

Final Performance Report

The AIACC Project: Assistance for Capacity Building, Stakeholder Engagement, and Communication of Scientific Information in Developing Countries for Climate Change Assessment

USAID Grant No. GEW-G-00-02-00006-00

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Final Performance Report

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I. Executive Summary

The activities undertaken with grant no. GEW-G-00-02-00006-00 from USAID to START/AGU are in support of AIACC, a GEF funded global project that is being co-executed by START and the Third World Academy of Sciences on behalf of UNEP. The AIACC project launched 24 regional assessments of climate change vulnerability and adaptation in 2002 in 46 countries of Africa, Asia, Latin America and Small Island States. The project provides training, technical support and mentoring to the regional assessment teams. Nearly 300 scientists and students in developing countries, plus another 40 scientists from developed countries, are participating in the AIACC regional assessments.

The regional assessments are adding to knowledge in the developing world about their vulnerabilities to climate change and available adaptation responses, sharing this knowledge with public and private sector stakeholders, and contributing to dialogues and decision processes for adapting to climate change. Roughly half the regional assessments will have completed their analytic investigations by December 2004 and the remainder will complete their investigations by mid-2005. In 2005, the regional assessments will continue their interactions with stakeholders to disseminate and discuss their findings, produce reports on their activities, and publish scientific papers. AIACC will also produce two reports in 2005 that synthesize lessons from the 24 regional assessments, one on the causes and nature of vulnerability to climate hazards and climate change in the developing world and another on adaptation strategies.

The grant from USAID contributed to the overall objectives of the AIACC project by enhancing capacity in developing countries for assessing climate

change vulnerabilities and adaptation options, engaging stakeholders in the assessment process, and communicating scientific information that can aid adaptation decisions. Two activities were implemented with the grant from USAID to achieve these objectives. The first activity was a small grants program to assist participants in the AIACC project with capacity building and stakeholder engagement activities. The second task was the development and maintenance of a web-based information network that provides information about the objectives, methods, scenarios, data, analytic results, and lessons from the AIACC regional studies.

Small Grants Program

The small grants program was co-financed by the AIACC project. A total of \$298,176 was awarded in 24 small grants to AIACC regional assessment teams. Of this amount, \$130,336 was funded from the USAID grant and \$167,840 was funded from a grant to the AIACC project from the Global Environment Facility. The small grants ranged in size from \$2300 to \$17500.

Table1. Countries that Participated in and Benefited from Small Grants Program

Region	Countries
Africa and Islands of the Indian Ocean	Botswana, Comoros, Egypt, Gambia, Ghana, Kenya, Lesotho, Madagascar, Malawi, Morocco, Mozambique, Nigeria, Senegal, Seychelles, South Africa, Sudan ¹ , Tanzania, Uganda, Zambia, Zimbabwe
Asia and Islands of the Pacific	China, Cook Islands, Fiji, Indonesia, Lao PDR, Mongolia, Philippines, Sri Lanka, Thailand, Vietnam
Latin America and Islands of the Caribbean	Argentina, Brazil, Jamaica, Trinidad and Tobago, Uruguay

¹The small grant awarded to the Sudanese project team was funded from the GEF grant; no USAID funds were used to support the activities in Sudan.

The small grants program has successfully achieved the objectives specified in the project proposal. The grants have provided training and visiting scientist exchanges that have increased the scientific capabilities of developing country scientists in 35 countries to assess climate change vulnerabilities and adaptation options and have assisted them to apply these enhanced capabilities in regional assessments (see Table 1). Evidence of the capabilities and their application is provided by 15 papers published by AIACC participants in peer-reviewed journals and 20 more working papers that are in review. Further evidence will be provided by the technical reports on vulnerability and adaptation to be produced by each project in 2005.

The grants have contributed to building relationships among scientists and scientific institutions for ongoing research and assessment of climatic risks and response options. Each of the grants brought together persons from multiple disciplines and multiple institutions, and often from multiple countries, to focus on research that is targeted to decision making. Each of these groups will continue working together in 2005 and most are developing new collaborative projects.

The grants have also brought together stakeholders with researchers with the result that the research is better targeted to decision-making needs, there is a shared understanding of climate risks and response options among stakeholders and researchers, and important groundwork has been laid for the use of research outputs in decision making to manage climate risks and adapt to climate change. The partnerships have included stakeholders from local community organizations, farmer organizations, government agencies from local to national levels, and private sector organizations. These partnerships that link together scientific, public sector, private sector and civil society organizations are an important legacy of the AIACC project and the USAID supported small grants program that can facilitate sustainable responses to climate risks.

Summarized here is a sample of the activities and accomplishments supported by the small grants program. Information about the activities and accomplishments of all 24 small grants are provided in the body of the report. Performance reports from the small grant recipients are included in Appendix

1 (small grants supported with USAID funds) and Appendix 2 (small grants supported with GEF funds).

- *Climate modeling and scenarios in Africa:* Grants to University of Cape Town, South Africa, and University of Cheikh Anta Diop de Dakar, Senegal, trained young researchers in western and southern Africa in climate modeling, interpretation of climate model simulations, and their application to agricultural and water management; provided researchers with data, computers and data storage equipment for climate modeling; and supported an end-user dialogue workshop that brought together climate scientists, agronomists and water experts to explore potential uses of climate modeling for improved resource management.
- *Climate related health risks in East Africa:* Community workshops in Kenya, Tanzania and Uganda, supported by a grant to the Kenyan National Academy of Sciences, raised awareness of climatic influences on malaria and cholera risks and engaged community leaders in planning responses to manage the risks. The grant was also used to train 9 East African researchers in the use GIS tools and methods. These tools and methods are now being applied by the researchers in an assessment of climate change health risks and adaptation responses in the Lake Victoria basin.
- *Water and crop modeling in West Africa:* Technical staff of the Gambian Global Change Research Unit (GCRU) of the Department of Water Resources, the National Agricultural Research Institute, the Department of Agricultural Services and the regional AGRHYMET program received training in crop and water balance modeling. GCRU was assisted in applying the model to simulate the impacts of climate change on water balances and crop yields. GCRU is now using the modeling framework to perform similar analyses to feed into their work on the evaluation of benefits and costs of climate change adaptation policies. The other Gambian agencies are applying the modeling framework for seasonal projections to be used in management planning.

- *Conserving biodiversity in a changing climate:* CSIRO, South Africa, is using its research results to develop a manual for use by land managers for protecting biodiversity in a changing climate and across a landscape that is a mosaic of public and private lands. Training materials and program have been developed for a training workshop for land management officials. Officials from 10 African countries will attend the workshop, scheduled for February 2005.
- *Watershed management in the Philippines:* The University of the Philippines – Los Banos conducted a workshop to inform stakeholders of preliminary research results on the influences of climate variability and change on the Pantabangan-Carranglan watershed, discuss possible management responses, and familiarize stakeholders with the research methods and tools. The workshop has laid the groundwork for stakeholders to use research results from the project in management decisions for the watershed. Stakeholders that participated in the workshop include the National Power Authority, National Irrigation Administration, national Department of Environment and Natural Resources, and municipal agencies.
- *Rice farming in the Mekong River Basin:* The Southeast Asia START Regional Center, working with local researchers, conducted field surveys of farmer households, interviews with community leaders and local government officials, and focus group discussions in case study sites in Lao PDR, Thailand and Vietnam. The collected data is being analyzed to understand the impacts of climate variability on rice farming in the basin, potential climate change impacts, and possible adaptations. Workshops will be held to share results with the community leaders and government officials, get their feedback, and explore adaptation strategies.
- *Climate risks in the Rio de la Plata basin:* The University of Buenos Aires and Universidad de la Republica conducted national workshops for stakeholders in Argentina and Uruguay. Two documents were prepared for and distributed at the workshops, one to educate the general public about climate risks and adaptation options and a longer, more technical document for technical staffs of public and private

agencies. Feedback from the workshops is being used to revise the two documents, which will then be published and distributed to the target audiences. The grant also supported workshops on climate change for journalists in Argentina and Uruguay. These workshops resulted in several newspaper articles and radio reports and helped to prepare journalists to cover the UNFCCC's 10th Conference of the Parties.

Web-based Data, Methods and Synthesis Information Network

The second task, development and maintenance of a Data, Methods and Synthesis (DMS) web-based information network for the AIACC regional studies, was implemented by the Center for Climate Systems Research (CCSR) and the Center for International Earth Science Information Network (CIESIN) at Columbia University, in collaboration with START. The web-based network includes:

- a searchable directory of AIACC projects (key word searchable and accessible via a clickable map),
- a searchable bibliography of climate impacts and adaptation literature and selected data sets,
- a “methods” page describing the vulnerability and adaptation assessment methods used by the AIACC projects,
- a “toolkit” page describing software tools available to the AIACC projects,
- a “synthesis” page integrating the core areas of research being addressed by the AIACC projects, and
- a “network” page with a searchable database of researchers working on climate impacts and adaptation research.

This website facilitates sharing of information across the AIACC project teams, cross-project learning, and synthesis of project results. The web-based network also enables researchers who are not participants in the AIACC project as well as stakeholders to evaluate and understand the analyses

conducted under the AIACC program. The website is facilitating access to and use of AIACC project data and results by the Intergovernmental Panel on Climate Change for the 4th Assessment Report and by non-annex 1 governments and their agents for information and tools relevant to National Communications under the UNFCCC.

The AIACC DMS activity has served to stimulate an exchange of methods and information among the AIACC projects and the wider climate change impacts, vulnerability and adaptation research community. The UNFCCC Secretariat has reported that they find the website to be a valuable complement to their database of methods and tools for vulnerability and adaptation assessment. The AIACC website provides greater details about selected methods and tools than is in the UNFCCC database, and provides information about experiences and results from the application of the methods and tools. The website has an average of 600 unique visitors per month.

The Socioeconomic Data and Applications Center (SEDAC), a Distributed Active Archive Center (DAAC) operated by CIESIN for the U.S. National Aeronautics and Space Administration (NASA), has agreed to continue hosting the AIACC DMS as part of its efforts to promote interdisciplinary exchange of data and information. SEDAC will support limited updating of the site's contents based on AIACC project inputs.

The website is available at <http://sedac.ciesin.columbia.edu/aiacc/>

II. Description of Activities and Accomplishments

II(a) Small Grants Program

START, in consultation with the AIACC Technical Committee, developed criteria for approval of small grant proposals and a call for proposals in the summer of 2002. The call was issued in fall of 2002 and is included as Appendix 3 of this report. The grants could be requested for two purposes: to assist with scientific capacity building for application in AIACC regional assessments, and/or to enhance stakeholder engagement in the regional assessments.

Twenty-four proposals for small grants were received from AIACC regional assessment teams. Each proposal was circulated to the AIACC Technical Committee for review and recommendations. Recommendations for improvement of the proposals from the Technical Committee were communicated to the proponents by the AIACC Director. Where necessary, proposals were modified to incorporate the improvements and resubmitted. All twenty-four submitted proposals were eventually approved and awarded a small grant. The AIACC Director and AIACC Regional mentors monitored implementation of the small grant activities and provided guidance and assistance for their implementation.

The small grants program was co-financed by the AIACC project. A total of \$298,176 was awarded in 24 small grants to AIACC regional assessment teams. Of this amount, \$130,336 was funded from the USAID grant and \$167,840 was funded from a grant to the AIACC project from the Global Environment Facility (GEF). The small grants ranged in size from \$2300 to \$17500. A total of 35 countries participated in and benefited from the activities supported by the small grants, (see Table 1) above.

Summary information about each of the grants awarded using funds from USAID is presented in Table 2. Included in the table are descriptions of the activities undertaken with the small grants and the accomplishments achieved. Table 3 presents similar information for the grants awarded using funds from the GEF. A broad overview of activities by region is provided below. Performance reports from the grant recipients can be found in Appendices 1 and 2.

Africa and Islands of the Indian Ocean

Thirteen small grants were awarded to recipients in Africa and nearby islands and 20 countries in the region participated in and benefited from activities supported by the grants. Supported capacity building activities include training and information exchange for regional climate modeling (southern and western Africa), use, visualization and application of climate change scenarios (western Africa), crop system modeling (Nigeria and Gambia), water balance modeling (Gambia), GIS tools and methods (Kenya, Tanzania, Uganda, Seychelles and Comoros), construction and use of socioeconomic scenarios (Kenya, Tanzania and Uganda), and biodiversity conservation strategies for a changing climate (southern and eastern Africa). Supported stakeholder engagement activities include a biodiversity conservation workshop for land management officials (southern and eastern Africa), community workshops on climate related malaria and cholera risks (Kenya, Tanzania and Uganda), community workshops on resource management practices to limit drought impacts (Sudan), end-user dialogue workshop on use of climate modeling in water and agricultural management decisions (West Africa), senior policy maker workshop on climate change and adaptation (Malawi), and local workshops with small and medium size commercial farmers to share information about water management and climate change risks (Egypt).

Asia and Pacific Islands

Seven small grants were awarded to recipients in Asia and the Pacific Islands. Ten countries in the region participated in and benefited from activities supported by the grants. Supported capacity building activities in the region include training for integrated assessment and crop modeling (Sri Lanka), GIS tools and methods (Philippines and Indonesia), and training of technical staffs of public agencies in methods of vulnerability and adaptation assessment. Supported stakeholder engagement activities include workshops for municipal and national agencies to discuss watershed hazards and management (Philippines and Indonesia), linking and coordinating AIACC assessment activities with related national efforts (China), local community workshops on vulnerability of pastoral livelihoods and adaptation strategies (Mongolia), field surveys, interviews and focus groups in rice growing

communities to gather data, share knowledge and receive feedback from local stakeholders (Lao PDR, Thailand and Vietnam), and a stakeholder forum with community leaders to share results from integrated modeling research and discuss their utility for risk management (Fiji and Cook Islands).

Latin America and the Caribbean

Four small grants were awarded to recipients in Latin America and the Caribbean. Five countries in the region participated in and benefited from activities supported by the grants. Supported capacity building activities in the region include training for epidemiological modeling of dengue and data collection (Jamaica and Trinidad & Tobago) and a technical workshop to share expertise and draft scientific paper manuscripts (Argentina and Uruguay). Supported stakeholder engagement activities include national workshops with public and private sector agencies to raise awareness of climate change risks and explore potential response options (Argentina, Brazil and Uruguay), workshops for journalists (Argentina and Uruguay), and preparation of education materials for the general public and for technical staffs of public and private sector agencies (Argentina, Brazil and Uruguay).

Table 2: Small Grants Awarded Using Funds from USAID Grant No. GEW-00-02-00006-00

AIACC						
Project No.	Award Amount	PI and Institution	Participating Countries	Objectives	Activities and Accomplishments	Status
AF07	\$15,000	B. Hewitson, University of Cape Town, South Africa	Ghana, Nigeria, Senegal, South Africa, Zambia, Zimbabwe	Enhance capacity in western and southern Africa for evaluating regional biases of GCM projections and developing regional climate scenarios; coordinate climate modeling activities of the AF07 and AF20 projects	Information and expertise for regional climate modeling shared among researchers from participating countries in workshop held in Senegal; researchers in Senegal, Zambia and Zimbabwe provided with computer hardware and modeling tools for modeling regional climate; climate change scenarios for Sub-Saharan Africa and West Africa generated and distributed.	Completed
AF23	\$6,000	J. Adejuwon, Obefemi Awolowo University, Nigeria	Nigeria	Enhance capacity of junior project team members for crop-climate simulations; raise University students' awareness and understanding of climate change issues	G. Knight of Penn State University traveled to Nigeria and provided training to project team members in modeling crop responses to climate variations, evaluated work performed to date by the project team and provided advice; assisted with the preparation of journal articles, and gave lectures to graduate level seminar.	Completed.
AF91	\$10,000	S. Wandinga, Kenyan National Academy Sciences, Kenya	Kenya, Tanzania, Uganda	Engage members of community groups to participate in assessment of health risks, identify risk reducing adaptations, and disseminate info about climate-health risks; enhance GIS capabilities of research team	Stakeholder workshops held in case study communities in Kenya, Uganda and Tanzania; workshops raised local awareness of malaria and cholera risks, the influences of climate variations on the risks, and strategies to manage the risks. Ideas for possible interventions developed for possible implementation. Nine project investigators were trained in GIS tools; these tools are now being applied by the investigators in the AF91 project to evaluate vulnerability.	Completed.
AF91	\$5,888	S. Wandiga, Kenya National Academy of Sciences, Kenya	Kenya, Tanzania, Uganda	Build capacity to develop socioeconomic scenarios, link them to climate scenarios, and apply them in vulnerability assessments.	Training workshop conducted in Kenya on the construction and use of socioeconomic scenarios for assessment of climate change vulnerability. Training provided by T. Downs of Clarke University. Methods are being applied in the AF91 project.	Completed.

Table 2 (continued): Small Grants Awarded Using Funds from USAID Grant No. GEW-00-02-00006-00

AIACC						
Project No.	Award Amount	PI and Institution	Participating Countries	Objectives	Activities and Accomplishments	Status
AS12	\$15,000	J. Ratnasiri, Sri Lanka Association for the Advancement of Science, Sri Lanka	Sri Lanka	Enhance capacity of Sri Lankan researchers for integrated assessment and modeling of impacts and adaptation strategies	Joint workshop held with International Global Change Institute, U of Waikato, New Zealand, to assist the Sri Lankan AS12 team with integrated assessment modeling. Results of the workshop include development of climate change scenarios downscaled to the study area, linking models of tea and coconut yield with integrated model and testing the linked model, completion of initial analyses of tea and coconut yield changes under different climate scenarios, and development of capacity in the Sri Lankan team to apply the integrated model.	Completed.
AS21	\$2,363	R. Lasco, U of Philippines at Los Banos Foundation, Philippines	Philippines, Indonesia	Enhance capacity of project participants to use GIS in the assessment of vulnerabilities	AS21 team acquired GIS software and GIS training. The GIS tools and skills are being applied by the project team to assess climate change vulnerability in watershed communities of the Philippines and Indonesia.	Completed.
AS21	\$12,008	R. Lasco, University of the Philippines at Los Banos Foundation, Philippines	Philippines, Indonesia	Raise the capacity of project team members and stakeholders in gov't and private agencies to assess climate change impacts and vulnerabilities.	Training workshops conducted in Philippines and Indonesia for stakeholders of the AS21 project. Participants included persons from National Power Corporation, National Irrigation Administration, Dept of Natural Resources, and municipal agencies. Training developed familiarity with climate change issues and methods for assessing vulnerabilities and adaptation options that will later facilitate use of AS21 research results in decisions by the different stakeholders.	Completed.

Table 2 (continued): Small Grants Awarded Using Funds from USAID Grant No. GEW-00-02-00006-00

AIACC						
Project No.	Award Amount	PI and Institution	Participating Countries	Objectives	Activities and Accomplishments	Status
AS25	\$15,000	Y. Yin, International Institute for Earth System Science, China	China	Build partnerships w/ key Chinese agencies at national and regional levels to engage them in the project and facilitate sharing of information and collaboration in investigating vulnerabilities and adaptation	Established a Steering Committee with membership of key Chinese national and provincial agencies that is providing input from these agencies to the conduct of the AS25 project, coordinating project activities with other climate change projects in China, and facilitating communication and application of results from the project for national communications and adaptaiton planning. Established an Expert Committee to advise on scenario design, database development, and analytic methods so as to improve consistency and complementarity with other climate change projects in China.	On-going. Expected completion by September 2005.
LA26	\$17,500	V. Barro, University of Buenos Aires, Argentina	Argentina, Uruguay	Engage stakeholders in AIACC projects in the Rio de la Plata basin and raise awareness to facilitate adaptation planning; engage graduate students in the assessment of climate change vulnerability and adaptation; coordinate with LA32 project, which is also working in the Rio de la Plata estuary.	Activities were undertaken in collaboration with the LA32 project. A stakeholder workshop was held in Buenos Aires with 96 participants from NGOs, public agencies and private sector to raise awareness of climate risks in the basin and adaptation options. The workshop produced recommendations for regulatory changes, publications for general public, and meetings to brief public and private sector decision makers. Draft document for public education produced, being edited by NGO for general audience. A workshop for journalists was held. Led to several newspaper articles and radio reports; also provided background information that was useful to journalists for reporting on COP-10, which was held in Buenos Aires. A draft technical report has been written with the LA32 team for technical staffs of public and private sector	Most activities completed. Remaining activities: publish non-technical information document for general public; publish technical report; brief decision makers.

agencies. Three

Table 2 (continued): Small Grants Awarded Using Funds from USAID Grant No. GEW-00-02-00006-00

AIACC Project No.	Award Amount	PI and Institution	Participating Countries	Objectives	Activities and Accomplishments	Status
					graduate students' theses supported.	
LA27	\$14,077	A. Gimenez, Instituto Nacional de Investigacion Agropecuaria de Uruguay, Uruguay	Argentina, Brazil, Uruguay	Establish local networks of policy makers, resource managers and other stakeholders to disseminate information about climate-agriculture interactions & adaptations; contribute to National Communications	Five national workshops held, 2 in Uruguay, 2 in Argentina and 1 in Brazil to inform agricultural stakeholders and general audiences of climate change risks and possible responses. Six papers to educate the general public were produced in Spanish and Portuguese and distributed in Uruguay, Argentina and Brazil. Two regional workshops were held for researchers in the 3 countries to share information; they resulted in 3 paper manuscripts being written for submission to peer review journals.	Completed.

LA32	\$12,500	G. Nagy, Uruguayan State University, Uruguay	Argentina, Uruguay	Engage stakeholders in AIACC projects in the Rio de la Plata basin and raise awareness to facilitate adaptation planning; engage graduate students in the assessment of climate change vulnerability and adaptation; coordinate with LA26 project, which is also working in the Rio de la Plata estuary.	Activities were undertaken in collaboration with the LA26 project. Stakeholder workshop was held in Montevideo to raise awareness of climate risks and adaptation options. A workshop for Uruguayan journalists was held, which led to several newspaper articles and radio reports on climate change and increased the ability of journalists to report on the upcoming COP-10. A draft technical report was written with the LA26 team that is targeted at technical staffs of public and private sector agencies.	Most activities completed. Remaining task: publish and distribute technical report
SIS90	\$5,000	R. Payet, The Seychelles Climate Center, Ministry of Environment, Seychelles	Seychelles, Comoros	Increase capacity for use of remote sensing images and for hydrologic modeling in GIS framework	A training workshop on GIS and use of remotely sensed data planned for 25 persons coming from environment and resource ministries of the Seychelles and Comoros. The training will assist members of the SIS90 team to analyze data for their assessment of vulnerability and will assist public agency technical staff to use results of the SIS90 project to manage resources in a changing climate. Total cost of the activities is \$12,000; 5000 is funded from the USAID grant and 7000 from the GEF grant.	Start of this activity delayed due to time demands on project staff. Training expected to be completed by January 2005.
Total from USAID	\$130,336					

Table 3: Small Grants Awarded Using Funds from GEF Grant to AIACC Project

AIACC Project No.	Award Amount	PI and Institution	Participating Countries	Objectives	Activities and Accomplishments	Status
AF04	\$15,000	B. Scholes, CSIRO, South Africa	South Africa, other African countries - particularly southern Africa	Transfer methods developed by AF04 for analysis of adaptation options for biodiversity protection to conservation planning officials from African countries	Workshop of conservation officials and project participants	Workshop completed.
AF14	\$15,000	N. Goutbi and B. Osman, Higher Council for Environment and Natural Resources, Sudan	Sudan	Engage stakeholders to link project to planning activities in Sudan, including NAPA preparation	Series of local workshops to build awareness of issues, identify & evaluate resilience building measures, and identify capacity gaps and strategies to address	Completed.
AF20	\$13,700	A. Gaye, University of Cheikh Anta Diop de Dakar, Senegal	Senegal, other West African countries	Enhance capacity of team members in evaluating and using GCM and RCM climate simulations; establish dialogue with potential end-users of climate projections; communicate information to National Communications teams	Training workshop on interpretation, use and visualization of climate model simulations; End-user dialogue workshop	Planning
AF23	\$9,000	J. Adejuwon, Obefemi Awolowo University, Nigeria	Nigeria, South Africa	Develop capabilities for construction and analysis of socioeconomic and climate scenarios and for vulnerability assessment.	Junior researchers to be sent to SEI-Oxford and University of Cape Town for training and assistance with applying these methods.	Planning

Table 3 (continued): Small Grants Awarded Using Funds from GEF Grant to AIACC Project

AIACC Project No.	Award Amount	PI and Institution	Participating Countries	Objectives	Activities and Accomplishments	Status
AF38	\$5,305	P. Desanker, CENCARTA, Malawi	Malawi	Initiate a dialogue to develop a strategic plan for Malawi in areas of climate change assessment, education and implementation of mitigation and adaptation activities.	Workshop convened senior policy makers in Malawi, participants in the AIACC AF38 project, and other persons to discuss climate change impacts, development of a national adaptation program in Malawi, and participation of Malawi in international climate change policy. Several initiatives endorsed, e.g. setting up a national CDM authority and to request establishment of a small grants program by the GEF/UNDP. A paper describing the workshop was written and submitted to <i>Climate Policy</i> journal for publication.	Workshop completed.
AF42	\$15,000	O. Dube, University of Botswana, Botswana	Botswana	Establish forums for information exchange on climate change impacts and adaptations; educate local communities; review coping strategies with communities.	Workshops with farmers' associations, village development committees, policy makers	Planning
AF47	\$13,874	O. Davidson, U of Cape Town, & B. Jallow, Dept Water Resources, Gambia	Gambia, South Africa	Enhance capacity of Gambian participants to apply crop and water basin models in investigation of impacts and adaptation	Assistance in calibration and initial application of models, training in use of models, technical support in application of models. P. Droogers (FutureWater, Netherlands) to provide training.	Training and assistance completed.
AF90	\$14,000	A. Abou-Hadid, Central Laboratory for Agricultural Climate, Egypt	Egypt	Engage with agricultural extension service and farming community to communicate information about climate vulnerabilities and management responses.	Work with agricultural extension advisors to develop and implement 3 workshops for sharing information and training.	Planning

Table 3 (continued): Small Grants Awarded Using Funds from GEF Grant to AIACC Project

AIACC Project No.	Award Amount	PI and Institution	Participating Countries	Objectives	Activities and Accomplishments	Status
AS06	\$15,000	P. Batima, Institute of Meteorology and Hydrology, Mongolia	Mongolia	Increase the participation of stakeholders in assessing, identifying and evaluating potential adaptation options for pastoral livelihoods	Workshops in 3 "aimags" for local community representatives to involve them in evaluating adaptation options.	Planning
AS07	\$15,000	A. Snidvongs, Southeast Asia START Regional Center, Thailand	Lao PDR, Thailand, Vietnam	Engage community stakeholders in the assessment of adaptation options; obtain information about present coping methods and other data.	Consultations with local community leaders; household surveys	Planning
SIS06	\$15,000	A. Chen, U of West Indies, Jamaica	Jamaica, Trinidad & Tobago	Enhance capacity of project participants to model epidemiology of dengue fever and evaluate effectiveness of adaptation strategies	Training workshop on modeling techniques, data needs and calibration of model; technical assistance in application of the model and analysis of results. D. Focks (Johns Hopkins U) to provide training and technical support.	Planning
SIS09	\$14,961	K. Koshy, University of the South Pacific, Fiji	Fiji, Cook Islands, Somoa, Solomon Islands	Train stakeholders in use of new integrated assessment model for application to islands of Oceania; engage stakeholders in assessing the abilities, applications and limitations of the modeling framework.	Workshop to provide training and forum to evaluate a new modeling framework.	Planning
SIS90	\$7,000	R. Payet, The Seychelles Climate Center, Ministry of Environment, Seychelles	Seychelles, Comoros	Increase capacity for use of remote sensing images and for hydrologic modeling in GIS framework	Training workshop in Seychelles	Proposed. Proposal rec'd 19 July; fwd to TC on 19 July.
Total from GEF	\$167,840					

II(b) Web-based Data, Methods and Synthesis Information Network

CCSR, CIESIN and START began working on the AIACC DMS activity in October 2002 with the design of a survey, the purpose of which was to develop profiles of the 23 AIACC projects (Appendix 4). The resulting profiles include information about the focus of each study, the tasks to be undertaken, the methods, data, models, tools and climate change scenarios to be used, and key published references that are relevant to their work. This survey was important because many of the projects had revised their work plans, so the information contained in their original proposals was not up-to-date. Also, many of the work plans did not include all the desired information, or provided it in formats that could not be readily incorporated into a standard database.

