**Heads of Space Agencies Support Actions at COP22  
for Water Management**

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Heads of space agencies met in Marrakesh, Morocco, on 11 November 2016 on the occasion of the COP22 (Conference Of the Parties) organized by the United Nations Framework Convention on Climate Change (UNFCCC). They recalled the Declaration of Mexico, recognizing the tremendous contribution of satellites to climate change studies and disaster management support, and expressing their determination to strengthen the role of space in these fields in support of political decisions taken at successive UN COPs.

Following the agreement reached at the COP21 in Paris at the end of 2015, Heads of space agencies endorsed the Declaration of New Delhi stating that “an inclusive global data set would help further global understanding and is a necessary step in establishing an international approach to estimating emission changes for global use based on internationally accepted data. The heads of space agencies from around the world reaffirmed their commitments to work together on these matters within a coordinated international framework with users, service providers and policymakers.”

Climate change driven by increasing concentrations of greenhouse gases is set to alter the water cycle in various ways—through modified precipitation regimes, increased water stress and glacier melting to name a few—and will impact ecosystems and society. Water is a core element of climate change, and as a key factor in mitigating and coping with such changes, particularly in developing nations, it is also a major concern for the COP22, which has been dubbed "the Conference of Action”. Water quality and availability will have major human, economic and environmental repercussions, as underlined at the International Conference on Water and Climate (ICWC) organized in July in Rabat, Morocco, during the workshop on “Water Security for Climate Justice”.

In response to these concerns, operational observing methods are required both to quantify current shifts and continuously monitor their impacts, as well as to develop, refine and validate predictive models. In this context, the heads of space agencies note that space-based remote sensing provides the synoptic view and the repeat observations needed to track and quantify the different elements of the water cycle, alongside collection of in-situ data.

Many space missions are already delivering data for this purpose: the Jason (Europe-USA) and SARAL (France-India) altimetry missions; SMOS (Europe) and SMAP (USA), measuring soil moisture; GPM (USA-Japan) and Megha-Tropiques (France-India), providing better estimates of precipitations; GRACE (USA-Germany), helping to estimate groundwater variations; and the Copernicus programme’s Sentinel 1, 2 and 3 missions. In 2021, the SWOT mission (USA-France-UK-Canada) is set to fly a new-generation wide-swath altimeter that will afford unprecedented levels of spatial resolution.

Space hydrology is now enabling us to gain a greater understanding of the planet’s land water resources. The Committee on Earth Observation Satellites (CEOS) is currently drafting proposals for a Water Constellation of satellites in response to the requirements mapped out by the Group on Earth Observation (GEO). The Heads of space agencies, working with international organizations and the user community, are determined to join forces to assure a continuous supply of such space hydrology data and propose new missions to improve and complement current measurements. They also support initiatives to strengthen cooperation and capacity building to promote use of these new data, in order to enable scientists to devise better models and thus improve our forecasting capabilities to inform decision-makers and help governments to manage water resources more effectively.

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