



Penetration into tropical cyclones by the WindSat radiometer

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WindSat is a low earth orbiting passive microwave imager launched in 2003. It has well documented capabilities to penetrate through clouds and light precipitation to image surface emissivity and estimate near surface wind speed and direction over oceans at wind speeds up to ~ 25 m/s. A parameterized radiative transfer model has been developed at the WindSat frequencies that is tuned to tropical cyclone (TC) conditions. Inversion methods have been developed to estimate surface emissivity under moderate to high levels of precipitation. A strong sensitivity is found to wind speed changes even at speeds as high as 50 m/s, suggesting that wind speed retrievals should be possible under these conditions. The surface emissivity estimator is currently being extended to permit simultaneous imaging of wind and precipitation fields during TC overpasses by WindSat.