

# International Association of Hydrological Sciences -IAHS

## Activities' Report - Year 2017

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### 1. Introduction

The Italian research 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. In this context, the most relevant initiative carried out in 2017 can be identified by the activities of:

- a) *International Commission on Water Resource (ICWR/IAHS)*, <https://iahs.info/Commissions--W-Groups/ICWRS-Water-Resources-Systems.do>, presided by Alberto Montanari (Alternate national Representative IAHS) aimed to promote research development on the integration of all phases of water resource protection, planning, design, management, operation and utilization;
- b) *International Commission for Ground Water (ICGW)*, <https://iahs.info/Commissions--W-Groups/ICGW-Groundwater.do>, presided by Prof Aldo Fiori (Università Roma Tre), addressed to the advancement of the science of groundwater hydrology, including the scientific basis for groundwater resource assessment and groundwater management. It is also responsible for helping to bridge the gap between science and practice
- c) *International Commission on Statistical Hydrology (ICSH/IAHS)*, <https://iahs.info/Commissions--W-Groups/ICSH-Statistical-Hydrology.do>, presided by Prof. Salvatore Grimaldi up to July 2017, Tuscia University, and since now by Prof. Ashish Sharma (UNSW Sydney); the Secretary in charge is Dr. Elena Volpi (Università degli Studi Roma Tre). The activities of the commission are focused on the development of new statistical methods and tools for hydrological applications.
- d) *MOXXI Working Group (Measurements & Observations in XXI Century)*, <https://iahs.info/Commissions--W-Groups/Working-Groups/MOXXI.do>, the activities related to the MOXXI Working Group (Measurements & Observations in XXI Century), chaired by Dr. Flavia Tauro (University of Tuscia), with the task to promote the advancement of novel observational techniques that leads to new sources of information to help better understand the hydrological cycle.
- e) *International Commission on Continental Erosion/International Association of Hydrological Sciences (ICCE/IAHS)*, <https://iahs.info/Commissions--W-Groups/ICCE-Continental-Erosion.do>, whose aim is to promote the research in the erosion, transport and deposition of sediment and associated nutrients and contaminants and the interaction of these processes with other components of the hydrological cycle and the environment. The Secretary in charge is Dr. Paolo Porto (Università Mediterranea of Reggio Calabria)
- f) *International Commission on Surface Hydrology (ICSW)*, <https://iahs.info/Commissions--W-Groups/ICSW-Surface-Water.do>, whose vice-president is Prof. Ennio Ferrari (University of Calabria). The activities of the commission are focused at promoting research into surface hydrology and its interaction with other aspects of the hydrological cycle."
- g) *Citizen AND HYdrology Working Group (CandHy WG)*, <https://iahs.info/Commissions--W-Groups/Working-Groups/Candhy.do>, presided by Dr. Fernando Nardi, aims to stimulate discussion, sharing of knowledge, information, data, ideas fostering scientific and professional exchange of academic, institutional and citizen communities interested in the "Citizen AND HYdrology" topic. CandHy seeks to discover the potential of citizen involvement and crowd sourced data for advancing hydrologic research in water resource and risk management, hydro-climatic risk mitigation and disaster preparedness.

- h) *Società Idrologica Italiana (SII)*, [www.sii-ihs.it](http://www.sii-ihs.it), belonging to the international network of IAHS's scientific associations, <https://iahs.info/Links/National-and-Regional-Hydrological-Associations.do>, presided by Dr. Tommaso Moramarco (National IAHS Representative), addressed to advance interest and scholarship in scientific and applied aspects of hydrology and foster members involvement in relevant national and international professional activities.

Moreover, there has been a very relevant research activity carried out by Italian institutions within IAHS and in particular within IAHS research initiatives. 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 “Panta Rhei – Everything Flows”.

## 2. Main activities carried on by IAHS during 2017 relevant for Italy and for CNR

The most relevant activity developed in the period 2017 is related to the activities of Groups involved in IAHS and in particular: 1) *International Commission on Statistical Hydrology (ICSH-STAHY)*; 2) *MOXXI Working Group* (Measurements & Observations in XXI Century); 3) *International Commission on Continental Erosion/International Association of Hydrological Sciences (ICCE/IAHS)*; 4) *Italian Hydrological Society (SII)*; 5) *International Commission on Water Resource (ICWR/IAHS)*; 6) *Citizen AND HYdrology Working Group (CandHy WG)*; 7) *International Commission on Surface Hydrology (ICSW)* and 8) *International Commission for Ground Water (ICGW)*. Specifically, the main activities can be identified as in the sequel.

