
Press Releases



October 14, 2013
JAMSTEC

First Discovery of the Link between Antarctic Ozone Depletion and Summer Warming over Southern Africa

1. Overview

A joint research team of the Research Institute for Global Change and the Application Laboratory of the Japan Agency for Marine-Earth Science and Technology (JAMSTEC; Asahiko Taira, President), the University of Tokyo, and the Bindura University of Science of Zimbabwe (Desmond Manatsa, Scientist) analyzed observed data and reanalysis data from the National Centers for Environmental Prediction (NCEP)/National Center for Atmospheric Research (NCAR) over the past 30 years to investigate the recent rise in surface air temperatures, which is greatly affecting the regional communities of southern Africa. The researchers discovered for the first time that the increase in the summer temperature over the region is linked to the loss of ozone over Antarctica and the associated intensification of the Angola low-pressure system over southern Africa.

The findings were published in the October 14, 2013 (JST) issue of *Nature Geoscience*.

Title: Link between Antarctic ozone depletion and summer warming over southern Africa

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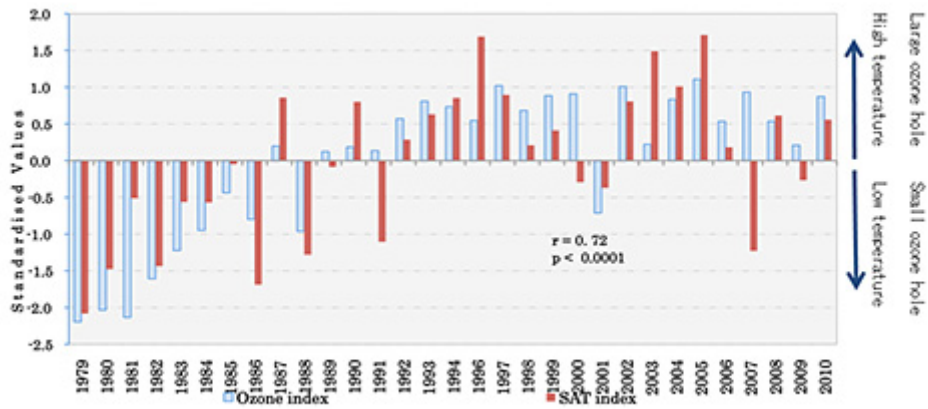
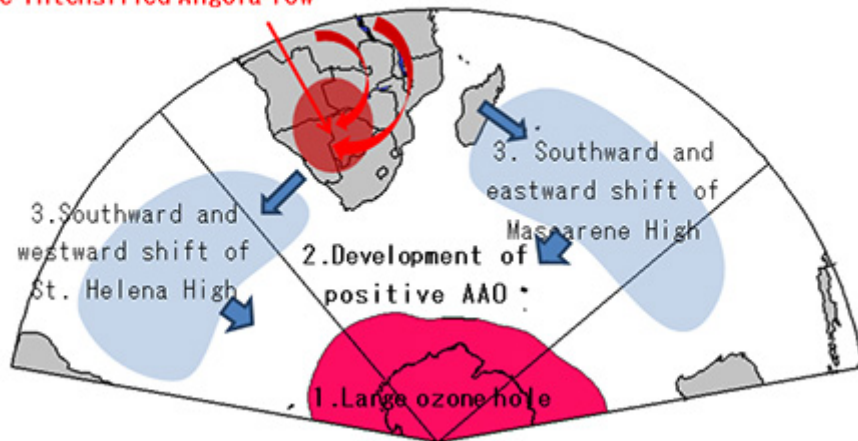


Figure 1: Time series of anomalies in the Antarctic ozone hole area (blue) and the surface air temperature over southern Africa (red) during October to December of 1979–2010. The indices are normalized by their standard deviations.

4. Warm air advection from tropics by the intensified Angola low



4. Cold air advection from high latitudes by the subtropical highs

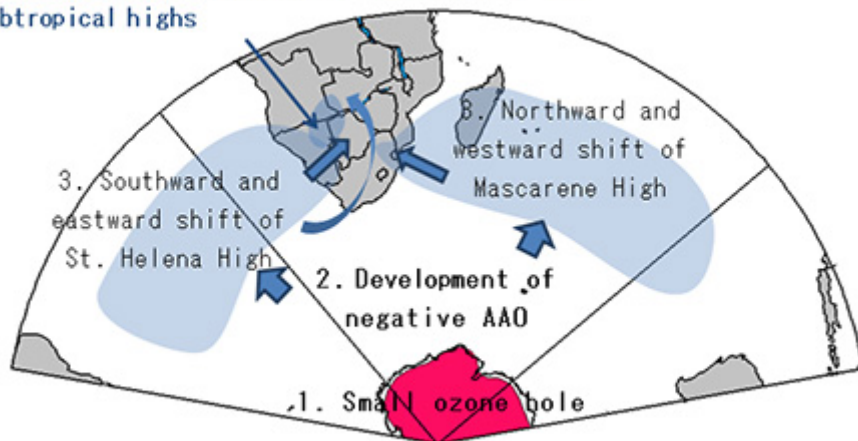


Figure 2: (Top) Mechanism of the surface air temperature rise over southern Africa during the large ozone hole era. (Bottom) Mechanism of the surface air temperature drop over southern Africa during the small ozone hole era (bottom).

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