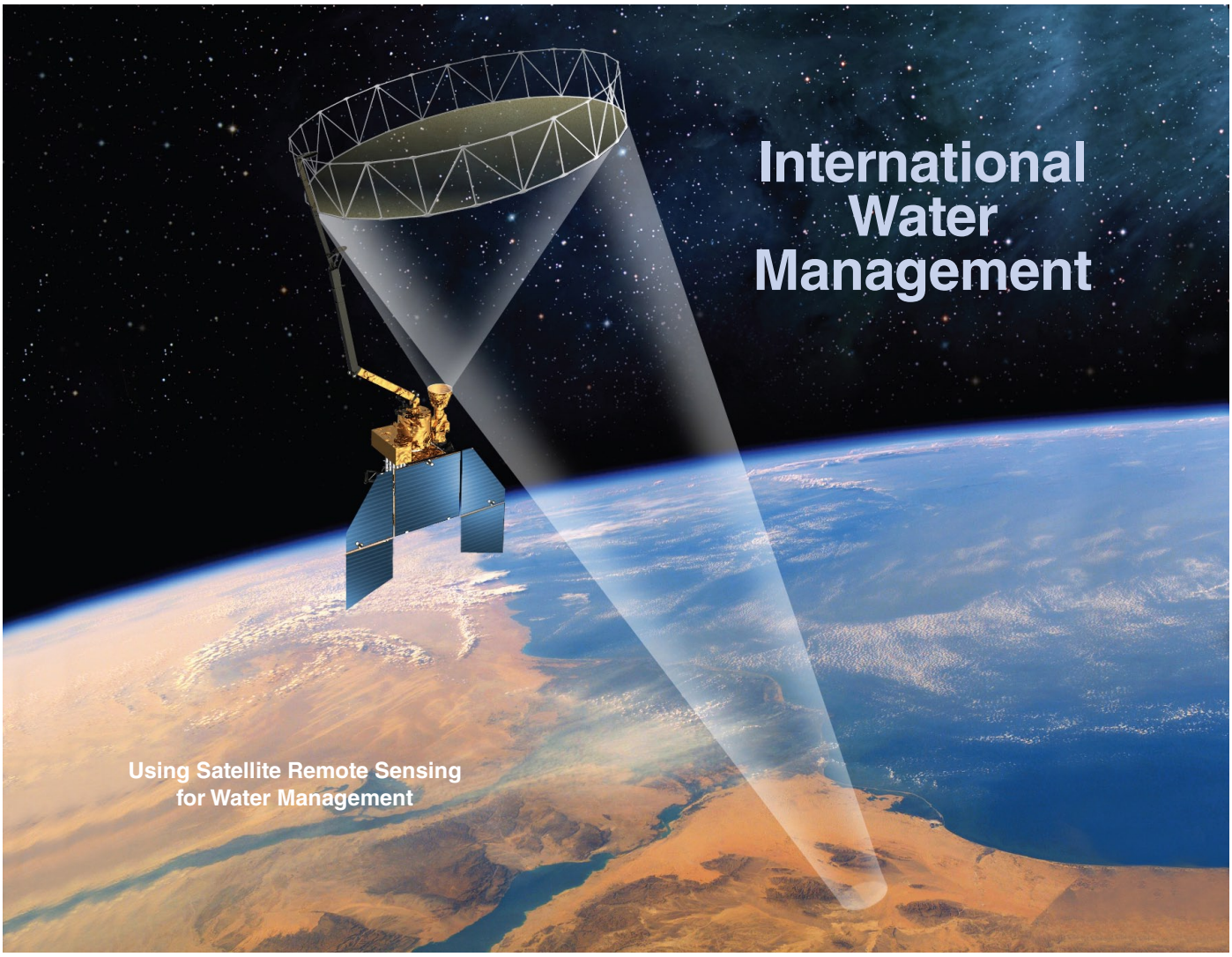
REMOTE SENSING & TECHNOLOGY FOR INTERNATIONAL WATER MANAGEMENT

NASA Applied Sciences Program: Including Water Resources, Natural Disasters, Agriculture, and Ecological Forecast



NASA's Applied Sciences Program delivers satellite-based and modeled data to water managers, researchers, and communities throughout the world, especially benefiting developing nations and data limited regions.

- Approximately $1.7B of the FY09 NASA budget supports Earth science technology, research, and applications.
- NASA and Earth observing remote sensing based observations are valuable to developing countries with sparse *in situ* data. NASA tools for combining satellite data with existing *in situ* networks can effectively fill observational gaps and are powerful for decision makers.
- NASA strongly supports a free and open exchange of its Earth science and satellite data throughout the world.
- The invaluable Earth and related information—satellite data, tools, ground measurements, and models—provided by NASA is a vital resource for addressing societal benefits such as:
  - water resource planning and management,
  - famine early warning and drought monitoring & prediction for food security,
  - disaster management including floods and landslides, and
  - water quality and transboundary water issues.

