Evaluation and Validation of NRT RapidScat Ocean Surface Vector Winds

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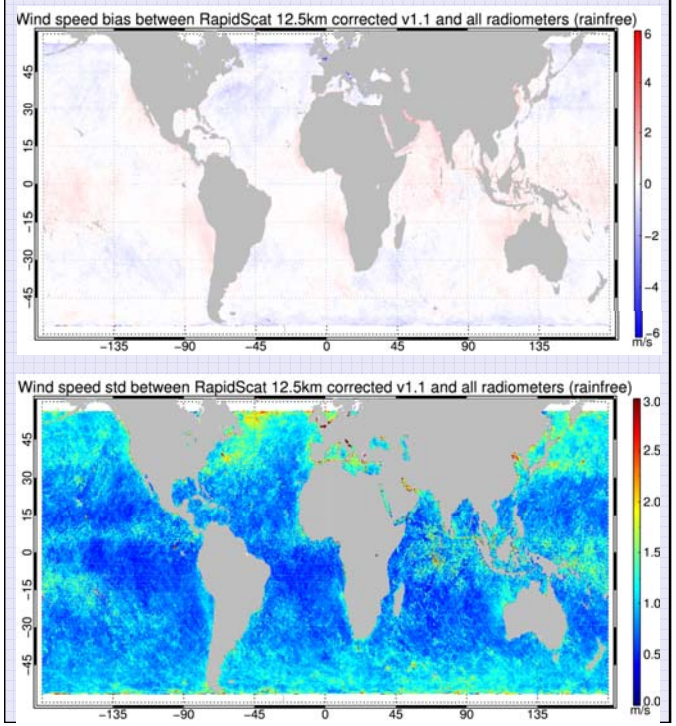
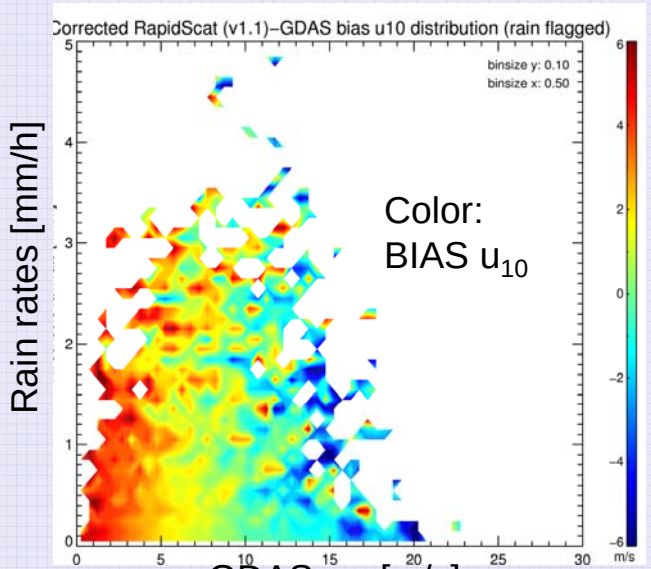
[1]Global Science & Technology- [2]NOAA/NESDIS/STAR- [3]NOAA/NWS/NCEP/Ocean Prediction Center- [4]NOAA/NWS/National Hurricane Center

- Assessed quality of three different NRT RapidScat products using NWP models and RSS radiometer data
- Explored usability of rain flagged data for support of operational forecasting and warning functions
- Ensured stability of NRT RapidScat winds through daily time series analysis

