The Global Water Monitor: Wetland Surface Height Dynamics for Ecology, Conservation, and Resource Management.

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The Global Water Monitor (GWM) offers surface water-related products for lakes, river reaches and wetland zones. The surface elevation change products are derived from satellite radar altimeters, such as the Jason/Sentinel series, and can span multiple decades. While the current instruments are profiling, they offer surface water height at specific locations, thus contributing to parallel observation of wetland surface water extent. GWM wetland products are "operational" with routine updates within 1-2days of satellite overpass. There is also assurance of product continuity to at least the end of 2030. Currently, the GWM holds products for a small selection (~40) of diverse wetlands for objectives that focus on conservation and water/fisheries resource monitoring. These sites have been requested by various organizations also looking to the effects of climate change and anthropogenic influences.

Many of the current GWM wetland regions are in National Parks such as the Everglades (USA), the Wasur (Rep. Indonesia), and the Kakadu marshes (Australia). They also include coastal river deltas of the Danube, Mekong, Amazon, Orinoco and Ganges Rivers, and the internal Okavango Delta in Botswana. The preliminary set also ensures a diverse range of wetlands e.g., the shallow pot-hole lake region of the Sand Hills and the coastal Black Swamp of the USA, the peat fields of Malaysia and rice growing fields of Yilinzhen in China. Extensive wetlands in Brazil (the Pantanal), South Sudan (the Sudd Marshes) and Belarus (the Pinsk) are also featured, as are the mangrove regions of the Sundarbans (India) and the Laguna Terminos (Mexico). The Usangu wetland (Tanzania) is also included, a focus region where wetland ecology strongly competes with demands from irrigation, livestock, and the needs of downstream hydro-electric power.

The nadir-pointing altimeter instruments record height variations regardless of vegetation or canopy cover, and height dynamics at 10-day or monthly resolution reveal seasonal and inter-annual variations as well as longer-term declining or re-charging trends. These products provide a unique, multi-decadal data set that can stand-alone or serve with cross-validation or image-fusion efforts.

Session:

Remote Sensing of Wetland Dynamics (B042)

Wetlands ecosystems provide essential services for the subsistence of life on Earth, however, these ecosystems face constant external threats that affect and change their natural processes and dynamics. There are still significant knowledge gaps on multiple aspects, components and interactions of different kinds of wetlands worldwide. Multitemporal earth observations (using passive and active sensors) offer an excellent opportunity to address these knowledge gaps and are sometimes the only source of information in remote and non-instrumented areas. This session focuses on studies that use multitemporal remote sensing data to understand different processes and components (e.g., water dynamics, vegetation changes, disturbances) of wetlands ecosystems (e.g., marshes, swamps, fens, bogs, lakes, ponds) with different regimes

(e.g., permanent, temporary), and support the development of new applications for wetlands monitoring and management.

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