Antarctic Climate and Sea Ice Variability

Marilyn N. Raphael

Abstract:
Antarctica's remoteness, the difficulty of conducting research there and the paucity of observations, are some reasons why the Antarctic climate and sea ice variability are not as well understood as in the Arctic. However, research has shown that the climate of Antarctica, including its sea ice, is dictated by numerous influences with origins ranging from the Tropics to local atmosphere/surface interactions. Over the period of record indications are that much of Antarctica is warming, led by the Antarctic Peninsula. Regional changes in atmospheric circulation, sea surface temperatures and sea ice may explain this warming. Overall, sea ice extent is increasing, contrary to climate model predictions for the 21st century, and this increase has strong regional and seasonal signatures. Sea ice variability is strongly influenced by ENSO, the Southern Hemisphere Annular Mode (SAM) and by zonal wave three (ZW3) among other large scale atmospheric circulation mechanisms. The Antarctic climate and sea ice variability are discussed with respect to the atmospheric and oceanic mechanisms that influence them.

Bio:
Marilyn N. Raphael is a Professor in the Department of Geography at the University of California, Los Angeles. Her research interests lie in the Southern Hemisphere large scale atmosphere dynamics, climate variability, and atmosphere-sea ice interaction, focusing on Antarctic sea ice, global climate modeling, and the Santa Ana Winds of California.