

Editorial: Toward 50 years of *Water Resources Research*

Alberto Montanari,¹ Günter Blöschl,² Ximing Cai,³ D. Scott Mackay,⁴ Anna M. Michalak,⁵ Harihar Rajaram,⁶ and Graham Sander⁷

Citation: Montanari, A., G. Blöschl, X. Cai, D. S. Mackay, A. M. Michalak, H. Rajaram, and G. Sander (2013), Editorial: Toward 50 years of *Water Resources Research*, *Water Resour. Res.*, 49, 7841–7842, doi:10.1002/2013WR014986.

[1] The first issue of *Water Resources Research* (WRR) was published in March 1965 and, therefore, the year 2015 will present the exciting opportunity to celebrate the 50th anniversary of the journal. Naturally, this milestone will be seen as an occasion to look back on 50 years of research activity. The history of WRR provides a very interesting perspective on the development of hydrology and the legacy of the worldwide water resources community.

[2] Before 1965, there were only two scientific journals dedicated to hydrology: the *Hydrological Sciences Journal*, which began in 1956, and the *Journal of Hydrology*, which began in 1963. Since the first paper in 1965, 49 volumes and 464 issues of WRR have been published, including more than 13,800 contributions that received more than 380,000 citations. From its launch, WRR has been the flagship journal of the American Geophysical Union. Thirty-four capable editors—the first was Walter B. Langbein, who edited the journal from 1965 to 1969—raised the profile of WRR to the highest levels, thus creating a superb forum for advancing and indeed shaping the hydrologic sciences, and serving society. One of the strengths of WRR has always been a forward-looking vision and an interdisciplinary platform that allowed the journal to continuously play a leading role, while scientific research and publishing was tremendously evolving during the past decades.

[3] It is expected that the above evolution will continue at an even faster pace in the near future, and therefore, the upcoming 50th anniversary of WRR is an opportunity to further develop the vision for the journal. Rocketing submission numbers, both for WRR and other journals, and the popularity of other forms of communication such as web-based discussions, are increasing the information available to researchers at an unprecedented pace. On the one hand,

this trend is a real opportunity for the journal, while on the other, it poses challenges for presenting scientific information and assessing the quality of scientific publishing. These are extremely important issues that impact the value and visibility of hydrologic research, and therefore, the ceaseless effort of humans to secure water vital to the development of society. Evolving the vision of WRR is, therefore, an important target, today more than ever.

[4] WRR being a journal of the American Geophysical Union, it is fitting to frame its vision in the context of the Union's mission statement, which reads (<http://about.agu.org/mission>): “The purpose of the American Geophysical Union is to promote discovery in Earth and space science for the benefit of humanity.” Indeed, if one looks at the future of hydrology, it is clear that, to benefit humanity, we will need to address with fervor issues related to the interaction and feedbacks between water and society. The human footprint on the hydrologic cycle, and therefore, on water resources and water related hazards, can no longer be overlooked at any scale. There is an increasing need and desire to improve our capability to predict the evolution of natural and artificial water systems under the impact of the changes induced by society. This is also the target of the 2013–2022 Scientific Decade “Panta Rhei—Change in Hydrology and Society” of the International Association of Hydrological Sciences. The awareness of such developing challenges has made the new Editorial Board of WRR adopt “Science for society” as one of the keywords of their vision for the journal. Hydrology is hugely relevant to society, and in order to understand the variability and change of hydrology due to human as well as natural factors, the fingerprint of society needs to be put center stage in hydrologic research.

[5] The basis of such an endeavor must be the quest for better understanding of the water cycle, and its physical, chemical, and biological processes in the context of the Earth system as it evolves with human development. Researchers should strengthen their efforts to focus on the dynamics of hydrologic processes and emerging theories in an interdisciplinary context, and to better exploit new observational systems. The latter may well go beyond classical data collection and include social networking and citizen science, for example. We need a broader look at the spectrum of what and how we can observe, seeking a creative and innovative effort to profit from the availability of an ever increasing flow of information and expert knowledge. New technologies, philosophies, and human resources are available, and WRR should look at these innovations with an interdisciplinary, enthusiastic, and bold attitude.

¹Department of Civil, Chemical, Environmental, and Materials Engineering (DICAM), University of Bologna, Bologna, Italy.

²Institute for Hydraulic and Water Resources Engineering, Vienna University of Technology, Vienna, Austria.

³Ven Te Chow Hydrosystems Laboratory, Department of Civil and Environmental Engineering, University of Illinois at Urbana-Champaign, Urbana, Illinois, USA.

⁴Department of Geography, State University of New York at Buffalo, Buffalo, New York, USA.

⁵Department of Global Ecology, Carnegie Institution for Science, Stanford, California, USA.