### 2.1 Organization of conferences, workshops 2017

- During the IAHS 2017 Scientific Assembly "Water and Development: scientific challenges in addressing societal issues" (<http://cwrr.ukzn.ac.za/iahs/overview-of-scientific-programme>) Alberto Montanari convened the workshop “Water resources management and the competition/balance between humans and ecosystems (eco-hydrology)”, which received 10 oral and 7 poster contributions. During the same assembly Alberto Montanari presented 3 contributions (A perspective on Panta Rhei The IAHS Scientific Decade 2013-2022, see <http://distart119.ing.unibo.it/albertonew/?q=node/133>; Physical interpretation of river memory and application to seasonal flood forecasting, see <http://distart119.ing.unibo.it/albertonew/?q=node/135>; Should we reconsider the conceptual structure of hydrological models, see <http://distart119.ing.unibo.it/albertonew/?q=node/137>).
- EGU-General Assembly 2017, Vienna 23-28 April, 2017, Session HS7.7/NH1.17 - Hydroclimatic and hydrometeorologic stochastics: extremes, scales and probabilities PICO session. Convener: Alberto Viglione. Co-Conveners: Rui A. P. Perdigão, Marco Borga, Andreas Langousis, Xiaolan L. Wang, Salvatore Grimaldi, Auguste Gires; <http://meetingorganizer.copernicus.org/EGU2017/session/22999>
- IAHS 2017 General Assembly "Water and Development: scientific challenges in addressing societal issues", Port Elizabeth, South Africa | July 10-14, 2017. Sessions organized by ICSH – STAHY: #21 Quantifying uncertainty in hydrological systems: A Bayesian point of view; #22 Nonstationarity in Hydrology: Theories, Methods and Applications; #23 Multivariate statistics for hydrological application; #24 Stochastic hydrology: simulation and disaggregation models and co-organized by ICSH – STAHY: #7 Measurements in the 21st century: innovation in hydrological observations; #10 Prediction in ungauged basins; #11 Modelling hydrological processes for prediction under change; #13 Extreme events: links between science and practice; <http://cwrr.ukzn.ac.za/iahs/iahs-2017-in-south-africa>
- IAHS 2017 Scientific Assembly "Water and Development: scientific challenges in addressing societal issues”, Ennio Ferrari was a convener of the workshop “Extreme events: links between science and practice”, with 17 oral presentations e 5 posters.
- STAHY’17 WORKSHOP, September 22-24, 2017, University of Life Sciences, Warsaw, Poland. Chairman: Christopher Kochanek, website: <http://www.stahy2017.org>
- 2017 Digital Mapping & Active Citizenship, WARREDOC, University of Foreigners, Perugia, Italy, March 15th, 2017, Co-organized by MOXXI and sponsored by the Italian Hydrological Society

- Paolo Porto was the local organizer of the IASWS International Conference held in Taormina (Italy) in June 2017 (website: <http://www.iasws2017.altervista.org/>) during which a meeting of the ICCE members was organized to plan the future activities of the Commission
- 2017 “Innovation in Hydrometry - From Ideas to Operation: IAHS Measurements and Observations in the XXI Century (MOXXI) and World Meteorological Organization (WMO) HydroHub Joint Meeting”, Geneva, Switzerland, December 4-5, Chair: Flavia Tauro. This two-half day workshop brought together members of the science and operations communities to learn about innovative observational methodologies and to foster the uptake of such novel solutions in operational environments. On the first day, around 70 participants from all over the globe attended 28 short presentations followed by Q&A on a variety of topics, including flood gauging, monitoring networks, citizen science, and drone initiatives in hydrology. On the second day, keynote talks, expert interviews, and breakout group discussions motivated the participants to identify key challenges and needs for the uptake of new technologies into hydrological practice. According to a questionnaire administered by WMO after the event, 94% of the surveyed participants deemed both days either good or excellent. The event has been briefed and advertised through the IUGG Electronic Journal as well (Volume 18 No.4, 1 April 2018).
- 2017 International Association of Hydrological Sciences General Assembly, Port Elizabeth. Sessions organized by ICGW:
  - 1) Advancements in modeling and characterization of aquifer. Conveners: Alberto Bellin, Aldo Fiori, Muhterem Demiroglu, Corinna Abesser
  - 2) Methodologies for risk assessment of groundwater contamination. Conveners: Felipe P.J. de Barros, Antonio Zarlenga, Alraune Zech
  - 3) Innovative ICT tools for water management and science. Conveners: Laura Foglia, Rudy Rossetto, Mary Hill, Melody Sandells, Berit Arheimer
- 2017 American Geophysical Union (AGU) Fall Meeting, December 11-15, 2017, New Orleans, USA, Poster session “The MacGyver Session. The Place for Novel, Exciting, Self Made, Hacked or Improved Sensors, Data Acquisition and Data Transmission Solutions to Understand The Geosphere”. Co-convened by MOXXI friends.
- Giornate dell’Idrologia della Società Idrologica Italiana 2017, Favignana (TP) 21-24 giugno, organized by the Italian Hydrological Society ([www.sii-ihs.it](http://www.sii-ihs.it)). The Conference has permitted to sharing the experience of Italian hydrology community with Public Authorities and Stakeholders in the field of natural hazards and water resources management.

