International Association of Hydrological Sciences - IAHS

Activities in Italy (2011-2012)

Short summary
The Italian activity referring to the International Association of Hydrological Sciences (IAHS) has been carried out by the scientific community that refers to hydrological sciences, hydraulics and hydraulic works. The most relevant activity carried out in the period 2011-2013 is that related to the International Commission on Statistical Hydrology of IAHS, which is presided by Dr. Salvatore Grimaldi (University of Tuscia). The activities of the commission are described in detail at the web site www.stahy.org**.**
The main initiative that was organised in Italy has been the Italian National Conference on Hydraulics and hydraulic works, that was co-sponsored by IAHS and took place in Brescia during September 2012. The conference is a traditional and highly attended event for the Italian community working in hydraulics. Extensive reference to the conference can be found at www.idra2012.it.
There has been a very relevant research activity carried out by Italian institutions within IAHS and in particular within IAHS research initiatives. The Italian hydrological community massively participated to the PUB research initiative, namely, the IAHS scientific decade 2003-2012, by establishing two working groups and participating to several conferences and workshops. The Italian community also played an important role in the consultation process that is leading to the preparation of the new IAHS Decade 2013-2022. In fact, the National Representative of Italy within IAHS has been nominated chair of the Task Force that was in charge of identifying the subject for the new decade and is going to chair the decade itself for the first two years.

Organization of conferences and workshops
XXXIII Convegno di Idraulica e Costruzioni Idrauliche, Brescia, 10-15 settembre 2012, www.idra2012.it.

Organization of scientific initiatives
Chairmanship of the IAHS scientific decade 2013-2022 for the period 2013-2015. Presidency of the International Commission on Water Resources Systems and Presidency of the International Commission on Statistical Hydrology.

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A) Institutions involved in research activity

An extended set of Italian universities is involved in the IAHS activities, as well as several institutes of the National Research Council.

National Research Council
ResearchInstitute for Geo-HydrologicalProtection

Main universities involved:

- Polytechnic of Turin (Prof. Pierluigi Claps)
- University of Bologna (Prof. Alberto Montanari)
- University of Tuscia (Prof. Salvatore Grimaldi)

B) Scientific Report

The scientific contribution of the Italian community to IAHS was mainly centered around the development of the new scientific decade (see http://distart119.ing.unibo.it for more details). One of the missions of the International Association of Hydrological Sciences is advancing the science of hydrology for the benefit of society, with particular emphasis on countries that suffer from water problems. IAHS has a long and well-known track record in undertaking a range of activities that advance hydrologic practice globally (www.iahs.info). The results of IAHS scientific initiatives in terms of education of young scientists, comparison of research views and results, and international cooperation and visibility are substantial. Now, IAHS is proposing a new initiative for the scientific decade 2013-2022 , to continue to collectively address the most exciting research challenges related to the water cycle, water risks and water resources.

To identify the subject of the SD an extensive consultation of the community was promoted through a dedicated web discussion (see the IAHS blog at www.iahs.info) which has been set up by Italian researchers and was widely advertised, and collected many posts and comments and thousands of visits. Moreover, a series of dedicated symposia was organised where senior and young scientists and stakeholders provided their view on the future of hydrology. The attendance at these meetings was impressive, therefore witnessing once again a growing interest in cooperative scientific efforts. The consultation was an unprecedented success in terms of involvement of people, discussions and exchange of ideas, which were favoured by modern communication technologies and promoted a new spirit of global inclusivity. Every single statement of this worldwide discussion was taken into account in shaping the SD, which is the fertile product of an effective bottom-up process. The consultation already provided a first lesson, in coherence with the vocation and background of IAHS: the development of hydrological sciences is strictly related to the capability of the scientific community to profit from cooperative efforts through an effective synthesis, by stimulating, coordinating and valorising individual ideas. Further, the ability to take advantage from modern communication means to promote a global and interdisciplinary approach to water problems, which will be the key for developing hydrology in the future.

The scientific discussion clearly demonstrated that public administrators, water resources managers, stakeholders and scientists are well aware that the relationship between water and humans is more delicate today than ever (Sivapalan et al., 2012, Srinivasan et al., 2012). We live in a highly dynamic world with many changes occurring simultaneously. Some of these changes are the result of natural forces and some are human-induced. Some are relatively slow and some are sudden. Some are predictable and others unexpected and take society by surprise. The connections among these changes are significant, for the inherent links among the social and environmental systems are co-evolving.

