

CHEFS

High and Extreme Winds from C-band radar measurements

A particularly pressing requirement in the Ocean Surface Vector Wind community is to obtain reliable extreme winds in hurricanes (> 30 m/s) from wind scatterometers, since extreme weather classification (hurricane categories), surge and wave forecasts for societal warning are a high priority in nowcasting and in numerical weather prediction (NWP). Moreover, global information on the motion near the ocean surface is generally lacking, limiting the physical modelling capabilities of the forcing of the world's water surfaces by the atmosphere. This also limits our knowledge of the exchange of momentum across the water-air interface, affecting meteorological and ocean applications, which exchanges are particularly violent in extreme conditions. The scatterometer SCA onboard Metop Second Generation (Metop-SG) will have a cross-polarization (VH) C-band channel to obtain improved extreme wind observations in addition to the co-polarization channels (VV and HH). The EUMETSAT CHEFS project is concerned with developing a consolidated wind reference from 0 m/s up to 60 m/s. Such wind reference may be used to calibrate retrievals of extreme wind speeds by both passive and active satellite sensors using empirical Geophysical Model Functions (GMFs), but also to tune NWP models to provide a more adequate representation of hurricanes. The CHEFS project objective is to apply such wind reference to C-band VV, HH and VH polarization GMFs, as these are used for ASCAT onboard Metop and for SCA onboard Metop-SG. For such purpose, NOAA hurricane hunter dropsonde and microwave (such as the Stepped-Frequency Microwave Radiometer or SFMR) wind data, NWP output, moored buoy winds, and C-band scatterometer and Synthetic

Aperture Radar (SAR) data will be used in this study.

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Dates

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