The resulting database was used to develop the project profiles that can be accessed from the home page (using the map or the pull down menus) and summary tables of vulnerable systems and groups addressed by each of the projects. The latter was included in the synthesis page.

The AIACC DMS team also developed an architecture and a design for the website. The website was beta tested in early 2003 and launched officially during the summer of 2003. In the fall of 2003 the final sections of the website were filled in. The web-based network includes:

- A searchable directory of AIACC projects, searchable via key word pull down menus (countries, regions, systems, sectors, groups) and a clickable map of the world.
- A searchable bibliographic database of close to 1,000 citations to journal articles, reports, working papers, websites, data, and software applications addressing climate impacts, adaptation, and vulnerability. An advanced search page enables searching on multiple criteria (region, systems, sectors, groups).
- A “method” page describing the vulnerability and adaptation assessment methods used by the AIACC projects.

- A “toolkit” page describing software tools available to the AIACC projects, including climate models, data analysis tools, agricultural models, and water resource models.
- A “synthesis” page synthesizing the core areas of research being addressed by the AIACC projects and soon to include a synthesis of key results.
- A “network” page with a searchable database of researchers working on climate impacts and adaptation research and pointers to additional information available on the Internet.

In early 2004, semi-annual project reports for 2003 were added to the project profiles.

A second synthesis survey was developed in early 2004 and sent out to all teams in March (Appendix 5). The synthesis survey focused on the synthesis of the results of the individual studies and the overall AIACC project. The main goal was to produce information about the capacity of different communities and systems/sectors to adapt, which can then directly contribute to the development of relevant adaptation strategies. The project investigators’ responses to the Synthesis Survey were analyzed to provide information about the characterization of vulnerability, the capacity to adapt, the role of decision-makers and stakeholders in adaptation, and the projects’ contributions to National Communications and to planning adaptation actions. We emphasized that the information that was requested for the survey was consistent with the information that project teams were expected to provide in final project reports to START. Although the analysis of the survey results has yet to be completed, we anticipate that this will be completed in early 2005 and added to the AIACC DMS website’s synthesis page as a PDF file.

AIACC DMS team members participated in each of the regional workshops as follows:

	Africa	Asia	Latin America
2003	Ana Iglesias	Alex de Sherbinin	Cynthia Rosenzweig
2004	Ana Iglesias	Anthony Nyong ²	Alex de Sherbinin

At each of the regional workshops, short presentations giving an update on the DMS activity were made, but the central focus was to meet with teams to discuss the survey results and, in the case of the second survey, to work with them to fill out the survey. AIACC DMS team members also made presentations and facilitated technical sessions during the regional workshops. Following the 2004 regional workshops, AIACC projects were also encouraged by the AIACC-DMS team members to provide vulnerability and adaptation (V&A) methodologies to the consultants producing the UNFCCC compendium of V&A methods.

III. Self-Evaluation of Achievement of Objectives

In the early stages of implementation of the GEF funded AIACC project, three shortcomings of the project were identified. First, insufficient resources had been allocated for capacity building activities to support the AIACC regional assessment teams. Three large training workshops were held in the first year to provide training in methods and tools for construction and use of regional climate change scenarios and for assessment of climate change vulnerability and adaptation. The training workshops introduced participants to the wide range of available methods and tools, providing participants with basic information about their purposes, data requirements, skills needed to utilize, appropriate applications, limitations and interpretation of results. Some hands-on instruction was provided in the application of selected methods and tools. But generally it was not possible to provide training of the necessary depth to impart sufficient expertise to participants for them to implement many of the methods and tools relevant to their planned assessment activities.

² Owing to a change in schedule for the 2004 Asia Regional Workshop, no AIACC-DMS team members were able to attend, so Anthony Nyong, Department of Geography and Planning, University of Jos, Nigeria, served as AIACC-DMS representative to this workshop.

A second shortcoming was that insufficient resources had been allocated for stakeholder engagement in the regional assessments. Many of the regional assessment teams had planned only minimal engagement of stakeholders in their assessment work plans and budgets. As a result of interactions with their peers, guidance from AIACC mentors, and emphases of the training workshops, the regional assessment teams came to recognize the need for substantive engagement of stakeholders if their research was to be useful and used. But their regional assessment budgets could not accommodate greater stakeholder activities without sacrificing other key assessment elements.

The small grants program was devised to address these two shortcomings. With the grant from USAID, and reprogramming of other AIACC funds, the small grants program provided new resources that each regional assessment team could allocate to additional capacity building and for working with stakeholders. The program was designed to enable the regional assessment teams to submit proposals that targeted self-defined priorities. The proposal review process provided guidance to improve the likely effectiveness of the proposed activities for achieving the objectives of the regional assessment teams.

The small grants program has been highly successful in surmounting these two shortcomings of the original conception of the AIACC project. The regional assessment teams obtained critical skills that enhanced the quality and scope of their assessments of climate change vulnerability and adaptation options. The overall quality of the AIACC assessment work is indicated by the 15 peer-reviewed papers that have already been published in scientific journals, with many more in the pipeline. This success is partly attributable to the small grants program.

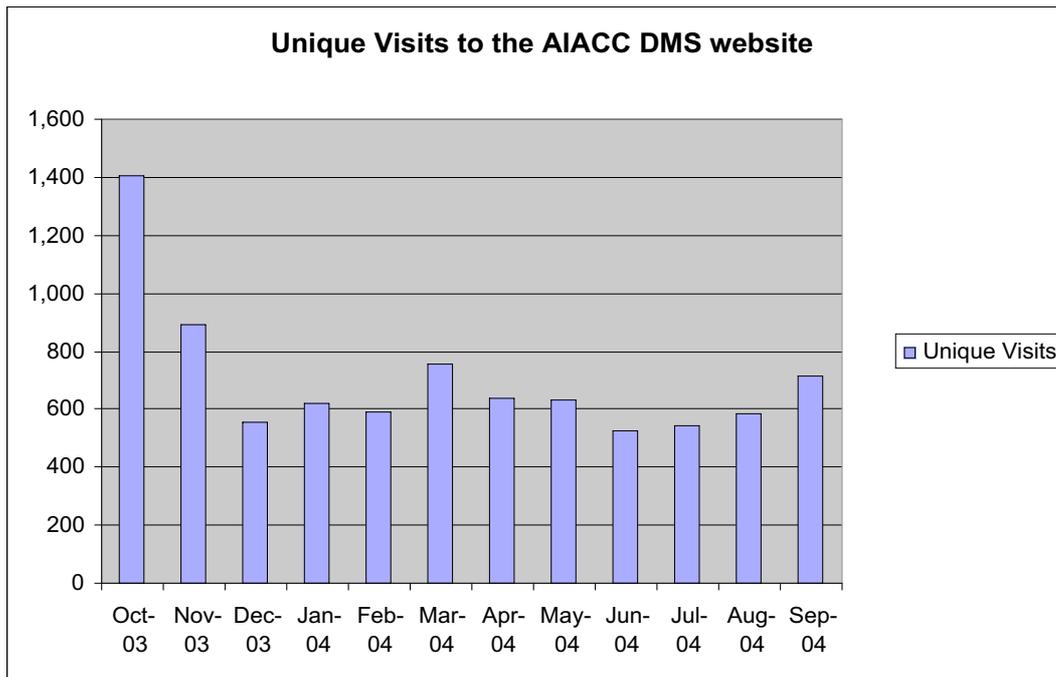
The stakeholder workshops and consultations that were supported by the small grants have had a marked impact on the way in which the AIACC regional assessments have been conducted. The researchers have been challenged in these venues to focus their research on questions that are priorities for decision making, to work harder at communicating their results in forms that can be readily understood, and to work collaboratively with stakeholders. This has improved the quality and utility of the research and it is expected that it will facilitate use of the assessment findings by

stakeholders in risk management decisions. However, these challenges cannot be easily achieved, and it cannot be claimed that the AIACC regional assessments have fully succeeded in meeting them. But they have succeeded in initiating dialogues and partnerships with key groups that can be an important foundation for serving stakeholder and decision maker needs for credible and valid knowledge about climate risks and risk management responses.

The third shortcoming in the early stages of implementation of the AIACC project was that there was no mechanism for sharing data, information about methods, and preliminary results across the 24 regional assessments prior to the end of the project, when the regional assessments would report their findings. Participants in AIACC quickly voiced a desire to have ready access to information about the activities of the other assessments so that they might learn and benefit in time to apply this information in their own work. The Data, Methods and Synthesis (DMS) website was implemented with the USAID grant to address this need. The DMS website has proven to be a valuable resource that has been used by AIACC participants as well as by others outside the AIACC network.

The objective of the AIACC DMS activity was to communicate and share information among researchers, stakeholders, and decision makers about the objectives, methods, input data, results and lessons from regional assessments of climate change that are under way as part of the AIACC project. We feel that the activity has achieved this objective both through in-person contacts with the project teams and through the website.

Apart from conducting a survey of the project teams, it is difficult to evaluate website utilization. However, it is possible to measure overall website utilization, which would include the AIACC project teams, other researchers, and the general public. As can be seen from the figure below, after an initial high of 1,400 visits in October 2003, the AIACC DMS website has settled down to a relatively consistent 20 unique visitors per day (~600 per month) since the end of 2003. Unique visitors is a better statistic than total visitors, since it is less prone to be influenced by web spiders and robots.



Overall, it is our belief that the AIACC-DMS activity helped not only in terms of information exchange, but that the structured surveys helped the teams in a number of ways. At the outset, the first survey forced the teams to think through their work plans and to identify literature or data sets that would be vital to their research. The second survey has helped the teams to think through their findings in a consistent manner, identifying the primary areas of vulnerability and sensitivity to climate change of the systems/groups they were studying, and beginning to assess possible adaptation mechanisms and the roles of stakeholders and decision-makers in bringing those adaptations about. Many of the teams found this to be a useful exercise, and one which will hopefully help them to think through the broader implications of their research and to produce reports and articles for decision-makers and the scientific community.

IV. Recommendations

Based upon our experience in the overall AIACC project, and with the supplemental activities provided for by the grant from USAID, we have a number of recommendations. First, there continues to be a need for research and assessment of climate change vulnerabilities and adaptation responses. A strong case has been made that adaptation responses are needed now and that there is sufficient information to act. This is true, but it is also true that

climate change is an ongoing process and there is still much to learn about the threats it poses and the effectiveness, benefits and costs of possible responses. The need for further assessment is particularly great in the developing world at local, national and regional scales. Projects such as AIACC and the programs of START, IAI, APN and others demonstrate that high payoffs can be achieved by investments in global change research in the developing world. At present, the resources directed to climate change assessment in the developing world is small relative to the need and more resources should be allocated to this need by development and science funding agencies.

Second, research and assessment that targets adaptation decision-making should be given priority. To do this effectively will require assessments that are partnerships between scientific and stakeholder groups and in which stakeholders contribute substantively to defining the objectives and designing and implementing the assessments. Stakeholder participation should be built into assessments at the start with adequate resources allocated, and not retrofitted as was done in many of the AIACC regional assessments. This will facilitate application of assessment outputs in actions to manage risks.

Third, research and assessment activities in the developing world should include substantial capacity building elements. Learning-by-doing is the most effective means of capacity building, and was the main means of capacity building in the AIACC project. Training activities, scientist exchange programs, technical assistance and mentoring can enhance learning-by-doing capacity building and improve the quality of assessments. As was learned in the AIACC project, these supplemental activities should be tailored by the participants to address their self-defined priority needs. There are now a number of centers of expertise for climate change assessment in the developing world, and these centers are increasingly capable of providing training and technical support services. These centers should be utilized to transfer and spread capacity in the developing world.

Fourth, regional assessments are best implemented within a network of similar assessments and not as stand-alone projects. AIACC has realized substantial synergies by implementing a group of regional assessments with guidance, technical assistance, training, and mentoring services provided through a coordinated network of institutions and experts. The coordination

has allowed for efficient provision of the services to a large group of users and has allowed for positive spill-over effects as participants share knowledge, expertise and data across the individual assessments. This modality is also facilitating synthesis of lessons from across the regional assessments.

V. Fiscal Report

The expenditure of grant funds is reported in Table 4. Not reported in Table 4 are expenditures co-financed by AIACC. Sub-awards of USAID funds for small grants to developing country institutions totaled \$130,336. A description of their activities and expenditure of funds is provided in Appendix 1. Contractual expenditures totaling \$120,000 were paid to CCSR, Columbia University, for development of the DMS website, for collection of data and information for the website, and maintenance of the website. Personnel salary and benefit expenditures of \$36,645 provided for development of the call for small grant proposals, coordination of the review of proposals and award decisions, monitoring and assisting performance of the small grant activities, coordination with Columbia University on the design and implementation of the DMS website, and preparation of performance reports. Charges of \$14,249 by AGU are for managing receipt and disbursement of funds and financial reporting. Expenditure of grant funds totaled \$299,230, or \$770 less than the original award amount.

Table 4. Expenditure of Grant Funds

DESCRIPTION	ALLOCATED	Date	EXPENDED	BALANCE
AIACC Sub-awards				
AF23, Adejuwon, Obefemi Awolowo University, Nigeria		27-Oct-03	6,000.00	
AF91, Wandiga, KNAS, stakeholder workshops, Nigeria		6-Jun-03	10,000.00	
AF91, Wandiga, KNAS, Kenya, socioeconomic scenarios		22-Jul-04	3,250.00	
AF91, Wandiga, KNAS, Kenya, travel costs for trainer		23-Jul-04	2,637.71	
AF07, Hewitson, U of Cape Town, South Africa		27-Oct-03	15,000.00	
AS12, Ratnasiri, SLAAS, Sri Lanka		27-Oct-03	15,000.00	
AS21, Lasco, U of Philippines, Philippines, workshops		4-Feb-04	12,008.00	
AS21, Lasco, U of Philippines, Philippines, GIS software and training		1-May-03	2,363.00	
AS25, IIESS, China		27-Oct-03	15,000.00	
LA26, Barros, UBATEC, Argentina		6-Nov-03	17,500.00	
LA27, Gimenez, INIA, Uruguay		27-Oct-03	14,077.00	
LA32, Nagy, U de la Republica, Uruguay		6-Nov-03	12,500.00	
SIS90, Payet, Ministry of Environment, Seychelles		14-Sep-04	5,000.00	
SUBTOTAL	130,858		130,335.71	522.29
Contractual - CCSR				
Columbia University Subcontract		17-Jun-03	15,112.00	
Columbia University Subcontract		2-Dec-03	13,546.00	
Columbia University Subcontract		18-Mar-04	18,955.00	
Columbia University Subcontract		8-Jun-04	26,280.00	
Columbia University Subcontract		14-Sep-04	34,655.00	
Columbia University Subcontract		15-Nov-04	11,452.00	
SUBTOTAL	120,000		120,000.00	0.00
Personnel (salary & benefits)				
2003 Charges as of 31 Dec. 03 (final)		31-Dec-03	7,572.83	
2004 charges to date (AGU GL 21Dec04)		21-Dec-04	27,072.29	
Personnel SUBTOTAL	34,856		34,645.12	210.88

Contractual - AGU	14,286	14,249.04	36.66
TOTAL	300,000	299,229.87	769.83

Appendix 1: Performance Reports from Recipients of USAID Funded Small Grants

1.1 Climate Modeling and Scenarios for Africa

AIACC Project code: AF07

1.1.1 AF07 Background

Project Investigator:	Bruce Hewiston
Organization:	University of Cape Town, South Africa
Total Grant	\$ 15,000.00
Participating Countries	Ghana, Nigeria, Senegal, South Africa, Zambia, Zimbabwe

1.1.2 Summary of Accomplishments

1. Coordination meeting between AF07 and AF20, Dakar, Senegal, January 2004.
2. Installation of new computational PC for climate research in Senegal.
3. Installation of new computational PC at the University of Zambia.

1.1.3 Description of Activities

A meeting between the two AIACC projects concerned with modelling climate change in Africa (AF07 and AF20) was convened in Dakar, Senegal in January 2004. These two projects are conducting research into downscaling methods for generating climate change scenarios, in particular the use of Regional Climate Models (RCMs) for such purposes. Both projects also focus on using different General Circulation Models (GCMs) and RCMs and it was therefore important that both groups communicated with each other to benefit from each other's insights and experiences. The meeting spanned 2 days during which presentations were given on current and future work plans, followed by discussions that facilitated the development of the activity plan for each project. It was apparent that the two projects have taken different approaches to the work; AF07 has used multiple (3) GCMs to investigate the envelope of uncertainty in the climate change projections, whereas AF20 has focussed on a single GCM (CCM) and fully understanding the biases in that model. Further, the two projects are using different RCMs: RegCM (AF20) and MM5 (AF07). One of the important results of this meeting was that it became apparent that different models predict varying changes in climate and the work of the two projects is complimentary. Altogether 5000 USD of the supplemental grant was given for this meeting, though due to higher than anticipated travelling costs it was necessary to supplement this figure with other monies from this grant. Due to the declining cost of computer equipment this extra spending was saved from other parts of the budget.

The remaining budget of the grant was for the purchase of new computer equipment and its installation at our African partner institutions. The first installation was a PC for Abdoulaye Sarr in Senegal. To maximise the use of funds this computer was taken as part of the meeting detailed above. A computer with the following specifications was installed to enhance redundancy of disk storage and power spikes/outages, as well as increase computing capacity to run the MM5 RCM. These issues had been highlighted as important throughout the life cycle of project AF07, with Abdoulaye Sarr previously losing data through a hard disk failure.

1.1.4 Specifications of modelling PC

- 2.8+ Ghz AMD athlon processor
- 2 x 250 Gb hard disk storage using software RAID0 (this allows one disk to fail whilst maintaining computer functionality).

- 1 Gb RAM to enable faster memory intensive computing (RCMs are memory intensive)
- External Uninterruptible Power Supply (UPS) to maintain power in the event of power failure and protect from spikes associated with power surges. These are often associated with disk failure.
- External 250 Gb USB hard disk. This is used as an external backup and for transferring data between the remote institution and the leading-institution base in Cape Town.
- CD writer for secondary backup of primary data.

A second PC with the same specifications, though bought at a lower price, was taken to Zambia 8 months later. This PC was installed in the Mathematics department at the University of Zambia and will be used by co-researcher in AF07 Suman Jain and her students. A workplan was formulated between Mark Tadross and Suman Jain, whereby the University will look at testing the best configurations of the model for downscaling the climate of Zambia. This will form the basis of a student project and will enhance local training. This installation proved to be a significant upgrade to the previous PC and represents perhaps the most powerful computer in both the Maths and Physics Departments. Whilst installing the PC, Mark Tadross talked with staff in the Maths and Physics departments and it became clear that both departments have few computing resources with which to teach students programming etc. At least 2 of these students are now in Cape Town doing post-graduate degrees involving climate modelling and so it was suggested that the introduction of a computer network would enhance the teaching in the department. This would allow students to advance further within Zambia and enable them to better tackle further studies either in Zambia or abroad. A computer aid organisation (www.computer-aid.org) was suggested as a source of cheap second-hand computers, which enables a network of 20 computers to be installed at a cost of approximately 1500 USD. The department is now engaged in acquiring the computers. It was noted that finding a suitable computer engineer with Linux experience was one of the top priorities for the sustainability of such a project.

1.1.5 Persons and organisations benefiting:

1. Projects AF07 and AF20 benefited from their interaction and exchange of climate modelling experiences.

2. Abdoulaye Sarr (Senegal Meteorological service) has benefited from access to a faster and more reliable PC that has enabled him to redo the modelling experiments, data from which had previously been lost. He is also planning to take a sabbatical in Cape Town towards the end of this year to write up his experiments for submission in journals.
3. Suman Jain (University of Zambia) has benefited by having access to a PC that enables higher resolution modelling and a facility with which students can conduct project work on climate modelling. The experience has also suggested a way in which the departments of mathematics and physics can benefit as a whole.

1.1.6 Effectiveness of utilisation of funds

Efficient use of funds has proved effective in accomplishing the initially stated goals. The original partitioning of funds was not realistic and extra funds were taken for travel. Further, changes in the Rand-Dollar exchange rate have reduced the available funds. However, the cost of computer equipment has reduced in time enabling the last PC to be purchased for around 10000 rand. The remaining budget (approx 20000 rand) allows the purchase of 2 more PCs, which will bring the total to 4 PCs. This is one less than originally budgeted for, but it seems that currently there is no manpower in Zimbabwe to utilise their designated PC. Therefore a PC has been earmarked for Joseph Intsiful who is returning to Ghana after finishing his PhD studies in Germany towards the end of the year. A Zimbabwean student at UCT may take the final PC, if he returns to his post in the Zimbabwean Meteorological services.

The PCs currently installed are generally well utilised though the technical difficulties with maintaining the equipment and replacing failed components is a concern. The software RAID, which allows a hard disk to fail without affecting the computer system, is a step up in complexity from that previously used. Replacement of failed disks will require more technical assistance than previously required.

Object of Expenditure	Supplementary Project Budget Allocation (USD)	Supplementary Project Budget Allocation (ZAR)	Actual Supplementary Project Budget Allocation* (ZAR)	Expenses (USD)	Expenses (ZAR)	Amount Remaining (USD)	Amount Remaining (ZAR)
COMPUTER EXPENSES [1]	8685	66000	58705	4487	30331	4235	28374
Computer - A. Sarr (Senegal)				2306	15588		
Harddrive & Cables				505	3413		
Computer - S. Jain (Zambia)				1676	11330		
TRAVEL FOR IMPLEMENTATION [2]	1315	10000	8895	571	3859	752	5036
Tadross - Zambia				571	3859		
OTHER TRAVEL[3]	5000	38000	33800	4862	32864	140	936
Tadross - Dakar				907	6133		
Hewitson - Dakar				1271	8593		
Adeoyin - Senegal				1527	10324		
Accommodation - Senegal				650	4394		
Daily Expenses - Senegal				506	3420		
UCT Research Levy						-1377	-9224
TOTAL	15000	114000	101400	9919	67054	3750	25122

* Actual Supplementary Budget allocation - this figure differs to Supplementary Budget allocation due to exchange rate fluctuations. The project was approved at \$1=7.6 and the grant was received at \$1=6.76.

1.2 Modeling Crop Yield Responses to Climate Change in Nigeria

AIACC Project code: AF23

1.2.1. AF23 Background

Project Investigator:	James Adejuwon
Organization:	Obafemi Awolowo University , Nigeria
Total Grant	\$ 6,000.00
Participating Countries	Nigeria

1.2.2 Project outline

Professor Greg Knight of Pennsylvania State University visited Obafemi Awolowo University for two months, February and March of 2004, to assist the AF23 regional assessment team. Professor Knight trained team members in the application of crop models to simulate the effects of climate variation and climate change on crop yields. He evaluated crop modeling work done to date by the AF23 team and assisted the team with calibration and validation of the crop models for use in Nigeria. During his visit, Professor Knight assisted members of the team with the preparation of paper manuscripts for submission to journals. Professor Knight also delivered lectures in the University on human dimensions of environmental change, with special emphasis on climate change.

1.3 GIS training and community workshops on climate related health risks in East Africa

AIACC Project Code: AF91

1.3.1 AF91 Background

Project Investigator:	Shem Wandiga
Organization:	Kenya National Academy of Science, Kenya
Total Grant	\$ 10,000.00
Participating Countries	Kenya, Uganda and Tanzania

1.3.2 Summary

Two activities have been accomplished during the reporting period, namely: GIS Training and Meeting with Pilot Communities. Under GIS training nine persons underwent a 5 day course which covered the introduction to GIS, working with data to developing a GIS application in Arc View (see course training program, Attachment 1), five graduate students, three researchers and one principal investigator participated in the course. The course was very useful in data entry and analysis for the Project AF-91. The participants are currently involved in the data entry and analysis.

Two meetings with the community stakeholders for cholera and malaria in Kenya also took place. Three researchers, three graduate students and selected community leaders participated. During these meetings brief presentations on the coping mechanisms and adaptation strategies from the socio economic, health and climate perspectives were made by the three researchers. Thereafter, a discussion with the community stakeholders on the risk groups, coping mechanisms and adaptation

strategies from the communities' perspective ensured. The deliberations from these stakeholders meetings are valuable, since they will greatly assist in charting the implementation of the strategic action plans.

The stakeholders' workshop for Tanzania was conducted as part of the second fieldwork phase. The objective of the workshop was two-fold, one was to present an overview of the project and preliminary research findings to the participants. The second objective was to obtain additional information from participants to complement the data-set collected during the fieldwork phases. The exercises and activities towards this end involved developing problem trees on malaria and cholera, discussions and comments from the participants. The participants also identified potential and/or ongoing intervention measures for malaria and cholera.

The Uganda stakeholders meeting was held at Makerere University on 22nd July 2003. The list of participants is given as Attachment file. There was a review of the status of malaria and cholera situation at Kabale and Gaba where the research was conducted. Difficulties in secondary data collection were highlighted and a way forward agreed upon. Participants appreciated the value of the research being carried out. They also applauded their involvement in the workshop. They agreed on five issues for the project's way forward.

1.3.3 Description Of Activities

A GIS training workshop was organized for nine participants in the AF-91 project with one person coming from Uganda and Tanzania each. The rest of the participants were Kenyans. The Project Principal Investigator, three researchers and five postgraduate students participated in the course (see list of participants as Attachment II). The course was conducted by Mr. Samuel Ng'ang'a, GIS Consultant/Instructor, Regional Centre for Mapping of Resources for Development (RCMRD) and was held at the Kenya National Academy of Sciences offices, Utalii House, Room 801, Utalii Street, Nairobi from 25th to 29th September 2003. The course covered the following topics: Arc View Basics, Getting data into Arc View, Displaying themes, Working with tables, Creating and editing shapefiles from raster (Image) and vector data sets, Digitizing through the screen, Querying and analyzing themes for planning and decision making, Creating layouts-Map production and project-Developing a GIS application in Arc View (See Attachment I). Participants were given several exercises to do during the course.

The community stakeholders meeting for cholera and malaria sites took place on the 16th and 17th of October 2003 in Kisumu and Kericho respectively. The number of community stakeholders varied from 12-18 and was composed of various opinion leaders such as chiefs and sub-chiefs, church leaders, women's group leaders etc that had been identified as opinion makers by their communities (see Attachment III). Using participatory approaches, the stakeholders' meetings were able to identify risk groups in the community, coping mechanisms, and adaptation strategies for cholera and malaria. Multi-criteria decision making was employed in comparing the different alternatives and selecting the preferred adaptation strategies. The participation and engagement of the community stakeholders in implementing strategic action plans for the preferred strategies for cholera and malaria epidemics was also obtained during these meetings. The participants also agreed that the members of the research project were to design the strategic action plans for the preferred adaptation strategies decided upon at the meeting and disseminate them to the stakeholders for comments and or/ amendments before implementation.

The stakeholders workshop was conducted in Muleba Town, Tanzania, between 15th and 16th July. The participants composed of different stakeholders (Attachment IV). The timetable of the workshop consisted of presentations and group participation. The workshop was able to identify the following: weaknesses and information gaps in the preliminary report; additional information to improve the report and the aspects that need further research. Further, the participants were able to develop problem trees on malaria and cholera and brainstorm on the strategies that can be used in the control of malaria and cholera at the local levels.