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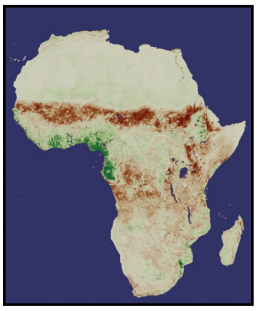
Famine Early Warning System

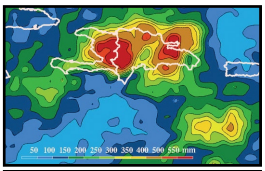


1984 Africa Drought Anomaly

NASA provides critical information such as near real-time precipitation, lake level, and vegetation information to the USAID-sponsored Famine Early Warning Systems Network relevant to crop production, rangeland condition, and food security. NASA products and technology are helping FEWS NET expand its service from 21 countries to numerous additional developing countries.

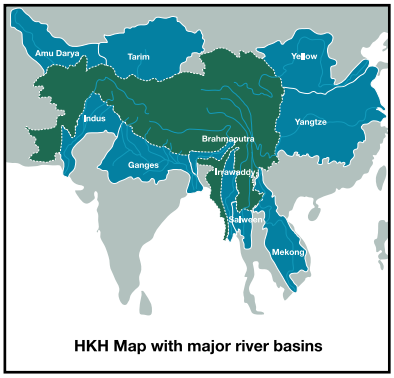
Global Rains, Floods, & Landslides

Floods and associated rainfall-driven landslides account for the largest number of natural disasters. NASA satellite data on rainfall and surface characteristics are used to inform, understand, and predict flood and landslide hazards globally. The goal is to produce operational systems providing near real-time data.



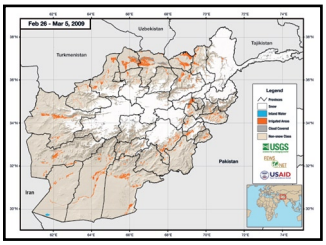
Credit: Philip Wilmane/ACTLWF Trevo

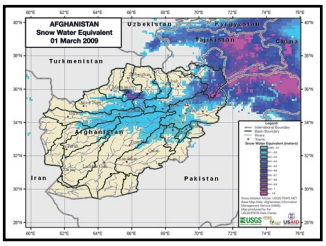
HIMALA: Climate Impacts on Glaciers in the Himalaya Region



HKH Map with major river basins

This project uses NASA's satellite remote sensing and modeling to focus on climate and water resources in Himalayan glacier-fed rivers in Asia. The objectives of HIMALA are to provide potable and integrated water resources management information and projections of climate change impacts.

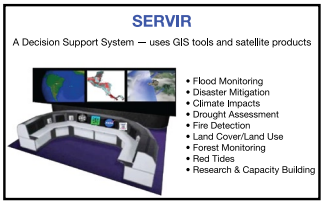




MENA Regional Water Assessment

Water Management Platforms

NASA, in collaboration with USAID and the World Bank, is developing remote sensing and Earth Science data platforms in water critical parts of the world, i.e., the Middle East and North Africa (water availability, agriculture & aquifer monitoring). These will address a multitude of issues dealing with water resources, aquifer & streamflow transboundaries, agriculture planning, flood management and early warning, and overall water balance. With these data, decision makers will be better able to address these issues in the future.



On the Web

Water Resources http://wmp.gsfc.nasa.gov/
Applied Science http://appliedsciences.nasa.gov/

Summary of Additional NASA Water International Projects

REGION	ACTIVITY
World	Lake Level Monitoring: Satellite microwave data are used to provide near real-time global water level data for lakes and reservoirs (currently 75, soon for 600+) important for assessing drought and food production. **http://www.pecad.fas.usda.gov/cropexplorer/global_reservoir**
Africa, Asia, Central America	SERVIR (to serve): Visualization and monitoring systems are used for environmental stations in data limited parts of the world (currently in Panama & Kenya; plans for Nepal & West Africa) - also includes 'Climate One Step'. **http://www.servir.net**
Africa & Latin America	Capacity Building in Latin America and Africa: NASA is working in cooperation with other groups to help overcome problems developing countries have with the collection, training, and analysis of water-related geo-information. **http://wmp.gsfc.nasa.gov**
Nile Basin	Distributed Hydrological Data for Nile Basin: To improve water resource decision support systems for the Nile Basin, satellite observations and modeling are used to promote improved water management and data sharing between countries. **http://wmp.gsfc.nasa.gov**
India	Groundwater Monitoring in India: NASA scientists have applied satellite observations in combination with a hydrological modeling system to quantify the depletion rate of aquifers in the Indian states of Rajasthan, Punjab, and Haryana (including Delhi). **http://www.nasa.gov/topics/earth/features/india_water.html**
South America	Integrating NASA Products into Decision Systems for Agriculture and Water Management: NASA remote sensing and modeling products combined with surface observations at various scales (sub-country to continental) are used to improve decisions support systems in agriculture, drought, and water resources management. **http://wmp.gsfc.nasa.gov**
Iraq	Agriculture for Pre-War and Post-War Iraq: NASA is mapping agriculture before and after the Iraq War with the US Army to assist with improved food production. **http://wmp.gsfc.nasa.gov**
Catchment to Global	Hydrology for Life Environment and Policy (HELP): NASA supports HELP (under UNESCO) to aid in bridging the gap between scientific hydrology and the various other stakeholders involved in comprehensive basin management decisions. **http://www.unesco.org/water/ihp/help/**

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