

THE ANTARCTIC SEA ICE PROCESSES AND CLIMATE (ASPECT) PROGRAM

A P Worby¹, C A Geiger², M van Woert³, S F Ackley⁴, T De Liberty⁵

¹*Antarctic Climate and Ecosystems CRC and Australian Antarctic Division, Hobart, Tasmania, Australia,* ²*USA Cold Regions Research and Engineering Laboratory, Hanover, New Hampshire, United States,* ³*National Science Foundation, Washington, DC, United States,* ⁴*Clarkson University, New York, New York, United States,* ⁵*University of Delaware, Newark, Delaware, United States*

The Antarctic Sea Ice Processes and Climate (ASPeCt) is a program of multi-disciplinary Antarctic sea ice zone research which is co-sponsored by the Scientific Committee on Antarctic Research (SCAR) and the Climate and Cryosphere (CliC) program. The ASPeCt program has established a data base of ship-based observations of Antarctic sea ice and snow cover thickness that now comprises approximately 25,000 data points from almost 100 voyages between 1980 and 2005.

In this paper we present results that show the spatial and temporal variability of the sea ice thickness fields as well as the seasonally varying ice thickness distribution for five different sectors around Antarctica. The seasonal analysis shows the progression from a single mode distribution in autumn to a bimodal distribution in winter, and thicker single mode distributions into spring and summer. We then test the parameterization of the sea-ice thickness distribution using a Weibull Function. Our objective is to provide a simple parametric description of regional thickness distribution that can be imported into numerical models with a physical relationship relating the mathematical parametric values to the data structure. Our results are important for understanding the dynamics of sea ice development and evolution and are also a necessary prerequisite for future efforts at assimilating sea ice thickness data into sea ice models.