The Uganda stakeholders' meeting was opened by Prof. Paul Mugambi, Principal Researcher. He gave the background of the project which was followed by presentations as shown in the workshop programme (Attachment VI). Participatory group discussion followed each presentation and conclusions were reached on secondary data collection, community participation and project resource dissemination as well a sway forward.

1.3.4 Self Evaluation

At the end the course participants highly approved the course and its usefulness. They all agreed to enter their AF-91 data using the Arc View format and to analyze

the same using Arc View Program. The Kenya, Uganda and Tanzanian data are being entered and analyzed using GIS program.

The participants of the stakeholders meetings in Kenya, Uganda and Tanzania felt that the meetings were able to achieve the set out objectives (Attachment III). The community stakeholders appreciated that the consultation process had given them a sense of ownership in the project and would assist them in creating awareness about malaria and cholera epidemics that are induced by climate variability.

1.3.5 Attachment I: 5-Day Arc View Training Program

- Day 1. *1. Arc View basics*
 Exercise 1: An Arc View sampler
2. Getting data into Arc View
 Exercise 2a: Add themes to a view
 Exercise 2b: set view properties
3. Displaying themes
 Exercise 3a: Using the legend editor to create Thematic Maps
- Day 2. Exercise 3b: Set theme display properties; i.e.; displaying layers at different Scales
4. Working with tables
 Exercise 4a: Add and edit tables
 Exercise 4b: Select and summarize records
- Day 3. Exercise 4c: Join and link tables from other data sources
 Exercise 4d: Create a chart
5. Creating and editing shapefiles from raster (Image) and vector data sets and Digitising through the screen
 Exercise 5: Create and edit shapefiles
- Day 4. *6. Querying and analyzing themes for planning and decision making.*
 Exercise 6a: Use theme-on theme selection
 Exercise 6b: Join and merge spatial data

7. Creating layouts-Map productions

Exercise 8: Create a map layout

Day 5. Project- Developing a GIS application in Arc View (Participants expected to use their own data)

1.3.6 Daily Schedule For 5-Day Arc View Training Program

9.00-11.00 First morning sessions
11.00-11.30 Coffee / tea breaks
11.30-01.00 Second morning session
01.00-02.00 Lunch break
02.00-03.30 First afternoon sessions
03.30-03.45 Coffee / tea breaks
03.45-05.0 Second afternoon sessions

1.3.7 Attachment Ii: List Of Participants For GIS Training

Name	Designation	Address
James Ndwiga Kathuri	Postgraduate student	University of Nairobi Department of Geography P.O. Box 30197 Nairobi, Kenya
Lydia Atieno Olaka	Postgraduate student	University of Nairobi Department of Geology P.O. Box 30197 Nairobi, Kenya
Roselyn Amonyeket Ojala	Postgraduate student	Drought Monitoring Centre Nairobi, Kenya Meteorology Department P.O. Box 30259, Nairobi, Kenya
Dr. Dan Olago	Senior Lecturer / Principal Researcher	University of Nairobi Department of Geology P.O. Box 30197, Nairobi, Kenya
Dr. Maggie Opondo	Senior Lecturer / Principal Researcher	University of Nairobi Department of Geography P.O. Box 30197, Nairobi, Kenya
Dr. Richard Kangalawe	Researcher	Institute of Resource Assessment University of Dar es Salaam Box 35097, Dar es Salaam Tanzania
Eugene Apindi Ochieng	Postgraduate student	University of Nairobi

		Department of Geology P.O. Box 30197, Nairobi, Ker
Timothy Baguma	Postgraduate student	Department of Social Sci Makerere University, P.C 7062, Kampala, Uganda
Prof. Shem Wandiga	Principal Investigator	Kenya National Acaden Sciences, P.O. Box 39450, N Kenya

1.3.8 Attachment III: Community Stakeholders' Meetings In Kenya

1.3.8.1 Aims of this Meeting

- To consult with community stakeholders in identifying:
 - risk groups in the community;
 - coping mechanisms; and
 - adaptation strategies for cholera/malaria epidemics.
- To identify alternatives strategies that can accommodate the possible changes in risk for cholera/malaria epidemics.
- To select preferred adaptation strategies for cholera/malaria epidemics.
- To seek the participation and engagement of stakeholders of the community stakeholder group in designing and implementing strategic action plans for the preferred strategies for cholera/malaria epidemics.

Time	Item	Lead Person
9:00-9:15 am	Introduction-inc aims and objectives	Maggie Opondo
9:15-9:45am	Overview: cholera/ malaria from the climate health and the social perspective	Andrew Githecc Dan Olango and Maggie Opondo
9:45-10:00 am	Discussion of overview (Question and answer session)	Participants Andrew Githecc Dan Olango and Maggie Opondo
10:00-10:15 am	BREAK	
10:15-10:45 am	Discussion and identification of risk groups	All participants
10:45-11:15	Selection of preferred adaptation strategies	All participants
11:45-12:15	Implementation Participation of stakeholders? Design of strategic action plans (SAPs) Implication: -costs-fundraising -timeplan materials etc.	All participants
12:15-12:45	Way forward	All participants
12:45-1:00	Closing	All participants

Activities:

1. Which groups in your communities are usually most at risk in the event of a cholera/ malaria epidemic?
2. What coping mechanisms and adaptation strategies are undertaken when there is a cholera/ malaria epidemic?
3. What are the five most important and relevant coping mechanisms and adaptation strategies for different risk groups identified?
4. What is good and bad about each of the five identified coping mechanisms and adaptation strategies? (i.e. reflect/ discuss on what is good or bad about these coping mechanisms and adaptation strategies (Goal is to produce 10-20 criteria)
5. Draw up a matrix with the coping mechanisms and adaptation strategies across the top and the criteria down the side on the flipcharts.
6. Discussion on how well each criterion is fulfilled by each coping mechanisms and adaptation strategies using the following questions:
 - (i) Which is the best?
 - (ii) Which is the next best?
 - (iii) Which is the worst?
 - (iv) Which is the next worst?
 - (v) Of the two remaining, which is better?

7. Ranking of the alternatives according to the evaluation criteria set by the participants.

List of Participants for Stakeholders Meetings in Kenya

Community Stakeholders' Meeting, Thursday 16th October 2003, KEMRI, KISUMU, 9am – 1 pm.		Community Stakeholders' Meeting, Friday 17th October 2003, Sosiote Health Centre, KERicho, 9am – 1 pm.	
Participant	Designation	Participant	Designation
Collins O. Otunga	Church pastor	James Kimeto	Farmer (Retired)
Atito L. Omondi	Teacher	Richard Kirui	Lab Assistant
Walter O. Ongoro	Public Health Technician	Paul Koech	Nurse
Jechonia O. Otunge	Beach Management Unit Chairman.	Rebeka Kirui	Chairlady, Kobokyek Women's Grp
Peter Mwoso O. Owano	Farmer	Leah Chesege	Chairlady, Kaitui. Women's Group
Adino Peter Omuga	Community Development Educator	Lilian Tuei	Teacher
Calasine Nambaka	Environmental Health Officer	Elizabeth Kerich	Teacher
Florence Achieng	Teacher	Monica Yegon	Nurse
Gordon Owiti	Youth group representative	Emmy Chepkorir	Community worker
Juliana Arowa	Women group representative	William Kiripan	Pastor
Christabel Ombok	Assistant Chief	Paul Keter	Community Health Officer.
Dorka A. Agoro	Nyaluo women group	Susan Morogo	Public Health Technician.
Dr. Andrew Githeko	Researcher	Wilson Kiwa	Clinical Officer
Dr. Dan Olago	Researcher	Moses P. Kirionki	Public Health Officer
Dr. Maggie Opondo	Researcher	Benjamen K. Tele	Chief,
James Ndwiga Kathuri	Postgraduate student	Kimutai Arap Chelulei	Councillor–
Lydia Atieno Olaka	Postgraduate student	Mrs. Kemei Bernadette	Lab Technician.
Eugene Apindi Ochieng	Postgraduate student	Mrs. Rop Lydia	Public Health Technician.
		Dr. Andrew Githeko	Researcher

		Dr. Dan Olago	Researcher
		James Ndwiga Kathuri	Postgraduate student
		Lydia Atieno Olaka	Postgraduate student
		Eugene Apindi Ochieng	Postgraduate student

Attachment iv: Community Stakeholders' Meetings in Tanzania

Workshop Timetable

Time	Activity	Responsible
DAY 1 (15/07/2003)		
09.00-10.00	Registration	All participants
10.30-10.35	Self introduction	All participants
10.35-10.45	Opening remarks	District Executive Director, Muleba
10.45-11.15	Presentation 1: Impacts of climate change, vulnerability and adaptations to malaria and cholera – and the AIACC Project	Prof. P.Z. Yanda
11.15-11.30	Tea break	All participants
11.30-12.00	Presentation 2: Preliminary research findings on the impacts of climate change, vulnerability and adaptations to malaria and cholera in Bugarama and Chato villages	Dr. R.Y.M. Kangalawe
12.00-12.30	Discussion	All participants
12.30-14.00	Lunch	All participants
14.00-16.00	Group work	All participants
16.00-16.30	Presentation of Group work	All participants
16.30-17.00	Discussion	All participants
17.00-17.30	Tea break	All participants
17.30	End of Day 1	All participants
DAY 2 (16/07/2003)		
Time	Activity	Responsible
09.00-10.00	Group work	All participants
10.00-10.30	Tea break	All participants
10.30-13.00	Group work continued	All participants
13.00-14.00	Lunch	All participants
14.00-14.30	Group Presentation	All participants
14.30-15.00	Discussion	All participants
15.00-15.10	Closing workshop	District Health Officer, Muleba
15.20-17.00	Cocktail	All participants

List of Participants for Stakeholders Meetings in Tanzanian

No	Name	Designation	Institution represented	Contact
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				Address
1	Dr Pius Buchukundi	Medical Officer in Charge	Chato Health Centre	P.O. Box 50, Chato - Biharamulo
2	Mr. Gervas Nyongoli	Acting District Medical Officer, Biharamulo	Biharamulo District Council	P.O. Box 22, Biharamulo
3	Mr. Alistides Kamara	Acting District Health Officer, Biharamulo	Biharamulo District Council	P.O. Box 22, Biharamulo
4	Mr. William Bandeke	Acting Village Chairman	Chato Village	P.O. Box 181, Chato - Biharamulo
5	Mr. Julius B. Mazige	Health Attendant	Chato Village	P.O. Box 181, Chato - Biharamulo
6	Mr. Prudence Rwekaza	District Health Officer, Muleba	Muleba District Council	P.O. Box 10, Muleba
7	Ms. Margareth Kalokola	Representing District Executive Director, Muleba	Muleba District Council	P.O. Box 131, Muleba
8	Ms. Rosemary Binamungu	Acting District Medical Officer, Muleba	Muleba District Council	P.O. Box 10, Muleba
9	Ms. Florence Kayungi	Medical Officer in Charge	Kaigara Health Centre	P.O. Box 10, Muleba
10	Ms. Grace Mushashu	Clinical Officer in Charge	Kabare Dispensary	P.O. Box 10, Muleba
11	Mr. Sylvester Lwabumbile	Village Chairman	Bugarama Village	Bugarama
12	Mr. Hulbano Nyegeza	Health Attendant	Bugarama village	Bugarama
13	Ms. Scholastika Rushagya	Nursing Officer/Midwife	Rubya Hospital	P.O. Box 133, Rubya - Muleba
14	Mr. Yusuf Abdulkadiri	Senior Health Officer	Muleba District Council	P.O. Box 10, Muleba
15	Mr. Musa Manamba	Driver	Chato Health Centre	P.O. Box 50, Chato - Biharamulo
16	Prof. Pius Z. Yanda	Researcher/Workshop Facilitator	Institute of Resource Assessment, University of Dar es Salaam	P.O. Box 35097, Dar es Salaam
17	Dr. Richard Y.M Kangalawe	Researcher/Workshop Facilitator	Institute of Resource Assessment, University of Dar es Salaam	P.O. Box 35097, Dar es Salaam
18	Mr. Dosteus Lopa	Research Assistant	Institute of Resource Assessment, University of Dar es Salaam	P.O. Box 35097, Dar es Salaam
19	Ms.	Research Assistant	Institute of Resource	P.O. Box

Margareth Bushesha	Assessment, University of Dar es Salaam	35097, Dar es Salaam
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Attachment V: Community Stakeholders' Meetings In Uganda

List of participants

Name	Designation	e-mail/ telephone
Nanyunja K. Robinah	Research Scientist, MUIENR, Box 7298 Kampala	rhobink@yahoo.com
Theresa Twesigomwe	Health trainer/ supervisor, Kabale	Tel 077437729
Kizza Michael	Asst Lecturer, Dept of Civil Engineering, MUK	mkizza@tech.mak.ac.ug Tel 077614580
Daniel Olago	Senior Lecturer, Dept of Geology, University of Nbi, Box 30197 Nairobi	DOLAGO@UONBI.AC.KE
Kabumbuli Robert	Department of Sociology, MUK, Box 7062 Kampala	socdev@infocom.co.ug
P.E. Mugambi	PR AIACC	pmugambi@math.mak.ac.ug
Tindimugaya Callist	Principal Hydrologist, Directorate of Water Development	ctindi.wrmd@dwd.co.ug
Baguma Timothy	Researcher AIACC	bagumatim@yahoo.co.uk
E.K. Kirumira	Dean, Faculty of Social Sciences, MUK	Kirumira@starcom.co.ug
C.P.K. Basalirwa	Ass. Prof, Dept of Geography	cbasalirwa@Arts.mak.ug
Babiiha Julius	Drug Information Officer, National Drug Authority	Tel 255665
Ssebina Robert	Chairman Local Council I Gaba	Tel 077458530
Kiyimba Benard	Chairman Health Committee Gaba	Tel 075506836
Kirumira Mohamed	Ag Chief Health Inspector Kampala City Council	Tel 077447761
Bwire Godfrey	Senior Medical Officer, Control of Diarrhoeal Diseases, MOH	cddmoh@yahoo.com Tel 077418934

Attachment VI. Uganda National Stakeholders' Meeting Held At Makerere University, Faculty Of Forestry – 22nd July 2003,

Aims of this Meeting:

- To create awareness and seek involvement of national stakeholders in the AIACC project.
- To establish networks and strengthen links with community stakeholders where the research was conducted.
- To identify focal points in various national institutions for the AIACC project.

Structure:

Time	Item	Lead Person
9.15 am	Introduction of participants	
9.15 – 9.30 am	Overview of AIACC AF 91 project	Prof. Mugambi
9.30 – 9.45 am	Progress Report of the Project – Challenges and Accomplishments	Dr. Kirumira
9.45 – 10.05 am	Discussion of presentations [Question and Answer Session]	All Participants
10.05 – 10.20 am	BREAK	
10.20 – 10.35 am	The Cholera Situation in Uganda	Dr. Bwire
10.35 – 10.50 am	The Malaria Situation in Uganda	Ms. Twesigomwe
10.50 – 11.10 am	Discussion of presentations [Question and Answer Session]	All Participants
11.10-11.25	Water and Climate Change	Mr. Kizza
11.25-11.40	Overview on Climate Data Collection and Analysis	Dr. Olago
11.40 – 12.00 am	Discussion of presentations [Question and Answer Session]	All Participants
12.00 – 1.00 pm	Plenary Session - To establish the Way Forward	All Participants

AIACC – AF91 PROJECT: FINANCIAL STATEMENT FOR THE SUPPLEMENTARY
GRANT FOR CAPACITY BUILDING/STAKEHOLDERS ENGAGEMENT
RECEIPT USD

Financial support from International START secretariat grant award
No. GEW-G-02-00006-00 10,000

B. COMMITMENTS/PAYMENTS

I. Capacity Building

- 5 day GIS training workshop of Kenya, Uganda and Tanzania
team members using Arc View V software GIS programme. 3,500
- Transport for the Uganda and Tanzania team members by air 600
- Refreshments and lunch provisions 840
- Accommodation for Tanzanian and Ugandan participants 1,120

a. **II. Meeting workshop pilot communities from Kisumu & Kericho**

-
- Transport for Research Assistants from Nairobi to Kisumu and Kericho 30
 - Transport of Principal Researchers to Kisumu by air 320
 - Hire of field vehicles in Kisumu and Kericho 1,000
 - Refreshments and lunch to the communities 540

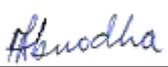
b. **Total** 7,950

Surplus (Deficit) **2,050**

Total **10,000**

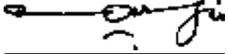
C. The surplus of USD. 2050 (U.S Dollars Two thousand and fifty only will be used for post feasibility studies and dissemination workshop.

I hereby certify that all information contained in this expense report is true and correct.

Signed: 

Date: **27th October, 2003**
(Duly authorized official of administering institution)

Signed:



(Principal Investigator)

Date: 27th October, 2003

1.4 Socio-economic scenarios for East Africa

AIACC Project code: AF91

1.4.1 AF91 Background

Project Investigator:	Shem Wandiga
Organization:	Kenya National Academy of Sciences, Kenya
Total Grant	\$ 5,888
Participating Countries:	Kenya, Tanzania and Uganda

1.4.2 Summary of Accomplishments

The workshop was held in order to train participants in the AF-91 project on how to link global scenarios of climate change to local socio-economic scenarios. Downscaling global scenarios to local/community level has not been widely attempted due to the nature of the changes at local level associated with socio-economic development. However if policy decisions are to be taken it is necessary that socio-economic scenarios that might arise as a result of climate change should be clearly elucidated or understood. The problem has been how best to scale up the local socio-economic scenarios to global scale or vice versa. The workshop started with a review of presentations of the accomplished work by various researchers. The work followed the outline of the AF-91 last progress report. It then explored the local situations that might be used to build narrative or numerical scenarios that could be used for adaptation to future outcomes at the community or national level in order to understand better future impacts. Dr. Timothy Downs the worked with the participants on scenarios development using the UNDP Handbook "Developing

socio-economic scenarios for use in vulnerability and adaptation assessment". The exercise involved developing a scenario for the East Africa sub-region using SRES scenarios A1, A2, B1 and B2. At the end of the exercise it was agreed that the future scenarios that were the outcome of SRES series above were inapplicable to the prevailing conditions in East Africa. A narrative approach was recommended with the description of the SRES scenarios series outcome.

1.4.3 Training Workshop Program

The workshop was opened by Prof. Shem Wandiga, the Principal Investigator, who welcomed the participants to the Kenya National Academy of Sciences and to the workshop. He outlined the objectives and aims of the training workshop and invited the participants to introduce themselves. He then called on Dr. Timothy J. Downs, the workshop trainer to say a few words. Tim was appreciative of the invitation to come to Nairobi and the opportunity to work with the group once again. Presentation of socioeconomic data from Kenya, Uganda and Tanzania were given by Maggie Opondo, Robert Mabumbuli and Richard Kangalawe respectively. These were followed by presentations of health and climate data that were given by Andrew Githeko, Dan Olago and Faith Githui. Eugene Apindi and Lydia Olaka gave a presentations on the GIS maps of the study sites and hydrology of Lake Victoria Kenyan rivers. These presentations were followed by discussions. Day two was taken by Tim who led the group in working out the socio-economic scenarios for East Africa using the SRES scenarios A1, A2, B1, and B2. The workshop ended by each participant giving a view of the achieved task.

1.4.4 List of Participants

Name	Address	e-mail
1. Maggie Opondo	Department of Geography University of Nairobi, P.O. Box 30197, Nairobi, Kenya	Maggie@swiftkenya.com
2. Faith Githui	P.O. Box 10304, 00100 Nairobi, Kenya	faithgit@yahoo.com
3. Lydia Olaka	Department of Geology, University of Nairobi, P.O. Box 30197, Nairobi, Kenya	lydiaolaka@hotmail.com
4. Eugene Apindi	ditto	Eugenid79@yahoo.com
5. James N. Kathuri	P.O. Box 13704,00100, Nairobi, Kenya	jimkathuri@yahoo.com
6. Robert Kabumbuli	Department of Sociology Makerere University, P.O. Box 7062, Kampala Uganda	robertkabumbuli@yahoo.com
7. Edward Kirumira	Dean, Faculty of Social Science, Makerere University, P.O. Box 7062 Kampala Uganda	kirumira@starcom.co.org ekrumira@ss.mak.ac.ug
8. Dan Olago	Department of Geology, University of Nairobi, P.O. Box 30197, Nairobi Kenya	dolago@uonbi.ac.ke
9. Andrew Githeko	P.O. Box 15018, Kisumu, Kenya	AGitheko@kisian.mimcom.net
10. Tim Downs	Clark University 950 Main St. Worcester, MA 01610, USA.	tdowns@clarku.edu
11. Pius Yanda	Institute of Resource Assessment, University of Dar es Salaam, P.O. Box 35097, Dar es Salaam, Tanzania	yanda@ira.udsm.ac.tz
12. Richard Kangalawe	ditto	kangalawe@ira.udsm.ac.tz
13. Michael Marshall	P.O. Box 30197, Nairobi, Kenya	mmarshall@clarku.edu

1.4.5 Self Evaluation of the effectiveness of meeting objectives

The workshop was able to evaluate the project collected data on health, climate and socio-economic. Participants were able to identify linkages that may be used to develop scenarios of how the local communities will be impacted on by climate change. Analyses of vulnerability to malaria and cholera were identified and projected for future climate scenarios. Poverty was identified as the dominating vulnerability factor in the malaria control. Provision of functioning medical infrastructures has ability to reduce malaria and cholera infection. Lack of potable water and bed nets exacerbate the diseases impact.

The use of SRES socio-economic scenarios while useful at the global level did not yield meaningful results for a small community based study area. Descriptive narrative of the business as usual, best and worst scenarios were preferred. The results will greatly assist AF-91 in providing quality information to policy decisions.

1.4.6 Budget

International Air Travel. NBO-Boston x 1 pax US\$ 2,330

Local Travel: NBO-Ksumu x 4 pax @ US\$50 = US\$ 200

NBO-Entebe x 2 pax @ US\$350= US\$ 700

NBO-Dar x 2 pax @ US\$350= US\$ 700

DSA @ US\$ 120x 5 pax 2 days US\$1,200

@US\$ 70x 3 pax 2 days US\$ 420

Total US\$5,550

Budget Narrative Report

Payment of roundtrip for Dr. Tim Downs airfare to Nairobi was made directly to him by AIACC. Local travels for the following: Drs. Andrew Githeko, Tim Down, Maggie Opondo and Dan Olago to visit Kisumu and meet stakeholders were met from the grant. Additional local travels for Prof. Pius Yanda, Drs. Richard Kangalawe, Edward Kirumira, Andrew Githeko and Robert Kabumbuli to attend the workshop in Nairobi were also met from the grant..

Daily subsistence allowance in Nairobi @ US \$120 for the following: Tim Downs, Andrew Githeko, Pius Yanda, Robert Kabumbuli and Richard Kangalawe for two days and @ US\$70 for two nights stay in Kisumu for Tim Down, Dan Olago and Maggie Opondo was also met from the grant. Payment for lunches, tea/coffee and local Nairobi travel for the city resident participants was covered by AIACC grant.

1.5 Integrated assessment and crop yield modeling in Sri Lanka

AIACC Project code: AS12

1.5.1 AS12 Background information

Project Investigator:	Janaka Ratnasiri
Organization:	Sri Lanka Association for the Advancement of Science, Sri Lanka
Total Grant	\$ 15,000.00
Participating Countries:	Sri Lanka

1.5.2 Introduction

Purpose: To conduct the second phase of the Training Workshop on the use of the software SimCLIM developed by the International Global Change Institute (IGCI) of the University of Waikato, New Zealand to generate downscaled patterns of temperature and rainfall scenarios over Sri Lanka under different emission scenarios and corresponding to different GCM outputs at different time frames, and to link the crop models developed for coconut and tea to this software, enabling the projection of yields of the two crops under these temperature and rainfall scenarios.

1.5.3 Resource Persons

The IGCI training team comprised of:

- Dr Richard Warrick (IGCI Deputy Director)
- Dr Wei Ye (IGCI Modelling Unit Leader)

- Dr Xianfu Lu (Research Associate, Tyndall Centre, UK and special AIACC advisor on scenario development)

Richard Warrick will oversee the preparation and delivery of all aspects of the workshop. Wei Ye is the software engineer and SimCLIM Program designer, and will guide the technical aspects of development of the software applicable to Sri Lanka, referred to as SriLankaCLIM. Xianfu Lu has been retained by AIACC to assist all AIACC projects and will thus provide support (at no cost except travel) with regard to climate scenario development, downscaling, climate data, etc.

1.5.4 First Training Workshop

The above 3 visiting scientists from the IGCI conducted the first phase of the Training Workshop during December 15-20, 2002 at Colombo. Fifteen members of the project team comprising 8 scientists and 7 research assistants attended the workshop. Its objectives were:

Objective 1: to build a prototype SriLankaCLIM model, by:

specifying the data required from Sri Lanka for development of the prototype version (IGCI -- completed), and developing a prototype "shell" for a *SriLankaCLIM* model that includes: a data browser; an extreme event analyzer and a climate change scenario generator, as well as the capacities for spatial and site-specific analyses.

Objective 2: to train the Sri Lanka team in SriLankaCLIM development, by:

conducting a structured exercise on model development and maintenance using datasets provided by IGCI. The country team will learn how to: define the geographical area and spatial resolution; input climate time-series data for sites; input spatial climatologies; add or delete patterns of climate change from GCMs; applying the skills of the country team to build the prototype SriLankaCLIM during the workshop (as in Obj. 1);

Objective 3: to determine the scope and logistics for further *SriLankaCLIM* development, especially with regard to sectoral impact models, by:

conducting a training exercise using a fully-developed SimCLIM for another country; discussing the options for further model development and sectoral modelling in light of the priorities of the AIACC country team, the availability of data, and the team's priorities and modelling capabilities;

1.5.5 Second Training Programme

The second training workshop on the development of the SriLankaCLIM Model, as a follow up to the first programme conducted in December 2002, was conducted by the same 3 scientists from IGCI during 14 – 16 June at Colombo. Thirteen members of the project team comprising 8 scientists and 5 research assistants attended the workshop. The first phase of the training programme was financed by the main grant received from AIACC, while this second workshop was financed by the supplementary grant.

Dr Roger Jones, the Mentor assigned to the project by the AIACC was also present at the workshop

Since the first workshop, the Sri Lankan team has been busy carrying out tasks required for Stage II development. These tasks included:

- (1) the refinement of the baseline, spatially-interpolated climatologies;
- (2) the quality control of station time-series data for the model;
- (3) the development of downscaled patterns of climate change from GCMs; and
- (4) the development of crop models for tea and coconut as possible attachments to the SriLankaCLIM model to be developed.

The two crop models were developed with the assistance of Dr Naveen Kalra of the Indian Agricultural Research Institute (IARI), New Delhi, India. He visited Sri Lanka in 2003 to conduct a preliminary training programme. Subsequently, four members of the project team spent 2 weeks at the IARI in February/March, 2004 developing the crop models under the guidance of Dr Kalra. This programme was also financed by the main AIACC grant.

1.5.6 Summary of accomplishments

During the Stage II model development carried out with the Supplementary Grant, the following tasks were achieved:

- Develop the refined scenarios under different emission scenarios using different GCM patterns for different time slices.
- Develop down-scaled climatologies applicable to Sri Lanka for each of the above scenarios, both in terms of incremental values and absolute values, using base line climatologies worked out previously.

- Attach the crop models for coconut and tea to the SimCLIM Model and test them and demonstrate how such impact models could be attached to the main SimCLIM model.
- Conduct an initial assessment of the impacts of climate change on tea and coconut yields under different scenarios.

