Editorial

Why a “new” journal on aquatic sciences?

The journal you have in your hands (or on your computer screen) is not a new journal – at least, not literally; it has been in publication since 1920, initially as a journal of hydrology. Since 1989, it has carried the name “Aquatic Sciences – A Multidisciplinary Journal for Theoretical and Applied Limnology, Fisheries Science and Water Technology” (AS). Starting with this issue, AS is being relaunched with a new focus, a new appearance, a new international editorial board, and a new name: “Aquatic Sciences – Research Across Boundaries”.

Few processes occurring in natural environments are purely biological, geological, chemical or physical. Research transcending traditional disciplines is needed, therefore, to answer important questions about natural aquatic systems; that is, studies examining interactions between biological, geological, chemical and physical processes. An outstanding example of a group of scientists undertaking basic research across disciplinary boundaries is the Center for Environmental BioInorganic Chemistry (CEBIC), directed by François M. M. Morel at Princeton University. CEBIC brings together the complimentary expertise of bioinorganic chemists, geochemists, and environmental microbiologists to elucidate the molecular mechanisms of the function, fate, and effect of trace metals in the environment. There exist many institutes conducting cross-disciplinary research including the National Institute for Water & Atmospheric Research, the Woods Hole Oceanographic Institution, the Institute of Ecosystem Studies, the Max-Planck-Institutes, the European Commission Joint Research Centre, and the Swiss Federal Institute for Environmental Science and Technology (EAWAG), to name a few. I am pleased to add that these and other such institutions are represented on the new Editorial Board of this journal (see back-cover and inside of front-cover).

Many processes occur at environmental interfaces: gas-exchange at the air-water interface or microbial redox and dissolution processes at the sediment-water interface. River-ocean, lentic-lotic, subsurface-surface, and land-water linkages likewise exhibit the characteristics of boundaries. These boundaries are very sensitive environments because they influence (and are influenced by) adjacent aquatic, terrestrial and atmospheric systems. The concentration of nutrients, and thus the biological composition of coastal waters, is largely determined by input from rivers – and those of rivers by input from their catchments. The structure of riparian zones has significant impacts on the diversity of riverine biota and for “life on the edge”. Interfaces are fascinating environments because they exhibit dynamic interactions between physics, chemistry and biology. At boundaries, in particular, and in aquatic ecosystems, in general, the structure of communities and their environments, as well as physical, chemical, and biological processes, vary spatially and temporally. Hence, cross-disciplinary research must be combined with research across environmental, spatial and temporal boundaries.

The “new” AS is a forum for the publication of cross-boundary research dealing with natural (not technical) aquatic systems and with the impacts of human activities on these systems, spanning the range from molecular-based mechanistic studies to investigations on an ecosystem scale. Research from both freshwater and marine systems can be published in this journal, including field studies, laboratory experiments, mathematical modeling, and combinations of these approaches. In Aquatic Sciences – Research Across Boundaries, research papers as well as reviews and overviews can be published. Review and overview articles should focus on cutting-edge research questions and articulate future directions in fields transcending traditional disciplines and approaches. Review articles should provide a synthesis of the state-of-the-art in a particular field incorporating cross-boundary research, whereas overview articles should discuss studies performed among several research groups and institutions or give an overview of one’s own interdisciplinary research.

Management of natural aquatic systems also is an issue of interest to the Journal; for example, developing strategies for a sustainable use of aquatic ecosystems as
sources of food and energy, or the sound restoration of river flood plains and other wetlands. When dealing with the management of natural waters, political and socio-economic aspects must be taken into account. The articles published under the Journal’s “Water Policy” section should present research at the interface of the natural sciences, social sciences, and public policy. They should describe developments and suggest trends in the sustainable management of local and global aquatic systems, and provide relevant information to policy makers and governments. Due to the complex nature of such articles, the Editorial Board includes natural scientists as well as an anthropologist and an individual with a background in political science, history and international law.

The re-launching of Aquatic Sciences is a process; it will take some time to establish the profile of the Journal as indicated by its new name and by this editorial. To facilitate this process, we invited all of the water policy, overview and review articles that appear in this and the 2nd and 3rd 2002 issues. We hope they will convey to you, our reader, the type and quality of cross-boundary research we wish to publish in the Journal. The research articles published in the present issue were submitted before the new Editorial Board was assembled. I would like to acknowledge the former Subject Editors of AS (see Vol. 63) who were responsible for these research articles. The 4th 2002 issue of AS will be a Special Issue on “Vulnerability of Water Resources to Environmental Change – A Systems Approach” based on a session at the Open Science Conference “Challenges of a Changing Earth” held in Amsterdam in July 2001. This conference was organized jointly by the International Human Dimensions Programme on Global Environmental Change (IHDP), the International Geosphere-Biosphere Programme (IGBP), and the World Climate Research Programme (WCRP). These programs are represented on the AS Editorial Board by Eric O. Odada, director of the Pan-Africa START (the global change SysTem for Analysis Research and Training) Secretariat (PASS).

I welcome your comments on the re-launch of AS. I look forward to receiving articles for publication in AS, presenting research across boundaries from you and from within your research group, Department and Institute.

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