

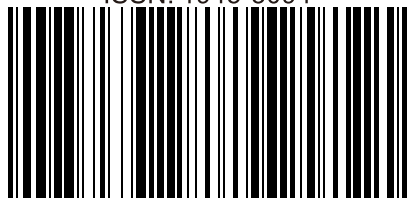


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Special issue on Water: Unite and Divide



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The Interdisciplinary Junior Summit on Water: An Experiment toward New Perspectives for Scientists

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Interdisciplinary research is becoming one of the key elements in the world of science; and thus scientists, research policy-makers but also industries aim at multiplying interdisciplinary research initiatives. In this context, the European Science Foundation decided to organise in August 2012 the first Interdisciplinary Junior Summit, focussing on the following issue: “Water: Unite and Divide”¹. This project was initiated and coordinated by the ESF Standing Committee for the Humanities and supported by three other Committees covering the Life, Earth and Environmental Sciences; the Physical and Engineering Sciences; and the Social Sciences.

The main objective of the Summit was to invite the next generation of leading scientists (“early career researchers”) across the academic spectrum to participate in a four-day, in-depth discussion on the challenges and opportunities posed by inter-(multi, trans, cross) disciplinary research. Discussions focussed on various issues related to the event’s general theme of “Water: Unite and Divide—Interdisciplinary approaches for a sustainable future”, including for instance water governance, water quality, the value of water, and water and climate change.

This special issue, which gathers some of the talks given by the invited world-class experts as well as collaborative papers written by the selected early career researchers, should be understood as a concrete sample of what can be considered as a first experiment and a milestone toward implementing more interdisciplinarity in the European Research Area.

Ten years ago, the European Science Foundation, as a result of a forward looking project on Global Change, was already calling for more “willingness to plan projects together from the start, taking into account the different traditions in the various disciplines”². Later in 2007, the ESF co-published with the EUROHORCs

(European Heads of Research Council) a science policy briefing commenting on the European Commission’s Green Paper “The European Research Area: New Perspectives”. One recommendation was to encourage “closer collaboration on foresight in order to set science agendas and priorities taking into account the need for inter—and multidisciplinary research”³.

The Interdisciplinary Junior Summit was conceived as a new initiative toward the same objective; however the intention this time was not to call for more interdisciplinarity once again but to actually start implementing. Leading experts and early career researchers were invited to reflect on conceptual frameworks for addressing interdisciplinarity and developing mutual understanding and respect (hard sciences versus soft sciences); to address questions as to how educate young researchers in interdisciplinary communication and actual research. This event aimed at enhancing awareness of the necessity of bridging gaps between disciplines and research domains.

When this project was initiated, it was decided to select a theme that could be broad enough to attract researchers from across the disciplinary base; the theme of water, generally considered to be one of today’s Grand Challenges, seemed to be an ideal starting point. Indeed, “water” covers H₂O (a simple molecule with surprising properties), the oceans and the seas (*i.e.*, about 71% of the earth’s surface) as well as over half the human body. Water is a key to life, a means of mobility, a tourist attraction, a power source, a transmitter of infectious diseases and a source of inspiration that has been reflected in man’s cultural outputs for thousands of years.

The importance of water as a key research issue has long been identified by the European Science Foundation. A number of research projects addressing issues on this

¹www.esf.org/water.

²Policy Briefing 19, *ESF Scientific Forward Look on Global Change Research*, European Science Foundation, Strasbourg, 2002, p. 6.

³Science Policy Briefing 29, *EUROHORCs’ and ESF’s comments on the European Commission’s Green Paper “The European Research Area: New Perspectives”*, European Science Foundation, Strasbourg, 2007, p. 7.

specific theme have been supported, for instance in 2008 a conference was organised on *Complex systems and changes: water and life* and a second conference in 2010 on *Accounting for water scarcity and pollution in the rules of international trade*; several EUROCORES, Research Networking Programmes or Exploratory Workshops also addressed related issues. More recently, the RESCUE (Responses to Environmental and Societal Challenges for our Unstable Earth) Forward Look⁴, whose aim was to set an agenda for global change research, underlined the need to focus among other issues on the increasing water scarcity and water pollution.

Current and future research agenda in Europe are more and more conceived as a direct answer to solve “pressing societal challenges such as climate change, an ageing population, or the move towards a more resource-efficient society”⁵, a challenge-based approach that implies bringing “together resources and knowledge across different fields, technologies and disciplines”⁶.

In the forthcoming Horizon 2020, the European Commission has set a research agenda articulated around six societal challenges:

- Health, demographic change and wellbeing;
- Food security, sustainable agriculture, marine and maritime research and the bio-economy;
- Secure, clean and efficient energy;
- Smart, green and integrated transport;
- Climate action, resource efficiency and raw materials;
- Inclusive, innovative and secure societies.

For each of those challenges, water should be considered as a transversal key factor. *Demographic changes* such as climate-induced migrations due to the rise of water level in certain regions in the world or recurrent droughts and floods were addressed by several speakers during the Interdisciplinary Junior Summit. The challenge of *food security and sustainable agriculture* is also highly related to water conflicts due to irrigation practices for instance; a number of speakers talked about water management and governance issues in our current world but also through history (cf. the water issue between European law and African custom in the twentieth century⁷). Rivers and sea waters are more and more considered as credible sources of *clean and efficient energy*; they are also an every-day key means of mobility (e.g.

⁴*Responses to Environmental and Societal Challenges for Our Unstable Earth (RESCUE)*, ESF Forward Look, European Science Foundation, Strasbourg, 2011.

