

## Scatterometer Simulation Model

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The Scatterometer Simulation Model (ScattrSM) produces simulated Ocean wind speeds and directions at 10 M using either the fvGCM or ECMWF T511 Nature Runs. Current supported scatterometers are QuikScat (25 km resolution) - Ku band and ASCAT (50 km resolution) - C band. Wind speed and direction errors due to low/high wind speeds and precipitation (Hilburn, et al., 2009; Jones and Laupattarakasem, 2007) are included. Land and precipitation quality data flags are also included. ScattrSM is based upon DLSS architecture. Examples of 24 hour simulations for ASCAT and QuikScat platforms are shown in figures 1 and 2, respectively.

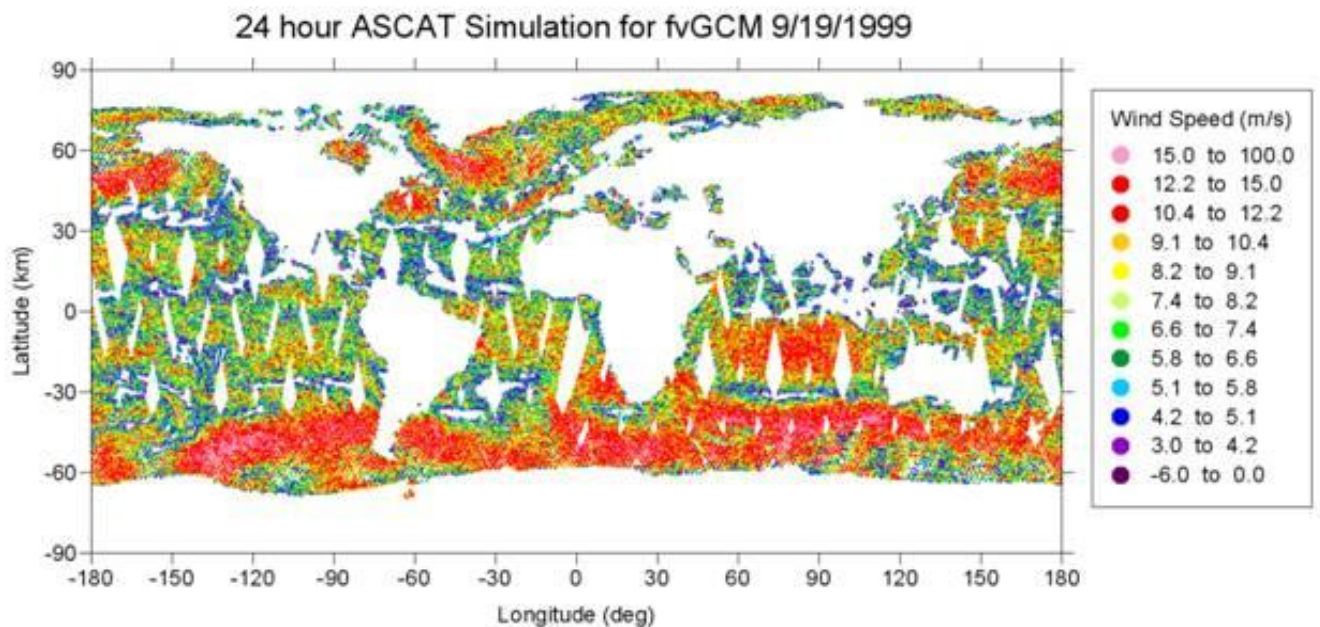


Figure 1 is an example of a 24 hour simulation of an ASCAT platform for the fvGCM nature run 09/19/1999.

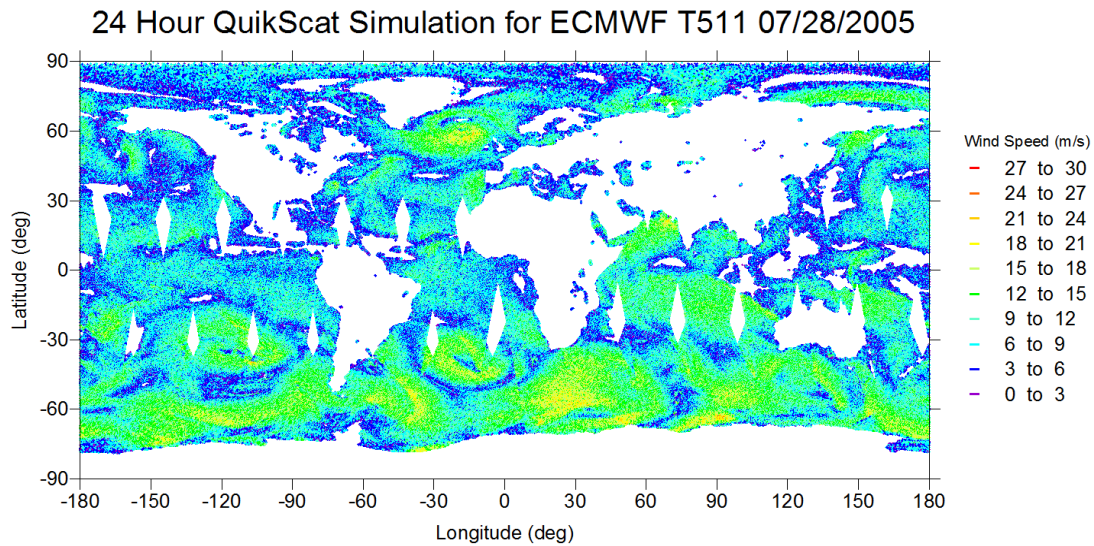


Figure 2 is an example of a 24 hour simulation of a QuikScat platform for the ECMWF T511 nature run 07/28/2005.

## **FORTRAN 90 ASCII output statements**

1. Header ASCII input to SCATTRSM terminated by ~~

2. `write(14,'(11(1x,f10.4))',iostat=ios) &`

PlatformLatitude, &                   ! latitude (deg) of satellite as a function of elapsed simulation  
                                         ! time

PlatformLongitude, &                 ! longitude (deg) of satellite as a function of elapsed simulation  
                                         ! time

TimeOfMeasurement, &               ! elapsed starting simulation time (s)

WindLatitude, &                     ! latitude (deg) of wind measurement as a function of elapsed  
                                         ! simulation time

WindLongitude, &                    ! longitude (deg) of wind measurement as a function of  
                                         ! elapsed simulation time

scatspeed, &                         ! scatterometer wind speed (m/s) with errors at 10 meters

scatdirection, &                    ! scatterometer wind direction (deg) with errors at 10 meters  
                                         ! - Oceanography convention

precip, &                            ! total column precipitation (units - NR dependent) - conv. and  
                                         ! stratus

F\_Land, &                            ! Land Flag (% of land influence in measurement) - 0-good,  
                                         ! 0.25-fair, 0.5-poor, 0.75-bad

F\_precip                             ! Precip. Flag (precip. influence) - 0-good, 0.25-fair, 0.5-poor,  
                                         ! 0.75 - bad, 1.0 - very bad

speed, &                             ! Wind speed (m/s) at 10 meters

directionO                           ! Wind direction (deg) at 10 meters - Oceanography

## **References**

Hilburn, K., D. k. Smith and F. J. Wentz, 2009: Rain Effects on Scatterometer Systems. NASA Ocean Vector Wind Science Team Meeting, May 18-20, 2009 Boulder, Colorado.

Jones, L. and P. Laupattarakasem, 2007: QSCAT Hurricane Wind Vector Simulation for HIRad OSSE. Central Florida Remote Sensing Lab.