

Cover Letter for Article submission  
David Mikolajczyk  
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Article Title:  
Regional Warming Event in Winter on the Ross Ice Shelf, Antarctica as Observed by UW-Madison  
Automatic Weather Stations

Authors:  
David E. Mikolajczyk, Jonathan E. Martin, Linda M. Keller, Matthew A. Lazzara

Submitting to:  
Atmosphere, Special Issue: "Polar and High Mountain Weather: Interactions, Variability, and  
Forecasting"

To Whom It May Concern:

We submit the following article for your consideration for inclusion into your journal Atmosphere, Special Issue: "Polar and High Mountain Weather: Interactions, Variability, and Forecasting". The following study investigates rapid and extreme increases in near-surface air temperatures over the polar region of the Ross Ice Shelf, Antarctica in winter. This study reveals how the synoptic-scale atmospheric environmental set up and evolution led to such a warming event, in which air temperatures across the Ross Ice Shelf increased by 30° C or greater in two or fewer days. While previous studies have noted that atmospheric ridging and blocking has led to similar temperature increases in Antarctica, particularly over the East Antarctic plateau, this study shows how the warm front from an approaching cyclone in the Ross Sea led to such extreme warming.

The predictability of such extreme temperature increases can be improved by better understanding the causes of these events. This study shows both how the atmospheric environment before the event is just as important as the development throughout the event, as well as how numerous factors lead to such warming. In the future, it may be imperative to understand the frequency and intensity of such warming events, particularly in the context of climate change, to understand their effects on the surface mass balance of the Antarctic ice sheets.

We confirm that neither the manuscript nor any parts of its content are currently under consideration or published in another journal.

All authors have approved the manuscript and agree with its submission to Atmosphere, Special Issue: "Polar and High Mountain Weather: Interactions, Variability, and Forecasting".

We thank you for your consideration.

Sincerely,

David Mikolajczyk, Jonathan Martin, Linda Keller, and Matthew Lazzara