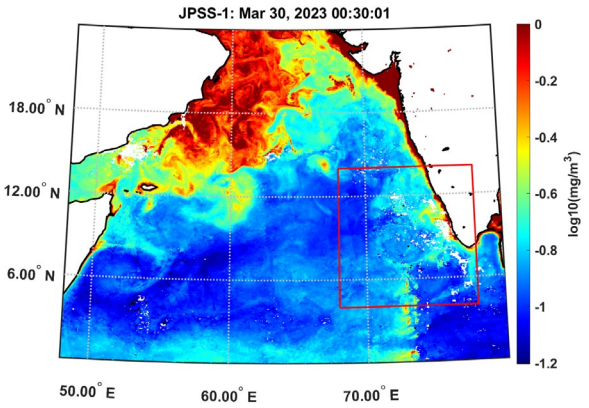
Remote Sensing of The Arabian Sea Transition Layer (ASTraL): Exchange across the Air-Sea Interface

The ASTraL project focuses on implementing a suite of advanced and adaptive remote sensing techniques for characterizing air-sea conditions of the Arabian Sea. A suite of satellite-based geophysical data products will be generated both at synoptic scales over the Arabian Sea and at meso- and sub-meso scales over the ***'mini warm pool'*** that develops in the southeastern Arabian Sea. The satellite data include both publicly available data sets and commercial data sets. The latter will be specifically tasked for events and emerging situations. The synergy of these data sets provides research opportunities across the range of scales affecting meso-scale dynamics.

The multi-scale approach to satellite remote sensing will allow new research to provide improved boundary-layer conditions for the numerical modeling of small-scale ocean processes including meanders, rings, vortices, and filaments. The Center for Southeastern Tropical Advanced Remote Sensing (CSTARS) will work to advance techniques of synthetic aperture radar (SAR) for surface characterization of the atmospheric boundary layer, as well as SAR-based winds and waves, in a synergistic approach to understand better the intensity and dynamics of exchange processes across the air-sea interface. Satellite data will be directly downlinked to the CSTARS campus and processed in-house.



Chlorophyll-A concentrations over the Arabian Sea showing an anti-cyclonic circulation over the mini warm pool.

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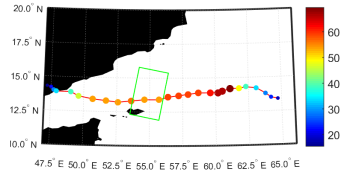
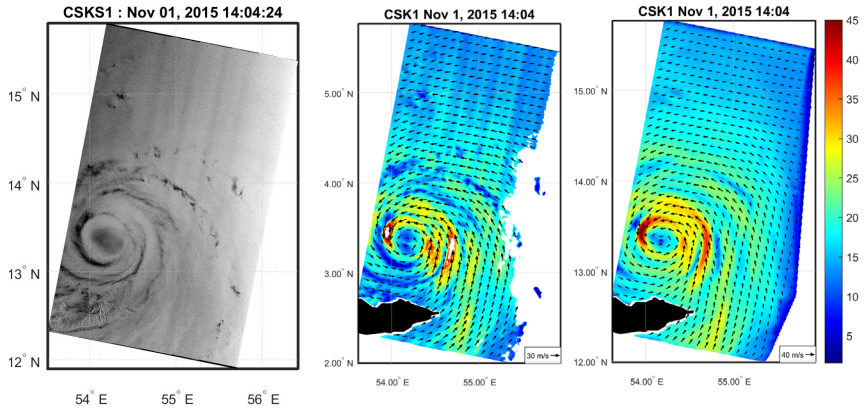


Chapala's track and intensity stages.



Left: COSMO/SkyMed SAR image of Extremely Severe Cyclonic Storm Chapala acquired on November 1, 2015. Center: Raw SAR winds. Right: Smoothed SAR winds obtained by combining the initial results with a geophysical model.

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