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SERVIR GLOBAL

NASA

SERVIR and AGRICULTURE

Agriculture. Climate change, extreme events, and development pressure are placing increasing stresses on agriculture. Flood, drought, frost, pests, and severe storms can devastate a region's food supply. In support of food security, SERVIR helps local officials monitor and predict extreme events and other factors potentially impacting plant health and crop yields, so they can manage risks and improve productivity and food security.

SERVIR connects space to village by making geospatial information, including Earth observation data from satellites, Geographic Information Systems, and predictive models useful to developing countries. SERVIR is a joint development initiative of NASA and USAID, working in partnership with leading regional organizations around the globe. SERVIR helps those most in need of tools for managing climate risks and land use.

SERVIR global hubs include:

- SERVIR-Eastern and Southern Africa, hosted by the Regional Centre for Mapping of Resources for Development (RCMRD)
- SERVIR-Himalaya, hosted by the International Centre for Integrated Mountain Development (ICIMOD)
- SERVIR-Mekong, hosted by the Asian Disaster Preparedness Center (ADPC). Launched October 2014.

JOHN WINNIE JR. WCS-AFGHANISTAN

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SERVIR places science in the service of society by building the technical capacities of regional organizations with an established track record of working with governments and communities to apply geospatial tools at the local and regional levels. Through the SERVIR network, experts at SERVIR regional hubs partner with local decision-makers and local and US-based scientists to create new datasets, maps, and decision-support tools that answer critical development questions. SERVIR hubs also provide training to build capacity in local institutions for evidence-based decision-making to meet societal needs.

Safeguarding Agriculture

Advanced Weather Forecasting

Increasingly accurate weather forecasts provide local officials with advance warning for extreme events such as violent storms or heavy rainfall. Using satellite data and products for sea surface temperature estimation, changes in vegetation cover, and soil moisture, scientists have created a more precise Weather Research and Forecasting model. During CATHALAC's partnership with SERVIR, they began using this model to more accurately forecast weather in the region, benefiting agriculture, food security, and disaster preparedness.

adpc RCMRD ICIMOD

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When the Kenya Meteorological Department needed satellite data to improve their Weather Research and Forecasting model, they turned to SERVIR-Eastern and Southern Africa. NASA satellite data provide high-resolution measurements of surface vegetation and soil moisture to help forecasters predict where and when it will rain and estimate the potential intensity of coming rainstorms. With NASA's satellite data, Kenya's meteorologists are strengthening their numerical prediction capabilities and increasing the accuracy of their weather forecasts, creating a more effective early-warning system for drought and flood, and advancing food security and disaster preparedness.

Frost Monitoring and Forecasting

An early frost can be devastating to farmers. In East Africa, for example, frost has caused millions of dollars in damage to crops such as tea and coffee. With advance warning, farmers can pick early to protect their harvest. Kenya's Ministry of Agriculture asked SERVIR-Eastern and Southern Africa to build their capability to identify frost-impacted areas and measure ground temperatures to determine, within a 72-hour window, where frost is likely to occur. SERVIR's Frost Monitoring and Forecasting application uses satellite data to assess frost-damaged areas in Africa. Satellites monitor nighttime land surface temperatures to enable the mapping of areas impacted by frost. The program also provides daily emails with color-coded display map updates of frost locations to the Ministry of Agriculture and Kenya Meteorological Department. Soon, Weather Research and Forecasting predictions will be added to show areas of potential frost up to three days in advance, and an insurance company is interested in using the tool to inform a frost insurance product.

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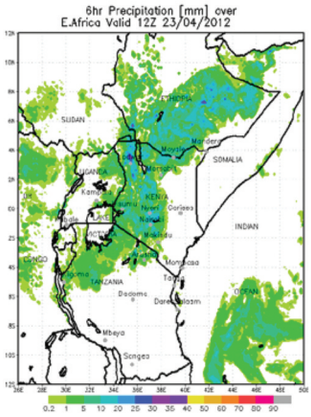

KMD

SERVIR tools improve Kenya Meteorological Department's numerical prediction models.

Assessing Drought and Agricultural Productivity

Drought is increasing in many parts of Africa, affecting millions of people, threatening lives, livelihoods, and access to food. Comprehensive estimates of rainfall variations are key to drought early-warning and environmental monitoring. In the Greater Horn of Africa, in collaboration with FEWS-NET, a SERVIR project has produced a 30-year record of regional rainfall estimates to analyze how precipitation patterns may be evolving as a result of climate change. In four nations of eastern Africa, another SERVIR project is using Earth observation datasets, climate change scenarios, and a hydrological and crop modeling system to provide drought assessments and maps projecting agricultural productivity. Local officials will be able to use this information to mitigate drought's impact on agriculture.

In Nepal, SERVIR-Himalaya is developing a crop yield estimation tool with historical vegetation growth data. The analysis compares recent vegetation growth with historical patterns to predict whether crop yields will be greater or lower than average.

SERVIR strengthens the ability of governments and other development stakeholders to incorporate Earth observations and geospatial technologies to respond to natural disasters, improve food security, safeguard human health, manage water and natural resources. Improved management of natural resources also helps to identify opportunities to improve economic growth while lowering greenhouse gas emissions and building resilience to climate change.

FIND OUT MORE AT
www.servirglobal.net