



Severe Marine Weather Studies using SMOS L-band Sensor

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The Soil Moisture and Ocean Salinity (SMOS) mission provides multi-angular L-band (1.4 GHz) brightness temperature images of the Earth. Because upwelling radiation at 1.4 GHz is significantly less affected by rain and atmospheric effects than at higher microwave frequencies, the SMOS measurements offer unique opportunities to complement existing ocean satellite high wind observations that are often erroneous in these extreme conditions. In this talk, we shall provide an overview of the results of an ESA project which aims to exploit the identified capability of SMOS L1 Brightness Temperatures to monitor wind speed and whitecap statistical properties beneath Tropical Cyclones and severe storms. We shall present an overview of these new capabilities and of the potential of the synergy between L-band and C-band sensor data for severe marine weather monitoring. In particular, we will show the results from SMOS for several Hurricanes and Typhoons since 2010 and an analysis of the combined SMOS and AMSR-2 data acquired during the passage of the Typhoon Haiyan, the strongest tropical storms to date and the second-deadliest Philippine typhoon on record.