⁶Department of Civil, Environmental, and Architectural Engineering, University of Colorado, Boulder, Colorado, USA.

⁷Department of Civil and Building Engineering, Loughborough University, Loughborough, UK.

[6] The ambitious goal of benefitting humanity implies that the visibility and impact of hydrology must be raised. While hydrology plays a pivotal role in the future of society, its importance is not reflected in its public visibility. We believe that the community should engage in a cooperative communication effort to make the public aware of the key role that hydrology plays for water resources management and the mitigation of water related risks. A step toward this goal would be more timely communication of recent research results, by giving due reference to our recent work. We call on all authors to make their and their colleague's research quickly known, and involve the most recent work in discussions. We believe that a cooperative effort is needed, as the visibility of research depends largely on the efforts of the researchers themselves.

[7] Another excellent opportunity to raise the visibility of WRR is the shift toward open access publishing. Over the past decade, efforts have increased to expand free access to scientific publications and their underlying data, and AGU is progressively embracing open access policies [Van der Hilst and Hanson, 2013]. It has been estimated that about half of the recent literature may now be openly available [Archambault et al., 2013]. WRR already offers the option to make published papers freely available on the web but, currently, this is an expensive option that is financially feasible to only a relatively small fraction of researchers. We are convinced that WRR would gain a lot of visibility if it were entirely freely accessible. The open access model that AGU may adopt [Van der Hilst and Hanson, 2013] will push more of the publishing costs to authors and funding institutions. The details of such a business model need to be carefully considered, as the current accessibility of WRR at an affordable price for authors would be impacted. Consequently, the implications of the open access decision are extremely important, and the Editorial Board of WRR is committed to cooperating with AGU, the WRR readership, and WRR authors in identifying a suitable business model targeted to the journal and its community.

[8] To reach the above targets, the new Editorial Board of WRR is committed to making the journal even more efficient in terms of timeliness and rigor of the review process. Timeliness is extremely important for increasing the visibility of contributions in a publishing marketplace that is moving forward at a fast pace. Moreover, getting prompt and constructive feedback on submitted papers is a substantial benefit for researchers. We should become aware that any increased effort to provide timely, accurate and constructive reviews provides an added value for the whole community and, in an indirect way, will be beneficial to the reviewers themselves. We do not believe that a timely review is detrimental to its quality; we must be rapid,

objective, corporative, and excellent if our target is to shape an exciting future for our science and our early-career researchers.

[9] As we are moving toward the 50th birthday of WRR, the Editorial Board is launching new initiatives that we are excited to introduce. To foster the productive exchange of ideas, we will shortly launch a new article type, the *Debates on Water Resources*, where three to four researchers will be invited to present their views and debate emerging research questions. The debates will be an excellent and highly visible opportunity to confront new ideas and to stimulate a forward-looking perspective by both established and early-career researchers on the future of hydrologic science.

[10] Furthermore, in 2015, the Editorial Board aims to publish a special section dedicated to the 50 years of WRR, including invited contributions from WRR distinguished authors and Editors, opinion papers on the future of hydrologic sciences and excellent research contributions in the form of regular articles. Our ambitious hope is to provide a reference for future work, by continuing the tradition that Stephen Burges inaugurated in 1986 through the influential "Trends and directions in hydrology" special issue [Burges, 1986]. We look forward to cooperating with the authors of WRR to reach this target.

[11] The vision and ideas presented above have evolved through numerous discussions with the AGU hydrologic community. To bring them to bear on the development of the Journal, we rely on the support of the authors and readers of WRR. The dialogue of the Editors with the community is vital: we are committed to ongoing discussions, by corresponding with the authors and organizing meetings with researchers. We would be pleased if anyone who has ideas on the future of the journal and strengthening our communication strategy contacted us.

[12] We are extremely grateful to Praveen Kumar, Ron Griffin, Hoshin Gupta, Tissa Illangasekare, Graham Sander, and John Selker, the previous Editors, for leading WRR in the past 4 years. We are committed to promoting discovery in hydrologic science in accordance with the AGU vision, and are looking forward to celebrating the 50th anniversary of our flagship journal: *Water Resources Research*.

References

- Archambault, E., D. Amyot, P. Deschamps, A. Nicol, L. Rebut, and G. Roberge (2013), Proportion of open access peer-reviewed papers at the European and world levels—2004–2011, Rep. RTD-B6-PP-2011-2, Science, Montreal, Que., Canada.
- Burges, S. J. (1986), Trends and directions in hydrology, *Water Resour. Res.*, 22(9S), 1S–5S, doi:10.1029/WR022i09Sp0001S.
- Van Der Hilst, R., and B. Hanson (2013), Update on AGU publishing: A focus on open access, *Eos Trans. AGU*, 94(39), 345.