

# **Statistical Distributions of Wind Speeds and Directions Contained in the Preliminary NSCAT Science Data Products**

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## **Abstract**

In order to validate wind vectors derived from NSCAT, statistical distributions of wind speeds and directions over the global oceans are investigated by comparing with ECMWF wind data. Histograms of wind speeds and directions are calculated from the Preliminary NSCAT Science Data Products for a period of about one month. For the wind speed, excessive low wind distribution is pointed out by the comparison of histograms with ECMWF winds. A hump at the lower wind speed side of the peak in the histogram of wind speeds is discernible. Shape of the hump varies with the incidence angle. Incompleteness of the pre-launch geophysical model function, SASS-2, tentatively used to retrieve wind vectors from backscatter measurements, is considered to cause the skew of the wind speed distribution. Frequency distribution of the wind directions relative to the spacecraft flight direction is calculated to assess selfconsistency of the wind directions. It is found that the NSCAT-derived wind vectors may exhibit systematic directional preference relative to the antenna beams in comparison with those of the ECMWF winds. This artificial directivity is also considered to be caused by imperfections in the model function. Dependencies of the directional distributions on incidence angle and wind speed are also discussed.