For this reason, the new scientific decade 2013-2022 of IAHS, which is entitled “Panta Rhei – Everything Flows”, is dedicated to research activities on change in hydrology and society. The purpose of Panta Rhei is to reach an improved interpretation of the processes governing the water cycle by focusing on their changing dynamics in connection with rapidly changing human systems. The practical aim is to improve our capability to make predictions of water resources dynamics to support sustainable societal development in a changing environment. The concept implies a focus on hydrological systems as a changing interface between environment and society, whose dynamics is essential to determine water security, human safety and development, and to set priorities for environmental management. The Scientific Decade 2013-2022 focuses on better understanding of unsteady behaviours of the Earth system including the water cycle, by devising innovative theoretical blueprints for the representation of processes including change and profiting from advanced monitoring and data analysis techniques. Interdisciplinarity will be sought by bridging with socio-economic sciences and geosciences in general.

- MainResearchProjects/Programmes

The acrtivities related to Panta Rhei allowed Italian researchers to already submit two proposals for research projects related to similar activities. One was submitted to EU and deals with the study of hydrological change at the European scale. Another one was submitted to the Italian government and deals with the effects of hydrological change on flood risk.

- Funding Agencies

European Union, Italian Government.

C) Goals, priorities and plans for future activities *(next two years)*

For the next two years the plan is to continue to actively participate to IAHS initiatives through targeted activities. The most relevant one is the organization of an international conference on water resources management, that will take place in Bologna in June 2014.

D) Scientific Publications*(peer-reviewed papers)*

Allamano P., Bartolini E., Claps P., Laio F., Scarsoglio S. (2011), Spatial interpolation of extreme-precipitation with intermittent records. In: EGU 2011.

Allamano P., Laio F., Claps P. (2011), Effects of disregarding seasonality on the distribution of hydrological extremes. In: HYDROLOGY AND EARTH SYSTEM SCIENCES, vol. 15 n. 10, pp. 3207-3215. - ISSN 1027-5606

Andrés-Doménech, I. Montanari, A., Marco, J.B., Efficiency of Storm Detention Tanks for Urban Drainage Systems under Climate Variability, Journal of Water Resources Planning and Management, ASCE, 138, 36-46, 2012.

Bartolini E., Allamano P., Laio F., Claps P. (2011), Runoff regime estimation at high-elevation sites: a parsimonious water balance approach. In: HYDROLOGY AND EARTH SYSTEM SCIENCES, vol. 15, pp. 1661-1673. - ISSN 1027-5606.

Biondi, D., Freni, G., Iacobellis, V., Mascaro, G., Montanari, A., Validation of hydrological models: Conceptual basis, methodological approaches and a proposal for a code of practice, Physics and Chemistry of the Earth, 42-44, 70-76, 2012.

Brandimarte, L., Di Baldassarre, G., Bruni, G., D'Odorico, P., Montanari, A., Relation Between the North-Atlantic Oscillation and Hydroclimatic Conditions in Mediterranean Areas, Water Resources Management, 25, 1269– 1279, 2011.

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Cimini D., Portoghesi L., Madonna S., Grimaldi S., Corona P., "Multifactor empirical mapping of the protective function of forests against landslide detachment: statistical approaches and a case study", Journal of Applied Earth Observation and Geoinformation, submitted.

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Gallo E., Soffia C., Claps P. (2012), Ricostruzione topologica e validazione automatica della congruenza idraulica di schemi acquedottistici di adduzione informatizzati. In: L'ACQUA n. suppl., pp. 283-292. - ISSN 1125-1255

Gräler B., van den Berg M. J., Vandenberghe S., Petroselli A., Grimaldi S., De Baets B., and Verhoest N. E. C., Multivariate return periods in hydrology: a critical and practical review focusing on synthetic design hydrograph estimation, Hydrology and Earth System Science, accepted.

Grimaldi S., Petroselli A., Arcangeletti E., Nardi F., Flood mapping in ungauged basins using fully continuous hydrologic-hydraulic modelling, Journal of Hydrology, accepted.

Grimaldi S., Petroselli A., Nardi F., A parsimonious geomorphological unit hydrograph for rainfall runoff modeling in small ungauged basins, Hydrological Science Journal, 57(1), 73-83, 2012.

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