

Public Abstract

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Title:Climatology of Atmospheric Blocking 1978-2008 Global and Hemispheric Breakdown, as well as Impacts of Temperature and Global Climate Cycles

The study of blocking and its connection to temperature and some of the cycles that happen in the climate, expressly new ones such as the Pacific Decadal Oscillation, is important in regards to climate change and weather forecasting. With the Pacific Decadal Oscillation being a relatively new discovery it is important to examine its impacts on various weather patterns, in this case blocking.

This study examined how blocking has been impacted by temperature and the Pacific Decadal Oscillation and El Niño, from the years 1978-2008. These years were chosen because they contain an increase in global average temperatures, as well as many changes in El Niño and a change in the Pacific Decadal Oscillation. Yearly averages were examined of blocking intensity, blocking duration, and total blocking events each year.

Over all, the results found that in the Northern Hemisphere blocks are becoming less intense with longer durations and the temperature has increased. As well, the Pacific Decadal Oscillation was found to have significant impact on the total blocking events each year in both the Northern and Southern Hemispheres. The blocking duration and blocking intensity are not impacted significantly by the temperature patterns, though are lightly impacted by the Pacific Decadal Oscillation.

The strength of the Pacific Decadal Oscillation on the total amount of blocking events in both hemispheres, expressly the Southern Hemisphere, came as a surprise and will be the center of much more research in the coming years as we learn more about the Pacific Decadal Oscillation. As well, realizing the impact of temperature and Pacific Decadal Oscillation on blocking will impact and improve weather forecasts as we can better model blocking events.