

Using WindSat to Further Investigate the Relationship Between the Passive Wind-Induced Emissivity and the Active Bragg Scattering.
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WindSat is proving to be a very well calibrated satellite microwave radiometer, notwithstanding some hot load issues at 19 GHz. It flies in an orbit similar to QuikScat (node times 12 hours apart) and hence provides an ideal tool for comparing active and passive wind retrievals. Since the wind retrievals are really measurements of the wind-induced emissivity due the slope of gravity waves (WindSat) and the Bragg scattering from capillary waves (QuikScat), one can study the relationship between these two types of roughness. We use the collocated QuikScat roughness measurements to compute simulated WindSat brightness temperatures. The difference between the simulated and actual brightness temperatures are then analyzed as a function of wind, sea-surface temperature, and water vapor. Of particular concern is whether the relative balance between gravity waves and capillary waves is constant or whether it changes under varying environmental conditions. This type of detail study was not previously possible with AMSR because of its hot load calibration problems.