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The impact of satellite data assimilation on hydrologic model perfor- mance

Tuesday, 26 November 2019 12:30 (30 minutes)

The very scales at which data may be required and the accessibility of sampling points quickly renders certain direct measurements impractical e.g., changes in land cover, sea surface temperature, snow in mountains, etc. Satellite-derived products are a valuable source of such data and overcomes the large spatial extent limitations. The data is sometimes at a reasonable temporal resolution as well, which addresses the sampling frequency challenges. The satellite data, at the large spatial scales can provide boundary conditions for constraining numerical models but can also be assimilated to improve their predictions. In this study we show the effect of assimilating the actual and potential evapotranspiration, the snow water equivalent and the fractional snow cover; and the different combinations of the four products into the hydrologic model HYPE. We assessed the dependency of the hydrologic model performance by assimilating different products on: i) whether the model is calibrated to the data to be assimilated or not, ii) observation error model assumptions, iii) gaussification of non-Gaussian model and observation fields iv) ensemble size, v) assumptions regarding error model for perturbing the model forcing data (ensemble generation).

Which session would you like to present in?

1. Remote sensing, hydrological modelling and data assimilation

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