

Sea Surface Temperature Dependence of C-band Radar Cross Sections

Observed by ERS-1/AMI Scatterometer

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Abstract

Dependence of C-band radar cross-section on the sea surface temperature (SST) is statistically investigated by using sigma-0 observed by the ERS-1/AMI scatterometer with collocated ECMWF wind and temperature data. Negative correlation of the sigma-0 with SST is discernible for cases of crosswind, mid wind speed and high incidence angle. The slope of the linear regression line reaches $-0.07 \text{ dB}/^{\circ}\text{C}$, which is not negligible for the wind observation by the C-band scatterometer. The correlation is not significant for cases of upwind and downwind incidence or low incidence angle. The SST dependence of C-band sigma-0 is discussed in relation with the temperature dependence of water viscosity. It is concluded, however, that the SST dependence of the C-band sigma-0 found in the present study may not be explained by the temperature dependence of viscosity.