

U.S. Support for IHP Phase 8
International Hydrological Programme United States National Committee
September 2013

In support of International Hydrological Programme Phase 8 implementation starting in 2014, the IHP United States National Committee (USNC) strongly supports the IHP 8 Strategic Plan -- Water Security: Responses to local, regional, and global challenges. The USNC would be pleased, if requested, to work with many levels of IHP-- the Council, other National IHP Committees, Water Centers, Chairs, Regional Hydrologists, and Program Committees -- to use hydrologic science and technology to build peace, reduce poverty, and to support sustainable development and intercultural dialogue. New and ongoing activities that the USNC considers highest priority are described below. At the same time, we encourage more efficient overall IHP program management and consolidation of related programs.

Themes of IHP Phase 8, 2014-2021

- 1: Water-related disasters and hydrological change
- 2: Groundwater in a changing environment
- 3: Addressing water scarcity and quality
- 4: Water and human settlements of the future
- 5: Ecohydrology, engineering harmony for a sustainable world
- 6: Water education, key for water security

Strengthening our Category 2 Center networks (All themes). Category 2 Centers extend the reach of IHP to new institutions and strengthen relationships among the member states, both regionally and thematically. The USACE operates the only IHP Category 2 Center in the United States, the International Center for Integrated Water Resources Management (ICIWaRM). ICIWaRM leads USNC contributions to the Category 2 Center network by increasing our interactions among the Centers and with the Institute for Water Education (IHE). ICIWaRM, including its network of U.S. universities, has worked with the Category 2 Centers of Latin America and the Caribbean to network activities and events, and has an ongoing, long-term partnership with Japan's Category 2 Center, The International Centre for Water Hazard (ICHARM). ICIWaRM has also supported several of the ecohydrology-based Category 2 Centers.

The USNC is committed to collaborating with the new Category 2 Centers in Sub-Saharan Africa and specialized groundwater Category 2 Centers worldwide.

Participating in Program Committees (All themes). The U.S. Geological Survey (USGS), one of six Federal agencies on the USNC¹, contributes leadership and hydrologic expertise to several IHP programs: Groundwater Resources Assessment under the Pressures of Humanity and Climate Change (GRAPHIC), Hydro Open-source software Platform of Experts (HOPE), Internationally Shared Aquifer Resources Management (ISARM), and the IHP Working Group on Land Subsidence. USGS participates in GRAPHIC, a program to improve understanding of groundwater, how groundwater supports ecosystems and people, and how groundwater responds to human activities and climate change. USGS chairs the Expert Working Group of HOPE, an open-source software platform to assist African water authorities and academia by providing users a set of water-resource software programs that are an alternative to commercial engineering software.

¹ USNC Federal agency members are USGS, USACE, NASA, NOAA, NSF, and USAID

USGS participates in ISARM, a program to produce science products to understand and manage transboundary aquifer resources. USGS co-chairs the IHP Working Group on Land Subsidence, a group to monitor and understand the phenomenon of land subsidence commonly associated with groundwater extraction, which implies increased vulnerability to flooding and reduced groundwater storage.

The ICIWaRM is the Technical Secretariat for the IHP Global Network on Water and Development Information in Arid Lands (G-WADI), and works globally in support of G-WADI, particularly in Africa and South America.

NASA works with NOAA through the USNC to provide capacity building support for hydrology and application projects in Latin America and the Caribbean through the Group on Earth Observations (GEO) Center of Hydrologic and Spatial Information for Latin America and the Caribbean.

NASA works through GEO and the African Water Cycle Coordination Initiative to support UNESCO in their hydrologic science dealing with IWRM and transboundary basins in Africa.

NASA and other organizations support the GEO Summit for the 2013 UN Year of Water Cooperation.

The USNC has recently published a monograph in support of the IHP Hydrology for the Environment, Life and Policy (HELP) program. The monograph is entitled Science and Practice of Integrated River Basin Management: Lessons from North and Central American UNESCO-HELP Basins.

Adapting to climate change and variability (All themes). The USNC is committed to climate change science and brings expertise in this area through efforts by Federal and academic partnerships to improve near real-time flood monitoring, prediction, and inundation mapping; regional frequency analysis of sparse hydrometeorological data; and drought monitoring through selected UNESCO programs and Centers. U.S. Government science agencies and USNC members, are now focusing on collection and analysis of long-term hydrologic data to monitor and understand the hydrologic effects of climate and climate-change adaptation. The USGS, for example, is developing standards and best practices for vulnerability assessments, (<http://www.doi.gov/whatwedo/climate/adaptation.cfm>).

NASA conducts climate change research, enhancing the ability of the international scientific community to advance global integrated Earth system science using space-based observations. NASA is leading efforts to use satellites to monitor, understand, and predict both short- and long-term changes in the hydrological cycle to help provide adaptation and mitigation strategies to benefit society.

ICIWaRM is working with Conservation International, the World Bank, Deltares and others on risk-informed decision making for climate change adaptation, using a practical, “bottom-up” approach for water resources managers and planners.

ICIWaRM, through its partner Oregon State University, supports students associated with the Brazilian Category 2 Center, the International Centre for Water Education, Training and Applied Research (HidroEX), to undertake advanced studies in transboundary water resources, bio-energy IWRM, and other disciplines.

