

Poleward Propagating Weather Systems in Antarctica

Jessica A. Staude

Space Science and Engineering Center, University of Wisconsin-Madison,
1225 W. Dayton Street, Madison, WI 53706

The introduction of satellite coverage over the continent and Southern Ocean for weather research and operational forecasting has provided new insight into the patterns and origins of harsh conditions over Antarctica. However, forecasting for travel across the continent is still difficult, especially in West Antarctica. Prior gaps in satellite coverage have impeded forecasting abilities, and real time data from automated weather stations (AWS) is limited because of the small number of stations in this region. The creation of Antarctic satellite composite images in 1992 has allowed for a comprehensive compilation of weather data around the continent and surrounding areas from a hemispheric view.

In this study, ten years of composite satellite images from 1992-2002 are examined for poleward propagating weather systems in West Antarctica. These large scale synoptic events transport clouds onto the continent and affect local weather. These systems are counted on a monthly basis, examined for periodicity, and the temporal distribution of the systems is compared against climate indices. Case studies using AWS data verify the onset of conditions associated with systems identified in the composite images. The results are directly relevant to seasonal forecasting over West Antarctica.