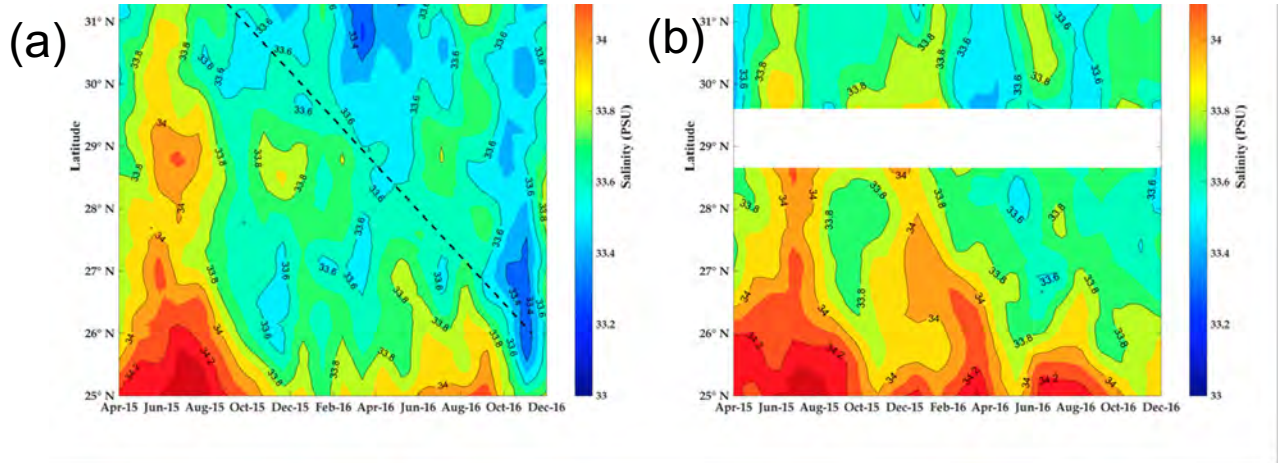
SMAP Tracks Freshening During the 2014–2016 Northeast Pacific Warm Anomaly

Problem: A well-documented marine heat wave occurred in the Northeast Pacific during the period 2014–2016 (the 2014–2016 warm anomaly). At the present time, a study of the salinity variability from remote sensing during the 2014–2016 warm anomaly is lacking.



Hovmöller diagrams using SMAP-derived SSS of the latitudinal variation at two ((a) 120W and (b) 118W) longitudes. The dashed line shows the approximate propagation of the freshening from north to south.

Finding: Data from the SMAP Salinity produced by JPL and from the California Cooperative Oceanic Fisheries Investigations (CalCOFI) were used to examine the freshening that occurred during 2015–2016 in the Southern California Current System. Overall, the freshening was found to be related to the 2014–2016 Northeast Pacific Warm Anomaly. Differences between SMAP and CalCOFI are consistent with the increased stratification in 2015 and changes in the mixed layer depth. SMAP observed freshening that reached the Baja California Coast.

Impact: Several key results found from using the SMAP SSS, and this should be considered an important step forward in applying satellite-derived salinity to coastal processes and their connection to basin-scale changes.

Vazquez-Cuervo, Gomez-Valdes, 2018: SMAP and CalCOFI Observe Freshening during the 2014-2016 Northeast Pacific Warm Anomaly, *Remote Sensing*.