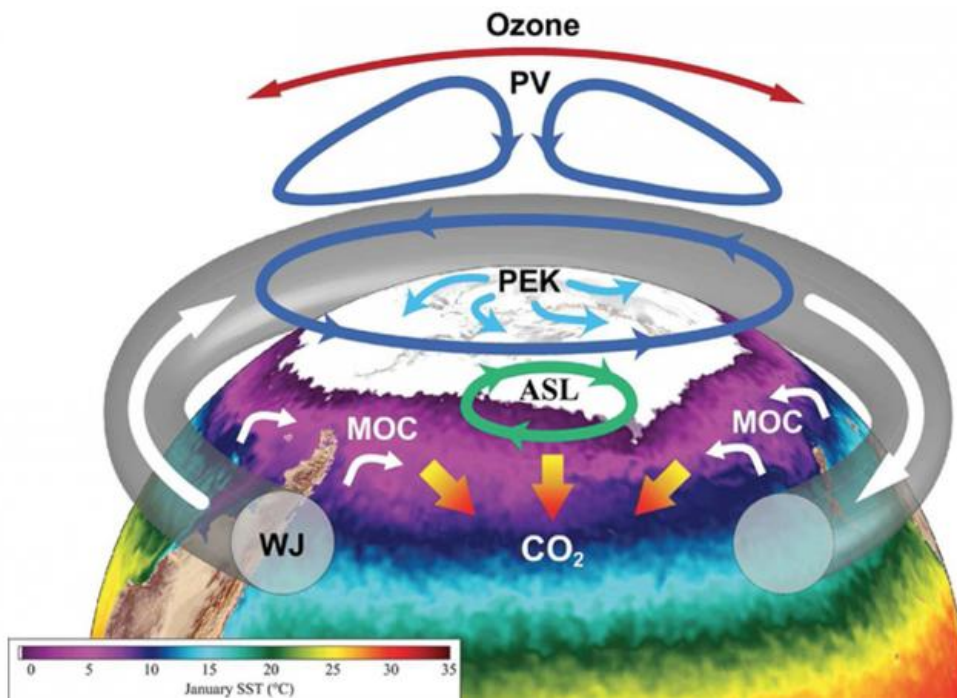


Climate surprises possibly in store for Antarctica, say researchers

August 24 2015, by Beth Staples



Two different climate scenarios appear plausible for Antarctica in the 21st century, says Paul Mayewski, director of the Climate Change Institute at the University of Maine.

An examination of [climate models](#) as well as records of [climate](#) change developed through ice cores reveal a potential for future climate

surprises in the Southern Hemisphere, he says.

Mayewski and fellow researchers with AntClim21 (Antarctic Climate in the 21st century), a Scientific Research Programme of the Scientific Committee on Antarctic Research (SCAR), discovered potentially different forecasts as part of a published review they developed for the scientific community.

"In a nutshell, the review describes how the examination of past analogs compared to model projections differ, and the implications," he says.

Climate models suggest that continued strengthening and poleward contraction of the Southern Ocean westerly wind belt will affect Antarctica's [21st century](#) environment, Mayewski says.

Ice core records suggest continued southward displacement of the westerlies, but weakened westerlies that allow greater entry of warm marine air masses into Antarctica.

Mayewski says implications for the ice core-derived past analog scenario are serious; wind-driven infiltration of warmed water into the coastal zone could result in abrupt collapses of glaciers in these regions and accelerated global sea-level increase.

Changes in the westerly jet structure could cause other surprises on a regional scale that could significantly affect weather extremes, ocean circulation, carbon uptake, sea ice extent and sea-level rise.

Evidence from Earth's [climate history](#) supports the possibility of such a surprise in the rate of ice-sheet response and [climate change](#) in the Southern Hemisphere, he says.

For instance, around 14,500 years ago, global sea level rose by 20

meters, at a rate of 4 meters per 100 years. Marine sediment reconstructions and modeling studies indicate the rise was partially due to a rapidly collapsing West Antarctic ice sheet.

The review, titled "Potential for Southern Hemisphere climate surprises," is in the *Journal of Quaternary Science's* "Rapid Communication."

Mayewski was joined in the study by AntClim21 researchers from the United States, including Sean Birkel of the Climate Change Institute, as well as scientists from the United Kingdom, Australia, New Zealand and Korea.

Provided by University of Maine

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