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Leveraging Earth Observations Data for Facilitating Water Diplomacy and Sustainable Development Goals in Transboundary Cooperation

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The United Nations Agenda 2030 Sustainable Development Goals call for substantially increasing water-use efficiency across all sectors and ensuring sustainable withdrawals and supply of freshwater to address water scarcity, as well as increasing international cooperation over transboundary water resources through integrated water resources management (Goals 6.4 and 6.5).

Water scarcity affects more than 40 per cent of the world population and is projected to rise substantially, affecting safe water and sanitation access globally. In addition, More than 80 per cent of wastewater resulting from human activities is also discharged into soil, rivers or sea without any treatment or poor water quality controls. From fast depleting groundwater reserves in the arid Middle East to the densely populated river basins of South Asia, demand for water and competition for water resources are sharply rising. As a result, water quality is under threat, cooperation over water sharing is limited, and safe water access is not ensured for vast populations across basins. In addition, data availability on many of these regions have been a recurring problem for various technological and institutional reasons.

Earth observation techniques provide the most cost-effective and encompassing tool to monitor large transboundary river basins and aquifer systems, and water resources vulnerabilities to climate change around the globe. University of Rhode Island, along with US and international collaborators, is using satellite remote sensing datasets and earth observation techniques to develop tools for surveillance, analysis and decision support for stakeholder organizations to achieve sustainable development goals in safe water access, quality and transboundary cooperation.

Here, we provide examples, analyses, and case studies on 1) providing safe water and sanitation access in vulnerable regions of South Asia through safe water resources mapping, 2) identifying groundwater depletion rates in transboundary aquifer systems and emerging hotspots in arid Middle East, and 3) monitoring changes in hydrologic regimes of High Mountain Asia and impact on water availability in downstream riparian countries (such as the Indus and the Ganges-Brahmaputra-Meghna basins).