



## **Quantifying Precipitation Errors via Soil Moisture Data Assimilation**

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The partitioning of the water budget is of key importance to global climate and weather forecasting, and to the monitoring of agricultural and other socioeconomic phenomena. Soil moisture is crucial in the water budget at the interface between land and atmosphere. The best estimates of soil moisture can be obtained by combining satellite observations with land surface models via data assimilation. However, by improving soil moisture estimates, the land surface water budget no longer closes unless the assimilation increments of soil water are included in the budget. The objective of this study is to relate soil moisture data assimilation increments to errors in precipitation and contribute to more accurate estimates of the water balance components. A preliminary analysis of the operational Soil Moisture Active Passive (SMAP) Level 4 Soil Moisture product (L4\_SM), the Bureau of Meteorology Atmospheric high-resolution Regional Reanalysis for Australia (BARRA) precipitation product and in situ precipitation measurements over the Murrumbidgee area in southeastern Australia will be presented. Temporal and spatial patterns in both precipitation errors and soil moisture increments will be discussed and a method to relate SMAP L4\_SM soil moisture increment data to precipitation errors will be introduced.