

Hydrological Applications Runoff Network

Project Name	HYDROLOGICAL APPLICATIONS RUNOFF NETWORK
Acronym	HARON
Project Type	WIGOS Pilot
Project Status	Planning
Project Overview	<p>The Implementation Plan for the Global Observing System for Climate (GCOS) in support of the UNFCCC included a call for the development of a baseline observing network, the Global Terrestrial Network – Runoff (GTN-R) as a component to the Global Terrestrial Network-Hydrology (GTN-H), which aims to improve access to near real-time river discharge data for nearly 380 selected gauging stations around the world (http://grdc.bafg.de/servlet/is/2492/). In response, the Hydrological Applications and Run-Off Network (HARON) has been developed aiming towards an integrated approach to the global understanding and continuous monitoring of the availability and variability of the world's freshwater resources.</p> <p>The HARON project has been developed by the Hydrology and Water Resources Branch (WMO-HWRD), jointly with GEO and in particular the Integrated Global Water Cycle Observations (IGWCO) theme of GEO, and participating Organizations.</p> <p>The main goal of HARON is to improve and support the closure of the global water budget in line with requirements of GCOS and the Global Water Cycle Experiment (GEWEX) and will promote the free and unrestricted international exchange of hydrological data, in consonance with the needs of the global hydrological community.</p> <p>Its objective is to integrate, in a phased approach, dedicated river gauging networks of existing hydrological stations on a global scale into a global runoff observation network. The project will be carried out in a phased approach, gradually linking other global networks related to freshwater observations into the integrated observing system.</p>
Project Aims	<p>The goal of HARON is <i>to observe and analyze surface runoff and lake storage variations to a much higher degree of accuracy and timeliness than has ever been achieved before with the objective to considerably enhance in-situ hydrological measurements supplemented with remote sensing observations to produce integrated, comprehensive datasets that are essential for hydrological research and effective water resources management.</i></p> <p>Features of this enhanced network include:</p> <ul style="list-style-type: none"> ➤ Observations of the run-off of major rivers derived from a rehabilitated network of 380 GTN-R baseline stations operated by the NHSs; ➤ Monitoring of water levels of major lakes and reservoirs; ➤ Incorporation of new operational technologies, instruments, and methodologies, such as space-borne radar altimetry to determine water levels in rivers, lakes, and reservoirs, with in-situ hydro-meteorological observations from the GTN-R network and SOLS/HYDROLARE; ➤ Development of user-oriented information products that make full use of the wealth of observations made accessible by HARON. <p>Complementary to the WHYCOS programme, HARON is designed specifically to facilitate a global understanding of the time and spatial variability of the principal components of the hydrological cycle.</p>
Partners / Participants	National Hydrological Services engaged in in-situ runoff observations in the participating countries would be the major partners in the project. Input would

	be provided by scientific partners for space research and data in developing interpretation algorithms to convert surface water radar echoes into water levels. Core-partners for the project will include European Space Agency (ESA), the Committee on Earth Observation Satellites (CEOS), WCRP/GEWEX, the Integrated Global Water Cycle Observing (IGWCO), GEO and its members and the Global Data Runoff Centre (GRDC), together with WMO-CHy and Hydrology and Water Resources Programme (HWRP), and the Global Climate Observation System (GCOS).
Project cost	Up to 9 million EURO if all three project phases will be implemented. Detailed cost estimate has been submitted to the EU 7 th Framework Programme. Programme Phase I in the order of 3 million EURO.
Funding Source(s)	WIGOS Trust Fund, external funding organizations; Project has been submitted to EU 7 th Framework programme for funding. Project will be resubmitted for funding January 2010 to an EU specialized call specifically focusing on HARON objectives
Project Timescale	Report to CHy-XIII in November 2008, project phases total 60 months from start of implementation
Expected Key Deliverables	<p>The short- and medium-term benefits of HARON will be an improved overview of the freshwater resources of the world, thereby supporting water resources management and contributing in a cross-cutting fashion to all Societal Benefit Areas of GEO. It will include development of an implementation plan for a global water cycle data integration system combining water cycle <i>in-situ</i>, satellite data, and model prediction outputs. The long-term benefit will be to support the closure of the global water budget in line with requirements of the Global Climate Observing System (GCOS) and the Global Water Cycle Experiment (GEWEX). It will help disseminate knowledge and support global and regional approaches to scientific research within a modeling and forecasting framework.</p> <p>Capacity Building in order to facilitate the understanding of the observation principles and techniques and to promote interoperability standards would form an essential component of the project. It will assist the national water managers in the use of observation provided through HARON for the improvement of national water management practices.</p> <p>The project will be implemented in three phases, starting from the integration of the GTN-R. In Phase 3, HARON will consolidate integration of hydrological observation networks and facilitate their interoperation with atmospheric networks, including synoptic weather observations and products generated by the Global Climate Prediction Centres that are supported by WMO. One of the priorities of this Phase is the linkage to other Programmes and organizations to encourage increased participation in this global hydrological initiative, leading to the integration of several hydrological systems. In particular, sea-level observations and the integration of environmental networks are seen as a priority for this Phase. This would enable the development of a global framework of observations, reaching from continental observations to the coastal zones into the open oceans. This framework would be particularly enhanced when supported by atmospheric (synoptic) observations, leading to a better understanding of the global water cycle system with a view to pragmatic applications in many sectors of direct human and environmental relevance.</p>
Project Links	Project web site to be established
Project Summary	The project will provide integrated global observations on water –related variables with a focus on continental freshwater fluxes to the oceans from a multitude of <i>in-situ</i> and satellite observation platforms to serve the hydrological research and applications- as well as the climate and ocean communities. The

	implementation of the project will be in three distinct phases with an overall duration of 60 months
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