Antarctic Sea Ice Distribution from Integrated Microwave Sensings

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ABSTRACT

We investigated the distributions of sea ice using various microwave remote sensing techniques in the part of Drake passage, Antarctica, between the area 45-75°W and 55-66°S. We used Topex/Poseidon(T/P) radar altimeter, ERS-1 altimeter, ERS-2 scatterometer, Nimbus-7 Scanning Multichannel Microwave Radiometer (SMMR), and DMSP Special Sensor Microwave/Imager(SSM/I) data. The sea ice distributions were estimated between May and Jun., 1995 and Oct. and Nov., 1998. The two altimeter measurements (T/P and ERS-1) showed good coherence with the results from the radiometer data in the given period when the ice concentration of 20% and greater was selected. The scatterometer data also showed good correlation with altimetry-implied sea ice surface. The maximum and minimum values of sea ice distribution were appeared in Aug. and Feb., respectively. In general, the sea ice distributions estimated from radar altimeter, radioneter, and scatterometer are well correlated.