Overview of USAID-World Bank-NASA collaboration to address Water Management Issues in the MENA Region

Shahid Habib
NASA Goddard Space Flight Center
Earth Sciences Division
Greenbelt, Maryland, USA
e-mail: shahid.habib@nasa.gov
Phone: 1-301-614-5575

The World Bank, USAID and NASA have recently established a joint project to study multiple issues pertaining to water related applications in the Middle East North Africa (MENA) region. The main concentration of the project is on utilization of remote sensing data and hydrological models to address crop irrigation and mapping, flood mapping and forecasting, evapotranspiration and drought problems prevalent in this large geographic area. Additional emphases are placed on understanding the climate impact on these areas as well. Per IPCC 2007 report, by the end of this century MENA region is projected to experience an increase of 3°C to 5°C rise in mean temperatures and a 20% decline in precipitation. This poses a serious problem for this geographic zone especially when majority of the hydrological consumption is for the agriculture sector and the remaining amount is for domestic consumption. The remote sensing data from space is one of the best ways to study such complex issues and further feed into the decision support systems. NASA's fleet of Earth Observing satellites offer a great vantage point from space to look at the globe and provide vital signs necessary to maintain healthy and sustainable ecosystem. These observations generate multiple products such as soil moisture, global precipitation, aerosols, cloud cover, normalized difference vegetation index, land cover/use, ocean altimetry, ocean salinity, sea surface winds, sea surface temperature, ozone and atmospheric gasses, ice and snow measurements, and many more. All of the data products, models and research results are distributed via the Internet freely through out the world. This project will utilize several NASA models such as global Land Data Assimilation System (LDAS) to generate hydrological states and fluxes in near real time. These LDAS products will then be further compared with other NASA satellite observations (MODIS, VIIRS, TRMM, etc.) and other discrete models to compare and optimize evapotranspiration, soil moisture and crop irrigation, drought assessment and water balance. The floods being a critical disaster in many of the MENA countries, NASA's global flood mapping and modeling framework (CREST) will be customized for country specific needs and delivered to the remote sensing organizations for their future use. Finally, capacity building is a critical part of this project and NASA will assist in this effort as well.