Daily Scatterometer Datasets in a Near Uniform Format

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1. Goal For the Data Set

The most up to date L2 scatterometer data sets (currently for QuikSCAT, RapidSCAT, ASCAT-A and ASCAT-B) have been reformatted into a **daily data structure that is almost identical across platforms**. These data sets are much easier to use because **a common read code**, time convention and naming convention are applied to all these data sets. The goal is to make scatterometer data easier to use for the typical user. Therefore only the selected ambiguities, time, location and key metadata are retained.

2. Data Access

The data sets are available through a THREDDS data server (http://tds.coaps.fsu.edu/thredds/catalog_satellite.html) and through FTP via the COAPS scatterometry website (https://mdc.coaps.fsu.edu/swath). The data set names are prefixed with the 'COAPS Simplified.' Example read code in several languages (e.g., IDL and Python) will be made available. We have processed Ku-band data from QuikSCAT, RapidScat; and C-band ASCAT-A and ASCAT-B. The data sets are described below.
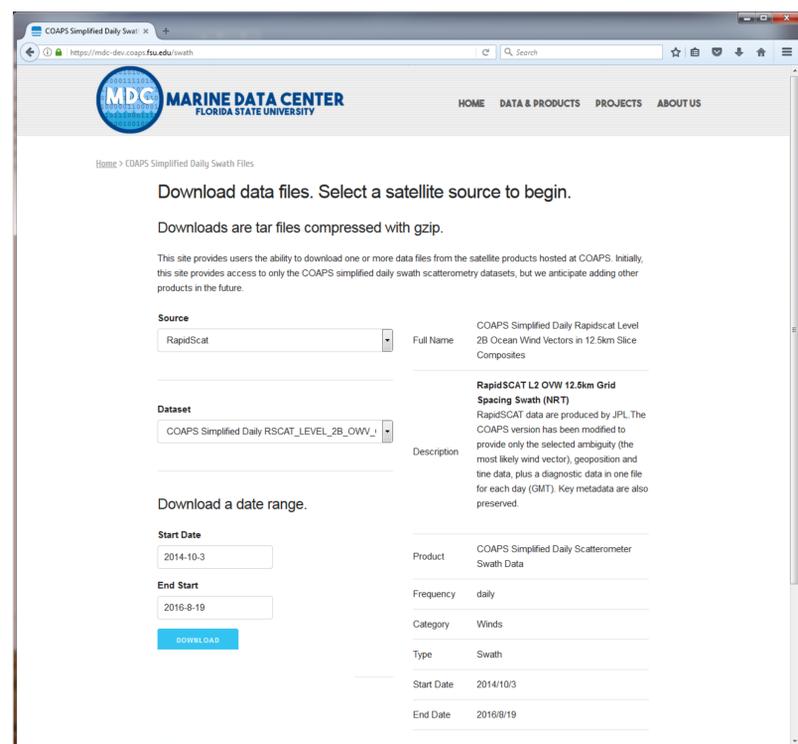
3. Dataset Changes

The largest change in terms of data set size is that we provide only the selected ambiguity. We have tried to keep the names of the variables similar to the original names. Where data producers used different naming convention we chose the variable name that most clearly conveyed the description of the variable. In the case of wind direction we chose a new name that is much less ambiguous. Meteorological and oceanographic direction conventions are reversed (offset by 180 degrees). We also added vector components, which have the same meaning regardless of direction convention.

A simplified quality flag was created using bit flags from the original L2 orbit files (flags variable for JPL products or wvc_quality_flag variable for KNMI products). A value of simplified_wvc_quality_flag = 1 denoting poor quality under two conditions: (1) the original bit flag is set to _FillValue, or (2) one or more of the following bits are set:

RapidSCAT/QuikSCAT: adequate_sigma0_flag, coastal_flag, ice_edge_flag, wind_retrieval_flag, available_data_flag.
ASCAT-A/ASCAT-B: wind_inversion_not_successful, some_portion_of_wvc_is_over_ice, some_portion_of_wvc_is_over_land, not_enough_good_sigma0_for_wind_retrieval.

Otherwise, simplified_wvc_quality_flag = 0 denoting good_quality. Data were discarded if simplified_wvc_quality_flag = 1 for an entire row.

COAPS Simplified C-Band Variable Names		OSISAF Variable Names		COAPS Simplified Ku-Band Variable Names		JPL Variable Names	
double	time	int	time	double	time	double	time
float	lat	float	lat	float	lat	float	lat
float	lon	float	lon	float	lon	float	lon
float	eastward_wind			float	eastward_wind		
float	northward_wind			float	northward_wind		
float	wind_speed	float	wind_speed	float	wind_speed	float	retrieved_wind_speed
float	wind_to_direction	float	wind_dir	float	wind_to_direction	float	retrieved_wind_direction
int	simplified_wvc_quality_flag			int	simplified_wvc_quality_flag		
float	ice_prob	float	ice_prob	float	rain_impact	float	rain_impact

4. Improvements That We Want In Future Data Sets

➤ We will process data from additional missions (e.g., the OceanSat-2 scatterometer, SeaWinds on Midori)

➤ We would like to add estimates of wind stress as well as divergence and curl of wind and wind stress.

➤ We would like to have a rain impact flag that is a better measure of the impact on random error in vector components, and therefore has the same definition and scale for all types of scatterometers. Such a flag of would not be tailored to a specific application (e.g., calibration) and could easily be applied for a wide range of applications! The current rain impact flag is only suitable for isolated applications: for most applications it is better to ignore this flag.

5. Acknowledgements