## 2.2 Organization of scientific initiatives 2017

- *MOXXI working group* visibility has considerably increased by involving experts through person-to-person invitations (currently, MOXXI includes 131 “friends” from more than 15 countries). MOXXI friends receive a newsletter every other month and can showcase their relevant papers in a dedicated page.
- MOXXI is actively participating in the recently approved COST project: “*HARMONIOUS – Harmonization of UAS techniques for agricultural and natural ecosystems monitoring*”. The project is led by MOXXI’s friend Dr. Salvatore Manfreda. The project is expected to foster a wealth of initiatives on MOXXI topics in the following years. Members of the COST Action and MOXXI Friends have met in Geneva (MOXXI-WMO meeting in December 2017) and Valencia (COST Action first meeting in February 2018). Future joint initiatives are being encouraged (including paper writing, summer schools, and field campaigns).
- The community paper: “Measurements and Observations in the XXI century (MOXXI): innovation and multidisciplinary to sense the hydrological cycle” has been published in *Hydrological Sciences Journal*. This effort (co-authored by 30 MOXXI’s friends) will further strengthen the bonds among the community while offering a reference for current and future research in innovative hydrological observations.
- Alberto Montanari contributed to the book *Global Change and Future Earth: The Geodetic and Geophysical Perspective*, by authoring a chapter titled “Remote sensing and hydrological change”.

- Florisa Melone Award 2017 promoted by the Italian Hydrological Society to a research project developed by young Italian researchers. The Award is dedicated to the memory of Florisa Melone, CNR Head Researcher of the Research Institute for Geo-Hydrological Protection. The award consists of 5,000 € and Dr. Stefania Camici was bestowed for the project "*Monitoring extreme events (floods & droughts) through the discharge time series obtained from satellite altimetry*".
- Course on “Emerging Hydrometric Techniques for Discharge Estimation and Rating Curve Development”. The Course is organized by the Indian Institute of Technology, Ministry of Human Resource Development and co-led by the national representative IAHS, Tommaso Moramarco, Roorkee, April 2017

### 2.3 Editorial Board Participation

#### IAHS *Hydrological Sciences Journal*

- Attilio Castellarin: Editor in Chief as of 2017 (Co-Editor since 2015), University of Bologna, Italy
- Aldo Fiori: Associate Editor, Università Roma Tre, Italy
- Elena Volpi: Associate Editor, Università Roma Tre, Italy
- Flavia Tauro: Associate Editor, University of Tuscia, Italy
- Andrea Petroselli: Associate Editor, University of Tuscia, Italy

### 2.4 Goals, priorities and plans for future Scientific Initiative

For the next year the plan is to continue to actively participate to IAHS initiatives through targeted activities. To date, various initiatives are being planned, among which:

