

Comparison of QuikSCAT and ASCAT Spatial Variability

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Comparisons between QuikSCAT and ASCAT winds typically use winds collocated with in situ measurements or model estimates. These comparisons effectively show the relative accuracy of each scatterometer. However, they do not provide information about the relative spatial variability of each instrument.

Freilich and Chelton (1986) used Seasat-A Satellite Scatterometer (SASS) to determine the spatial variability of ocean surface winds over wavelengths from 200 to 2200 km. They demonstrated that winds over the Pacific Ocean follow a power-law dependence on wavenumber of approximately k^{-2} . This power-law dependence is used to compare and contrast the spatial variability of the QuikSCAT and ASCAT scatterometers down to wavelengths of 50 km. The comparison is also extended to include the recent ASCAT 12.5 km wind product down to wavelengths of 25 km. To maximize the comparison, one-dimensional spectra are computed for zonal and meridional components in the along-track direction for 20° latitudinal bins.