

## Monitoring the Water Cycle in the Arab Region Using NASA Satellite and Data Assimilating Model Technology

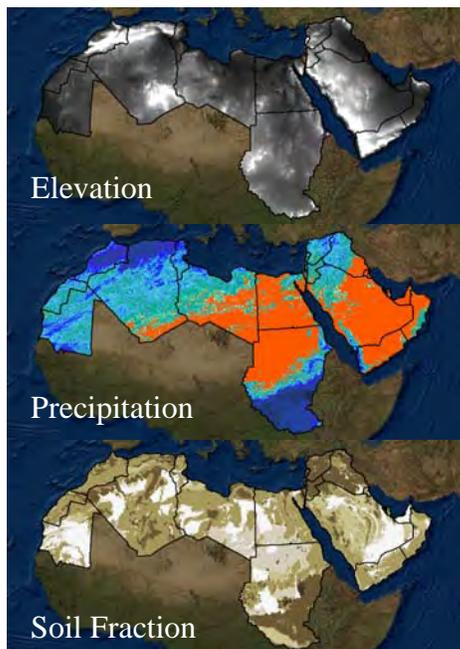
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The USAID / Office of Middle East Programs (OMEP) have funded this regional effort led by scientists at NASA/Goddard Space Flight Center (GSFC). The main purpose of this project is to provide regional, gridded fields of hydrological states and fluxes relevant for water resources assessments by configuring and delivering a Land Data Assimilation System (LDAS) for the MENA region.

The Arab region of Northern Africa and the Middle East suffers from arid conditions, dense population, and inefficient use of fresh water resources. In order to utilize the existing resources more efficiently, it is necessary that all nations within the Arab region have optimal estimates of hydrological states and fluxes. This project is envisaged to achieve these goals by providing a LDAS designed specifically for the Arab region using NASA satellite data, surface observations from Arab countries, and publically-available meteorological analyses to drive a suite of advanced land surface models. To this end, the Arab LDAS will serve several functions that are consistent with USAID/OMEP goals for the region:



- It will improve water managers' ability to monitor changes in water availability, including surface- and ground-water storage, river runoff, and related land use changes;
- It will provide a tool for predicting the regional hydrological impacts of climate change scenarios; and



- It will provide a platform for cooperation and data sharing among nations.

Specific applications would include coordinated management of transboundary water resources, estimating the recharge rates of oversubscribed shared aquifers, and optimizing the response to droughts and floods on the regional scale.

The Arab LDAS will be developed in collaboration with a regional water association such as the Arab Water Council (AWC), and/or with national water agencies in Arab countries. Sustainability will be achieved by training professionals from the region and transferring the model to a regional water partner and/or to technical units within each country.

Drs. John D. Bolten and Matthew Rodell are the lead scientists on the project. Other collaborators include the World Bank and scientists from the US Department of Agriculture, University of Wisconsin, Johns Hopkins University, and University of California - Irvine.