报告

Record Arctic Ozone Loss in Spring 2020 is Likely Caused by North Pacific Warm Sea Surface Temperature Anomalies

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讲者介绍 Biography

胡永云，北京大学物理学院大气与海洋科学系教授，2000 年或芝加哥大学博士学位，2000-2004 年分别在华盛顿大学和哥伦比亚大学做博士后研究，2004 年任教北京大学至今，现任中国气象学会副理事长和北京气象学会理事长。研究方向包括：现代气候变化、深时气候演化、行星气候和宜居性。

报告摘要 Abstract

Record ozone loss was observed in the Arctic stratosphere in spring 2020. The question is what caused the formation of the extreme Arctic ozone loss. Here, we show observational and simulation results that the extreme Arctic ozone loss was likely caused by record-high sea surface temperatures (SSTs) in the North Pacific. It is found that the record Arctic ozone loss was associated with the extremely cold and persistent stratospheric polar vortex over February–April, and that the extremely cold vortex was because of anomalously weak planetary wave activity. Further analysis reveals that the weak wave activity can be traced to anomalously warm SSTs in the North Pacific. Both observations and our simulations show that warm SST anomalies in the North Pacific can cause weakening of wavenumber-1 wave activity, colder Arctic vortex, and lower Arctic ozone. These results suggest that for the present-day level of ozone depleting substances, severe Arctic ozone loss could form again as long as dynamic conditions are satisfied.

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