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POST-2015 WATER MANAGEMENT: A CRITICAL APPLICATION FOR EARTH SATELLITES

Abstract

Increasingly, water is becoming a prized asset in most countries. Whether countries treat water as a human right or they manage their water based primarily on economic considerations, there is an increasing cost associated with the provision of safe water in countries with growing populations. In general, as populations and the demand for industrial and domestic water increase, the average water available per capita decreases. This trend increases the pressure on resource managers to make better decisions about water allocations so water can be made available more efficiently and new sources can be discovered and tapped. Climate and economic development determine the optimum strategy for water management in different countries. Different strategies are needed due to varying climate and levels of economic development. Governments in the developing world need to protect their water through better sanitation, and at the same time provide better access to more effective use of their water, particularly in relation to the Water-Energy-Food Nexus and to reduce the exposure of clean water to pollution. They also need to find safe and effective ways to recycle, treat and reuse wastewater. Future management decisions related to water will require a better understanding of the present and future quantity and quality of the available water and better information to support the tradeoffs in decision making. Earth observations provide information that can be used at multiple scales to assist in decision-making. Earth observations are available from satellites, in-situ data networks and in some cases models. These range from the geographical distribution of water with different properties at the large scale to the distribution of water in more highly managed systems where dams and reservoirs, allocated water withdrawals and navigation infrastructure have modified waterways and natural supply systems. As indicated in the proposed Post-2015 Sustainable Development Goals, water also needs to be allocated to the needs of ecosystems. Clearly we need to better understand and measure the distribution of water on our planet. This talk reviews what we have learned about the information needed for making decisions about water and explores strategies for making data and science available to support many of these decisions. It also identifies the gaps in our knowledge and technologies and indicates ways in which we could address these gaps with new sensing capabilities, research, development, and applications.