1.5.7 Description of activities

During the three day programme, the first day was completely devoted for discussing the progress made by the project team since the first programme, in refining the base line climatologies, spatial mapping of the climatologies using elevation dependent software obtained from the National University of Australia, and apprising the IGCI team about the two crop models developed at the IARI.

Dr Basnayake and his Assisatnt, Jagath Vithanage were responsible for the development of the climatology scenarios, and downscaling them. Dr Ranasinghe presented the details of the crop model for coconut while Wijeratne presented the details of the development of the tea model. These were developed specially to match agro-climatological conditions in Sri Lanka. The structure of these two crop models were given in Annex I to the Progress Report for the period January – June 2004.

The DLL versions of the two crop models were written by Dr Wei using their source codes, for attaching them to the SriLankaCLIM model. This enabled the acquisition of crop yield values corresponding to any future climate scenario on the click of a button. However, this process took longer than anticipated time because of the bugs encountered. The crop models which were written in Fast Fortran Language, had to be modified slightly in certain places for compatibility with the SimCLIM model. The IARI kindly provided the source code of their computer programme to the project team, which enabled the team to carry out the necessary changes and also in writing the DLL versions.

During the second day, the IGCI team made some presentations on approaches to assessment (R Warrick), Climate change scenarios (Xianfu Lu) and Consideration of extremes and risk (Roger Jones). The team spent most of the day in running the software along with the cop models incorporated into the software, to asses the impacts on the two crops, in terms of their variability of yield, to climate change. Dr Wei helped the team members in this exercise.

Some discussions on the basics of adaptation issues were held on the third day, including perspectives on adaptation, by the visiting team. However, no detailed exercises were conducted, as no quantified data on adaptation were available at that time, and also due to the fact that time was running out as more time was spent on working out the impacts using the crop models.

At the end of the workshop, the project team was able to run the Sri LankCLIM model to obtain coconut and tea yields under different climate scenarios and different GCM outputs for 2025, 2050 and 2100.

The detailed programme drawn up before the workshop is annexed.

1.5.8 Identification of the persons and organizations that participated and/or benefited

Participant	Designation	Organization
Dr. A.Anadacoomaraswamy	Plant Physiologist	Tea Research Institute, Talawakele
Ms Asoka.Jayakody	Agricultural Economist	-do-
Dr M A Wijeratne	Agronomist	Tea Research Institute, Ratnapura
Mr. Lalith Amaratunge	Experimental Officer	-do-
Mr. Sayuru Ariyapala	Research Assistant	Tea Research Institute, Talawakelle
Dr (Ms) C S Ranasinghe	Senior Plant Physiologist	Coconut Research Institute, Lunuwila
Dr Sarath Peiris	Principal Biometrician	-do-
Dr M T Neil Fernando	Agricultural Economist	-do-
Ms. Champa Piyasiri	Research Assistant	Coconut Research Institute Lunuwila
Mr. Sagara Chandrakumara	Research Assistant	Coconut Research Institute Lunuwila
Dr Senaka Basnayake	Senior Meteorologist	Meteorology Dept. Colombo 00700
Mr. Jagath Vithanage	Research Assistant	-do-

1.5.9 Self-evaluation of the effectiveness of the activities in meeting objectives

The Integrated Assessment Modelling was a key element in the Sri Lanka's AIACC project. Prior to submitting the proposal, we corresponded with a team in India for providing the necessary software and training and their estimates were included in

the original proposal. Subsequently, we came across the IGCI team in New Zealand who has been retained by AIACC for the development of software package for the integration of climate change with impact modelling. After initial correspondence, we invited them to Sri Lanka in December 2002 to conduct a training programme on the application of their software.

The potential of their software in working out impacts of climate change in various sectors was explained, but it was mentioned that the initial workshop has to be followed up with another training workshop for detailed analysis of the country's situation and linking the impact models to their software. Their software has the capability to reproduce the outputs of several Global Circulation Models corresponding to selected emission scenarios and time frames. It also downscales the temperature and rainfall changes obtained for a selected GCM to cover the island's geographic area. These values are then normalized and added to the baseline climate values obtained from the country's baseline data after converting them to spatial maps. At the time of the first workshop, the baseline data were not available in the form of spatial maps.

During the first workshop, it was mentioned that the IGCI software had in-built crop models including that for coconut. However, no details of how the model was built were available, and the team members were not comfortable in using them. We therefore contacted IARI and developed crop models to suit our requirements with their assistance. These models were subsequently linked to the IGCI software during the second workshop.

Since there was no provision for a second training workshop in our budget, we had to seek a supplementary budget from AIACC, which the AIACC kindly approved. The IGCI software successfully works out the impacts on the two crops due to any climate change scenario. It has no economic or adaptation analysis capability. Once the impacts are known we have to use stand-alone software packages for achieving these two objectives.

Another problem we had with IGCI software was their continuing upgrading. As a result, the software given to us had only a limited validity. After a short time period, its validity expires. When this was brought to their notice, we were assured that they would give us the final version with no validity restriction. Though improved versions were uploaded into their website for us to download, there are problems in getting the software registered into individual computers, and also in accommodating all four GCM outputs. We will have to discuss this at the forthcoming workshop in Manila.

1.5.10 Fiscal report that describes how the funds were used

The cost of the Training Package payable to University of Waikato was US \$ 16,540 to cover:

Development of software

Delivery of software

Staff time for conducting the workshop

Airfare, accommodation and subsistence.

Out of this sum, US \$ 15,000 was paid from the supplementary grant, and the balance from the main AIACC grant.

1.6 Stakeholder training: climate change implications for watershed management

AIACC Project code: AS21

1.6.1 AS21 Background information

Project Investigator:	Rodel Lasco
Organization:	University of Philippines at Los Banos Foundation Inc. Philippines
Total Grant	\$ 12,008.00
Participating Countries:	Philippines, Indonesia

1.6.2 Rationale

The effect of climate change both to human and the environment is projected to be disastrous. However, at present there is no comprehensive estimate of such impacts that are available. The Environmental Forestry Programme of the College of Forestry and Natural Resources, University of the Philippines Los Baños in cooperation with the Institute of Pertanian Bogor are currently undertaking the project entitled **An Integrated Assessment on Climate Change Impacts, Adaptation and Vulnerability in Watershed Areas and Communities in Southeast Asia (AIACC AS21)**. The project hopes to assess the impacts of climate change to water resources, forests and the communities. Likewise, vulnerability and adaptation of the natural and social systems in watershed areas are identified. Methods used include models and stakeholder analysis.

A key component of the project is capacity building for the watershed stakeholders. The stakeholders will be capacitated by training them in the appropriate research methods that will be used in the impact assessment in the Philippines. The training

course therefore hopes to equip the participants with the necessary knowledge and skills on the research methods that will assess the impacts of climate change in the social systems of the watershed in the Philippines as well as the vulnerability and adaptation measures that need to be undertaken.

1.6.3 Objectives

- To capacitate the stakeholders with the research methods to be used in assessing the impacts of climate change to water resources, forest ecosystems and social systems of the watersheds in the Philippines; and
- To assist various stakeholders in the conduct of integrated vulnerability assessment of natural and social systems in the watershed areas.

1.6.4 Content and Methodology

The training was conducted from June 18-20, 2003 at Kamagong Training Room, The Training Center for Tropical Resources and Ecosystems Sustainability (TREES), College of Forestry and Natural Resources, University of the Philippines Los Baños.

There are a total of thirteen participants who attended the training. The participants of the training compose of representatives from various stakeholders of the Pantabangan-Carranglan watershed namely, the National Power Corporation (NPC), National Irrigation Administration (NIA), provincial and municipal offices of the Department of Environment and Natural Resources (DENR), municipal planning and development offices of the municipalities of Carranglan, Nueva Ecija, Ma. Aurora, Aurora, Pantabangan, Nueva Ecija, and Alfonso Castañeda, Nueva Vizcaya.

The first day of the training session was devoted to the discussion on the impacts of climate change on water resources and the use of the SEA basins model. These lessons gave the participants knowledge on the importance of watershed and its management, as well as basic concepts and hands-on experience on the use of GIS. The first half of the second day was spent by teaching the trainees the use of the CO₂ Fix model to analyze the relationship of change in climate and the forest resources. The second half of the second day was spent on the discussion of the social science concepts and methodology of conducting integrated climate change assessment. The morning session of the third day was spent on introductory lessons on climate change, climate change impacts, adaptation and vulnerability, and climate change prediction. These lectures were designed to familiarize and increase the knowledge

of the participants on the concept of climate change and other areas related to it. Finally, the last session was spent by doing the actual focus group discussion.

1.6.5 Training Materials and outputs

Climate Change Lecture Materials:

- Overview of the Project “An Integrated Assessment of Climate Change Impacts, Adaptation and Vulnerability in Watershed Areas and Communities in Southeast Asia”
- Introduction to Climate Change Impacts, Adaptation and Vulnerability
- Climate Change and Water Resources: Impacts, Adaptation and Vulnerability Assessment
- Climate Change and Forest Ecosystem: Adaptation and Vulnerability Assessment
- Climate Change and Local Communities: Methodology for Assessing Social Impacts, Vulnerability and Adaptation

Watershed Lecture Materials:

- Concept of Watersheds and Their Importance

Models and Softwares Used:

- CO₂ Fix Model
- Overview of the Hydrological SEA-BASINS Model

Additional Reading Materials

- Effects on Carbon Dioxide and Nitrogen on the Growth and Physiological Responses of *Cinnamomum camphor* Seedlings
- Evidence of a Feedback Mechanism Limiting Plant Response to Elevated Carbon Dioxide
- Forest Responses to CO₂ Enrichment and Climate Warming
- Net Primary Production of a Forest Ecosystem with Experimental CO₂ Enrichment
- Responses to Elevated Carbon Dioxide in Artificial Tropical Ecosystems

- Slicing Through a World of Information
- Migration, Resilience and Global Change in the Coastal Zone

1.6.6 Program for Training-Workshop on Integrated Assessment of Climate Change Impacts on Watershed and Communities, Adaptation and Vulnerability

Kamagong Training Room, TREES, College of Forestry and Natural Resources College, Laguna

DATE	TIME	Topic	Resource Person	Description of a Topic	Expected Outputs	
June 18	8:30 – 9:00 AM	Registration				
	9:01 – 9:04 AM	Invocation				
	9:05 – 9:08 AM	National Anthem				
	9:09 – 9:19 AM	Welcome Remarks				
	9:20 - 9:30 AM	Overview of the Training Workshop				
	9:31 - 9:45 AM	Coffee Break				
	9:46 – 12:45 AM	Climate change and water resources: impacts, adaptation and vulnerability assessment	RVOCruz	Discussion on impacts of climate change on water resources	Gained knowledge on the relationship of climate and water	
	12:46 – 1:30 PM	Lunch Break				
	1:31 – 6:00 PM	VIC Model	SSNRoy	Use of the VIC model	Gained knowledge on the VIC model	

June 19	8:30 – 11:30 AM	CO ₂ Fix Model	FBPulhin	Use of the CO ₂ Fix model to analyze the relationship of change in climate and forest resources	Actual experience on the use of the model
	11:31 – 1:00 PM	Lunch Break			
DATE	TIME	1.11 TOPIC _____	1.12 RES O U R C E P E R S O N _____	DESCRIPTION OF EACH TOPIC	EXPECTED OUTPUT
June 19	1:01 – 4:00 PM	Climate change and local communities	JMPulhin	Discussion on the social science concepts and methodology of conducting integrated climate change assessment	Acquired knowledge on social science methodology of conducting integrated assessment of climate change

June 20	8:30 AM– 11:30 Noon	Introduction to climate change Climate change impacts, adaptation and vulnerability. Climate change and forest ecosystem: adaptation and vulnerability assessment	RDLasco	Discussion on climate change, relation of climate to natural and social systems, impacts of climate change, adaptation and vulnerability to climate change Discussion on the impacts of climate change on forest ecosystem, impacts and vulnerability	Knowledge on climate change and its effect on the natural and social systems Gained knowledge on the relationship of climate and forests.
	11:30 – 1:00 PM	Lunch Break			
	1:01 – 4:00 PM	Focus Group Discussion			
	4:01 – 4:15 PM	Awarding of Certificates			
	4:16 – 4:25 PM	Response from the Participants			
	4:26 – 4:40 PM	Closing Remarks			

1.6.7 List of Participants

Name	Address / Tel No / Fax No
Mr. Cesar M. Baltazar	MPDC Carranglan, Nueva Ecija Mobile No: (044) 511-4720 (call center)
Mr. Manuelito Barcelo	Watershed Division NIA Pantabangan, Nueva Ecija
Mr. Amado Bautista	MPDC Ma. Aurora, Aurora Mobile No: (0920) 566-1643
Mr. Eriel Bumatay	Forester Carranglan, Nueva Ecija
Mr. Nathaniel M. Castañeda	DENR – CENRO

	Forester III Will represent Mr. Leovino G. Ignacio	CLSU Cmpd., Muñoz Science Telefax No: (044) 456-0712
	Mr. Christino Castillo	Dam and Reservoir Division NIA Pantabangan, Nueva Ecija
	Ms. Emisionia Gante	MPDC, Pantabangan, Nueva Ecija
	Mr. Donald C. Marcelino	Section Chief, Pantabangan Watershed Area Team Mobile No: (0916) 616-6629
	Mr. Jose U. Natibo-oc	DENR PENRO, 2nd Floor, DBP Bldg., Burgos St., Cabanatuan City; Nueva Ecija Telefax No: (044) 463-1728
	Mr. Nicasio V. Pascua	DENR - PENRO Bayombong, Nueva Viscaya Tel No: (078) 321-2084
	Mr. Henry G. Pascual	Planning Development Officer II Municipality of Pantabangan Tel No: (0916) 760-0918
	Mr. John Christopher Suhat	Planning Development Officer I Municipality of Alfonso Castañeda: Tel No: (078) 321-2520
	Ms. Aireen Gozar-Tumimbang, Sr.	Sr. Watershed Management Specialist, Resource Development Division Watershed Management Division

1.7 GIS Training and Application to Watershed Issues in the Philippines and Indonesia

AIACC Project Code: AS21

1.7.1 Background

Project Investigator:	Rodel Lasco
Organization:	University of Philippines at Los Banos Foundation Inc. Philippines
Total Grant	\$2363
Participating Countries:	Philippines and Indonesia

1.7.2 How the Grant Funds were Utilized

Grant funds were used to purchase GIS software and to train members of the AS21 regional assessment team in the use of GIS tools. The GIS software purchased is detailed below. The GIS software and the skills acquired in the training are being applied in the assessment of climate change vulnerabilities in watersheds of the Philippines and Indonesia. The use of these tools is greatly enhancing the ability of the team to understand key spatial relationships in the watersheds and to effectively communicate information and findings to stakeholder audiences.

Qty.	Description	Unit Price	Price
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1	ArcView 8.2 (concurrent user)	\$ 909.00	\$ 909.00
1	ArcGIS 3D Analyst Extension (concurrent user)	727.00	727.00
1	ArcGIS Spatial Analyst Extension (concurrent user)	727.00	727.00
2. TOTAL Amount			\$ 2363.00

1.8 Engaging key Chinese agencies and stakeholders in assessment of climate change in Western China

AIACC Project Code:AS 25

1.8.1 Background

Project Investigator:	Yongyuan Yin
Organization:	International Institute for Earth System Science, China
Total Grant	\$ 15,000
Participating Countries:	China

1.8.2 Summary of accomplishments

The AS25 project team has built up committed partnerships with multi-stakeholders in the process of conducting the project. An essential part of the stakeholder engagement strategy of this project is the establishment and participation of the Chinese Steering Committee and Expert Committee consisting of key government agencies and experts responsible for China's international cooperation on climate change issues and national communications. The Chinese agencies and experts in AS25 project Steering and Expert Committees are also playing important roles in coordinating AS25 activities with other international collaboration projects in China (C5 and UK-China projects). The Canada-China Cooperation in Climate Change (C5) project is funded by CIDA under the Canada Climate Change Development Fund. The UK-China joint climate change project focuses on assessing potential impacts of climate change on Chinese agriculture.

As a result, the project has adopted some specific mechanisms to improve project management and capacity building, as well as to enhance the involvement of state government agencies responsible for China's climate change issues. These

mechanisms have also facilitated the interactions between Chinese policymakers and our team of investigators so as to enhance the benefits to China from AS25 project. In this connection, some additional components have added to the AS25 project as supplemental parts in order to reduce project costs and risk, to involve relevant government agencies in the project implementation, and to ensure project success. In particular, three newly added components are listed below:

- 1) Establishment of a Steering Committee (SC), with the overall goal of ensuring national stakeholder participation in the project.
- 2) Establishment of an Expert Committee (TC) that is responsible for capacity building and technical issues such as scenario design, database, choice of analysis method, etc and maintaining close coordination with other ongoing projects on climate change in China, in particular, the Targeted Research Related to Climate Change and National Communications.
- 3) Ensuring participation of stakeholders at provincial and local levels in different stages of the project.

The main interaction between AS25 project and China's National Communications (NC) has been established to involve Chinese government officials and experts who are responsible for preparing the NC. The first AS25 project Steering Committee, Expert Committee and Research Team Meeting was held on Nov 25, 2003 at China National Climate Center in Beijing, China. In May 2004, AS25 project held an International Adaptation Conference with the CIDA C5 project in Lijiang, China. All members of the Office of National Climate Change Coordination Committee (NCCCC) of National Development and Reform Commission (NDRC), and Mr. Gao Feng, Chief Negotiator of China at UNFCCC, participated the conference and delivered key note speeches. The NCCCC is the Chinese agency responsible for preparing China's National Communication Report.

1.8.3 Description of activities

The supplemental grant mainly support project activities including workshops, survey, and community engagement methods which have been employed to involve multiple stakeholders, policymakers, and experts in the evaluation process. The project has been providing training to enable local decision makers and multi-stakeholders to understand the linkage between climate change and sustainability. Main activities relevant to the supplemental grant are described as follows:

- (1) Establishing a Steering Committee (SC)

The AS25 project established a Steering Committee (SC) under the leadership of the National Climate Change Coordination Office (NCCCCO) of National Development and Reform Commission (NDRC) to ensure that the AS25 project would follow the goals and direction of two major initiatives in China: **Stage II Adaptation to Climate Change** and implemented by China **Targeted Research Related to Climate Change**, contribute to National Communication. The SC consists of representatives of the following government agencies: NCCCCO/NDRC, China Meteorology Administration (CMA), Ministry of Science and Technology (MOST), State Environmental Protection Administration (SEPA), China GEF Office, and the two PIs of AS25 project. The SC has been facilitating the coordination between AS25 activities and other international collaboration projects in China (C5 and UK-China projects). The SC can ensure AS25 project results be contributed to China's national communications.

The SC is responsible to provide the research team with directions and objectives for the project, and to supervise the project implementation. It also has the following specific functions:

1. Supervise the agencies and researchers participated in the project so that the objectives will be fulfilled, the research deliverables will be realized, and the project will follow the national direction on climate change research.
2. Listen to reports presented by members of the research team and promote effective cooperation among agencies and researchers.
3. Provide instruction and requirements to PIs and the research team and suggest adjustment and changes to research activities in order to reduce risk.
4. Review research results and provide comments and suggestions.
5. Monitor project management.

(2) Establishing an Expert Committee (EC)

In order to obtain assistance from experienced experts in terms of their skill and data, key investigators of the AS25 project and some key Chinese experts who have experience from previous GEF climate change projects were invited to form the EC. Leading Chinese experts in climate change community such as Professors Ding Yihui (CMA), Lin Erda (Agricultural Research Academy), Liu Chungzhen (Ministry of Water Resources, MOWR), and others are members of the EC. The EC is responsible for capacity building and technical issues related to the project implementation. Prof. Lin is the Chinese director of a UK-China climate change project and the leader of the vulnerability and adaptation component of the C5 project. He has been facilitating cooperation between AS25 project, C5 and UK-China projects.

(3) Involvement of Government Agencies as Stakeholders

One of the major features of the project is emphasizing the participation of multi-stakeholders, sectors, and communities. The project not only considers the involvement of decision makers, scientists, sectors and stakeholders at the provincial and community levels, but also the involvement of state government agencies and Chinese experts involving in IPCC Working Group I and II.

(4) Steering and Expert Committee Meetings

The first AS25 project Steering Committee and Expert Committee Meeting was held on Nov 25, 2003 at China National Climate Center (NCC) in Beijing, China. Members of the Project SC, Sun Cuihua (NCCCCO), Wang Bangzhong (CMA), Lu Xuedu (MOST), Wen Gang (China GEF Secretary) and members of EC, Ding Yihui (CMA), Yongyuan Yin (PI), Ren Zhenhai, Lin Er'da, Long Ai'hau (CAREERI, on behalf of Xu Zhongmin), Li Manchun (ESSI, on behalf of Peng Gong) participated in the meeting. Some additional researchers, Xu Yin, Gao Xianqin, Shi Xueli, Li Qiaopin and Project Manager, Zhang Jin also attended the meeting.

SC members were briefed the report by Professor Ding Yihui, coordinator of the project regarding project progress. Dr. Yongyuan Yin, PI of the project, reported the status of the project, work plans, and research activities for each groups. And representative of each sub-research group presented research progress. SC members made their comments and suggestions to the project. SC members indicated that this project was an innovative and special project with clear thoughts of research. Its prospective results might support Chinese government international activities in global climate changes and provide strong scientific support for Chinese government in the 4th IPCC Assessment Report. In particular, SC members provided the following suggestions:

- The project shall further clarify its research scope, highlight its focus and priorities;
- The project shall design a conceptual model based on the proposed AS25 IA framework; The first stage of the project research shall develop a foundation for the 2nd phase of AIACC research if there is a second phase of AIACC as suggested;
- Project work plans and each stage's result should be clarified furthermore;
- The relationship of project's three components shall be further integrated;
- The mid-term inspection, evaluation, and acceptance of the project results shall follow MOST's procedure;

- Research outcome related to regional policy shall be approved by local authority before publishing. Research delivery related to national policy shall be approved by SC before publishing.

(5) The International Adaptation Conference in Lijiang, China

Recognizing the strategic importance of China in dealing with global climate change and the importance of climate adaptation, an international adaptation conference was held from 17-19 May 2004 in Jijiang, China. About 80 scientists, experts, officials participated in the conference to share their global knowledge about adaptation to climate change. Four journalists of Chinese major media were also invited to the conference. They wrote climate change reports for the Chinese press agency and the English-language news paper - China Daily. The conference was sponsored by the Canada-China Cooperation in Climate Change (C5) project funded by the Canadian International Development Agency (CIDA), the Integrated Assessments of Vulnerabilities and Adaptation to Climate Variability and Change in the Western Region of China (AS25) project, the Meteorological Service of Canada, China Meteorological Administration, and Chinese Academy of Agricultural Sciences (CAAS).

The conference was opened by several distinguished guests including Mr. Gao Feng, Chinese chief negotiator at UNFCCC, Mr. Gao Guangsheng, DG of National Climate Change Coordination Office (NCCCCO)/NDRC, Ms. Chao Qingchen, Deputy DG, CMA, Mr. Wu Fan, Deputy DG, Yunnan Development and Reform Commission, Mr. Leigh Sarty, Counselor of Canadian Embassy to China. Keynote addresses were given by Dr. Ian Noble of the World Bank, Dr. Richard Moss, Director of the US Global Change Research Program, Dr. Ian Burton, President of the International Society of Biometeorology, and Professor Lin Erda of the Chinese Academy of Agricultural Sciences. Dr. Ian Burton presented the AIACC project on behalf of Dr. Neil Leary, Science Director of AIACC.

(6) Multi-Stakeholder Workshop, 26th ~27th August 2002, Lanzhou, China

The Workshop brought together provincial and local stakeholders and researchers on climate change and sustainability issues in the study region. The workshop had built a team of interested parties to develop a conceptual integrated assessment framework. Through presentations by stakeholder representatives and group discussion, the workshop reached a common understanding regarding the methods among the investigating partners, and the stakeholders. The workshop enabled local stakeholders and scientists to have a better understanding of integrated assessment and policy evaluation.

About forty five people attended the workshop, among them eleven were women. The participants included representatives from the Chinese research partners and across the Heihe region. Various government officials and experts were invited to the workshop. After providing an overview of the project and the main research activities in the Heihe Basin, stakeholder representatives were invited to give presentations to identify major problems and key concerns related to resource use in the region. These representatives included officials from various ministries of Gansu provincial government, bureaus of municipal governments, research institutes, women group, and universities. It was indicated during the workshop that water shortage was the key problem relating to sustainable development in the region. Almost all the ecological non-sustainability problems are caused by water shortage.

(7) The Second AS25 Project Steering and Expert Committee and Team Meeting

The Second AS25 project Steering Committee and Expert Committee, and the Team Meeting was held on Nov. 29, 2004 at Xiangshan Hotel in Beijing, China. Members of the Project SC, Sun Cuihua (NCCCCO), Wen Gang (China GEF Secretary) and members of EC, Ding Yihui (CMA), Yongyuan Yin (PI), Ren Zhenhai and Gao Qinxian (SEPA), Lin Er'da (Chinese Research Academy of Agricultural Sciences), Liu Chunzheng (Ministry of Water Resources), Xu Zhongmin, Long Ai'hau, Zhang Qishi, Xu Jinxiang, Sun Landong (CAREERI), Xu Ying, Li Qiaoping, Liu Yiming (CMA) and Project Manager, Zhang Jin participated in the meeting.

SC and EC members were reported by the project investigators about research progress. Dr. Yongyuan Yin, PI of the project, reported the status of the project. Scientists from CAREERI and CMA presented their own research activities on scenario development and vulnerability assessment. Ms. Sun Cuihua, Chair of SC, made comments and suggestions to the project. She indicated that the project had been making good progress. She emphasized the importance of meeting deadline. EC members also provided some constructive suggestions.

1.8.4 Self-evaluation of the effectiveness of the activities in meeting objectives

It is obvious that the AS25 project has successfully achieved the main objectives set in the proposal for supplemental grant funded by START/USAID. The project has built up many partnerships with multi-stakeholders at both national and local levels. An essential part of the stakeholder engagement strategy of this project is the establishment and participation of the Chinese Steering Committee (SC) and Expert Committee (EC) consisting of key government agencies and experts responsible for China's international cooperation on climate change issues and national

communications. The Chinese agencies and experts in AS25 project SC and EC are playing important roles in coordinating AS25 activities with other international collaboration projects in China (C5 and UK-China projects). The Canada-China Cooperation in Climate Change (C5) project is funded by CIDA under the Canada Climate Change Development Fund. The UK-China joint project focuses on assessing potential impacts of climate change on Chinese agriculture.

The project adopted some specific mechanisms to improve project management and capacity building, as well as to enhance the involvement of government agencies responsible for China's climate change issues. These mechanisms have facilitated the interactions between policymakers and the research team so as to enhance the benefits to China from AS25 project. In this connection, the additional components added as supplemental parts (funded by the supplemental grant) to the AS25 project have generated influences to reduce project costs and risk, to involve relevant government agencies in the project implementation, and to ensure project success.

By engaging stakeholders and policy makers, the project achieved some important goals including: (1) training policy makers with the most recent adaptation science, management and policy options; (2) strengthening the capacity of key Chinese institutions; (3) promoting the integration of adaptation strategies into Chinese government development and planning initiatives; and (4) enhancing the adaptive capacity. It was agreed by SC members that the project had made good progress.

There have been many opportunities for AS25 project to contribute to the national communications. Since executing agencies and key experts responsible to China's NC are partners of the project (Steering and Expert committee leaders and members), the AS25 project can make useful contribution to China's NC. In addition, members of the AS25 project are also involved in the Canada-China Cooperation on Climate Change (C5) project which consists of a "National Communication" component.