- 1) MOXXI’s Topical Conference 2019 organized in March.
- 2) MOXXI’s Session in cooperation with several IUGG associations in the context of the 2019 IAHS General Assembly.
- 3) The next Groundwater Quality (GQ) conference will take place in Liege (Belgium). The GQ has always been a trademark conference for ICGW, starting from the 1993 edition in Tallin, Estonia. Contacts are active between ICGW and the organizers of GQ2019.
- 4) Short Course COPULA '18 "Copulas for hydrology and environmental sciences" (<https://iahs.info/Commissions--W-Groups/ICSH-Statistical-Hydrology.do>)
- 5) The 2018 ICCE symposium "Climate Change Impacts on Sediment Dynamics: Measurement, Modelling and Management” will be jointly held in Moscow with "The Second International Young Scientists Forum on Soil and Water Conservation”. This joint meeting is organized and hosted by Sergey Chalov (member ICCE) (website: <http://www.eng.geogr.msu.ru/IYFSWC/home.php>)
- 6) 3rd National Hydrological Congress, 19–21 September 2018, Warsaw, Poland - which is planned to include also topics on: soil erosion and sediment transport  
<http://www.globaleventslist.elsevier.com/events/2018/09/3rd-hydrological-congress>
- 7) STAHY’18 WORKSHOP, September 24-26, 2018, Adelaide, South Australia, info: <http://www.stahy2018.org>
- 8) Community paper on STAHY’s targets and interests in 10 years of activity.
- 9) Giornate dell’Idrologia della Società Idrologica Italiana 2018, June 18 -20, La Sapienza University, Rome, <https://web.uniroma1.it/giornateidrologia2018/>
- 10) Three *Special Issues* are scheduled on the *Hydrological Sciences Journal IAHS*:
  - a. “Hydrological Change in Chinese Rivers”. Guest Editors: Chen Yangbo (Sun Yat-Sen University, China); Borga Marco (University of Padova, Italy); Jia Yangwen (China Institute of Water Resources & Hydropower Research, IWHR, Beijing, China).
  - b. “Earth Observation for Integrated Water and Basin Management: New possibilities and challenges for adaptation to a changing environment”. Guest Editors: Christopher Neale (College of Engineering, University of Nebraska, USA); Maria

Patrocínio González-Dugo; María José Polo (University of Cordoba, Spain), (special issue proposal from IAHS International Commission on Remote Sensing).

- c. Hydrological Data: Opportunities and Barriers”. Guest Editors: Christophe Cudennec (Agrocampus Ouest, France & IAHS, Managing Guest editor), Berit Arheimer (SMHI, Sweden), Harry Lins (WMO Commission for Hydrology, USA), Stefan Uhlenbrook (UNESCO World Water Assessment Programme, Italy).

- 11) Special Issue (in preparation) on ‘IASWS 2017: The interactions between sediments and water’ Journal of Soil and Sediments (Springer) – Editor(s): Vito Ferro, Philip Owens, Paolo Porto

