

*A description of the Ross Ice Shelf air stream through the use of self-organizing maps*

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The near surface wind field of the Ross Ice Shelf region has been studied going back to the heroic exploration age of the early 20th century. Most of the previous studies are based on surface observations from automatic weather stations and field parties. A more advanced understanding of the low-level wind field has been accomplished in recent years with the increased use of numerical simulations. Through these studies the Ross Ice Shelf air stream (RAS), a dominant low-level feature of a northward moving air stream, has been realized to be of importance to the region. This study takes a close look at pattern, structure, and associated forcing of the low-level wind field at a height of approximately 150 m above ground level across the Ross Ice Shelf. The study is based on the archived output of the Antarctic Mesoscale Prediction System (AMPS) from 2001-2005. The method of self-organizing maps is used to objectively identify the patterns of the horizontal wind field with an emphasis on a better understanding of the RAS. The results clearly indicate the presence of the RAS across the western and central Ross Ice Shelf. The variation in position and extent of the RAS is also indicated to be dependent on changes in ambient synoptic forcing, seasonality, and regional influences, such as katabatic winds.