Fiscal report that describes how the funds were used (will be submitted to AIACC later)

1.9 Communicating information about climate risks and risk management responses in the Rio de la Plata basin

AIACC Project code: LA26

1.9.1 LA26 Background information

Project Investigator:	Vicente Barros
Organization:	UBATEC SA, Argentina
Total Grant	\$ 17,500
Participating Countries:	Argentina, Uruguay

1.9.2 Abstract

A workshop with the personnel of the Project and 96 participants from NGOs, technical public officers, executives and technicians from the private sector was held in July. It recommended further dissemination of the information produced by the Project and the revision of the regulation on soil usage in the coast of the city and the Province of Buenos Aires.

A document for the general public of around 30 pages and about 20 illustrations was prepared and it is in the process of language adaptation by specialists in communication. It will be published by the end of November 2004.

It was supported the development of highly qualified personnel. Three theses are in the final stage, i.e. they are in the writing phase. One is for a doctor degree in

Geography, other for a Master degree in Environmental Sciences and the third for the degree of Licentiate in Atmospheric Sciences.

1.9.3 Common activities LA 26 and LA 32

It was written a technical document with results of both Projects. It is about 160 pages, not including figures, which are going to be edited in a CD. The document is in the process of revision and is expected to be published in December 2004.

Two short courses for journalists were held in Buenos Aires and Montevideo in July 5 and 13. They were designed to help the participants to understand the climate change issue and the purpose and results of both Projects. As a side result, there were an immediate response in the media, with some articles in the leading newspapers and interviews.

1.9.4 Planned activities

- 1) Two workshops, the first oriented to technically educated participants including decision-makers from both private and public sectors and specialists from NGOs, and the other directed to general participants.
- 2) Elaboration of paperback material and their publication for the general public
- 3) Maintain and improve the web page
- 4) Meetings with Public Decision makers and with companies with specific interests
- 5) Thesis (Master or Doctor Degree) or final work (for undergraduate students)

1.9.5 Common activities LA 26 and LA 32

- 1) Elaboration of technical material and publication
- 2) Two short courses for journalists. One in Montevideo and the other in Buenos Aires

1.9.6 Project LA 26 Activities

1.9.6.1 Workshop on Climate Change and the water level rise of the Río de la Plata

The two workshops were merged in a single event in which the participants worked in three separated groups: technical public officers, executives and technicians from the private sector and NGO and conspicuous stakeholders.

The event was held July 27, 2004 at the Regente palace Hotel in Buenos Aires. The City Foundation provided the methodology, co-organized the meeting with the LA 26 Project and chaired the discussion sessions.

Participants

There were 96 participants and 15 from the LA 36 Project team members. The 96 invitees were members of NGOs with activities related to the coast of the Plata River, private executives from firms with interests in this area, public officers and other stakeholders.

1.9.7 Programme

The workshop had three sessions. In the first, the results of the Project LA 26 were presented by a panel of LA 26´ researches in a plenary. These results were discussed in the three separated groups during the second session. Finally, in the third session, again in plenary, questions and recommendations from each group were addressed to the panel, for answers and discussions

1.9.7.1 First session

- a) Opening and presentation of the workshop methodology
- b) Presentations from the panel

Dr. Vicente Barros: Framework of the Project. Main objectives and results

Dr. Jorge Codignotto: Coastal evolution and Delta growth

Ing. Ángel Menéndez: Modelling of the Rio de la Plata. Present return periods of floods along the Río de la Plat coast

Dr. Roberto Kokot: Topography and future scenarios for return periods of floods along the Río de la Plat coast

Dra. Claudia Natenzon: Vulnerability of the population to floods

Eng. Pablo Bronstein: Present and future scenarios of the real estate cost of floods.

1.9.7.2 Second session

The three groups elaborate questions and proposals. The questions were about five from each group and were addressed to a better understanding of the work done and results obtained. The recommendations could be resumed as follows

To promote the revision of the regulation on soil usage: in the city and the Province of Buenos Aires in order to avoid the urbanization of the coastal low lands and to encourage the use of this space in recreational activities compatible with recurrent floods.

Elaboration of a and brief dossier for decision makers and legislators in order to alert them about the damage, especially economic damage that could be faced if no prevention and further adaptation actions are taken.

Elaboration of a communication document for the general public In order to alert them about the inconvenience of investing, to build or to settle in areas that could possibly get flooded. This document should be distributed to the NGOs (In fact, this activity is being done by the Project as reported in activity 2)

Commitment to widespread the conclusions in the environmental commissions of the private venture forums, landfills operators and other companies potentially affected by the water level rise.

Publication of the conclusions. Diffusion on the web. (This will be part of activity 3)

1.9.7.3 Third session

The panel answered the questions and commented the recommendations. There was an ample discussion, which as the recommendations, headed towards the promotion of new regulations of the coastal area to consider the effects of climate change. There was consensus on the need that Project results require a wide diffusion.

Elaboration of paperback material and their publication for the general public.

This material was elaborated by the Project and is being adapted by specialists in communication at the City Foundation.

The document will be of around 30 pages and will include about 20 illustrations. The first page is shown in Annex 1 as example (preliminary draft). Printing is expected by the end of November. Document contents are in Annex 2

Maintenance and improving the web page

The web page of the Project was maintained and is going to be updated in November 2004

Meetings with Public Decision makers and with companies with specific interests

Most of this activity will be conducted after the publication of the paperback material for the general public and the Technical Report. However there was already one

important meeting with the deputy secretary of Environment of the Buenos Aires Province to help to design a law to regulate the use of coastal areas.

1.9.8 Capacity building

It was funded the work of three students. They work in subjects directly related to the Project. A summary follows:

Lic. Silvia Gonzalez.

1.9.8.1 Subject: Urban management of floods in the low basin of the Maldonado brook (Buenos Aires city)

Applying for the degree of Doctor in Geography

Director: Dra. Claudia Natenzon

Status: Presently writing the dissertation

Estimated date of submission: February 2005

Eng. Mariano Re

1.9.8.2 Subject: Impacts of global climate change in the coastal areas of the Plata River

Degree: Master in Environmental Sciences

Director: Dr. Angel Menendez

Status: Presently writing the dissertation

Estimated date of submission: April 2005

Ezequiel Marcuzzi

1.9.8.3 Subject: Extreme precipitation events during El Niño phase in the Plata basin

Degree: Licentiate in Atmospheric Sciences

Director: Dra. Susana Bischoff

Status: Presently writing the dissertation

Estimated date of submission: December 2004

1.9.8.4 Common activities of Projects Ia 26 and Ia 32

Elaboration and publication of a Technical Report

It was written a technical document, which resumes results of both Projects. Its length is about 160 pages, not including figures, which are going to be edited in a CD. The document is in the process of revision and is expected to be printed in December 2004. Document contents, as well as authors are shown in Annex 3

1.9.8.5 Courses on climate change for journalists

Two courses were offered for journalists, one in Regente Palace Hotel, Buenos Aires (Argentina) in July 5, 2004 and the other in the Hotel Embajador, Montevideo (Uruguay) in July 13.

They were designed to help the participants to cover the climate change issue and the rationale and results of both Projects. A framework of the problem will allow

them to better understand and communicate the news appearing in the international press. This activity was very opportune as the COP X will be held in December and it is important how the local media cover the event.

Buenos Aires course

Contents:

Climate change and linkages with climate trends in Argentina: V. Barros

Climate change in the Plata basin: G. Nagy

Future Scenarios in the Plata River and in their coasts: V. Barros, G. Nagy. C.

Natenzon, R. Kokot and J. Codignotto.

Questions and debate: all participants

Participants

The assistants were 13 journalists from different media, about half of them from the two most important newspapers of Argentina, Clarin and La Nacion, which sell 400 000 and 170 000 respectively.

Reactions

There was an immediate response with two articles in La Nacion and one in Clarin. The three articles together amounted more than 500 cm. The notes in these newspapers led to a wave of comments on the radio and in some cases to interviews to the scientists of the LA 26 Project. The wave reached even the media in Uruguay with comments in television and newspapers.

Montevideo course

Contents:

Introduction and dynamic of the course: G. Nagy

Climate Change: V. Barros and M. Bidegain

Climate trends in Argentina: V. Barros

Climate trends in Uruguay and Vulnerability: G. Nagy.

Results of the AIACC Projects of the Plata River: V. Barros, G. Nagy, M Bidegain, F.

Blixen, M. Caffera and A. Ponce

Questions and debate: all participants

Participants

The assistants were journalists from magazines and students of the Communication Faculty

Between the journalists, there were some from the important magazine Busqueda

Reaction

There were two notes in Busqueda and in Montevideo Digital, as in the case of the course in Buenos Aires, these notes led to a wave of comments and interviews to G. Nagy and M. Bidegain on radio and television, and even in two newspaper, including the most important of the country, El Pais.

1.9.9 Remaining activities

PROJECT LA 26

- Adaptation to general public language and publication of the paperback material developed. November 2004
- Reshape the web page. November 2004
- Meetings with Public Decision makers and with companies with specific interests December2004-March 2005
- Participation of Moira Doyle and Ines Camilloni in the PRECIS workshop in the CPETEC (Brazil) organized by CPTEC, CIMA and MET OFFICE. November 1 –5, 2004

1.9.10 Index of Publications for the General Public

PART 1: INTRODUCTION TO CLIMATE CHANGE

What is climate change about?

Solar and terrestrial radiation

The atmosphere

Greenhouse effect

Global warming

How the greenhouse gases would evolve in future?

Climate change impacts, scenarios for the Twenty first century

The climate change is taking place. Mitigation and adaptation

PART 2: CLIMATE CHANGE IN ARGENTINA

What has been observed?

Temperature

Trends in mean precipitations

Trends in extreme precipitation events

Trends in river streamflows

Flood trends

Linkages between regional precipitation changes and Climate Change

PART 3: CLIMATE CHANGE AND THE ARGENTINE COAST OF THE PLATA RIVER

Geography

Features of Plata River coastal area

The Salado River

The Paraná delta
Floods

Factors controlling the mean level of the Plata River

Discharges from tributaries

Mean sea level

Wind field

Observed trends

Mean water level in the Plata River

Changes in surface wind fields

The south easterly events

Coastal erosion

The Paraná delta advance

Modelling the Plata River

The two dimensional model

The three dimensional model

Methodology for estimating flood recurrence

Flood recurrence in present time

Projections for the twenty first century

Results: Return period of floods

Coastal erosion

The salinity front

Areas of permanent flood

3. 9 Vulnerability and adaptation

Social vulnerability

Indexes of social vulnerability

Social impact of floods

Recommendations

1.9.10 Technical Report

PART 1: INTRODUCTION

Forewords. V. Barros and G. Nagy

Introduction to climate change. V. Barros

PART 2: OBSERVED AND PROJECTED TRENDS IN THE REGIONAL CLIMATE

2.1 Climate trends. I. Camilloni

2.2 Hydrological trends. I. Camilloni

2.3 Regional climate scenarios in the twenty first century. I. Camilloni and M. Bidegain

PART 3: RESULTS FROM LA 32

3.1. Climate, hydrological and oceanographic trends in the Plata River and its Uruguayan coast. M. Bidegain, F. Blixen, R. Caffera, E. Forbes, J Lagomarsino, C. Martínez, G. Nagy and V Pshennikov

3.2. Vulnerability of the waters of the Plata River: Trophic state changes and physical factors. G. Nagy

3.3. Global change, historical evolution and trophic state and blooming of the Cyanobacterias in the Plata River. C. López and G. Nagy

3.4. Vulnerability of the water resources of the Santa Lucía River and Climate variability.

R. Caffera, F Blixen, M. Bidegain, G. Dupuy, J. Lagomarsino, G. Nagy, K. Sans and R. Torres

3.5. Developing capacity to assess coastal vulnerability to climate change: Western Montevideo as a study case. G. Nagy, E. Forbes, R. Kokot, A. Ponce, V Pshennikov and R Silva

3.6. Vulnerability and adaptation capacity of the small fisheries of the Plata River to climate variability. W. Norbis, G. Nagy, A Ponce, V Pshennikov, G. Saona, G. Sención, D. Severov, R Silva and J Verocai

PART 4: RESULTS FROM LA 26

General overview of the Project results. V. Barros

Water level trends in the tide gauges of the Plata River. E. D`Onofrio and M. Fiore

Southeasterly storms. Types, frequencies and trends. S. Bischoff

Geology of the Argentine coast of the Plata River. J. Codignotto and R. Kokot

Topography of the Argentine coast of the Plata River. R. Kokot and J. Codignotto

Hydrology and modelling of the Plata River A. Menendez and M. Re

Social and institutional vulnerability. C. Natenzon

Methodology for the assessment of return periods. V. Barros, A. Menéndez and R. Kokot.

Flood scenarios A. Menendez and M. Re

Flood scenarios: social impacts: C. Natenzon

Flood scenarios: economic impacts. P. Bronstein and A. Menendez

1.10 Engaging stakeholders to examine climate change risks to agriculture

AIACC Project Code: LA27

1.10.1 Background

Project Investigator:	Agustin Gimenez
Organization:	INIA, Argentina
Total Grant	\$ 14,077.00
Participating Countries:	Uruguay, Brazil, Argentina

1.10.2 General Results of the Supplemental Grant

Two Regional Workshops for researchers participating in the AIACC Project LA27 were organized: the first one in Montevideo, Uruguay, and the second in Bentos Gonçalves, Brazil. Five National Workshops (2 in Uruguay, 2 in Argentina and 1 in Brazil) were organized for agricultural stakeholders and general audiences.

We created regional climatic datasets (daily and monthly) with observed data for the period 1930-2000. Climate change scenarios (daily) were also obtained for several sites in the Pampas using two methods: (a) obtaining GCM output anomalies from IPCC DDC (Hadley model, A2 and B2 socioeconomic scenarios), and (b) using a weather generator (LARS) for creating scenarios for the following 10-20 years based on changes observed between 1930-60 and 1970-2000.

Three articles for peer-reviewed journals were drafted. The first one will look at observed changes in temperature and its impact on crop and pasture production. It will also report on the expected changes in temperature (maximum and minimum) and the impact on crop/pasture production using a climate change scenario based

on the observed changes. Finally it will study the observed changes in the frost regime and discuss the implications of such changes on agricultural production.

The second paper will address the observed changes in precipitation and the impacts on crop and pasture production. The paper will attempt to separate the changes in crop productivity due to technological improvement from the changes in yields due to climate variation. It will also report on the expected changes in precipitation and their expected impact on crop/pasture production using a climate change scenario based on the observed changes.

The third paper will use a crop disease simulation model to study the impact of climatic changes observed in the last 70-90 years on the incidence of Fusarium disease in wheat.

Two articles in Spanish were produced for agricultural stakeholders and general audience in Uruguay:

1. *La Variabilidad Climática, el Cambio del Clima y el Sector Agropecuario (Jun-2004)*
http://www.inia.org.uy/disciplinas/agroclima/publicaciones/ambiente/clima_tcb_o_0406.pdf

2. *Evidencias de Cambio Climático en Uruguay (Ago-2004)*
http://www.inia.org.uy/disciplinas/agroclima/publicaciones/ambiente/evi_cambio_clima.pdf

In Argentina two diffusion papers were produced:

1- CD-ROM *“Análisis de las precipitaciones ocurridas durante 1923-2000 en la Región Pampeana Argentina.”*

2- *Cambios ocurridos en el clima y en la producción de cultivos durante el siglo XX en la Región Pampeana Argentina.*

In Brazil two publications for diffusion were produced:

1. *“Mudanças Climáticas globais e seus possíveis impactos em agricultura e alimentação”*, Gilberto R. Cunha, Embrapa Trigo, (Fitopatologia Brasileira, v.29 –Suplemento, p.s8-s10, 2004)

2. *“Construindo nossa capacidade para lidar com as mudanças climáticas globais e seus possíveis impactos em agricultura e alimentação”*, Gilberto R. Cunha, Embrapa Trigo, (In. CUNHA, G.R. ed. Lidando com riscos climáticos: clima, sociedade e agricultura. Passo Fundo: Embrapa Trigo, 2004. P. 357-399.)

1.10.3 ^{1st} REGIONAL WORKSHOP AIACC Montevideo, Uruguay November 9-11, 2003

Participants:

Brazil

- 1 - Gilberto Rocca da Cunha (Senior Scientist – Embrapa Trigo)
- 2 - José Maurício Cunha Fernandes (Senior Scientist – Embrapa Trigo)
- 3 - Emerson Del Ponte (Junior Scientist)
- 4 - João Leonardo Fernandes Pires (Junior Scientist – Embrapa Trigo)

Uruguay

- 1 - Walter Baethgen (Senior Scientist – IFDC Uruguay Office)
- 2 - Jose Pedro Castaño (Junior Scientist – INIA Colonia)
- 3 - Rafael Terra (Senior Scientist, University of Uruguay)

Argentina

- 1 - Graciela Odilia Magrin (Senior Scientist – INTA Castelar)
- 2 - María Isabel Travasso (Senior Scientist – INTA Castelar)

Venue: Hotel Holiday Inn, Montevideo, Uruguay

Objective: To obtain and standardize long-term climate data from the three countries to create a climatic database for: (a) characterizing climatic changes occurred in the last 70-90 years in South Brazil, Central Argentina and Uruguay, and (b) use the data as input for a weather generator (LARS) to create climate change scenarios for the following 10-20 years.

Program**Day 1 (November 9)**

Organization of monthly weather datasets for the period 1930-2000 from 59 sites for precipitation (31 from Argentina, 15 from Brazil and 14 from Uruguay), and 23 sites for maximum and minimum temperatures (7 from Argentina, 13 from Brazil and 3 from Uruguay).

Day 2 (November 10)

Organization of long-term daily weather datasets for the period 1930-2000 for studying changes in the frost regimes. Collected daily maximum and minimum temperature data from 5 sites in Argentina, 3 sites in Uruguay and 2 in Brazil.

Day 3 (November 11)

1. 1. Compilation of regional datasets (monthly and daily), quality control of the information, detection of periods with no data, exploration of other possible sites for obtaining long-term data.
2. 2. Creation of a CD with datasets for each research group to continue working at respective institutions.
3. 3. Discussion of methods to be used for generating climate change scenarios for the crop/pasture simulation models: (a) GCMs from IPCC DDC –Hadley model, A2 and B2 socioeconomic scenarios, and (b) weather

generator (LARS) for creating scenarios for the following 10-20 years based on observed changes in the periods: 1930-60 to 1970-2000.

4. 4. Definition of the structure of the possible peer-reviewed articles and writing responsibilities.
5. 5. Discussion of possible contents and organization of the National workshops with stakeholders in each country,
6. 6. Discussion of the type of articles and other written material intended for general audiences in each country.

**1.10.4 2nd REGIONAL WORKSHOP AIACC Bento Gonçalves, RS, BRAZIL
April 26-29 2004**

Participants:

Brazil

- 1 - Gilberto Rocca da Cunha (Senior Scientist – Embrapa Trigo)
- 2 - José Maurício Cunha Fernandes (Senior Scientist – Embrapa Trigo)
- 3 - Emerson Del Ponte (Junior Scientist)
- 4- João Leonardo Fernandes Pires (Junior Scientist – Embrapa Trigo)
- 5 - Aldemir Pasinato (Technician – Embrapa Trigo)

Uruguay

- 1 - Walter Baethgen (Senior Scientist – IFDC Uruguay Office)
- 2- Jose Pedro Castaño (Junior Scientist – INIA Colonia)

Argentina

- 1 - Graciela Odilia Magrin (Senior Scientist – INTA Castelar)
- 2 - María Isabel Travasso (Senior Scientist – INTA Castelar)
- 3- Gabriel Rodolfo Rodríguez (Junior Scientist – INTA Castelar)

Duration: April 26 -29, 2004

Local: Hotel Villa Michelon, Vale dos Vinhedos, Bento Gonçalves, RS

Objective: To characterize climatic changes occurred in the century XX in the South of Brazil, Argentina and Uruguay and its consequences in the main agricultural cultures of each country.

Program

Morning (April 26)

10 12 AM - Welcome to participants.

12 14 PM - Lunch break

Afternoon (April 26) 14 16:30 PM - Presentations and Discussion of results obtained Post-Montevideo AIACC-LA27 meetings.

16:30 16:45 PM - Coffee Break

16:45 - 20 PM-Discussion of results obtained after the Uruguay Workshop

Morning (April 27)

- 8:00 - 10:30 AM - Characterizing regional climatic changes.
- 10:30 - 10:45 AM - Coffee Break
- 10:45 - 12:00 AM - Building a database on historic yield for the main crops in the region.
- 12:00 - 14:00 PM - Lunch Break

Afternoon (April 27)

- 14:00 - 16:30 PM - Evaluation of the historical yields trends for the main crops in the region and its relationship with the climatic variability.
- 16:30 - 16:45 PM - Coffee Break
- 16:45 - 20:00 PM - Evaluation of the historical yields trends for the main crops in the region and its relationship with the climatic variability.

Morning (April 28)

- 8:00 - 10:30 AM - Use of crop simulation models for the prediction of crop yield under a generated climatic scenario.
- 10:30 - 10:45 AM - Coffee Break
- 10:45 - 12:00 AM - Use of crop simulation models for the prediction of incidence diseases of wheat under a generated climatic scenario.
- 12:00 - 14:00 PM - Lunch Break

Afternoon (April 28)

- 14:00 - 16:30 PM - Climatic variability and ENSO.
- 16:30 - 16:45 PM - Coffee Break
- 16:45 - 20:00 PM - Expected impacts on regional agriculture from climatic variability.

Morning (April 29)

- 8:00 - 10:30 AM - Workshop concluding remarks.
- 10:30 - 10:45 AM - Coffee Break
- 10:45 - 12:00 AM - Data standardization.
- 12:00 - 14:00 PM - Lunch Break

Afternoon (April 29)

- 14:00 - 16:00 PM - CD-ROM preparation with data organized by country.
- 16:00 PM - Closing section

1.10.5 st NATIONAL WORKSHOP AIACC INIA Tacuarembó, Tacuarembó, Uruguay June 30, 2004

Objective: disseminate and discuss information about climate variability and climate change, and possible impacts in cattle beef production systems in Uruguay.

Participants: more than 40 participants from different stake holders and research organizations.

Publication: *“La Variabilidad Climática, el Cambio del Clima y el Sector Agropecuario”*, Walter. E. Baethgen, IRI, and Agustin Gimenez, INIA.

1.10.5 ^{2nd} NATIONAL WORKSHOP AIACC INIA La Estanzuela, Colonia, Uruguay. August 18, 2004

Objective: disseminate and discuss information about climate change results from the LA27 AIACC Project, and possible impacts in crop fields production in Uruguay.

Participants: more than 100 participants from different stake holders and research organizations.

Publication: *“Evidencias de Cambio Climático en Uruguay”*, Agustín Giménez, José Pedro Castaño, Laura Olivera, y José Furest, Unidad GRAS del INIA; Walter Baethgen, Instituto Internacional de Investigación en Predicciones Climáticas (IRI); Daniel L. Martino, Consultor y Asesor del INIA, y Ricardo Romero, USDA, Uruguay.

1.10.6 ^{3rd} NATIONAL WORKSHOP AIACC Federación Argentina de Acopiadores, Buenos Aires, Argentina October 7, 2004

Participants: Members of Federación Argentina de Acopiadores, Bolsa de Cereales, Fundación Producir Conservando, Interlink Sur Biotechnologies.

Objective: to disseminate information related to climate variability: Presentation of the CD-ROM “Analysis of precipitations during 1923-2000 in the Pampas Region of Argentina”.

This CD includes the analysis of monthly precipitation data from 53 weather stations distributed in the Pampas Region of Argentina considering the period 1923-2000. In each site the interannual variability was assessed considering precipitation anomalies (difference between observed values and trend) for each month of the year. Results are shown in 936 maps presented as individual maps (one year, one month) or grouped maps (years/months)

Monthly rain anomalies grouped by year

^{4th} NATIONAL WORKSHOP AIACC Bolsa de Cereales de la República Argentina, Buenos Aires, Argentina October 26, 2004

Participants: We estimate the assistance of more than 200 people representative of

farmers associations, policy makers, agribusiness, Secretary of Agriculture.

Objective: to disseminate results obtained under AIACC activities related to changes occurred in climate during the last century and climate variability in the Pampas Region.

1.10.7 ⁵**th NATIONAL WORKSHOP AIACC**
Secretaria da Agricultura do Rio Grande do Sul, Porto Alegre, Rio Grande, Brazil.
October 7, 2004

Objective: disseminate and discuss information about climate variability and climate change, and possible impacts in crop fields production in Southern Brazil.

Participants: 30 participants from different stake holders and research organizations.

Publications: (1) *“Mudanças Climáticas globais e seus possíveis impactos em agricultura e alimentação”*, Gilberto R. Cunha, Embrapa Trigo, (**Fitopatologia Brasileira**, v.29 – Suplemento, p.s8-s10, 2004)

(2) *“Construindo nossa capacidade para lidar com as mudanças climáticas globais e seus possíveis impactos em agricultura e alimentação”*, Gilberto R. Cunha, Embrapa Trigo, (In. CUNHA, G.R. ed. **Lidando com riscos climáticos: clima, sociedade e agricultura**. Passo Fundo: Embrapa Trigo, 2004. P. 357-399.)

Articles for media and one book in Portuguese were produced for agricultural stakeholders and general audience in Brazil.

1.10.8 Final Financial Report

Regional Workshops

International Workshop in Montevideo November 9-11, 2003.

Item	Expenses
Airfare	1148
Hotel	836
Perdiem and Shuttle to / from airport	1026
Materials and miscellaneous	350

Communications, other	300
Organization costs (Secretary time and other)	600
TOTAL	4,260

International Workshop in Brasil April 26-30, 2004.

Item	Expenses
Airfare	2055
Hotel	826
Perdiem and Shuttle to / from airport	2035
Materials, miscellaneous	450
Communications, other	350
Organization costs (Secretary time and other)	900
TOTAL	6616

National Workshop in Tacuarembó, Uruguay, June 30, 2004.

Item	Expenses
Perdiem and transportation costs	450
Materials, communications, and miscellaneous	325
Organization costs (Secretary time and other)	300
TOTAL	1,075

National Workshop in Colonia, Uruguay, August 18, 2004.

Item	Expenses
Perdiem and transportation costs	250
Materials, communications, and miscellaneous	315
Organization costs (Secretary time and other)	340
TOTAL	905

National Workshops in Buenos Aires, Argentina,

Item	Expenses
Perdiem and transportation costs	100
Materials, communications, and miscellaneous	650
Organization costs (Secretary time and other)	100
TOTAL	850

National Workshop in Porto Alegre, Brazil, October 7, 2004.

Item	Expenses
Perdiem and transportation costs	300
Materials, communications, and miscellaneous	200
Organization costs (Secretary time and other)	350
TOTAL	850

TOTAL PROJECT EXPENSES 14,556

1.11 GIS training with applications to Watershed Management in the Seychelles

AIACC Project code: SIS90

1.11.1 SIS90 Background information

Project Investigator:	Rolph Payet
Organization:	Seychelles Climate Centre, Ministry of Environment, Seychelles
Total Grant	\$ 5,000.00
Participating Countries:	Seychelles

1.11.2 Introduction

For the GIS training on Watershed Management and Remote Sensing there are several important activities to be undertaken. There is, firstly, the location of a trainer, secondly, ordering the appropriate software and extensions and thirdly the logistical matters associated with any training

1.11.3 Activities

Trainer

The first task involved finding an appropriate trainer with the right skills and experience to conduct the training in both Watershed Management (flooding) and Remote Sensing. Through consultations and guidance, the Centre of Studies in Resources Engineering (CSRE) of the Indian Institute of Technology, based in

Bombay, was identified as the appropriate institution having the qualified scientists required for the training in the above mentioned fields.