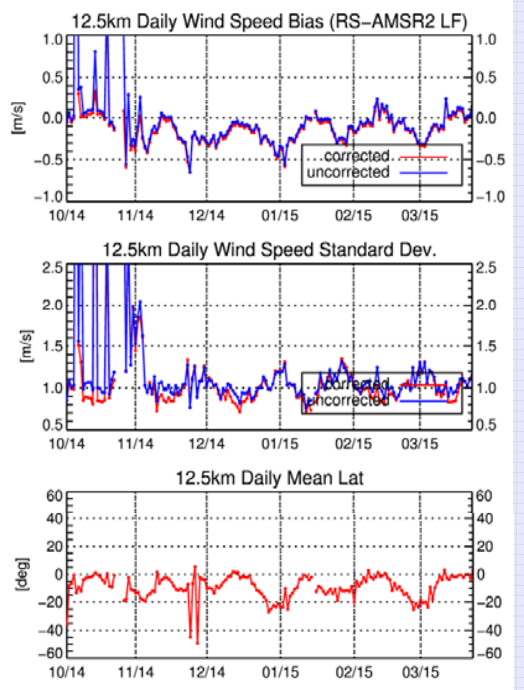
Wind Retrieval Performance



Exploring Usability of RapidScat Rain Flagged Data



Time series analysis



SFMR Reprocessing Project – Ocean Winds Observations

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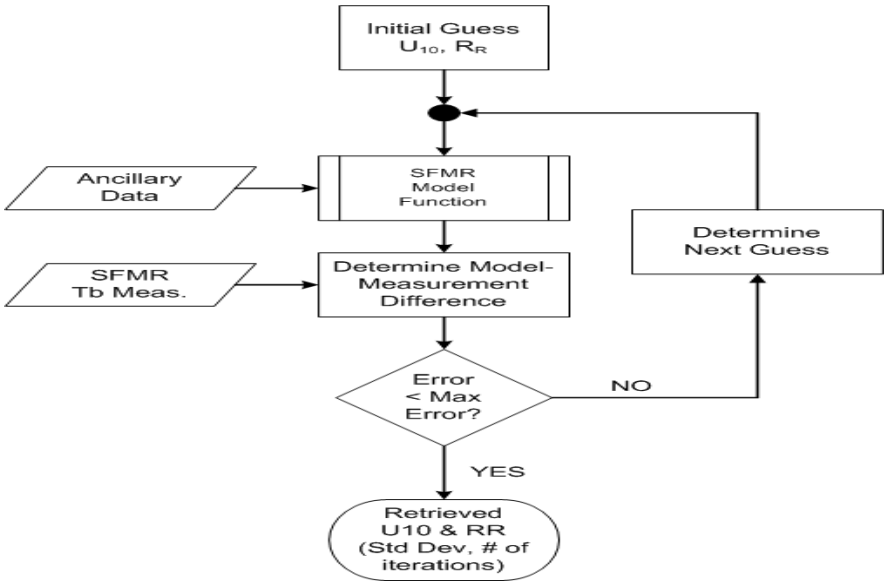
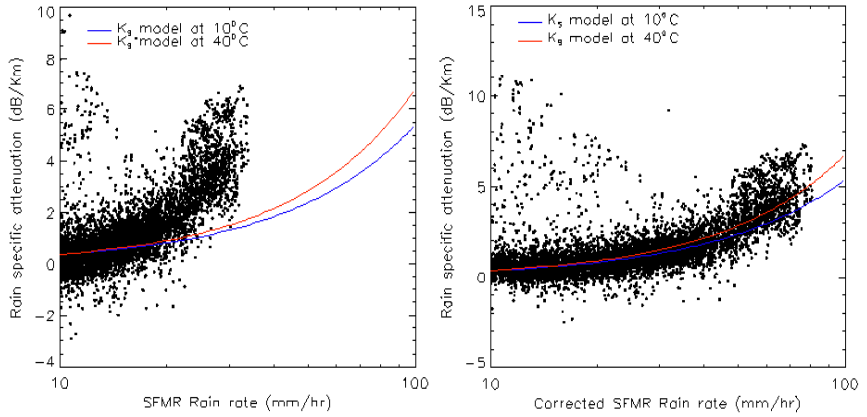
[1]Global Science & Technology, [2]UCAR, [3]NOAA/NESDIS/STAR, [4]Remote Sensing Solutions

- NOAA Ocean Winds field experiments program has three main objectives:
  - Calibration and validation of satellite-based sensors and advanced data products
  - Development and improvement of space-based ocean surface vector wind (OSVW) products
  - Testing of new remote sensing technologies for future satellite missions (risk reduction & feasibility studies)
- The goal is to have a consistent data set of SFMR and *in situ* measurements
  - More than 10 years of SFMR, sondes and buoys
- SFMR retrievals were reprocessed using a new rain absorption coefficient
  - Derived using IWRAP Ku-band reflectivity





(a) (b)