## 2.5 Scientific Publications (peer-reviewed papers)

1. Carisi, F., A. Domeneghetti, G. Gaeta, A. Castellarin, (2017): Is anthropogenic land subsidence a possible driver of riverine flood-hazard dynamics? A case study in Ravenna, Italy, *Hydrol. Sci. J.*, 62(15), 2440-2455, <https://doi.org/10.1080/02626667.2017.1390315>.
2. Ciullo, A., A. Viglione, A. Castellarin, M. Crisci, G. Di Baldassarre (2017): Socio-hydrological modelling of flood-risk dynamics: comparing the resilience of green and technological systems, *Hydrol. Sci. J.*, 62(6), 880-891.
3. Kreibich, H., T. Krueger, A. Van Loon, A. Mejia, J. Liu, H. McMillan, A. Castellarin, (2017): Scientific debate of Panta Rhei research – how to advance our knowledge of changes in hydrology and society?, *Hydrol. Sci. J.*, 62(3), 331-333
4. Tauro F., Selker J., van de Giesen N., Abrate T., Uijlenhoet R., Porfiri M., Manfreda S., Caylor K., Moramarco T., Benveniste J., Ciruolo G., Estes L., Domeneghetti A., Perks M. T., Corbari C., Rabiei E., Ravazzani G., Bogena H., Harfouche A., Brocca L., Maltese A., Wickert A., Tarpanelli A., Good S., Lopez Alcala J. M., Petroselli A., Cudennec C., Blume T., Hut R., Grimaldi S.: “Measurements and Observations in the XXI century (MOXXI): innovation and multidisciplinary to sense the hydrological cycle”, *Hydrol. Sci. J.*, 63(2), 169–196, 2018.
5. Caloiero T., Coscarelli R., Ferrari E., Sirangelo B. (2017). Temporal analysis of rainfall categories in Southern Italy (Calabria region). *Environmental Processes*, 4, 113-124.
6. Caloiero T, Coscarelli R, Ferrari E, Sirangelo B (2017). Trend analysis of monthly mean values and extreme indices of daily temperature in a region of Southern Italy. *International Journal of Climatology*, 37, 284-297.
7. Capra A, Porto P., La Spada, C. (2017). Long-term variation of rainfall erosivity in Calabria (Southern Italy). *Theoretical and Applied Climatology* 128 (1-2), 141-158.
8. Cogliandro V., Krajewski A., Rutkowska A., Porto P., Banasik K. (2017). Effect of forest fire on lag time of direct runoff of rainfall in a small catchment in Calabria. *Sylwan* 161(8): 677-684.
9. Collins A.L., Foster I.D.L., Gellis A., Porto P., Horowitz A.J. (2017). Sediment source fingerprinting for informing catchment management: Methodological approaches, problems and uncertainty. *Journal of Environmental Management* 194, 1-3.
10. Collins A.L., Pulley S., Foster I.D.L., Gellis A., Porto P., Horowitz A.J. (2017). Sediment source fingerprinting as an aid to catchment management: A review of the current state of knowledge and a methodological decision-tree for end-users. *Journal of Environmental Management* 194, 86-108.
11. Montanari, A., Sideris M., “Remote sensing and hydrological change”, in “Global Change and Future Earth: The Geodetic and Geophysical Perspective”, edited by Tom Beer, Cambridge University Press.
12. Moramarco T. Dingman S.L. (2017). On the theoretical velocity distribution and flow resistance in natural channels, *Journal of Hydrology*, [doi.org/10.1016/j.jhydrol.2017.10.068](https://doi.org/10.1016/j.jhydrol.2017.10.068)
13. Moramarco T., Barbetta S., Tarpanelli, A., (2017). From surface flow velocity measurements to discharge assessment by the entropy theory. *Water*, 9(2), 120; [doi:10.3390/w902012](https://doi.org/10.3390/w902012)

14. Tauro F., Piscopia R., Grimaldi S.: "Streamflow observations from cameras: large scale particle image velocimetry or particle tracking velocimetry?", *Water Resources Research*, 53(12), 10374–10394, 2017.
15. Tauro F., Petroselli A., Fiori A., Romano N., Rulli M. C., Porfiri M., Palladino M., Grimaldi S.: "Technical Note: "Cape Fear" - a hybrid hillslope plot for monitoring hydrological processes", *Hydrology*, 4(3), 35, 2017.
16. Petroselli A., Tauro F.: "Cape Fear: monitoring basic hydrological processes in an outdoor hillslope plot", *Environmental Monitoring and Assessment*, 189(3), 132, 2017.
17. Tauro F., Grimaldi S.: "Ice dices for monitoring stream surface velocity", *Journal of Hydro-environment Research*, 14, 143–149, 2017.
18. Sirangelo B, Caloiero T, Coscarelli R, Ferrari E (2017). A stochastic model for the analysis of maximum daily temperature. *Theoretical and Applied Climatology*, 130, 275-289.
19. Sirangelo B, Caloiero T, Coscarelli R, Ferrari E (2017). Stochastic analysis of long dry spells in Calabria (Southern Italy). *Theoretical and Applied Climatology*, 127, 711-724.

### **3. Activities carried on by Dr. Tommaso Moramarco within the Union during 2017 and impact on the Italian scientific community**

The activity can be identified, first, in the dissemination among Italian Universities and Research Institutions of the IAHS/IUGG programs. Moreover, it has been promoting a direct cooperation between IAHS and the Hydrological Sciences Division of the European Geosciences Union (EGU) so that the Italian community may benefit of exchange of information and possible joint activities concerning educational opportunities, student programs, and professional services for members of both organizations. In addition, through the Italian Hydrological Society, initiatives are addressed to foster the synergy among the Italian scientific community, the national authorities and firms for activities linked to water resources management and natural hazards. Details of activities are summarized as in the sequel.

