SMAP Level 4 Soil Moisture (L4_SM)

Merging SMAP observations into the GEOS-5 land data assimilation system to estimate root zone soil moisture.

On May 8, 2016, a major rain event in the interior of Australia was observed by the Bureau of Meteorology (**A**) but poorly represented in the global input data for the L4_SM system (**B**).

Due to the lack of rainfall in the L4_SM system, the soil moisture in the model forecast for 21:00 UTC was too dry, and therefore the modeled L-band brightness temperature (Tb) was too high compared to SMAP observations (**C**).

The L4_SM analysis of SMAP Tb observations thus resulted in a substantial correction of the model forecast soil moisture (**D**).

A

B L4_SM precipitation inputs *(May 8, 0z to May 9, 0z)* **[mm]**

C SMAP minus model forecast Tb *(May 8, 21z)* **[K]**

D Correction to L4_SM model forecast surface soil moisture *(May 8, 21z)* **[m³m⁻³]**