

Hydrology is important

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Researchers in hydrology have the important task to set the theoretical and methodological basis to ensure a sustainable and efficient use of water resources and to mitigate water related hazards. In the rapidly changing world, the mission of hydrologists is essential in ensuring societal development and security while reducing social tensions. Earth sciences and environmental issues are mostly about water. Hence, related global challenges cannot be dealt with if hydrological processes are not successfully modeled, by taking into account what we know and, in particular, what cannot be known.

To get to the target, researchers need to increase the collective perception of the importance of hydrology, because there is no successful policy without public awareness. The visibility of hydrology needs to be expanded by strengthening interdisciplinarity and increasing communication to the public and stakeholders. Besides producing new knowledge, researchers are today required to engage with societal needs and global challenges by linking their activity with the socio-economic context, therefore pursuing the "third mission" of the academia. As hydrology has historically dealt with providing solutions to real world problems, the society has a lot to gain from such engagement, in terms of focusing on pragmatism and departing from fashionable virtual reality.

To improve communication and public engagement, it is necessary to bridge the classical approach to hydrology, that promoted a tremendous evolution of water science and technology in the 20th century, with a new vision that requires an innovative view to hydrological theory and modeling. While hydrology is not an inexact science, hydrological processes cannot be monitored and modeled with full accuracy. This is an intrinsic characteristic of hydrology, rather than a limitation, that must be properly recognized and communicated within an evolving vision and modeling framework.

The key to the success is the involvement of young scientists, because paradigm changes require new energies, and a successful synthesis of the incommensurable amount of knowledge that hydrology gained during its history. In this lecture I will discuss the premises and ways forward for elaborating the above innovative vision by engaging the new generation of researchers.