NOAA Soil Moisture Operational Product System (SMOPS) Version 3.0: Validation and Improvements

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It is been several decades since the very first satellite soil moisture product is operationally produced. In recent years, as more satellites launch, a number of satellite soil moisture products become available operationally for different applications. However, the application of these products in operational numerical weather prediction models is still quite limited due to poor spatial coverage and data latency of these products. To improve both special and temporal coverage of satellite soil moisture product, a Soil Moisture Operational Product System (SMOPS) has been developed at NOAA-NESIDS and is now operationally running at NOAA. This system not only provides a one-stop shop for all operational soil moisture products from different satellite sensors, but also a merged soil moisture product that has much better spatial and temporal coverage. Soil moisture products from this system are now being tested and will be assimilated into NOAA Global Forecast System (GFS). The first version of SMOPS included soil moisture retrievals from WindSat, SMOS and ASCAT on Metop-A. The second version of SMOPS added soil moisture layers from ASCAT on Metop-B and near real time retrievals from SMOS. The third version of SMOPS, which is the current operational version, includes soil moisture retrievals from near real time SMAP brightness temperature, NASA SMAP level 3 soil moisture, and soil moisture retrievals from The Global Precipitation Measurement (GPM) Microwave Imager (GMI). This presentation will evaluate the quality of soil moisture products in SMOPS using field observations and show the possible approaches to improve the blended soil moisture product quality.