Going thought their website and list of scientists; we were able to identify the appropriate trainer and got into contact with him through e-mail. After agreeing to assist us with the training, the identified trainer made several comments and requested some information pertaining to the training. These include the type of software to be used, (he also made some propositions) and who will be attending the training and their level of understanding of the matters to be taught so that he can better prepare the training. This information has been passed on to the trainer.

Software

For the purchasing of the appropriate software, we have contacted several GIS software distributors in the region, especially South Africa and Kenya and have obtained quotes from them. Before making any purchases, we are considering all our options as to get the better deal. Another thing holding us back for the moment are the suggestions that the trainer has made as to the softwares to be used. As he is an expert in the matter, we are considering what he has proposed and waiting for further details from him, such as the price and capabilities of the proposed softwares. We are very interested in the capabilities of the proposed softwares as we want the training to cover two aspects, namely the watershed management and remote sensing. As soon as we get the information from the trainer, whom I must note has been very helpful in the matter; we shall proceed with the purchasing of the best suitable software and extensions. As the distributors in the region have the softwares, their delivery should not be problem and wont take a lot of time.

Logistics

Finally there are the logistics of the training to take care of. We are, firstly, sorting out the venue and waiting for the computer rooms to be made available. Computer rooms large enough to accommodate the number of people to follow the training (approximately 25), are held only by educational institutions. As exam time in Seychelles is November/December, we have to wait for the exams to be cleared before we can get access to the computer rooms. The institutions concerned have been contacted and we are waiting for a confirmation of dates.

Once we get the exact dates for the training we would be able to inform the trainer and invite the participants from Comoros. For now we are proposing 13th to the 17th of December, this year.

Participants

Those who would be participating in the training include some members of the climate change committee of both Seychelles and Comoros. From Seychelles we also

have staff of the main GIS centre of Seychelles coming from the Ministry of Land Use and Habitat. We also have participants from the Ministry of Environment and Natural Resources, from Ministry of Tourism and from the Seychelles Fishing Authority. These are all contributors of data to the project.

Having such training would enhance the participants' knowledge on watershed management and also on remote sensing. They would see the advantages of the tools they are being taught to use and also be able to convert data into valuable information. To the data contributors they would then be able to offer better services and provide better and more accurate information to the project.

1.11.4 Expenditure

Up till now, no money has been spent from the supplement grant, although the first instalment of the funds has been received. However, as soon as we decide on the software and extensions, nearly half of what was asked would be used. We are planning on purchasing the software beginning of November. The logistics would absorb the rest including the fees for the trainer.

1.11.5 Time frame

Activity	When/Duration
Secure venue for training	End of October
Invite participants	Beginning of November
Purchase software	Beginning of November
Receive software + Landsat Images from UNEP	Mid – End of November
Training	Mid December

2.UNEP Grant

2.0 Training for Conservation of Biodiversity in a Changing Climate

AIACC Project code : AF04

2.0.1 AF04 Background

Project Investigator:	Robert Scholes
Organization:	Council for Scientific and Industrial Research (CSIRO), South Africa
Total Grant	\$ 15,00.00
Participating Countries:	Mozambique, Botswana, Madagascar, Tanzania, Uganda, Lesotho, Kenya, Zimbabwe, Seychelles, South Africa Malawi

2.0.2 Project Description

A training workshop is planned to transfer methods developed by the AIACC AF04 regional assessment for the analysis of adaptation options for managing biodiversity conservation in a changing climate. The target audience for the training are officials

of conservation agencies and conservation NGOs in Africa. This audience already has a background in conservation planning, but need additional skills to apply their knowledge in the context of a changing climate and land use system. The content of the workshop will include:

1. Impacts of climate change on biodiversity
2. Bioclimatic modeling, using a variety of packages
3. Dispersal modeling using LANOS
4. Ecosystem modeling using tools developed by AF04
5. Economic analysis

The dates for the training has been set for 22nd to 25th February 2005. The supplementary grant will be used to bring nine Southern African representatives to the training.

At present we have planned the agenda for the training workshop and are in the process of developing the training material. This activity is covered by the main grant.

We have used existing networks to identify potential candidates for the training. So far we have received positive responses from the following as well as three Nigerians and one Moroccan. The grant was designed to bring only 9 representatives so we are already potentially over-subscribed.

Mr Paulo Jorge Sithoe	Mozambique
Raymond Kwerepe	Botswana
Lanto Andriamampianina	Madagascar
Belda Mosepele	Botswana
Godson Urassa <gjurassa@yahoo.com>	Tanzania
Dr Oliva C. Mkumbo	Uganda
Lehlohonolo Moeti (Ph.D. Edwards Mulaama <mulaama_environet@yahoo.com>	Lesotho
Francis T. Mugabe	Kenya
Herilala Randriamahazo	Zimbabwe
Dr. Munishi PKT	Madagascar
Mr. Walter Mangroo replaces Denis Matatiken	Tanzania
L. K. Chipeta	Seychelles
	Malawi

The training will take place at the University of the Western Cape where there is a training facility with 25 computers set up to run GIS software.

At present no expenditure has been made against the supplementary grand.
In the grand application we had suggested that the training be opened to SADC representatives. Given the list of applicants we may wish to also include some east African participants.

2.1 Capacity Building and Stakeholder Consultations in Sudan

AIACC Project code :AF14

2.1.2 AF14 Background

Project Investigator:	Balgis O. Elasha
Organization:	Higher Council for Environment & Natural Resources (HCENR) Climate Change Enabling Project, Sudan
Total Grant	\$ 15,000.00
Participating Countries:	Sudan

2.1.3 Summary of accomplishments

During the period November, 2003-October, 2004 the project continued stakeholders consultation process and informal meetings with representatives from different sectors and institutions.

2.1.4 Description of activities

Selection of three sites for awareness raising and policy consultation workshop in cooperation with case study researchers. The selected sites are the same AIACC-AF14 case study sites (Kordofan, Darfur and Red Sea states), The objective is use the

state -level workshops as platforms for consolidating the part of policy and institutional setting (complimentary to the initial project work)

Preparation for the three multi-stakeholders workshops is almost complete; the implementation will start immediately after the final review of the AIACC case study reports (on-going), will form the core material for the workshops. A detailed work plan was developed for each of the workshops aiming at achieving a true involvement, consultation, results dissemination and awareness among the different stakeholder groups.

2.1.5 Identification of individuals, communities and organizations that participated and/or benefited

This as an on-going activity and it started in close coordination with the NAPA project. The identification process covered national and local levels institutions and NGOs, and grass root groups and beneficiaries.

The identification of stakeholders produced a preliminary list of stakeholders, namely; Primary stake holders and this includes; committees and unions and their members who directly involved in the sustainable livelihood measures, management and monitoring of the system, more specifically: members of; Traditional Farmers Union; Mechanized

Farming Union; Pastoralists Union; and Fruits and Vegetable Producers Union.

Secondary stakeholders and this includes; Policy makers and planners at national, regional and community level that are directly or indirectly involved in the decision making process; and donors that are engaged or involved in activities related to natural resources management, state and local level researches and training institutes

2.1.6 Self-evaluation of the effectiveness of the activities in meeting objectives

The multi-stakeholders consultation process is intended to generate more information on adaptation related policies and institutions to enable the conducting of an in-depth analysis i.e. emphasis will be on linking the macro with meso and local level policies and plans guided by the information extracted from community respondents, this is very relevant to the activities stated in the workplan.

2.1.7 Fiscal report

Work plan for Stakeholder Engagement Nov.2004 – Feb. 2004

Total Expenditure in US\$	Sub-activities	Activities
1000	1.Stakeholders consultation meeting and stationeries.	1. Stakeholder scoping: 1.1. Define stakeholders 1.2. Collect information on stakeholders' needs 1.3. Coordinate a meeting with NAPA
1000 2000	Posters Pamphlets Brochures on CC and adaptation Newspaper articles Radio announcement	2. Initial awareness building: 2.1. Prepare awareness building plans and materials 2.2. conduct stakeholders meeting 2.3. Assess stakeholders needs and interests (ongoing)
	Preparation of Material Conducting the workshop Report writing	3. Targeted workshops (3 state workshops): 3.1. Bara Workshop (Kordofan) 3.2 Arbaat Workshop (Red Sea) 3.2 Darfur workshop (N. Darfur State)
		4. Network development: 4.1. Network development (integrate with in AF_14 network)
		5. Follow-up awareness building: 5.1.material and information dissemination 5.2. Integrate with NAPA (e.g. target workshops, network and information dissemination)
4000	11868	Total Received by HCENR
		Total received by SEI_B

2.2 Assessment of Climate Change Scenarios from GCM and RCM Simulations in West Africa

AIACC Project code: AF20

2.2.1 AF20 Background information

Project Investigator:	Amadou Gaye
Organization:	LPASR, Anta Diop University , Senegal
Total Grant	\$ 13,700.00
Participating Countries	Senegal, Niger, other West African countries

2.2.2 Main objectives of the AF20 Supplemental grant

AF20 is involve on assessing climate change scenarios at global (GCM) and regional (RCM) scales in West Africa. The ultimate goal is to produce climate model simulations for use in impact studies in West Africa. Building capacity on climate modeling and enhancing knowledge of west Africa climate change and variability is a targeted goal.

The main objectives of the activities undertaken with the supplemental grant are:

- Strengthen capacity of team members and students of the Laboratory of Atmospheric Physics at Dakar;

- Establish links between team members and end-users of climate products and stakeholders (mainly agriculture and hydrology) in the aim to help building adaptation strategies based on impacts studies;
- Provide climate models and data for applications in hydrology and agriculture;
- Facilitate inclusion of AF20 outputs in national communications of Senegal and bordering countries.

2.2.3 Description of the activity performed

We have envisioned training activities and workshops.

1- A meeting have been convened at Niamey, Niger (November 8-9 2004) by ACMAD to discuss integrated water resources management strategies in a context of climate variability and global climate change. The key questions of the Workshop were:

What are the tools and methods used in water management?

What are the climate data and products available or that could be developed?

What are the needs of the hydrology sector managers in term of climate data and products?

How to develop tailored climate information for water management needs?

What are the gaps and how to fill these?

AF20 team has been represented on that meeting by his PI Amadou Gaye. We gave important contribution during the plenary presentations and also discussions. We chaired sessions during the 2 days meeting.

Two (2) main issues came out the discussions:

- need to increase capacities of personals of national meteorological and hydrologic operational services;
- need to perform climatic and hydrologic modeling studies of the region;
- use the coming AMMA (African Monsoon Multidisciplinary Analysis) experiment (summer 2006) to fulfill the gaps on present West Africa climate knowledge;

- need to produce, disseminate and use climate information accurately.

2- Team members have attended their national climate change Committees (Senegal, Niger, Botswana)

Amadou Gaye have been nominated as Vice Chair of the Vulnerability and Adaptation Group of the Senegalese National Climate change committee. On the September session of the Committee he presented the AIACC program (focus on AF20 project) and how the outcomes of the project could be integrated in National Communication. Ideas of future projects have been raised.

2.2.4 Plan and time Schedule of future activities

1- Training Course

We plan to organize a training Course at the LPA Dakar University. The goals are to show researchers how to visualize and analyze global and regional climate outputs for West Africa. Scientists of the team and graduate students will undertake various tasks (regional climate and GCM analysis, data visualization, data provision for application in agriculture and hydrology).

2- Workshop

Participants: researchers and end-users; members of National Climate Change Committee.

Team members will confer with people of various disciplines to answer the key questions raised above on this document.

The workshop will include presentations from climate scientists and key user groups and will cover a wide variety of topics:

data gathering for scientists;

use of climate scenarios and predictions as decision-making tool;

use of climate models in integrated assessments (agriculture, hydrology, ...)

The 2 activities are scheduled for January 13-15 2005.

2.3 Briefing of Policy Makers in Malawi on Climate Change Issues

AIACC Project code: AF38

2.3.1 AF38 Background Information

Project Investigator:	Paul V. Dasenkar
Organization:	CENACARTA, Mozambique
Total Grant	\$ 5,305.00
Participating Countries:	Malawi

2.3.2 Workshop Goals:

This workshop will convene senior policy makers in Malawi to discuss issues of climate change, including: adverse impacts and possible approaches to adapt; current participation of Malawi in the UNFCCC; and, opportunities for Malawi to participate fully in initiatives supported through the UNFCCC and related mechanisms. A concrete outcome of this workshop will be a strategic plan for Malawi on climate change in areas of assessment, education, and implementation of mitigation and adaptation activities.

2.3.3 Expected Outcomes

- Strategy for a Malawi Climate Change Office/Center
- Strategy for Research and Education on Climate Change (College Level)
- Strategy for Data on Climate Change Impacts and Disasters

- Project ideas to address climate change for GEF and bilateral aid agencies
- A workshop report documenting proceedings of the workshop, and documenting the above

A paper titled “A Dialogue with Senior Policy Makers on Climate Change” to be submitted to the journal 'Climate Policy' approximately a month after this workshop. This paper will discuss reactions from the different policy makers to the information about climate change presented, and will document their level of previous understanding of the issues. We will also survey their interest and willingness to participate in mainstreaming of climate change in their activities. We gather some of this information through a brief survey for the participants to fill out.

2.3.4 Relevance To AIACC

The proposed workshop will greatly enhance knowledge of climate change for senior policy makers for Malawi, and should lead to a long-term interest and participation in climate change by a wide ranging group of stakeholders, well beyond the usual groups directly involved in environmental issues.

2.3.5 Provisional Agenda

- | | |
|------------|--|
| 0830-0900: | Registration |
| 0900-0920 | Opening Session Remarks by Mr. R.P.Kabwaza Director Environmental Affairs Department. Remarks by Mr. D.R.Kamdonyo Director of Department of Meteorological Services. Welcome remarks by Mr. G.Mkondiwa Principal Secretary, Ministry of Natural Resources and Environmental Affairs. |
| 0920-0940 | Overview of Impacts of Climate Change for Malawi Malawi’s First National Communication to the Conference of Parties (COP) of the UNFCCC (15 mins)

Overview of Climate Change Activities in Malawi Mr Dandaula, Climate Change Project Manager |
| 0940-1000: | TEA BREAK |
| 1000-1300 | Presentations and Discussion |

Broad Overview of Climate Change: Global, LDC and National Level Activities (15 mins), Dr. Paul V. Desanker, UNFCCC LEG/Miombo AIACC Project

Overview of Climate Change Activities in Malawi, Mr Dandaula, Climate Change Project Manager (15 mins)

Programmatic Opportunities for Malawi: Enabling Activities (NC, NAPA, NCSA, etc); GEF/UNDP Small Grants Programme, Clean Development Mechanism (15 mins). Mr Kabwaza (Director Environmental Affairs Department

Project Funding Opportunities: the GEF, Bilateral agencies – Adaptation, Mainstreaming Climate Change, and Capacity Building (15 mins)

Development of a Strategic Approach for Malawi: Education, Research, Implementation, and Coordination (1.5 hours)

13:00-1430 LUNCH

14:30-14:45 Workshop Summary and Closure: Mr. Mkondiwa, PS, Natural Resources and Environmental Affairs

2.3.6 Briefing Packet

The following documents will be made available to all participants.

- . • GEF Operational Programmes
- . • GEF NAPA Guidelines
- . • African Climate Change Vital Graphics (25 copies at \$25 each)?
- . • AIACC Background
- . • Miombo Network Background
- . • Malawi National Communication
- . • Other materials as appropriate
- . • GEF/UNDP Small Grants Programme

2.3.7 Budget Justification

Standard per diem rates for Malawi Government employees are used. Participants will arrive on Thursday March 11th and depart next day after the workshop.

Therefore, two days per diem is planned, plus accommodation for one night at a negotiated reduced price of K5,500. A total of 26 participants are budgeted for. In addition, drivers and support staff are also budgeted for, as well as reimbursement of fuel costs. (Each senior executive will be driven from their respective duty station all over the country). A modest amount is included for supplies.

BUDGET FOR BRIEFING OF POLICY MAKERS ON CLIMATE CHANGE ISSUES

TO BE HELD AT LIVINGSTONIA BEACH HOTEL ON 12TH MARCH 2004

Item	RATE	Qty	# of Days	# of People	Total
1 Subsistence Allowances for the PSs'					
PS MONREA	1,300.00	1.00	2	1	2,600.00
PS Local Government	1,300.00	1.00	2	1	2,600.00
PS NRCM	1,300.00	1.00	2	1	2,600.00
PS Agriculture	1,300.00	1.00	2	1	2,600.00
PS EP&D	1,300.00	1.00	2	1	2,600.00
PS Finance	1,300.00	1.00	2	1	2,600.00
PS Tourism	1,300.00	1.00	2	1	2,600.00
PS Gender	1,300.00	1.00	2	1	2,600.00
PS Commerce	1,300.00	1.00	2	1	2,600.00
PS Transport	1,300.00	1.00	2	1	2,600.00
PS Housing	1,300.00	1.00	2	1	2,600.00
PS Disaster Preparedness	1,300.00	1.00	2	1	2,600.00
Principal Chancellor College	1,300.00	1.00	2	1	2,600.00
Principal Mzuzu University	1,300.00	1.00	2	1	2,600.00
Principal Bunda College	1,300.00	1.00	2	1	2,600.00

Principal Polytechnic	1,300.00	1.00	2	1	2,600.00	
Executive Secretary of Congoma	1,300.00	1.00	2	1	2,600.00	
General Manager MIPA	1,300.00	1.00	2	1	2,600.00	
Chief Executive MEET	1,300.00	1.00	2	1	2,600.00	
General Manager NHBG	1,300.00	1.00	2	1	2,600.00	
Director,Meteorological Services	1,300.00	1.00	2	1	2,600.00	
Director,Environmental Affairs	1,300.00	1.00	2	1	2,600.00	
Official from MONREA	1,300.00	1.00	2	1	2,600.00	
Project Manager - UNFCCC	1,300.00	1.00	2	1	2,600.00	
Environmental Officer	1,300.00	1.00	2	1	2,600.00	
Miombo AIACC AF38 Rep	1,300.00	1.00	2	1	2,600.00	
						67,600.00
						67,600.00
Support staff						
DEA secretary	1,300.00	1.00	2	1	2,600.00	
Accountant	1,300.00	1.00	2	1	2,600.00	
HRMO/ PA System	1,300.00	1.00	2	1	2,600.00	
Messenger	1,300.00	1.00	2	1	2,600.00	
EAD & MoNREA drivers	1,300.00	1.00	2	4	10,400.00	
Other drivers	1,300.00	1.00	2	21	54,600.00	
Sub Total						75,400.00
2 Accomodation at Livingstonia beach						75,400.00

PS MONREA	5,500.00	1.00	1	1	5,500.00
PS Local Government	5,500.00	1.00	1	1	5,500.00
PS NRCM	5,500.00	1.00	1	1	5,500.00
PS Agriculture	5,500.00	1.00	1	1	5,500.00
PS EP&D	5,500.00	1.00	1	1	5,500.00
PS Finance	5,500.00	1.00	1	1	5,500.00
PS Tourism	5,500.00	1.00	1	1	5,500.00
PS Gender	5,500.00	1.00	1	1	5,500.00
PS Commerce	5,500.00	1.00	1	1	5,500.00
PS Transport	5,500.00	1.00	1	1	5,500.00
PS Housing	5,500.00	1.00	1	1	5,500.00
PS Disaster Preparedness	5,500.00	1.00	1	1	5,500.00
Principal Chancellor College	5,500.00	1.00	1	1	5,500.00
Principal Mzuzu University	5,500.00	1.00	1	1	5,500.00
Principal Bunda College	5,500.00	1.00	1	1	5,500.00
Principal Polytechnic	5,500.00	1.00	1	1	5,500.00
Executive Secretary of Congoma	5,500.00	1.00	1	1	5,500.00
General Manager MIPA	5,500.00	1.00	1	1	5,500.00
Chief Executive MEET	5,500.00	1.00	1	1	5,500.00
General Manager NHBG	5,500.00	1.00	1	1	5,500.00
Director, Meteorological Services	5,500.00	1.00	1	1	5,500.00
Director, Environmental Affairs	5,500.00	1.00	1	1	5,500.00

Official from MONREA	5,500.00	1.00	1	1	5,500.00
Project Manager, UNFCCC	5,500.00	1.00	1	1	5,500.00

2.4 Crop and Water Balance Modeling in Gambia

AIACC Project code :AF47

2.4.1 AF47 Background information

Project Investigator:	Bubu P. Jallow
Organization:	Global Change Research Unit of the Dept of Water Resources, The Gambia
Total Grant	\$ 13,874.00
Participating Countries:	Gambia, South Africa

2.4.2 Summary of accomplishments

The main objective for requesting the supplemental grant was to enable the Global Change Research Unit (GCRU) of the Department of Water Resources, co-partner with the Energy Research Centre (formerly EDRC) of the University of Cape Town in South Africa, in the AIACC project AF47, in the setting up of, and analysis of crop yield and irrigation models.

The team, with the intervention of the consultant, Dr. Peter Droogers of FUTUREWATER, Netherlands made the following achievements:

- Overcame data constraints by using the Climatic Research Unit (East Anglia University) geographically gridded dataset, which matches well the observed data in The Gambia;
- Simulations of crop water balance using the SWAP model on observed Gambian data, showed a significant correlation between seasonal rainfall and yield. This part of the analysis further prompted the lower threshold of seasonal rainfall likely to result in low yields as would be expected in drought periods;

- Since the SWAP model has been applied and tested for many different conditions and locations and has proven to produce reliable and accurate results, this gives a greater boost to the work of the team;
- Since the magnitude and signal of climate change were highly variable and inconsistent dependent upon the Global Circulation Model (GCM) in past studies in The Gambia, two GCMs i.e., the ECHAM4 and HADCM3 were selected to cover the projected range of variations in future climate;
- Progress in downscaling techniques;
- Further enlightenment on the impact of CO₂ on crop growth;
- Examination of the relationship between El Nino/ Southern Oscillation (ENSO) and precipitation in The Gambia;
- Study on the impacts of climate variability and change on crop production in the present time, in the near future and distant future; and
- Analysis of adaptation strategies using the SWAP model to run adaptation simulations for improved (drought tolerance) crop varieties, enhanced fertilizer use, and irrigation.

2.4.3 Activities

The grant catered for two working visits of a week's duration each, to The Gambia, by the consultant. The first visit took place from 10 - 16 January, whilst the last one took place from 19 - 23 April.

Trip I: January 10 - 16, 2004

- a). Saturday 10 January 2004: Field trip to Kerewan and Yallal Meteorological Stations. The main reason being to give the consultant and the collaborator from UCCEE, a feeling of the agricultural environment of the country with regards to the terrain, soils, cultivated crops, water levels, social setup of rural (farming) families, etc.
- b). Sunday 11 January 2004: Preliminary introduction of AIACC AF47 project to consultant; introduction of SWAP model by consultant; discussions on way forward.
- c). Monday 12 January 2004: Training session on SWAP to UCCEE and GCRU personnel. The session made use of Yundum climate and the millet crop, as well as the Hadley A2 scenarios.
- d). Tuesday 13 January 2004: Model runs indicate positive correlation between rainfall and crop yield.
- e). Wednesday 14 January 2004: Discussion on adaptation strategies; running adaptation scenarios; writing up various sections of AIACC working paper.

f). Thursday 15 January 2004: Finishing the draft AIACC Working paper; running the model for adaptation strategies.

Trip II: April 19 - 23, 2004

a). Saturday 17 April 2004: Training session of key members of the agricultural sector group of the National Climate Committee, UCCEE and GCRU, on the SWAP model.

b). Monday 19 April 2004: Overview of Saturday's session; running of model for irrigation, drought resistant scenarios

c). Tuesday 20 through Thursday 22, 2004: Fine tuning of draft AIACC Working Paper.

2.4.4 Beneficiary Persons & Organizations

Although the primary request for capacity building under this grant was meant for the GCRU and, eventually the UCCEE teams, it was later felt (after the first visit of the consultant) necessary that the SWAP model could be very useful to other applications in the agricultural sector. Thus in a bid to ensure the continued availability of skills in running the model, colleagues outside the above-cited study teams need to be involved. This is particularly necessary, in view of the problems encountered in the assessment of vulnerability and adaptation in agriculture during the preparation of the First National Communication to UNFCCC.

Furthermore, the choice of input parameters for the model that matched the local context would be better taken into account with the presence and participation of active professionals in the fields of agricultural research, extension services and hazards monitoring. Thus, a careful selection of active and motivated participants, considered together with the need to ensure effectiveness and focus on the objectives of the project, was made leading to the below described participation in the training session on the SWAP model.

Hence the staff of the lead, and assistant lead institutions in the agricultural working group of the National Climate Committee (NCC) were invited together with the focal person of the regional programme on drought monitoring, to join the UCCEE and GCRU teams in the training. Though the number of participants could have been more, it is highly believed that the above trained are amongst the most suitable for ensuring the availability of capacity in the subject as well as transmitting the knowledge to others.

The participant from the lead institution of the agricultural working group of NCC was Mr. Joko Kutubo Sanyang, agronomist at the National Agricultural Research Institute (NARI). The assistant lead institution is the Department of Agricultural Services, and it was represented by Mr. Momodu A. Joof, monitoring and evaluation officer.

To ensure that the SWAP model is useful other applications, such as in seasonal crop performance monitoring, the focal point of the Regional AGRHYMET Programme, Mr. Peter Gibba, was also invited to participate in the training session. His participation was felt very useful, as his appreciation of the model could determine its future use as both a tool for climate change studies as well as for real time monitoring of crop performance.

The UCCEE team comprised of Drs. Molly Elizabeth Hellmuth and John Macintosh Callaway. GCRU's participation comprised of Dr. Momodou Njie and Messrs. Bubu Jallow and Bernard Gomez.

2.4.5 Effectiveness of the activities in meeting objectives

The intervention of the consultant was very useful indeed, and besides the right choice of consultant was made, as he has previous experience of similar challenges in his past and current works. As mentioned earlier, the major stumbling block that necessitated the intervention of the consultant was the lack of modeling skills to show the link between water availability and crop performance, particularly crop yield. This was further aggravated by the lack of country data at the appropriate scale.

With the intervention of the consultant, the above stumbling block was overcome and the project work progressed to assess the impact of the current, near future and distant future climates on agricultural production.