X-factor and the Spatial Response Functions of QuikSCAT and RapidScat

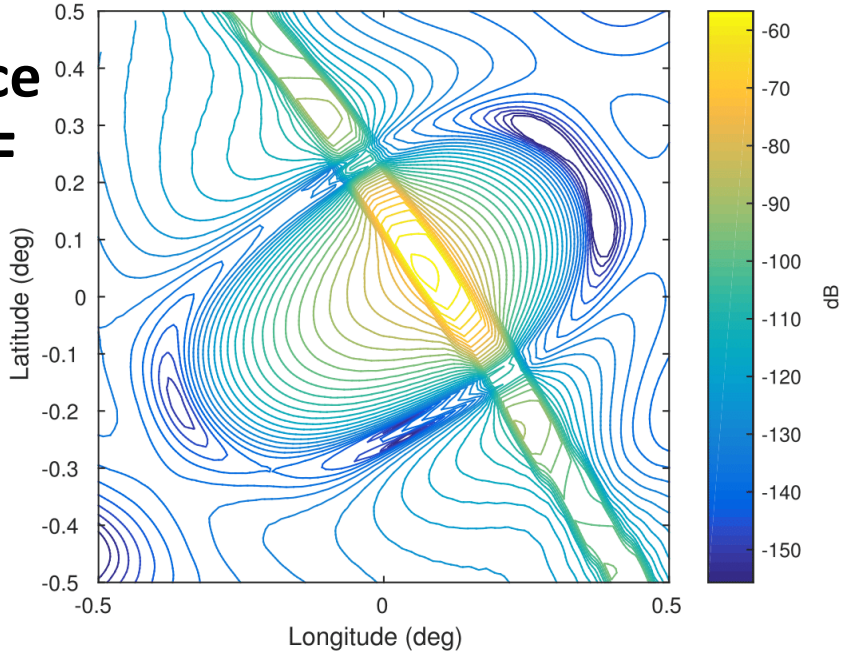
$$P_r = X\sigma^0$$

$$X = \frac{P_t^2}{(4\pi)^3} \int SRF(x,y)dA$$

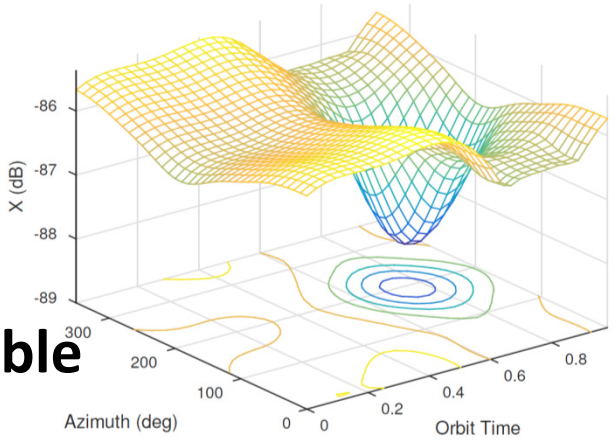
$$SRF(x,y) = \frac{G(x,y)^2 F(x,y)}{R(x,y)^4}$$

- Calculation of X-factor is computationally intensive
- Pre-computed and stored as table which is interpolated
- New tables needed for RapidSCAT
  - Use with QuikSCAT processing code
  - Variable ISS orbit

Slice SRF



H-pol X-factor table



BYU D. Long, N. Madsen, and J. Niedfeldt

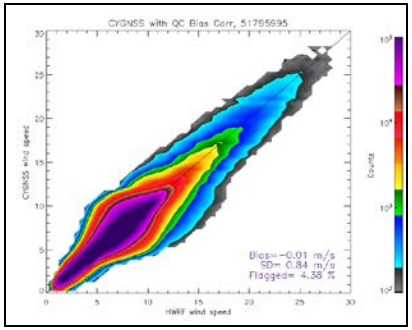
Evaluation and Validation of Simulated CYGNSS Winds over Large Range of Tropical Cyclones and Preliminary Analysis of TechDemoSat-1 GNSS Reflectometry Wind Product