Water education (Theme 6). The public and decision-makers require a level of science education not currently available to address local, regional, national, and transboundary water issues. The USNC supports UNESCO science and engineering activities developed in consultation with planning and policy efforts at local, regional, national, and global levels. For example, the USNC is emphasizing education and science education, especially for women and girls. The USNC will look for opportunities to strengthen water education within our own UNESCO National Commission and encourage it elsewhere. The USNC will look for opportunities for further partnering with IHE, the network of Category 2 Centers, Regional Hydrologists, and IHP African National Committees, particularly for water education for women in Africa.

USGS is participating in the HOPE initiative, a software platform to assist African water authorities, teachers, university lecturers and researchers by providing these users a set of water-resource software programs that are an alternative to commercial engineering software. The first phase of the Initiative is focusing on the selection of programs to include in the initial software “kit” (<http://www.hope-initiative.net/>).

NASA is providing professional-level training and education for a better understanding of satellite remote sensing in data acquisition, image visualization, and data analysis for water research and applications. NASA leads the DEVELOP program, which fosters an Earth science and applications interdisciplinary environment for students and young professionals.

Monitoring, reporting on and assessing freshwater resources (All themes). The USGS provides all of the streamflow, groundwater, water quality, and water use data collected by USGS in the United States available for free. Likewise, NOAA-NWS provides all precipitation data collected by NOAA-NWS for free. The free and open availability of water-resources data in the United States serves as an example for other member states to do the same for the sake of better understanding and management of water resources under changing conditions and to strengthen UNESCO’s programs. The USNC will look for opportunities to share USG best practices in the collection, dissemination, analysis of basic hydrologic data, and will reach out to IHP National Committees to offer seminars and training workshops.

The USGS continues to provide the long-term Landsat database for free. In May 2013, the USGS began operation of the Landsat 8 satellite, continuing their 41-year collaboration with NASA on the Landsat program. Current and historic Landsat data are freely available and have been accessed by more than 186 countries. Natural resource managers are able to receive Landsat data collected every eight days for any given location on Earth. Many Landsat users depend on this short repeat cycle for data on crops, forests, and water. Landsat 8 sensors include two thermal bands, which provide valuable information about soil moisture conditions and evaporative water loss used for monitoring and calibrating irrigation water applications, (<http://earthexplorer.usgs.gov/> and <http://googleblog.blogspot.com/2013/05/a-picture-of-earth-through-time.html>).

NASA strongly supports a free and open exchange of Earth science and satellite data useful for assessing water resources issues, such as with floods, droughts, water for food, and transboundary issues. Within this effort the NASA Applied Sciences Program has a large portfolio of projects delivering results and enabling partnerships with private and public organizations to address water issues for developing countries. This includes: 1) working with the USGS to enhance the USAID Famine Early Warning System with remote sensing and modeling products, 2) providing SERVIR (Spanish “to serve”) geospatial centers with USAID for developing nations to use remote sensing and Earth science information, 3) in partnership with the World Bank and USAID installing Water Information System Platforms (WISPs) with remote sensing, geospatial products and capacity building for countries in the Middle East and North Africa, 4) developing NASA-based applications for water availability in the Nile Basin, 5) linking climate change and water availability in the Himalayas, 6) creating and maintaining global flood, rainfall, and landslide early warning systems using satellite data, 7) monitoring regional to global aquifers with the Gravity Recovery and Climate Experiment (GRACE) satellite data, and 8) funding projects that use remote sensing to monitor and forecast agriculture and hydrological drought from regional to global scales.

ICIWaRM works with NASA and USAID (through SERVIR-Africa) to compare various approaches to predicting floods and droughts in Africa.

ICIWaRM works with the Government of Peru, the World Bank, and six pilot river basin organizations to develop local capacity for collaborative planning, from structured public participation to modeling.

World-wide, near real-time satellite-based rainfall estimates are freely available from the University of California-Irvine through the G-WADI website (<http://www.g-wadi.org>) for use in water budgets, drought prediction, and flood modeling.

Capacity building (All themes). The USNC is committed to building capacity in member states through short courses, technology transfer and collaboration with all levels of IHP. For instance, we are currently working with a Category 2 Center on Spanish translations of key U.S. hydrologic and hydraulic modeling software to make it accessible to a wider audience. The USNC looks forward to working with other Category 2 Centers, such as HidroEX, to make translations to Portuguese and other languages.

NASA supports developing countries in broadening the use of Earth observations and information in decision making. NASA and USAID through SERVIR provide visualization and environmental monitoring for Africa, Central America, Himalayan Region, and, soon, Southeast Asia.

Hydrodiplomacy. The USNC believes that all member states share a concern for the health and well-being of the world's most vulnerable citizens, and that water is an issue whereby even countries that have deep political differences can find common ground. We will encourage IHP, as a neutral science platform and convener, to be a force to strengthen science diplomacy.

Extrabudgetary funding. The USNC will work to identify potential extrabudgetary sources of funding, including public-private partnerships. Sources of funding (cash or in kind) for U.S.-organized activities in IHP to date have included USAID, World Bank, Inter-American Development Bank, National Science Foundation, NASA, NOAA, USGS, Corps of Engineers, SOUTHCOM, other Category 2 Centers, numerous universities in the United States and abroad, watershed groups, and others.

Efficiency and transparency. IHP has several programs that consider groundwater, several programs that consider river basins, and potentially several new initiatives to come online with IHP 8 that are redundant with existing programs. Through prioritizing, cutting back, and consolidating programs, IHP can assure continued effective performance of its hydrologic science. Cutbacks and consolidation are especially critical in view of current budgetary situation. The USNC will support IHP Bureau and Council leadership Council efforts to prioritize IHP programs, eliminate programs that have largely run their course, and combine programs that overlap.

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