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Evaluation of High Wind Speed Observations from Spaceborne and Airborne Ocean Wind Measurement Systems

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It is very difficult to obtain high quality in-situ wind data in the high wind speed regimes (>17m/s). Winds measured by moored small-hulled buoys become increasingly low biased as wind speeds exceed 20 m/s. Ordinary ship reported winds are of poor quality in this high wind speed range, and the better-equipped research vessels rarely sample this wind regime. Finally, marine wind fields produced by numerical weather prediction (NWP) models, including even the products of the newer "reanalysis" projects, are notoriously biased low in severe storms. The best-suited candidates to assess the performance of new wind measurements are actually other spaceborne and airborne ocean wind vector instruments (such as ASCAT and WindSat) provided their performance in high wind speed regimes are well understood.
The Indian Space Research Organization (ISRO) launched the OceanSat-2 satellite on 23 September 2009. Oceansat-2 is ISRO's second in a series of satellites dedicated to ocean research. OceanSat-2 carries a microwave radar scatterometer (OSCAT) capable of measuring the ocean surface vector winds. The OSCAT operates at Ku-band (13.515 GHz) scanning the earth surface conically at 20.5 rpm using dual-polarized pencil beams with an incidence angle 48.9 degree for the horizontally polarized (H-pol) beam and 57.6 degree for the vertically polarized (V-pol) beam resulting in a swath width of 1840 km. The orbit characteristics provide global ocean coverage wind retrievals within 29 orbits or 2 days.
In the paper we will present validation of high wind estimates from OSCAT measurements processed by NOAA.