

Analysis of Antarctic Sea Ice Extent based on NIC charts (includes ENVISAT) and AMSR-E data

Burcu Ozsoy-Cicek, Steve Ackley, Hongjie Xie, Penelope Wagner

University of Texas at San Antonio

burcu@drcicek.com

1. Abstract

The extent of the Antarctica sea ice is not accurately defined only using low resolution microwave data, such as The Advanced Microwave Scanning Radiometer-Earth Observing System (AMSR-E). Due to the varied ice types at the ice edge, it is necessary to use additional resources that will have better results. Our research includes ice edge data with the edge provided by AMSR-E sea ice concentration data. The ice extent from AMSR-E for a period between January 1st and March 1st, 2007 and 2008 were calculated. Then it was compared with ice extent from the data provided by National Ice Center (NIC) which includes the RADAR imagery for the same time period. For the quality purpose and validation NIC data were compared with NASA's Quick Scatterometer (QuikSCAT) to see the detection of ice edge differs or agrees between these dataset. Comparison covered the entire Antarctic continent for the middle of summer and middle of winter. NIC and QuikSCAT data showed very good agreement. AMSR-E data compared with NIC sea ice edge data and QuikSCAT sea ice extent data however AMSR-E data did not agree with the other datasets. AMSR-E basically underestimated total ice concentration at the edge during the summer season. We used the ArcGIS program to calculate the difference in the ice edges between these two resources. This was done by comparing raster data from AMSR-E to vector data of NIC sea ice edge and QuikSCAT sea ice extent.