- Participation to the CNR-IUGG Commission as a Member.
- Dissemination of activities of IUGG among Italian Universities and Research Institutions for the meetings participation and IUGG Research Grant applications
- Foster the collaboration between IAHS and Hydrological Sciences Division of the European Geosciences Union (EGU) by involving the President of Hydrological Sciences Division of EGU, Prof. Elena Toth.
- With Prof. Alberto Montanari, to promote the nomination of Professor Zbigniew W. Kundzewicz of Potsdam Institute for Climate Impact Research, for the 2017 Dooge Medal (International Hydrology Prize) of IAHS/UNESCO/WMO. The initiative had a positive outcome and Prof. Kundzewicz has been awarded the Dooge medal for his outstanding contributions to an improved understanding of flood events, climate impact on water resources and his leadership in the international community of hydrologists. The award ceremony will be held on July 13th 2017, during the IAHS Scientific Assembly in Port Elizabeth, South Africa.
- The endorsement for the nomination of Prof Dan Rosbjerg of Technical University of Denmark, for the Volker Medal International Hydrology Prize, the Volker Medal (International Hydrology Prize) of IAHS/UNESCO/WMO. The initiative was positive and the Professor Emeritus Dan Rosbjerg has been awarded the 2017 IAHS-UNESCO-WMO International Hydrology Prize - Volker medal for his outstanding contributions of hydrological science to the hydrological community and the society at large. The award ceremony will be held on July 13th 2017, during the IAHS Scientific Assembly in Port Elizabeth, South Africa. .

### **4. Evaluation of the participation in terms of benefits and membership cost**

The benefits of the participation in the Union are certainly positive for the Italian Scientific Community both for the resources made available by IUGG for the various initiatives promoted and which foster the attendance to Congresses and Research Grant applications and for the activities

developed by the various groups operating in IAHS/IUGG and chaired by Italian researchers, as can be also inferred from the Section2 of the document.

## 5. Evaluation of Italians' attendance and how to improve interest and involvement

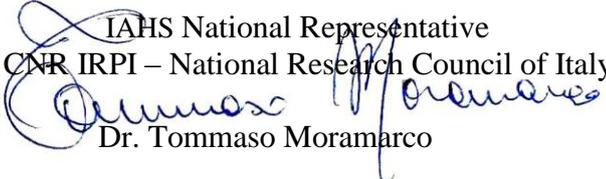
The participation of Italian scientists to initiatives organized under the IAHS umbrella is already significant as proved from different Courses, Conference and Meetings organized by the Groups/Commissions led by Italian scientists. However, the interest towards the IAHS activities can be improved if more financial resources are made available from IUGG, and it would be great from CNR as well, for international activities in the field of hydrological sciences, involving Italian scientist and in particular the youngest ones.

## 6. Italian experts with important roles within the Union or within related Commissions and Programs

- *Dr. Tommaso Moramarco*. National Representative IAHS/IUGG; Member of CNR-IUGG Commission and President of Italian Hydrological Society.
- *Prof. Alberto Montanari*. Alternate National Representative IAHS/IUGG and President of International Commission on Water Resource (ICWR/IAHS). Alberto Montanari was bestowed with the: a) *2017 Union Service Award* in recognition of his outstanding services to EGU's awards programme, incorporating the highest ethical standards and transparency in procedures; b) *2018 Henry Darcy Medal* for his physically based stochastic modelling and the major impact this had on water-resources engineering and management. Finally Alberto Montanari was elected President EGU for the period 2019-2021
- *Prof. Attilio Castellarin*. Editor in Chief of *IAHS Hydrological Sciences Journal*
- *Prof. Ennio Ferrari*. Vice-President International Commission on Surface Water (ICSW/IAHS)
- *Prof. Aldo Fiori*. President International Commission for Ground Water (ICGW)
- *Prof. Salvatore Grimaldi*. International Commission on Statistical Hydrology of (ICSH/IAHS)
- *Dr. Fernando Nardi*. President Citizen AND HYdrology Working Group (CandHy WG)
- *Dr. Paolo Porto*. Secretary in charge International Commission on Continental Erosion/International Association of Hydrological Sciences (ICCE/IAHS).
- *Dr. Flavia Tauro*. Chair MOXXI Working Group (Measurements & Observations in XXI Century);
- *Prof. Elena Toth*. President Division on Hydrological Sciences (HS) – EGU; Vice Presidente della Società Idrologica Italiana.
- *Dr. Elena Volpi*. Secretary in charge International Commission on Statistical Hydrology of (ICSH/IAHS)
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IAHS National Representative  
CNR IRPI – National Research Council of Italy  
  
Dr. Tommaso Moramarco