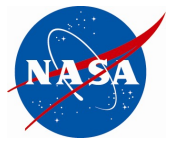
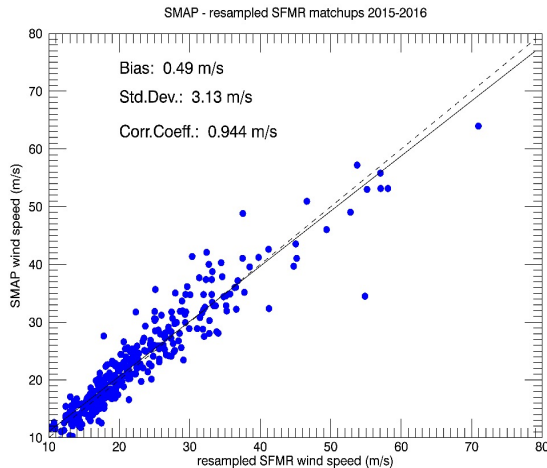


SMAP Measures Ocean Winds in Tropical Cyclones



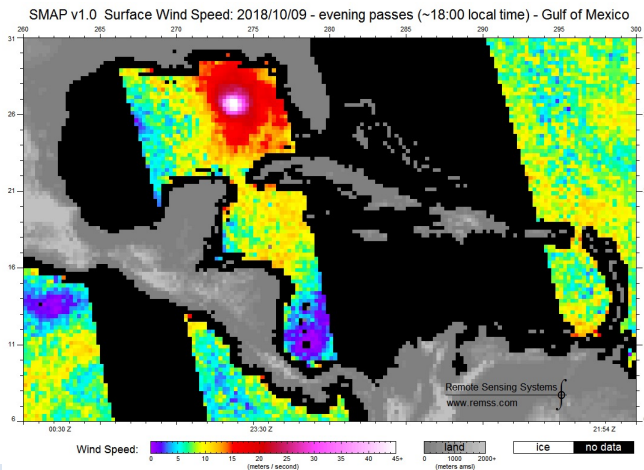
Comparing wind speeds from hurricane hunting aircraft (SFMR, x-axis) and SMAP (y-axis).



Problem: It is challenging for most space-borne sensors to give reliable estimates of wind speeds in strong tropical cyclones (hurricanes, typhoons). The main reasons are loss of sensitivity of the wind signal at high wind speeds and signal attenuation by rain.

Finding: SMAP's L-band wind emission signal remains strong at very high wind speeds and it is only minimally impacted by precipitation. It has been shown that SMAP ocean surface winds are in good agreement with measurements from hurricane hunting aircraft (Fig. 1) and tropical cyclone forecasts. Within its spatial resolution (40km), SMAP gives reliable estimates of intensity and size of tropical cyclones.

SMAP wind field containing Hurricane Michael shortly before landfall in Florida.



Impact: SMAP wind speeds are being produced in real-time for tropical cyclones (Fig.2). They are getting ingested into the Automated Tropical Cyclone Forecast System of the Joint Typhoon Warning Center of the U.S Airforce and U.S. Navy.

Meissner, Ricciardulli, Wentz, 2017: Capability of the SMAP Mission to Measure Ocean Surface Winds in Storms, *Bulletin of the American Meteorological Society*.