Contribution ID: **79** Type: **Oral presentation**

Optimization of the satellite datasets to study the water cycle at the global scale

Wednesday, 27 November 2019 09:00 (30 minutes)

Over the last decades, satellite observations have increasingly been used to study the global terrestrial Water Cycle (WC). We will present here applications to retrieve for instance soil moisture, surface waters or underground water storage. However, the use of satellite products is still limited by their uncertainties and inconsistencies like their inability to close the WC budget. We show that it is possible to optimise these datasets by integrating them based on the closure of the water budget at the basin scale. This is performed using observations only and no model assimilation is required. It is possible to close simultaneously the terrestrial, oceanic and atmospheric WC budgets. The obtained optimized hydrological coherent dataset can be used to design an independent and simple calibration of each satellite dataset to reduce the overall WC budget residuals. This calibration procedure is extrapolated from several basins around the world to the global scale. The reference dataset can also be used to estimate the uncertainties of each data source. This opens new perspectives to generate long-term global datasets based purely on all the available satellites observations. Several applications will be presented over South Asian basins, over the Mediterranean region, and over the Amazon.

Which session would you like to present in?

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Session Classification: Session 2: Hydrological validation and benchmarking

Track Classification: H SAF and HEPEX joint workshop on ”Satellite inspired hydrology for an uncertain future”