2.4.6 Financial report

Budget Line	Details of Expenditure	Cost (US \$)
<i>International Travel</i>	Air ticket costs for 2 visits by Consultant (FUTUREWATER)	2,000.00
<i>DSA</i>	Consultant charges (FUTUREWATER)	9,534.00
<i>Hotel</i>	Accommodation Charges (FUTUREWATER)	840.00

	<i>Total Paid to Consulting Firm (FUTUREWATER)</i>	12,374.00
<i>Local Travel</i>	Field Trip to Kerewan & Yallal	196.30
	Guests' Movements (airport terminal movements, daily rotations of visiting guests to meeting venue)	344.60
<i>Logistics</i>	Refreshments (coffee/ tea, snacks, lunch)	739.50
	Stationery (printer cartridges)	212.10
<i>Miscellaneous</i>	Bank Ledger Charges	7.50
	<i>Total Paid to GCRU</i>	1,500.00
Grand Total		13,874.00

2.5 Communicating with farm sector stakeholders in Egypt

AIACC Project code :AF90

2.5.1 AF90 Background information

Project Investigator:	Ayman Abou Hadid
Organization:	Central Laboratory for Agricultural Climate (CLAC), Egypt
Total Grant	\$ 14,000.00
Participating Countries:	Egypt

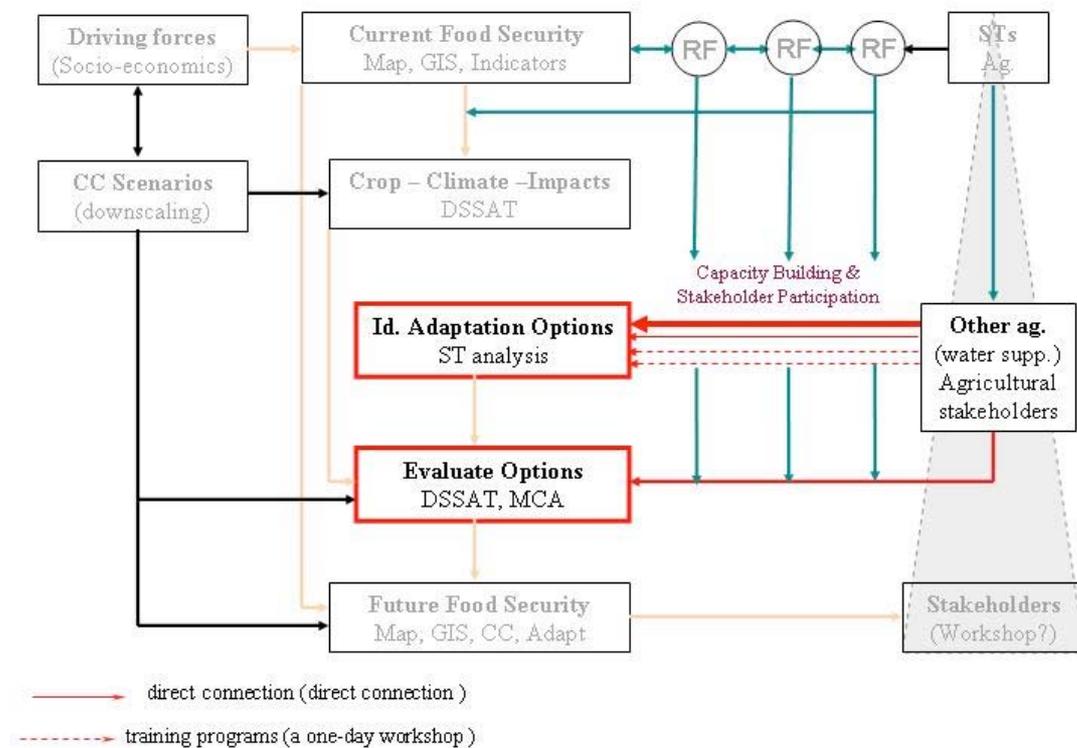
2.5.2 Introduction to the project

The main objective of this program is to further encourage communication with the engaged stakeholders and focal points through:

- Evaluation of adaptive management options for better utilization of water.
- Identification of opportunities and constraints in the policy-making process.
- Definition of the agenda and the needs for future scientific knowledge
- Dissemination of the project results.

These objectives may enrich the interaction between larger numbers of stakeholders, and hence help in identification of adaptation options that is one of the objectives of AF90 project (as illustrated in Fig. 1). The next step is to evaluate the available options through brain-storming exercises. Therefore, this procedure is activating the

sharing roll of the private sector in the stakeholders engagement in the AF90 activities.



Flowchart (1): Capacity building and stakeholder participation plan as a part in the AF90 plan

The project focuses on stronger involvement of three groups of stakeholders: small-holder farmers, commercial farmers and strategic resources managers. The Flowchart represents the stakeholder involvement throughout the original project. These supplements are emphasis on their engagement in the identification of the adaptation options and the evaluation of those options.

2.5.3 Description of activities

1. Socioeconomic consultant selection

A socioeconomics expert is involved in order to achieve the following:

- Improve the training activities and the communications with stakeholders.

- Enhance the opportunity of communicating with several types of stakeholders.
- Improve the identification of opportunities and constraints of adaptive management.
- Improve the dissemination of the project results for a larger number of the mentioned stakeholders that could create awareness related to the climate change impact.

The communication between the project scientific team and a number of socioeconomics is performed. Whereas, the final selection still under progress.

The consultant is supposed to be of high expertise in socioeconomic analysis, all the way from the questionnaire preparation through the data analysis and option preparation, test and evaluation. It's preferred to seek a socioeconomic consultant from a developing country (for example: Nigeria, Sudan, India...).

2.5.5 Training activities with stakeholders

Training programs is important tool for strengthening communications between different sectors and groups.

Three training programs were held in Bosaliy and Cairo, as a one-day workshop for each program. The focus of each workshop were be the relation between the food production and water management, as well as the effect of the future climate change on this relation and the available adaptation options. The workshop program was contained lectures and interactive open discussions. The detailed information of the performed workshops is listed in the following table:

Workshop	Location	Date	Trainers No.
1 st	Bosaliy location of protected cultivation- Bosaliy- Behera	1/9/2004	27
2 nd	Central laboratory for agricultural climate- Dokki- Cairo	21/9/2004	23
3 rd	Central laboratory for agricultural climate- Dokki- Cairo	28/9/2004	26

The direct connection between the project team and the trainers was performed through a questionnaire in order to gather information from the stakeholders

regarding their current vision on food production chain, water management, sustainable agriculture management, the predicted risks that may threaten their business under climate change conditions, the available options (from their point of view) proposed to limit these risks, and to shape the key roles of scientific sector, public sector and private sector in the proposed adaptation options.

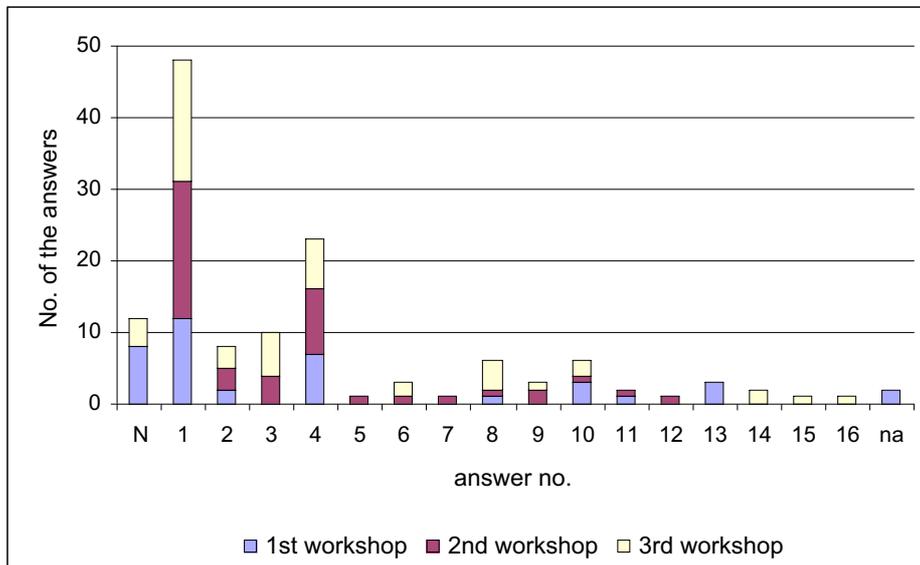
The collected questionnaires data were gathered, and under preparation and analysis. Three groups of stakeholders were filling the questionnaire, which were farmers, researchers and agronomists. The three samples were classified to four categories according to the age.

So far, it's indicated that different stakeholders groups had different answers to the various quotations asked.

For instance, the observation of the climate change occurrence was one of the important issues that investigated in the survey, by the question "Do you think there are any changes have been happened in the climate?". 16% of the samples said "they don't notice any changes", where as 84% of the samples indicated 16 indicators as the following:

1. General increase in the temperature levels.
2. Increase in temperature levels at summer and decrease in it at winter.
3. Decrease in rain amounts.
4. Increase in Relative humidity
5. Decrease in River Nile water amounts.
6. Increase in extreme events occurrence.
7. Increase CO₂ levels
8. Changes in beginning and ending of the seasons.
9. Increase the number of the extreme heat waves
10. Increase in the pollution levels and seasonally smog.
11. Increase the radiation intensity.
12. Changes in wind directions.
13. Unidentified changes.
14. Sea level raise.
15. Changes in rain patterns.
16. Decrease in aquifer.

The following chart illustrates the representing number of each indicator in the three workshops samples.



This indication illustrates the significant representation of understanding the concept of climate change, where as, most of the survey sample still have unclear vision of this concept.

The complete and detailed analysis of this survey will be published in upcoming paper. More over, It's supposed to held another two programs in Sakha and Sids, to complete the training activities.

2.6 Community participation in identifying and evaluating adaptation responses in Mongolia

AIACC Project Code:AS06

2.6.1 AS06 Background

Project Investigator:	Punsalmaa Batima
Organization:	Institute of Meteorology and Hydrology, Mongolia
Total Grant	\$ 15,000.00
Participating Countries:	Mongolia

2.6.2 Summary of accomplishments

The Objective of the project was to increase participation of stakeholder in assessing, identifying, analyzing and evaluation of potential adaptation options to climate change in Livestock sector of Mongolia.

One of the effective way to encourage participation of local stakeholder is workshop. On the other hands, the discussion of possible adaptation options at local level is one of the possible approach to integrate the research results and beneficiaries' interest in adaptation assessment. The workshops focused on:

- Encourage participation of local community and stakeholders in the adaptation assessment
- Dissemination of the research studies we have done in past two years
- Discussion of potential adaptation options and get feedback from local community
- Establish as possible local climate change experts' network.

There have been planned to held 3 workshops, which cover different regions that represent different pasture ecosystems: Gobi-steppe region (Dornogobi aimag*), Steppe region (Bayankhongor aimag) and High mountain region (Arkhangai aimag).

The workshop have been held in Bayankhongor (Steppe region) as it was planned. The workshops initially have planned to take place in Arkhangai aimag (high mountain region), have been changed from Arkhangai ato Khuvsgul aimags because of late receipt of the fund the center to host the workshop.

Also because of local election campaign the Dornogobi aimag could not participate in the workshop so the workshop have been held in Umnogobi aimag.

2.6.3 Description of activities

Workshops have held for four days in each region and the agenda is given bellow.

The workshop focused on

Dissemination of results of the climate change research studies

Discussion of potential adaptation options and get feedback of local community

Site visit to current adaptation practices.

As an example The General Agenda of the Workshop that held is given below.

DAY ONE

9.00-9.45 Registration

9.45-10.00 Opening of the Workshop

Welcoming speeches, Governor, aimag

Objectives of the workshop, Project PI

Presentations from AIACC projects

10:00-10:20 Past, present and fiture climate change and its impcats and vulnerability

Batima, Project PI

10:20-10:40 Clime change impacts on pasture : Shiirev-Adya, Project expert

10:40-11:00 Climate change impacts on livestock: Therendorj, Project expert

11.00-11.20 Adaptation options: *Bat, Project expert*

11.20-11.40 Coffee/Tea Break

11.40-12.40 Discussions

12.40-14.00 Lunch

Presentations from Local authorities

14:00-15:00 All participating aimags (three in each region) made presentations on “Current and future development and policy of livestock sector of *Aimag*”

Livestock officer of participating Aimags

15:00-15:30 Coffee / Tea Break

15:30-16:30 Discussions

16:30-17:00 Introduction of objectives and outcomes of the working groups:
Batima

17:00-17:20 Breakout in working groups

17:20 Close of Day One

19:00 Reception hosted by Local Governor

DAY TWO

9.30-12.30 *Discussion of working groups on impact and vulnerability of livestock sector of the region*

WG I: Climate change and its impact, vulnerability and adaptation on Pasture of the region

WG II: Climate change and its impact, vulnerability and adaptation on Livestock of the region

WG III: Livelihood of a herder’s community and households

12:30-14:00 Lunch

14:00-14:15 Presentation of WG I

14:15-14:30 Brief discussion

14:30-14:45 Presentation of WG II

14:45-15:00 Brief discussion

15:00-15:15 Presentation of WG II

- 15.15-15.30 Brief discussion
- 15.30-17.30 **Discussion of working groups on adaptation options of livestock sector of the region**
- 17.30-17.40 Close of Day Two

DAY THREE

- 09:30-10:30 Discussion of working groups on adaptation options of livestock sector of the region and prepare recommendations**
- 10:30-10:45 Presentation of WG I
- 10:45-11:00 Brief discussion
- 11:00-11:30 Coffee/Tea Break
- 11:30-11:45 Presentation of WG II
- 11:45-12:00 Brief discussion
- 12:00-12:15 Presentation of WG II
- 12.15-12.30 Brief discussion
- 12:30-14:00 Lunch**
- 14:00-15:00 Discussion of recommendations on adaptations measures.
- 15:00-15:00 Close of Day Three

DAY FOUR

Last day meeting held at *hot ail* level. *hot ail* is the Mongolian term and historical tradition of herding practices. A *hot ail* consists of at least two herding households. Meeting at *hot ail* level allowed us to participate as many as possible herders in evaluation of adaptation measures. This part of the workshop was most effective in discussion and welcomed part by the herders side.

There was organized site visit of current adaptation practice at bayankhongor aimag. the participants have seen the good practice how to improve shelter to protect animals from harsh weather and how to improve and reserve pasture in winter-spring.

2.6.4 Identification of the persons and organizations that participated

- Ministry for Nature and Environment;
- Institute of Meteorology and Hydrology;
- Bayankhongor, Uverkhangai, Gobi-Altai, Khuvsgul, Arkkhangai, Zavkhan, Umnogobi *aimag*'s Governors office;
- Bayankhongor, Uverkhangai, Gobi-Altai, Khuvsgul, Arkkhangai, Zavkhan, Umnogobi *aimag*'s Center for Meteorology, Hydrology and Environment Monitoring;
- Bayankhongor, Uverkhangai, Gobi-Altai, Khuvsgul, Arkkhangai, Zavkhan, Umnogobi *aimag*'s Veterinary's office;
- Bayankhongor, Uverkhangai, Gobi-Altai, Khuvsgul, Arkkhangai, Zavkhan, Umnogobi *aimag*'s Office for nature and environment.
- Some *Soum* Governors Office of participating *aimags*.

Total 206 participants have been participated including, *aimag*, *soum*, *bag* governors, local officer for food and animal husbandry, veterinary's officer, environmental officer, engineer of meteorology and hydrology, and herders (List of participants is attached).

2.6.5 Self-evaluation of the effectiveness of the activities in meeting objectives

The local workshops were very effective in terms of

- Improving the understanding of climate change at local level and disseminate the research results.
- Discussing the proposed adaptation options at local level and get feedback from local community. The local authority recognized that most responsible organization to implement the *Potential Adaptation Measures in livestock sector* and the local community or herders are the potential beneficiaries/users of successful implementation of such measures. However the local authority is still lacking in institutional and financial capability to take care about the actual implementation could carried out at the level of the bag or herders' *hot ail* communities, and a feasible and workable instruments are brought into action to influence local habits and traditions. Most importantly, almost all the adaptation options that was prepared by the expert team have been accepted by the local experts as well as herders.

- Meeting at *hot ail* level was very welcomed by the herders and they proposed to organize such meetings as frequent as possible because they often need an information and projection on whether and climate to take as possible as can possible measures to support their livelihood. They very much willing to have management and financial support in improving their livelihood. May it is because of socialist living practices. We found that young herders need a training in preparing traditional (hand prepared) as well as modern practice to prepare supplementary feed as well as in combining pastoral system with intensive farming.
- The participants have proposed 10 recommendations that will support the implementation of some adaptation measures.

2.6.6 Fiscal report that describes how the funds were used

	Per dium	Accommodation	Travel	Total
Umnogobi	1596.6	847.1	188.2	2631.9
Bayankhongor	1697.5	998.3	630	3325.8
Knuvsgul	1638.7	985.7	855	3479.4
Project team	1200			1200
Car rent			2056	2056
Material cost			2299	2299
Grand total				14992.1

The cost for car rent have exceeded the planned cost because of increase the petroleum cost in Mongolia.

Material cost includes all material costs for three workshops.

The cost for meeting venue and reception have been covered by local authority.

2.7 Engaging Local Stakeholders in Assessing Vulnerability and Adaptation to Impact of Climate Change and Climate Variability in the Mekong River Basin

AIACC Project code :AS07

2.7.1 AS07 Background Information

Project Investigator:	Anond Snidvongs
Organization:	START South East Asia Regional Office , Thailand
Total Grant	\$ 15,000.00
Participating Countries:	Thailand, Lao PDR and Vietnam

2.7.2 Summary of accomplishments

The supplemental grant is planned to be used for engaging local stakeholder at the community level in order to gain first hand information from the local communities in the selected study sites regarding the impact of climate variability and how they might adapt to impact of climate change.

The engagement was conducted in 2 study sites as follows:

- Songkhone District, Savannakhet Province, Lao PDR
- Deth-udom and Najaluay District, Ubonratchathani Province, Thailand

The supplemental grant was also used in the follow up interview with community leaders and government officials in Long An Province, Vietnam.

The in-depth interview to assess socio-economic condition and direction toward the coping with climate impact was conducted at the farm level as follows:

- 160 households in Songkhone District, Savannakhet Province, Lao PDR

- 600 households in Deth-udom and Najaluay District, Ubonratchathani Province, Thailand

The assessment was successfully completed with full co-operation from the farmers as well as government officials in the study sites. Information has been gathered for further analysis, which is being analyzed to understand the impact on rain-fed farmer livelihood from climate impact on rice production.

This assessment may be considered as a test of engagement approach in 3 different study sites, in 3 different countries, where the social and economic background and condition are very much differ from each other.

In addition to the assessment, this activity had also raised awareness on climate change in the local community, which would support the objective of the Article 6 of the UNFCCC.

2.7.3 Activities

Completed:

- Assessment on vulnerability of community at the commune level which may caused by the change in future yield of rice production
 - Conduct field survey to assess the vulnerability from climate impact on rice production
 - Interviewing 160 farmer households in Songkhone District, Savannaket Province, central part of Lao PDR
 - Interviewing 600 farmer households in Ubonrachathani Province, North-eastern part of Thailand
 - Interview and discuss with selected study subjects on the issue of coping with climate impact
 - Focus group meeting with community leaders in 5 zones of the study site in Ubonrachathani Province, North-eastern part of Thailand
 - Visiting and interview community leaders and government official in Long An Province in Southern part of Viet Nam

Work in pipeline:

- Stakeholder meeting with community leaders and government officials in Savannakhet Province, central part of Lao PDR
- Analyze how the community in the study area are able to cope with the change in the yield of rice production from climate impact
 - Analyze socio-economic condition of the household in the study sites and ability to cope with climate impact that affect rice production base on field survey result.
- Formulate adaptation option(s), to be focused on:
 - Increasing of coping capacity of community to climate variability
 - Strategy for long term adaptation option to cope with impact of climate change

2.7.4 Participating organizations

The organizations participated in the activities under the support of this supplement grant are:

- Faculty of Agriculture, Ubonratchathani University, Thailand
- Faculty of Social Science, National University of Laos
- Provincial Agriculture and Forestry Organization (PAFO), Savannakhet Province, Lao PDR
- District Agriculture and Forestry Organization (DAFO), Songkhone District, Savannakhet Province, Lao PDR
- Sub-Institute of Hydro-Meteorological Institute of South Viet Nam, Ho Chi Minh City, Vietnam

Expected outcomes:

- Analysis of household economic condition in the study sites
- Analysis of role of rice production to support household livelihood
- Analysis of household coping capacity to climate impact on rice production
- Analysis of potential vulnerable group to impact of climate change
- Suggested adaptation options to climate change base on local opinion

2.7.5 Tasks to be completed

- Nov.04: Stakeholder meeting in Savannakhet - Lao PDR (Provincial Agriculture and Forestry Organization - PAFO & District Agriculture and Forestry Organization - DAFO & community leaders) to discuss on the climate risk analysis and adaptation option.
- Dec. 04: Final conclusion on vulnerability and adaptation to climate impact.

2.8 Capacity Building in Modeling of the Epidemiology of Dengue Fever

AIACC Project code: SIS06

2.8.1 SIS06 Background Information

Project Investigator:	Abraham Anthony Chen
Organization:	University of West Indies , Jamaica
Total Grant	\$ 15,000.00
Participating Countries:	Jamaica, Trinidad and Tobago

2.8.2 Summary of Accomplishments

1. A workshop with Dr. Dana Fock was held in Montego Bay, Jamaica, from June 28th to July 2nd, 2004. (These were the earliest dates suitable for Dr. Focks.)
2. A program for pupae survey was agreed on.
3. Areas for pupae survey were identified.
4. A workshop to train field officer was arranged, but postponed due to the passage of hurricane Ivan.

2.8.3 Description of Activities

Dr. Focks instructed 3 participants in the use of the dengue model, which is currently being used operationally in Indonesia. The participants looked at the CIMSiM (the

container-inhabiting mosquito simulation model) and DENSiM (dengue simulation model). The CIMSiM model is used to determine the most influential containers for the breeding of the mosquitoes. It tells which container over time would result in high numbers of emerging females. The outputs from CIMSiM are used as inputs for DENSiM. DENSiM allows simulation of dengue transmission from the inputs given.

Closer attention was paid to CIMSiM. The participants were familiarized with the databases of CIMSiM. This included daily weather information for different regions across the globe. The database also contained a biological profile for the *Aedes* mosquitoes, container types common to the various regions and location specific data. A thorough explanation was given for entering of the data. Simulations were carried out. It was explained how the results from the CIMSiM model are used as database for the DENSiM model.

Discussions were made on how to implement the model in Jamaica, how the information would be collected and entered into the model, and how to go about naming the location in such a manner to avoid confusion since the study would include many houses.

Dr. Fock also exposed the participants to the concept of pupae survey and transmission threshold. The meeting highlighted the importance of determining major container types responsible for breeding *Aedes aegypti* mosquitos, which are the vectors of dengue, with a view of implementing control measures for these types of containers. The need for conducting surveys for the wet season as well as the dry season was pointed out.

2.8.4 Pupae survey Program

Four parishes have been selected for the pupae survey and staff within each parish has been identified. A workshop is planned for these workers to train them in conducting the pupae survey. The actual pupae survey, originally scheduled for September (wet season), was postponed due to the passage of hurricane Ivan. The survey is now slated to begin in December (dry season) and to continue in June 2005 (wet season). The postponement will minimize any bias in the data that might resulted from persons having to store extra water after the passage hurricane Ivan and the resulting water shortage, which could show an increase in the number of containers with stored and collected water. By December, the situation should have returned to normal.

2.8.5 Identification of Persons, Organization

1. Ministry of Health, Jamaica – Medical Entomologist, Sherine Huntley
2. University of the West Indies, Mona – Dr. Dwight Robinson, Entomologist; Dr. Anthony Chen and Roxann Stennett, Climate Studies
3. Ministry of Health and University of the West Indies, Trinidad – Dr. Dave Chadee, Entomologist and Epidemiologist.

2.8.6 Self Evaluation.

The project got off to a late start due to the necessity of putting together a working team and the time constraints of Dr. Focks.

The objectives of training in the use of the dengue model were met. The model was thoroughly explained. The participants obtained hands on experience in the use of the model. The various parameters used were explained. For those parameters where values were assigned, its value system was explained. If manual calculation were needed to find a particular parameter, they were taught how to do it. The participants were also shown simulations for various countries. Simple mistakes which could result in errors were pointed out.

Planning for the pupae survey progressed satisfactorily. However due to the possibility of biases in data collection due to the passage of Hurricane Ivan, the execution of the survey has been postponed until December (for the dry season) and June 2005 (for the wet season).

2.8.6 Timetable

Dry season survey of pupae containers will be conducted in December, 2004

Wet season survey of pupae containers will be conducted in June, 2005

The dengue model will be run using the results of the pupae survey in July 2005

Final Report will be made in August 2005

2.8.7 Fiscal report

THE UNIVERSITY OF THE WEST INDIES
THE THIRD WORLD ACADEMY OF SCIENCES
SUPPLEMENTAL GRANT FOR CAPACITY BUILDING AND/OR
STAKEHOLDER ENGAGEMENT - AIACC PROJECT SIS08
STATEMENT OF EXPENDITURE FOR THE PERIOD
February 20, 2004 - September 30, 2004

PARTICULARS	BUDGET US\$	EXPENDITURE		BUDGET BALANCE US\$
		US\$	J\$	
Travel and Per Diem for Dr. Focks and a participant from Trinidad	4,000.00	4,629.29	284,398.42	(629.29)
Travel and Per Diem for local participants	2,000.00	530.76	32,710.25	1,469.24
Field trip expenses and materials	3,000.00	38.04	2,327.34	2,961.96
Student support	6,000.00	0.00	0.00	6,000.00
TOTAL	15,000.00	5,198.09	319,436.01	9,801.91

Bursary, Mona
October 22, 2004

APPENDIX 3

AIACC Supplemental Grants Program for Capacity Building and Stakeholder Participation Call for Proposals

Eligibility: **Only** Principal Investigators (PIs) of AIACC regional studies that have already received an AIACC award may apply for grants under this program.

Applications
Accepted: Beginning immediately.

Application
Deadline: June 30, 2004

Award
Amounts: Maximum award of \$15,000 to an AIACC study team.
Larger awards possible for joint proposals submitted by multiple teams.

Apply By: Email to <aiacc@agu.org>

AIACC participants are invited to submit proposals for assistance for activities that would (i) build scientific capacity for application in their AIACC regional study and/or (ii) enhance stakeholder engagement in their study. Proposals must be submitted by the study PI. Proposals will be reviewed and award decisions made as soon as feasible after receipt of a proposal.

Funding for this Supplemental Grants Program of the AIACC Project is provided by the United States Agency for International Development and the Global Environment Facility.

Up to \$15,000 is available to each AIACC regional study for supplemental grants. However, PIs may submit a proposal jointly with PIs from other AIACC studies for larger amounts for activities that would involve participants from multiple studies (e.g. a joint training program). Such joint proposals are particularly encouraged. Proposals are also encouraged that would increase the involvement of stakeholders in AIACC studies, result in incorporation of AIACC outputs in second national communications and establish links between research and policy communities that would endure beyond the AIACC Project.

Examples of activities that might be funded under this program include, but are not limited to:

- Development and implementation of an intensive training course in selected methods for participants from multiple AIACC study teams;
- Integration of AIACC study participants and AIACC results into national communications under UNFCCC;
- Develop and sustain a local or regional network of researchers, policy makers, resource managers and other stakeholders for dialogue about climate change vulnerabilities and adaptation responses;

- Site visits by team members to research institutions to work with other experts and gain expertise in methods, models, data analysis etc for assessment of climate change impacts, adaptations, and vulnerabilities;
- Site visits by outside experts (including but not limited to AIACC Mentors) to the home institution of an AIACC team to work with and/or train team members;
- Joint workshops with other AIACC project teams to share expertise and solutions to common problems, facilitate cross-project synthesis, and engage with policy makers and other relevant stakeholders;
- Workshops and other activities to engage stakeholders throughout the assessment process (e.g. to participate in definition of assessment objectives, design of assessment work plan, identification of climate related risks and information needs, identification and evaluation of adaptation options, communication and interpretation of preliminary and final results);
- Surveys, focus groups and other methods to solicit information and views from relevant stakeholders; and
- Participation in relevant training courses offered by other institutions;

Proposals to simply attend conferences will not be funded.

Proposals for AIACC Supplemental Grants will be reviewed by the AIACC Technical Committee. Criteria for evaluating proposals include:

- Anticipated benefit to junior scientists;
- Anticipated benefit to successful implementation of AIACC regional studies;
- Anticipated benefit to stakeholders and potential users of study results (for example, likely success in integrating AIACC results into national communications);
- Appropriateness of the requested budget for the proposed activities;
- Compliance of the regional assessment team with reporting and other requirements of their original AIACC grant.

