

Submission for Antarctic and Global Change Symposium

Symposium topic: Sea Ice

### **Weddell Sea Ice Motion from Passive Microwave Observations**

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We have successfully derived two seasons of daily sea ice motion in the Weddell Sea using sequential 85 GHz and 37 GHz brightness temperature fields from the SSM/I instrument. The ice tracking method, which has been well-used previously, involves finding the spatial offset which maximizes the cross-correlation of the brightness temperature fields over 100 kilometer patches in two images separated in time. Derived displacement vectors over the Weddell Sea are compared with available buoy observations as a means to assess the errors in the measurements. The rms difference between the observations from the Weddell Sea are approximately 10 km. This is consistent with the comparative analysis we conducted in the Arctic Basin: there we find rms errors between 5- 15 km. The directional difference between the buoy measurements and passive microwave ice motion are unbiased with standard deviation of approximately 4 (1 degrees). The quality of the 37 GHz ice motion is slightly degraded due to the lower resolution of the sensor. Features in the daily ice motion fields and the utility of these observations are discussed. We believe a useful record of ice motion can be established for the duration of the SSM/I and SMMR sensors: that is, from 1978 into the next millenium.

"to" added