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Data Assimilation of Satellite-Based Observations into Land Surface Models

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Message from the Guest Editors

The accurate characterization and simulation of hydrological and biophysical variables at the land surface pose a significant challenge, given the large spatial heterogeneity and human modifications of the land surface. The role of Land Surface Model (LSM) has evolved over the years, from the primary goal of providing boundary conditions to atmospheric models to being used as a monitoring and forecasting tool for estimating land surface conditions. As a result, there is a big emphasis on constraining the LSM estimates with observational inputs and coupling them with other models of the Earth system (e.g. river-routing models). Remote sensing observations are particularly useful in this context, as they are now unrestrictedly available at a global scale, high resolution, and long time periods. Many satellite-derived products relevant to the hydrological (e.g., soil moisture, snow depth and cover, terrestrial water storage), vegetation (e.g., LAI, NDVI, FAPAR, biomass), and energy (e.g., LST, albedo) cycles are already available. Data assimilation allows to spatially and temporally integrate the observed information into LSMs in a consistent way.

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Editor-in-Chief

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Message from the Editor-in-Chief

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