

## BOOK REVIEW

### **Integrated Water, Wastewater and Isotope Hydrology. Proceedings of International Conference (ICE WWISH 2013). Department of Civil Engineering, Bangalore University, Bengaluru 560056**

Man has recognized the importance of water since the dawn of civilization. The ancient human settlements grew along the river valleys and sea beaches. Scarcity of water makes the foundation of civilization suffer from infirmity. Fatehpur Sikri collapsed as the capital of Mughal Empire because of acute water scarcity. Muhammad Bin Tughluq's bid to shift the capital from Delhi to Peninsula failed similarly. With population growth, industrial revolution and thereafter the role of water has increased manifold, so also scarcity triggered by accelerating consumption. According to experts, globally there is no dearth of water but for its non-uniform occurrence in time and space. What matters is its availability in required quantity and quality at the place and time as per our need. Thus at Cherrapunji despite rainfall of more than 2000 mm annually, scarcity prevails in non-monsoon months, as most of the rainfall is lost as runoff. Hence is the need for water management. Traditionally ancients developed and used innovative knowledge systems and skills for water management to cope with extreme situations of drought and flood. Various indigenous innovations helped them to store and use water round the year. Further, with growing use of water follow over-exploitation, pollution, need for water conservation, augmentation and protection, remediation of pollution, exploration of new sources and recycling of wastewaters. Modern Science and Technology have provided tools to investigate and solve the problems. In this context the Civil Engineering Department of Bangalore University organized a seminar to focus and deliberate on the new innovations in the frontal arenas of water science e.g., water development and management: exploration and modeling; water quality and pollution; wastewater recycling; and isotopic studies. The proceedings of the seminar are brought out in three volumes including 155 research papers organized theme wise as below:

Vol I: Theme I & II (Sustainable surface water and groundwater management).

Vol II: Theme IV & V (Sustainable wastewater treatment and water management policy).

Vol III: Theme III & VI (Water Quality and Isotope Hydrology).

The varied and interesting topics dealt with in the papers mostly relate to the grass root levels and are testimony to the wide range of problems confronting the water management sectors today to which response of the society including scientific community has been rather muted. After all, who bothers for the farmers' suicides after monsoon failure in Vidarbha, North Karnataka, or for the plight of the dwellers in slums and shanties of Mumbai or Delhi who suffer in silence from acute water shortage or poor quality of water. It is encouraging to note that young scientists are more and more invoking modern tools like remote sensing and

GIS, and mathematical or stochastic modeling in their study to find lasting solutions to the problems. Isotopic study is another new innovation being used in a variety of hydrogeological problems. In a way most of the papers are working examples of these analytical tools. Some of the papers which attracted my attention are listed below for the help of the research students and readers who may find them interesting and educative.

Theme I & II: Morphometric analysis and prioritization of sub-watershed (TI-05), Application of Remote sensing and GIS for soil and water conservation (TI-12), An investigation into sand mining (TI-27), Impact of land use change on groundwater (TII-03), Deep seated aquifers of Garo Hills district (TII-09), Agricultural impact on groundwater (TII-25), Heterogeneity in hard rock aquifers (TII-30).

Theme III: An overview of water quality in traditional RWH (TIII-01), Role of weathering and alkalinity for release of fluoride (TIII-10), Impact of industrialization on groundwater quality (TIII-12), Arsenic in groundwater in middle Gangetic plains (TIII-21), Impact of anthropogenic activities on groundwater quality (TIII-29), Radon in groundwater (TIII-31), Modeling groundwater pollution vulnerability (TIII-33).

Theme IV & V: Studies on industrial waste water treatment. (TIV-04), Removal of hexavalent chromium (TIV-21), Optimum pumping policy (TV-05), Integrated approach for irrigation scheduling (TV-10), Mathematical modeling for contaminant migration (TV-14).

Theme VI: Surface water and ground water interaction in Bist doab (TVI-01), d18O and dD isotopes and ionic ratio study to infer salinity ingress (TVI-03), Snow and glacial melt runoff contribution to Beas river (TVI-04).

There are also several other notable papers in the volumes.

Summarising, the Proceedings Volume is a priceless compilation of diverse valuable papers, which all university libraries must keep for reference, though it is beset with some avoidable shortcomings like imperfect organization of papers theme wise, lack of scrupulous scrutiny and editing, poor reproduction of figures, grammatical mistakes. However, the seminar achieved its twin objectives: (1) Generating awareness in the academics of the need for water management studies, identification of problems in diverse water related fields and striving to find out solutions and (2) Providing open forum to all budding scientists, new research students and young academicians in the quest for truth and innovative solutions through intense debates and queries. The Civil Engineering Department and the authors of papers deserve accolades.

*E: subhajyoti\_das@hotmail.com*

SUBHAJYOTI DAS