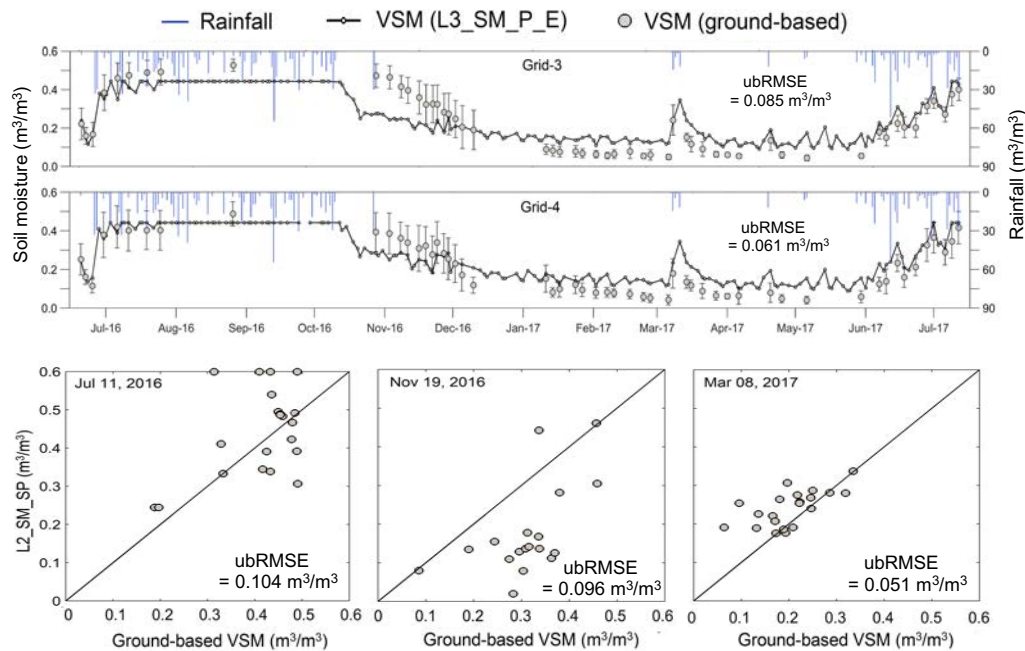


# Validation of SMAP Soil Moisture Products over the Paddy Dominated Tropical Region of India



**Problem:** To evaluate the performance of SMAP-based enhanced soil moisture products SMAP L3\_SM\_P\_E (9 km gridded) and active-passive SMAP-Sentinel-1 L2\_SM\_SP (3 km resolution) over typical Indian conditions of extreme seasonal variability that leads to changes from very wet to dry soil, using intensively monitored in-situ soil moisture under paddy field farming.



## Finding:

1. Both products meet SMAP accuracy criteria in paddy nongrowing season.
2. L3\_SM\_P\_E products have ubRMSE 0.063 - 0.097  $m^3/m^3$  and L2\_SM\_SP have ubRMSE 0.061 - 0.104  $m^3/m^3$  with dry bias during paddy growing season.
3. Incorrect use of clay fraction, surface water ponding condition, use of NDVI-climatology based vegetation attributes are the potential source of errors.

**Impact:** The reported study provides guidelines for the application of enhanced SMAP soil moisture products in India, especially over paddy dominant regions, and provides information that can be used to improve the soil moisture retrieval algorithm.