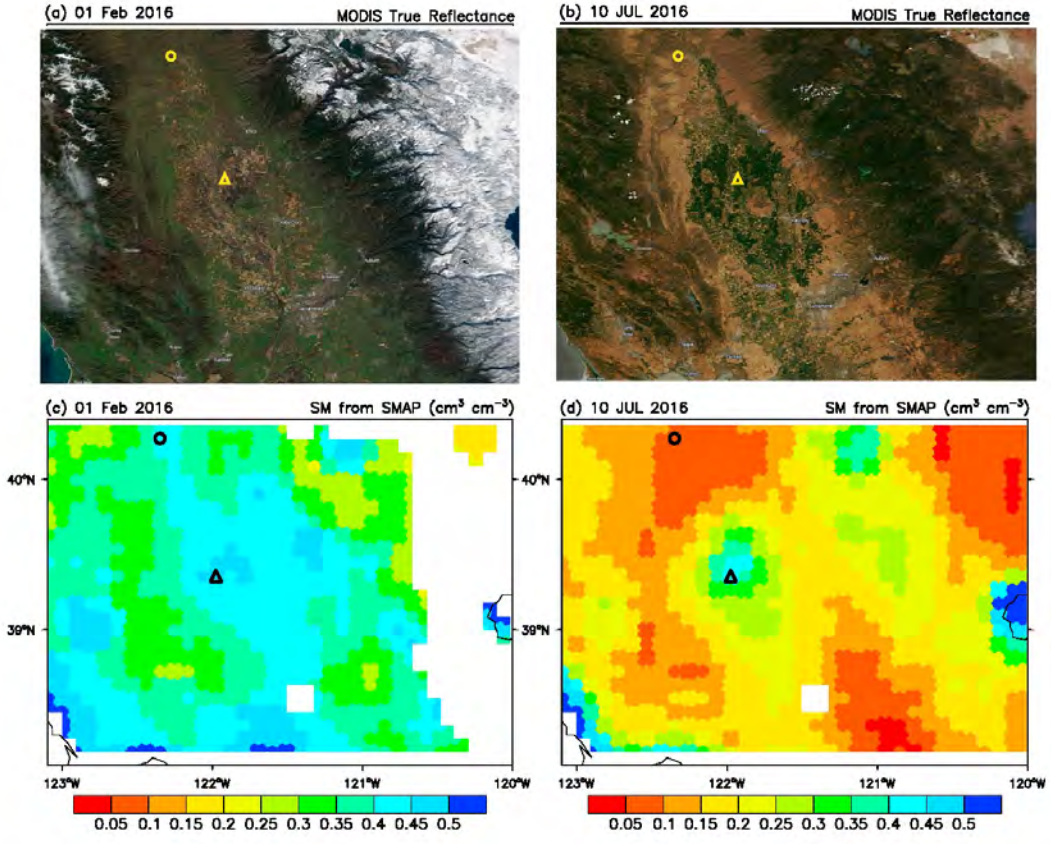
Irrigation Signals Detected From SMAP Soil Moisture Retrievals

Problem: Irrigation can influence weather and climate, but the magnitude, timing, and spatial extent of irrigation are poorly represented in models, as are the resulting impacts of irrigation on the coupled land-atmosphere system.



Finding: The greenness over the non-irrigated region in the Sacramento Valley present in February turns brown by July (MODIS images), with the exception of only the irrigated rice and higher elevation forests. SMAP soil moisture (SM) retrievals identify these contrasts as February is uniformly wet (>0.30 cm3/cm3) and July is dry except for the irrigated valley and forest, which show much higher SM.

Impact: The irrigation signals over three semiarid regions in the western US can be captured by the SMAP enhanced SM product on 9 km grids

Lawston, Santanello, Kumar, 2017: Irrigation signals detected from SMAP soil moisture retrievals, *Geophysical Research Letters*.