⁵European Commission, *Horizon 2020—The Framework Programme for Research and Innovation*, Communication from the Commission to the European Parliament, the Council, the European and Social Committee and the Committee of the Regions, COM(2011) 808 final, Brussels, 2011, p. 2.

⁶*ibid.*, p. 5.

⁷Interdisciplinary Junior Summit, *Water: unite and divide*, Programme Booklet, European Science Foundation, Strasbourg, 2012, p. 26.

cargo ships, barges) and thus an important issue for *smart, green and integrated transport*. In terms of *climate action and resource efficiency*, needless to underline that water resources are of the utmost importance, one of the articles of this special issue “Can Integrated Water Resources Management Increase Adaptive Capacity to Climate Change Adaptation? A Critical Review” will surely offer a renewed perspective of the problem. Finally, water, which can be a uniting or dividing factor (cf. title of the summit), is also a key issue toward more *inclusive, innovative and secure societies*.

Evidence shows that in order to find solutions to most of the challenges identified in today’s research agendas in general, and to water-related challenges in particular, we need to concretely start implementing interdisciplinarity; researchers must communicate across disciplinary borders. Through addressing a specific topic, the discussions can start with a focus on issues relating to each one’s own research interests and experiences but a number of sub-questions requires an inter-(multi, trans) disciplinary approach for a proper understanding.

This special issue of the Journal of Water Resource and Protection consists in articles from some of the invited speakers and selected early career researchers who attended the Interdisciplinary Junior Summit; it reflects well the diversity of topics discussed during the sessions and the variety of disciplines represented.

Kirsten Hastrup in “Water and the Configuration of Social Worlds: An Anthropological Perspective” explains from an anthropological point of view how important the water is to survive but also to configure social forms and values. David Feldman shows how through adaptive policies we can overcome the obstacles posed by freshwater scarcity. Ahmet Saatci gives an account of his own experience in finding solutions to water distribution and waste water treatment in large cities. These three papers, written by experts invited to the summit, give an account from three very different perspectives of the current challenges in each discipline on one particular topic. However, at the same time, each perspective gives an added value to the two others for a better understanding of the current issues concerning “water needs”.

This special issue is also enriched by collaborative articles that can be considered as a direct, and a very successful, outcome of the summit itself. It should be understood as a sample of the topics addressed during the sessions by the selected early career researchers but also a concrete example of how we can build interdisciplinary collaborations. The six articles—“Can Integrated Water Resources Management Increase Adaptive Capacity to Climate Change Adaptation? A Critical Review”, “Cultural Heritage and Flood: Need of Interdisciplinarity”, “A

Perspective on Plastics Additives in Water-Packaging Materials”, “Raising Awareness about Water Issues: The Role of Water Symbolism and Proverbs”, “Advances in Water Quality Monitoring of Inorganics: Current Trends”, “Water Shortage in MENA Region: An Interdisciplinary Overview and a Suite of Practical Solutions”—by the simple fact that they are put together as one issue and given the diversity of topics addressed show that interdisciplinary is not only theoretically necessary but that it is practically possible. The article on “Water Shortage in MENA Region: An Interdisciplinary Overview and a Suite of Practical Solutions” for instance, which received

inputs from engineering science, physical geography, environmental sciences as well as geopolitics to trigger the important issue of access to water for all, is a vibrant example that facing a grand challenge can only be done through pulling together the best of each and every one.

“In cross-disciplinary research one discipline or its object is illuminated from the perspective of another”⁸; that was the general aim of the whole initiative, to get a different perception of the possibilities that interdisciplinary research can offer and this special issue proves that it has been a great success.

⁸RESCUE, op. cit., p. 48.

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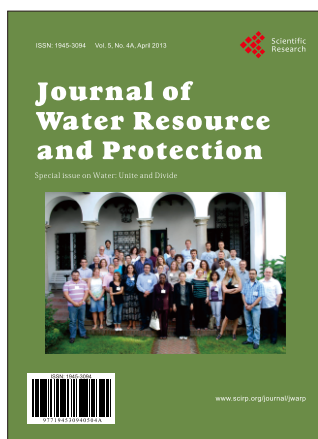
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JWARP is an international refereed journal dedicated to the latest advancement of water resource and protection. The goal of this journal is to keep a record of the state-of-the-art research and promote the research work.

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This journal invites original research and review papers that address the following issues in water resource and protection. Topics of interest include, but are not limited to:

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- Ground Water Monitoring & Modeling
- Industrial Ecology and Water Sustainability
- Innovative Technologies and Engineering Solutions for Water Resources Protection
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- Mine Water and the Environment
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- Sea Water Utilization
- Stormwater Management and Low Impact Development
- Surface Runoff and Ground Water Pollution Control
- Urban Water
- Water and Environment
- Water Infrastructure and Life Cycle Assessment
- Water Policy and Governance
- Water Purification and Wastewater Treatment
- Water Quality Management and Ecosystems Modeling
- Water Quality Monitoring and Assessment
- Water Quality, Pollutant Exposure and Health
- Water Research & Education
- Water Resources and Climatic Change
- Water Resources Protection and Management
- Water Resources Restoration and Sustainable Use

We are also interested in short papers (letters) that clearly address a specific problem, and short survey or position papers that sketch the results or problems on a specific topic. Authors of selected short papers would be invited to write a regular paper on the same topic for future issues of the **JWARP**.

Notes for Intending Authors

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