



## **Aquarius surface salinity bring new understanding to intraseasonal variability in tropical oceans**

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Satellite measurements of sea surface salinity (SSS) from SMOS and Aquarius, along with multi-sensor satellite observations of other parameters, are significantly contributing to the understanding of ocean and climate phenomena. This presentation highlights the applications of Aquarius SSS and other satellite data to study intraseasonal variability in tropical oceans, including tropical instability waves (TIWs) in the tropical Pacific and Atlantic Oceans and Madden-Julian Oscillation (MJO) in the tropical Indian and Pacific Oceans. For tropical Pacific TIWs, Aquarius revealed new feature of TIW propagation near the equator that has not been reported in the past few decades of TIW observations, which has significant implications to TIW-mean flow interaction. In the tropical Atlantic, Aquarius data identified energetic TIWs in the west that are not well captured by SST, in stark contrast to the east where TIW signature is strong in SST. Moreover, Aquarius data illustrated the increasing role of salinity in TIW energetics and the change of TIW seasonality from the east to the west. In the tropical Indian and Pacific Oceans, Aquarius data showed that salinity play a comparable or larger role in surface density and potential energy associated with the Madden-Julian Oscillation (MJO). Therefore, salinity effects need to be taken into account in modeling the oceanic response to and ocean-atmosphere coupling associated with the MJO.