

Future Outlook of Hydrology

Taikan Oki

IIS, The University of Tokyo

Historically, lucky researchers could have their patron to support their life and research activities, but most of research activities should have been a hobby of knowledgeable people who could be a teacher, or a priest, etc. Modern nations found research and development could have practical values, for example, for military engineering, and decided to be a patron of researchers and has been investing a lot to various field of research activities. The situation still remains; however, current governments are getting more accountable for tax payers and bureaucrats are tired to explain why they spend a lot of money for research developments. As a consequence, researchers are now demanded to prove how their researches pay for the real patron, the tax payers, directly.

Then, how hydrological science can appeal its merit for society? It is not always true that society admires which brings practical benefit, for example, arts and sports. What are the artistic or athletic research topics in hydrology? And also there should be many research fields in hydrology that are socially significant and scientifically relevant. Therefore it should be no use to worry that researches that contribute to society are application studies and have marginal values from a scientific point of view.

Hydrological science has evolved and developed its capability of prediction a lot in the last two decades, substantially owing to the development of computational capacity, communication technology, remote sensing, and GIS, etc. This is because hydrology is dominated by its boundary condition and forcing information rather than the principle equations, by nature.

What kind of opportunities lay ahead for hydrological sciences? Many aspects were identified by the “Hydrology 2020” working group of IAHS, such as global environmental issues including global warming and world water crisis, coupling physical and anthropogenic water cycles, integrated modeling with socio-economic aspects or biogeochemical processes, etc. What are the bottlenecks to explore these new frontiers? It is expected this symposium will be a good opportunity for brainstorming to discuss about what the current gaps are between societal expectations to hydrological prediction and the abilities of hydrological modeling systems, and what kind of topics and which directions in hydrology will challenge our scientific studies and technological developments in the coming decades.