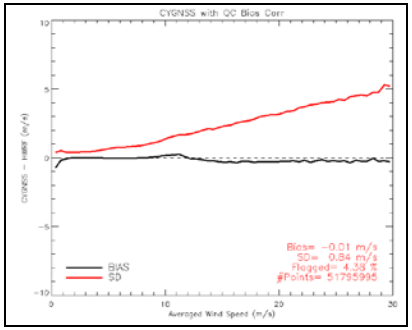
Seubson Soisuvarn, Faozi Said, Zorana Jelenak and Paul Chang
NOAA / NESDIS / STAR

CYGNSS Cal/Val

- Simulation from HWRF 2010-2011 AL EP Hurricane Seasons (43 storm)
- Wind Speed Validation with model, satellite and aircraft data
- Quality Control

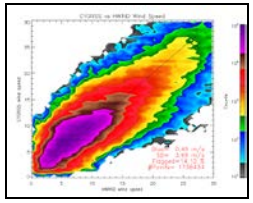
CYGNSS Wind Speed Performance



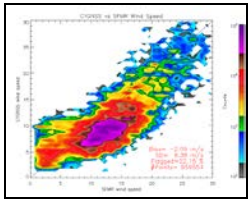


Storm Over pass Statistics

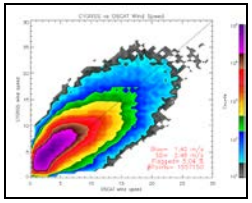
HWIND



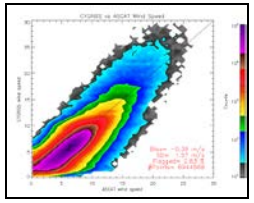
SFMR



OSCAT



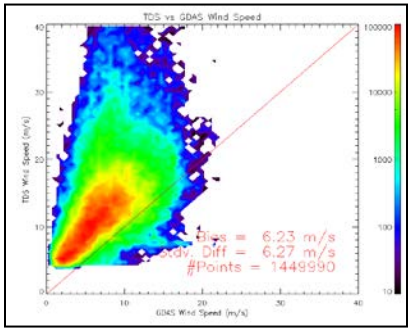
ASCAT

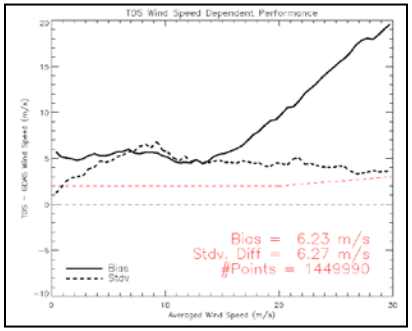


TechDemoSat-1 SGR ReSI First Look

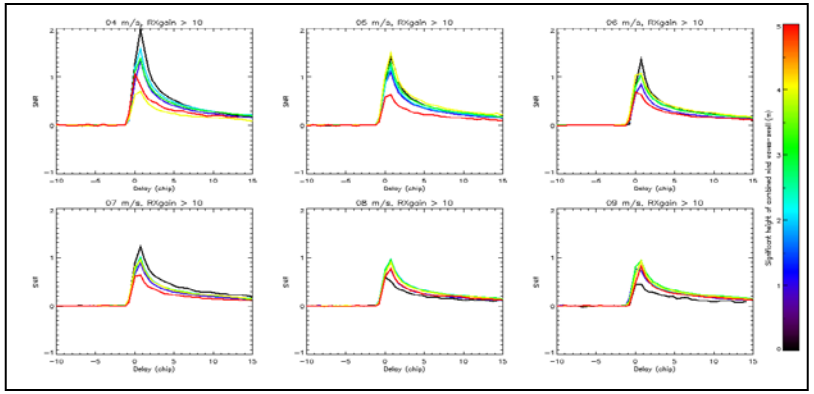
- L2 Wind Speed Bias
- L1B Wind and Wave Dependence

TDS Wind Speed Bias





Wind and Wave Dependence



The Simulation And Performance Analysis Of The CFOSAT RFSCAT

Risheng Yun (National Space Science Center, Chinese Academy of Sciences) XingouXu, Xiaolong Dong, Di Zhu

Evaluation of Ocean Vector Wind Data from ISS/RapidScat

Naoto Ebuchi (Hokkaido University)

A Method for Quality Assessment of Scatterometer-retrieved wind fields

Zengzhou Hao (The Second Institute of Oceanography, SOA) Delu Pan, Fang Gong and Tianyu Wang