Proposals should be brief (3 pages **maximum**) and should include:

- 1) Name of the PI(s)
- 2) AIACC Project code(s)
- 3) Amount requested
- 4) Proposed dates of activity
- 5) Main objectives and justification for the activity
- 6) Description of the activity (including numbers and names of participants if known)
- 7) Budget and budget narrative

Appendix 3

AIACC INFORMATION SURVEY #1 PROJECT PROFILE

The Center for Climate Systems Research (CCSR) at Columbia University, at the request of the AIACC Secretariat, is developing a database of the regional studies funded under the AIACC project. The database, which is to be accessible by the web, is a mechanism for sharing information and lessons learned across AIACC study teams as well as with persons outside the AIACC family about the activities, methods, tools, data and findings of your studies. It is intended to be a tool that will assist you during your project by informing you about the methods, tools and data being used by your colleagues working on similar problems. It is also intended to be a tool that will communicate information to other researchers and stakeholders so that they may learn about your activities in sufficient detail to evaluate the potential relevance of your activities to their own work. And finally, the database is intended to document the AIACC Project (what was done by each study, how it was done, and what was learned) and thereby facilitate summary and synthesis of the overall project.

Data will be collected in several stages. The following survey is the first stage and its purpose is to create a profile of the regional studies. This profile is to include information about the focus of each study, the tasks to be undertaken, the methods, data, models, tools and scenarios to be used, and key published references that are relevant to your work. Some of this information may be included in your work plan. However, many of the studies have revised their work plan. Also, many of the work plans do not include all the desired information, or provide it in formats that are not readily incorporated into a standard database. Hence the need for this survey.

In future stages, you will be requested to provide information about the datasets that you are acquiring or creating for your analyses and the results of your analyses.

Please note that the information that is being requested for the database is consistent with the information that you are expected to provide in your final project report to AIACC and your cooperation in providing this information now will aid you in preparing your final report.

The survey includes 13 questions. To assist you in responding to questions, explanatory notes (in boxes) are included with each group of related questions. If you are confused by any of the questions, please email Dr. Rosenzweig at the email address below specifying the question number. Where possible, we would appreciate it if you could complete the survey by directly typing responses into this Word document. Please send the completed survey to Dr. Rosenzweig by **22 November 2002**. *We thank you in advance for your time and attention!*

Dr. Cynthia Rosenzweig
Coordinator of the AIACC Data, Methods, and Synthesis Activity
NASA/Goddard Institute for Space Studies
Fax : +1 212 678 5648
Email : crosenzweig@giss.nasa.gov

Project Code: Project Principal Investigator: Project Name: Institution: Project Website (if available):
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A. INFORMATION ABOUT YOUR PROJECT

1. Sectors, Systems, Groups. Which sectors, systems and groups are you directly and primarily addressing in your regional study? Which sectors, systems and groups are you indirectly or secondarily addressing in your regional study?

Sectors, Systems, Groups. As projects are now underway, the direct and primary sectors, systems, groups may now be distinguished from the indirect and secondary ones. Please choose from the list below to answer question 1.

Sectors	Systems	Groups
<ul style="list-style-type: none"> • Agriculture (specify, e.g., crop production, livestock, plantation, mixed crop-livestock, etc.) • Forestry • Fisheries • Water resources • Tourism • Infrastructure • Other (please specify) 	<ul style="list-style-type: none"> • Regional economy • Human settlements (specify, e.g., urban, rural, coastal, mountain, floodplain, etc.) • Human health • Food security • Ecosystems (specify, e.g., grasslands, forests, estuarine, etc.) • Land use/land cover • Coastal zones • Biodiversity • Other (please specify) 	<ul style="list-style-type: none"> • Livelihood groups (specify, e.g., commercial farmers, subsistence farmers, herders, etc.) • Demographic groups (women, men, children, elderly, urban poor, rural poor, etc.) • Other (please specify)

1.a) We are directly addressing:

.

1.b) We are indirectly addressing:

.

2. Sources of Stress and Change. What are the primary sources of stress or change that you address in your study? What are the secondary sources of stress or change that you address in your study?

Sources of Stress and Change: Please choose from the list below to answer question 2.

- Climate change
- Climate variability and extremes (e.g. drought, floods, storms)
- Land use change
- Land degradation, desertification
- Population growth
- Economic growth
- Technological change
- Institutional change
- Other (please specify)

2.a) The primary sources of stress and change to be addressed are:

2.b) The secondary sources of stress or change to be addressed are:

3. Countries, Areas within the Countries, and Regional Country Groups. Which countries are the primary focus of your study? Which areas within the countries are you conducting case studies on? Is your study applicable to a larger region (i.e., a group of countries)?

3.a) The following countries are the primary focus of our study:

3.b) The following countries are the secondary focus of our study:

3.c) We are conducting case studies in the following areas of the countries:

3.d) Our study is applicable to the following regional country group (if any):

4. Work Plan. In a very concise form, please list the basic tasks that you are undertaking in your AIACC project. (A bulleted list of 5 to 12 tasks should be sufficient.)

We have the following three major tasks

5. Impact Analysis. Please answer the following questions about the analysis of biophysical and/or socio-economic impacts within your AIACC study.5.a) Briefly describe, in one or two paragraphs each, the general approach(es) to be applied in your project to evaluate the potential impacts of climate change, climate variability or extreme climatic events. Please specify the impacts to be investigated.

5.b) Please list and briefly describe (in 1 or 2 sentences) any models and software tools that you are using in your project to simulate impacts. Please also provide information on where and how the models/software can be obtained, including contact information and URLs as appropriate.

5.c) Please provide bibliographic details for the most relevant and useful references that describe the general approaches, models and software tools that you are using in your project for impact assessment (including manuals and tutorials for models and software). Please also provide contact information or URL for obtaining any of these materials if available and appropriate. If electronic copies of key references are available, please email them.

6. Vulnerability and Adaptive Capacity. Please answer the following questions about the analysis of vulnerability and adaptive capacity within your AIACC study.

Approaches to assess vulnerability and adaptive capacity include entitlements theory of A. Sen, political ecology approach of Bohle-Downing-Watts, coupled human-environment system approach of Kasperson et al., the Adaptation Policy Framework being developed by UNDP, and inverse analyses that seek to identify thresholds or coping ranges. Indicators and proxy variables, matrices, and mapping are tools that have been used to assess vulnerability and adaptive capacity. These are just some examples of approaches and tools that might be applied. Please specify and describe the approaches and tools that you will use.

6.a) Please briefly describe, in one or two paragraphs each, the approach(es) you are using to assess vulnerability and adaptive capacity. Please specify the groups, places or systems to be investigated.

6.b) List any indicators and proxy variables that you will use as measures of vulnerability and/or adaptive capacity.

6.c) Please list and briefly describe (in 1 or 2 sentences) any models and software tools that you are using in your project to evaluate vulnerability and adaptive capacity. Please also provide information on where and how the models/software can be obtained, including contact information and URLs as appropriate.

6.d) Please provide bibliographic details for the most relevant and useful references that describe the general approaches, models and software tools that you are using in your project for assessment of vulnerability and adaptive capacity (including manuals and tutorials for models and software). Please also provide contact information or URL for obtaining any of these materials if available and appropriate. If electronic copies of key references are available, please email them.

7. Adaptation Responses. Please answer the following questions about the analysis of adaptation responses (options, measures, strategies) within your AIACC study.

Adaptation responses might be actions taken by private individuals or groups, or actions or policies of public bodies. Adaptation responses to lessen vulnerability can be targeted at lessening exposure to stresses, lessening the sensitivities to stresses of exposed people or systems, increasing capacities to cope and adapt, and/or increasing resilience and recovery potential. Evaluation of adaptation responses can be based on observed or predicted effectiveness of options for achieving these objectives, the social, economic and environmental consequences of options, robustness of performance of options across a range of scenarios, feasibility of implementing options, potential contributions to or integration with development goals, and/or sustainability of options. Multi-criteria, benefit-cost analysis, and other methods can be used. These are just some examples of approaches and tools that might be applied. Please specify and describe the approaches and tools that you will use.

7.a) Please briefly describe, in one or two paragraphs, the approach(es) you are using to evaluate adaptation responses. Please specify the criteria to be used to evaluate adaptation responses. Please specify the types of adaptation responses to be investigated.

7.b) Please list and briefly describe (in 1 or 2 sentences) any models and software tools that you are using in your project to evaluate adaptation responses. Please also provide information on where and how the models/software can be obtained, including contact information and URLs as appropriate.

7.c) Please provide bibliographic details for the most relevant and useful references that describe the general approaches, models and software tools that you are using in your project for assessment of adaptation responses (including manuals and tutorials for models and software). Please also provide contact information or URL for obtaining any of these materials if available and appropriate. If electronic copies of key references are available, please email them.

8. Scenarios of future climate conditions. Please answer the following questions about the construction of climate scenarios for use in your AIACC study.

Climate scenarios can be developed from projections of General Circulation Models (GCMs) or as sensitivity or synthetic scenarios. The spatial resolutions of GCM projections are generally too coarse for regional assessment of impacts and vulnerability and methods are needed to “downscale” the GCM projections to finer resolutions. This might be done by simply using GCM projections of changes in climate variables, or interpolated changes, to scale finer-scale gridded or station data, by using statistical downscaling techniques, or by dynamical downscaling with regional climate models. Synthetic scenarios are useful for investigating thresholds and coping ranges to better understand vulnerabilities and adaptive capacities with respect to different magnitudes and types of stress. They are also useful as a diagnostic tool for evaluating model responses or sensitivity to climate perturbations.

8.a) Briefly describe, in one or two paragraphs each, the general approach(es) that you will take to develop climate scenarios for use in your project.

8.b) Please identify the climate variables and phenomena (e.g. storm intensity and/or frequency, sea level rise) that are to be included in your scenarios, the time steps (e.g. monthly averages, daily, other), the time horizon (e.g. present to 2100, 2010-2039, 2040-2069, etc.), and spatial resolution (e.g. 0.5 x 0.5 degrees; 50 km sq.).

8.c) Please identify the time period of observed climate that is to be used as the baseline climate (e.g. 1961-1990, 1971-2000, etc).

8.d) If sensitivity scenarios of climate change (sometimes called synthetic scenarios) are to be used, please describe these scenarios (e.g. annual uniform warming of 2°C and no change in precipitation in 2050s; warming of 2°C and 5% increase in precipitation in 2050s; 20% increase in severity of 100-year flood by 2050s, etc).

8.e) Please identify, if relevant, the greenhouse gas emission scenarios for which climate scenarios will be developed (e.g. SRES A1FI, A1B, A1T, A2, B1, and/or B2, IS92 scenarios, other)?

8.f) Please identify, if relevant, the General Circulation Model (GCM) experiments to be used as inputs to development of your regional climate scenarios. (There are multiple versions of many of the GCMs and multiple experiments available from each version, so please provide sufficient information to unambiguously identify the experiments that you will use).

8.g) Please list and briefly describe any models or software tools that you are using to downscale GCM results for your study area. Please also provide information on where and how the models/software can be obtained, including contact information and URLs if appropriate.

8.f) Please provide bibliographic details for the most relevant and useful references that describe the general approaches, models and software tools that you are using in your project for development of climate scenarios (including manuals and tutorials for models and software). Please also provide contact information or URL for obtaining any of these materials if available and appropriate. If electronic copies of key references are available, please email them.

9. Scenarios of future socio-economic and environmental conditions. Please answer the following questions about the construction of socio-economic and environmental scenarios for use in your AIACC study.

Scenarios for your study might be based upon global or regional projections of social, economic and environmental conditions or variables, national or more local projections, or a mixture of scales. Sensitivity scenarios for social, economic and environmental conditions might also be used. One source of global and regional socio-economic projections is the IPCC Special Report on Emission Scenarios (SRES), with regional down-scaling provided by CIESIN. The A1FI, A1B, A1T, A2, B1, and B2 scenarios were developed to represent differing future trajectories of the main demographic, economic, and technological driving forces of greenhouse gases and sulphur emissions.

9.a) Briefly describe, in one or two paragraphs each, the general approach(es) that you will take to develop scenarios of future socio-economic and environmental conditions. In your description, include description of key assumptions or “storylines” for each scenario.

9.b) Will scenarios of social, economic and environmental conditions be constructed so as to be consistent with the climate scenarios to be used in your study? If yes, briefly explain how this consistency will be achieved.

9.c) Please identify the social, economic and environmental variables that are to be included in your scenarios, the time steps for each (annual, seasonal, other), time horizon, and spatial resolution (national, state, 0.5 x 0.5 degree grid, other).

9.d) Please identify, if relevant, any projections of social, economic or environmental variables that have been developed by others and which will be used in the development of scenarios for your project. For example, will you be using any of the IPCC SRES projections?

9.e) Please list and briefly describe any models or software tools that you are using to generate scenarios of social, economic and environmental variables. Please also provide information on where and how the models/software can be obtained, including contact information and URLs if appropriate.

9.f) Please provide bibliographic details for the most relevant and useful references that describe the general approaches, models and software tools that you are using in your project for development of socio-economic and environmental scenarios (including manuals and tutorials for models and software). Please also provide contact information or URL for obtaining any of these materials if available and appropriate. If electronic copies of key references are available, please email them.

10. Stakeholder Involvement, UNFCCC National Communication Activities, and Interaction with Other International Scientific Activities.

Stakeholders can fall into many different categories or levels. Stakeholders can be the farmers or households that are directly participating in the study. They can also be local or municipal/commune-level authorities that make decisions about natural resource management, human health issues, disaster planning, infrastructure development, economic development, etc. At a larger scale, stakeholders can be national or regional level focal points, planners, and decision-makers. Each AIACC project should seek to interact with and contribute to UNFCCC National Communication activities.

10.a) What are the stakeholder groups that you intend to engage in your study?

10.b) Exactly how do you plan to engage each of these stakeholder groups throughout your project?

10.c) What steps are you taking to interact with and contribute to UNFCCC National Communication activities in the countries that are the primary and secondary focus of your project?

10.d) Does your AIACC study directly contribute to or participate in any other international scientific activities (e.g. Millenium Ecosystem Assessment or

core projects of International Geosphere-Biosphere Program (IGBP), World Climate Research Program (WCRP), International Human Dimensions Program (IHDP), DIVERSITAS, etc.)? If yes, please briefly describe the relationship.

11. Project Data

11.a) Please list global and regional datasets that you are using. These will be helpful for AIACC participants or other researchers. Please provide relevant URLs.

12. On-line Information and Library

12.a) Please list and provide URLs of websites that have been particularly helpful for your study and that other AIACC participants are likely to find useful. Please provide a very short (one sentence) description of what the website provides.

12.b) Do you maintain a website for your AIACC study, or does your institution have a general information website, that you would like to have linked to from the AIACC website? If yes, please provide the URL(s).

12.c) Please list publications or scientific papers that you consider most relevant and useful to the assessment of climate change impacts, adaptation and vulnerability in your region or sectors that you have not listed in response to previous questions. Please provide URL (web address) or other contact information for obtaining copies. If electronic copies are available, please email them.

13. Your Input, Comments and Suggestions

13.a) What suggestions do you have for the content or structure of the AIACC database and website that would make these tools useful to your work?

APPENDIX 5

AIACC INFORMATION SURVEY #2 PROJECT SYNTHESIS

At the request of the AIACC Secretariat, The Center for Climate Systems Research (CCSR) at Columbia University and CIESIN have developed a Data, Methods, and Synthesis (DMS) database of the regional studies funded under the AIACC Project. The database is accessible by the world-wide web (<http://sedac.ciesin.columbia.edu/aiacc>). The website/database is intended to document the AIACC Project (what has been done by each study, how it was done, and key lessons learned) and thereby facilitate synthesis and summary of the research.

In the first stage of the DMS, profiles of the regional studies were created based on survey responses provided by all AIACC teams. This second stage focuses on the synthesis of the results of the individual studies and the overall AIACC project.

The main goal is to produce information about the capacity of different communities and systems/sectors to adapt, which can then directly contribute to the development of relevant adaptation strategies. A key part of the AIACC projects is the involvement of stakeholders in their assessment processes. Thus, you are part of the second generation of climate change impact assessments, which are characterized by placing vulnerability and adaptation at the center of the assessment. The project investigators' responses to the Synthesis Survey will be analysed to provide information about:

- Characterization of vulnerability
- Evaluation of the capacity to adapt
- Role of decisionmakers and stakeholders in adaptation
- Contribution to the National Communications and to planning adaptation actions

Please note that the information that is being requested for the Synthesis Survey is consistent with the information that you are expected to provide in your final project report to AIACC. Your cooperation in providing this information now will aid you in preparing your final report.

The survey includes nine groups of questions. To assist you in responding to the questions, an example is provided for each group. If you are confused by any of the questions, please email Dr. Rosenzweig at the email address below specifying the question number. Where possible, we would appreciate it if you could complete the survey by directly typing responses into this Word document. Please send the completed survey to Dr. Rosenzweig by 1 June 2004. We thank you in advance for your time and attention!

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1. IDENTIFICATION OF EACH VULNERABLE SYSTEM / GROUP

The AIACC projects are focusing on vulnerability and adaptation across a wide range of systems and groups. Since each project may be focussing on one or more systems and groups combinations, the essential first step for characterising vulnerability and adaptation is to identify the focus of each vulnerable system and group in the AIACC projects. Initially, the results of the first AIACC Survey identified broad categories of sectors/systems³ (i.e., biodiversity, coastal regions, disasters, food security, human health, pastoral systems, water resources, and regional economy), and groups (i.e., resource managers, rural and urban poor, subsistence farmers and fishermen, commercial farmers, tourism workers, and women). Your responses in this Second Survey will contribute to further define the focus of the vulnerable systems/groups. Please define the focus of your project and complete questions 2 to 10 for each system and group studied.

1.1. Which are the system(s) and group(s) that your project focuses on?

<i>Example: Subsistence farmers on rain-fed farms in the semi-arid zone.</i>
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1.2. Please add the any information you consider necessary to characterize the vulnerability system and group in your study

2. CHARACTERIZATION OF THE CURRENT CLIMATE SENSITIVITY

This section focuses on the climate sensitivities, observed, impacts and coping measures that are currently used. Vulnerability and adaptive capacity to future climate change are considered in sections 5 and 6 of the survey.

Sensitivities of systems and groups to the ranges of climate variability and the frequencies and magnitudes of extremes to which they are presently or recently exposed are indicators of potential future vulnerability to climate change. Please answer the questions about current system sensitivities, impacts and means of coping in this section for each of the systems/groups that you have studied.

³ Henceforth we will refer to “sectors/systems” simply as “systems.”

2.1. What activities of the system/group are particularly sensitive to variations or changes in climate and to which climate variables or phenomena are these activities most sensitive?

Example: Food production and household food supply of subsistence farmers is particularly sensitive to variations in the starting date of rains; prolonged dry period during growing season; precipitation during growing season; maximum temperatures during growing season; excessive rainfall at harvest time; frequent/recurring drought. Off-farm income is sensitive to frequent/recurring drought.

2.2 What range of variations and/or trends in these climate variables and phenomena have been observed in recent decades?

Example: Drought episodes have increased in both intensity and duration; the conclusions are based in the statistical analysis of the time series of monthly precipitation.

2.3. What are the observed effects of these past changes and variations in climate?

Example: Rainfall was x% below 30-year average for the period of 1992 to 2003. During these years, periods of prolonged dry spells (x days or more) increased in frequency and the years 1999, 2002 and 2003 were years of severe drought. Crop yields during this dry period were x% below average and in the years of severe drought yields were decreased y% and more. Problems exacerbated by decreases in non-farm income and higher food prices. Period of extended dryness and low yields resulted in households depleting assets such as food stocks and livestock. Hunger and malnutrition known to have been increased in this period but not quantified. There was a net migration from the rural areas to urban areas of x% of the population, part of which is attributable to effects drier climate and droughts and part attributable to other economic and social forces.

2.4. What measures for coping with changes or variations in climate has the system and group used in the past and how effective have these measures been?

Example: Cultivation of crop x increased and cultivation of crop y decreased during dry period. Households with access to multiple plots discontinued cultivation of steeply sloped plots and focused their labour on less steeply sloped and lower elevation lands. These measures were minimally effective in the non-drought years but widely unsuccessful in the severe drought years. Attempts to find local off-farm income not effective due to depressed local economy. Members of some households migrated to urban areas to find other income sources. International food aid was provided to the region in the worst drought year, 2002.

2.5. Please add the any information you consider necessary to characterize the current climate sensitivity that affects the vulnerable system and group in your study

3. DEFINING THE SCENARIOS OF FUTURE CLIMATE CHANGE

3.1. What are the main features of the climate change projections in the region of your study?

Example: Projections of temperature increases for the region are slightly higher than the global average temperature increase for most models. The range of scenarios projects temperature increase of x to y °C by the 2020s, x to y °C by the 2050s, and x to y °C by the 2080s relative to the average for 1960-1990. Projected changes in precipitation and soil moisture in the region range from increases to decreases. But the majority of scenarios are of a drier climate in the region that is prone to more frequent drought than the present climate.

3.2. Have you identified other studies in the region that have utilized other climate projections? If so, how do the climate projections differ? Please provide full citations for other studies.

3.3. Please add the any information you consider necessary to characterize the scenarios of future climate change that may affect the vulnerable system and group in your study

4. POTENTIAL IMPACTS OF FUTURE CHANGES OR VARIATIONS IN CLIMATE

In this section, information is requested about projected or estimated impacts from future changes in climate. In your responses, please specify the time horizon for the estimated impacts and the corresponding changes in the climate variables/phenomena that are the most important determinants of the estimated impacts.

4.1. What are the main physical and biological impacts of the climate change projections on the system and group?

Example: Decreased crop yields of up to 40% in the 2050s for a scenario that include a 10% decrease in precipitation and an increase of 2°C in the growing season temperature; increased crop yields of up to 10% for a scenario that include increased precipitation by 30% and temperature increases of less than 2°C during the growing season. Increased risk of crop failure for some subsistence farmers for the hotter and drier scenarios; decreased risk of crop failure for less hot and wetter scenarios. These results take into account effect of CO₂ on yields.

4.2 What are the main human and social impacts of the climate change projections on the system and group?

Example: The results of the examples provided in Box 4.1 may result in increased

number of people at risk of hunger and derived health effects related to malnutrition; depleted household assets; reduced farm income.

4.3. Have you identified other studies in the region that project impacts for the same system/group? If so, do the projected impacts differ? How? What would account for the differences? Please provide full citations for these other studies.

4.4. Please add the any information you consider necessary to characterize the potential impacts of future changes or variations in climate in the vulnerable system and group in your study

5. EVALUATION OF ADAPTIVE CAPACITY

By examining the resources (economic, social, and governance) presently or potentially available to a community, one can assess its capacity to adapt to climate variability and change.

5.1. What are current capacities to develop adaptive strategies for coping with climate variability and extremes? What capacities are lacking in regard to existing climate variability and extremes?

Example : Insurance program for coastal storm damage; Public health disease prevention program; National/state water plan with drought contingency.

5.2. What lessons can be learned from current adaptive capacity and adaptation strategies that can be applied towards adaptation to future climate change?

5.3. What adaptation measures were evaluated in your project? Please fill out the Table below for each adaptation measure and make additional comments as needed.

Description of the measure:	
Characteristics of the measure	Comments
Description of the measure	
Who would implement	
Resources needed to implement	
Capacity of the actor(s) to implement	
Potential obstacles to implementation	
Benefits	
Key uncertainties	

5.4. Have you identified other studies in the region that evaluate adaptation measures for the system/group of study? If so, do their conclusions differ from yours? How? What would account for the differences? Please provide full citations for the other studies.

5.5. What methods did you find most effective to evaluate adaptive capacity?

5.6. Please add the any information you consider necessary to characterize the adaptive capacity of the vulnerable system and group in your study

6. CHARACTERIZATION OF VULNERABILITY

6.1. How would you characterize the vulnerability of the system/group?

Example: Subsistence, rain-fed farmers of this semi-arid region are highly vulnerable to decreases in average rainfall and to recurrent drought. In years with +/- 10% of average rainfall, most subsistence farmers are able to feed their families without supplementing their food sources from off their farms and can maintain current stocks of household assets. Years of rainfall deficits greater than 10% create substantial pressures on many of subsistence farming households. In such years, most households must supplement their food sources from off their farms, but opportunities for off-farm income are depressed in dry years and food prices higher. Many resort to selling livestock and other assets. In years of severe drought, many experience hunger and diminished health status, with females and children facing particular deprivations. If a drought year is followed by three or more years of near normal rainfall, most households recover to their previous though low level of well-being. But droughts that are more frequent than one year in four would deplete the resources of many subsistence farm households faster than they can be rebuilt.

6.2 In your study, what methods and indicators did you use to assess vulnerability? What advantages and limitations did you find for each method or indicator used?

6.3 To what aspects of climate variability and change is the system/group most vulnerable?

6.4 What non-climate factors are expected to have important influences on future vulnerability and impacts?

Example: General economic decline of the region has substantially weakened the capacity of small and subsistence farmers to cope with and adapt to climate change and variability. Future economic performance of the region is uncertain, but improving. There are significant questions, however, about the participation of subsistence farming households in future economic gains. Economic trade liberalization is having substantial and varied effects. Subsistence farmers may benefit from lower food prices, but lower commodity prices may depress the agricultural economy of the region. HIV/AIDS infection rate is moderate in comparison to adjacent countries, but if area follows trends of these adjacent countries HIV/AIDs will add to the general vulnerability of households in the region.

6.5 Have you identified other studies in the region that characterize vulnerabilities of the same system/group? If so, do their conclusions differ from

yours? How? What would account for the differences? Please provide full citations for other studies.

6.6 Have you consulted with stakeholders that represent the vulnerable group? If so, how did you go about doing that and what were the results?

6.7. Please add the any information you consider necessary to characterize the vulnerability of the system and group in your study

7. ROLE OF DECISIONMAKERS AND STAKEHOLDERS IN ADAPTATION

Decision makers and stakeholders will determine the actual adaptation strategies based on the opportunities for, impediments to, and effectiveness and costs of adaptation. Engaging stakeholders in evaluating adaptation choices contributes to ensuring credibility and relevance to their needs.

7.1. What stakeholders will/could use information from your study? For what purposes?

7.2. What information do they need? How did you determine their information needs?

7.3 How are you communicating information with relevant stakeholders?

7.4. What approaches have you used to engage stakeholders in your project? For what purposes? How effective have the approaches proved?

7.5. Please add the any information you consider necessary to characterize the role of decisionmakers and stakeholders in adaptation relevant to the vulnerable system and group in your study

8. CONTRIBUTION TO THE NATIONAL COMMUNICATIONS AND TO PLANNING ADAPTATION POLICIES AND ACTIONS

8.1 How is the study contributing to the UNFCC National Communication?

8.2 How is the study contributing to planning national or within-country adaptation policies?

8.3 How is the study contributing to planning multi-country regional adaptation policies?

8.4. Please add the any information you consider necessary to characterize the contribution of your study to the National Communications and to planning adaptation policies and actions in your country or region

9. WHAT FINDINGS DO YOU THINK WILL CONTRIBUTE TO THE ADVANCEMENT OF THE KNOWLEDGE ABOUT IMPACTS, VULNERABILITY, AND ADAPTATION TO CLIMATE CHANGE?

*Please provide a list of the key quantitative and qualitative findings that are relevant in advancing the understanding of the impacts, vulnerability and adaptation to climate change. Two kinds of information may be highlighted: (1) **Analyses** – produced through use of project methods such as vulnerability indicators, coping capacity, scenario analyses, or water-resource modeling. (2) **Stakeholder Insights** – key findings derived primarily through interactions with stakeholders in the course of the project. You may provide any or all of these types of findings.*

Your Project's Systems/Sectors /Groups(1)	Type of Information	Project Findings
(1) Food Security in subsidence populations in rainfed areas; Floods in low income coastal urban populations; etc.		

10. ADDITIONAL INFORMATION

Please add any information you consider necessary relevant to your study that contributes to the synthesis and understanding of the impacts, vulnerability and adaptation of climate change.