Embargoed, Advance Information for the **1 July** issue of Science

The following information is embargoed until 2:00 pm US ET/19:00 BST/18:00 GMT/19:00 CET, Thursday, 30 June 2016.

**The Start of “Healing” for the Antarctic Ozone Hole?**
After persisting for decades, the hole in the ozone over the Antarctic has begun to “heal,” exhibiting an ozone increase, a new study reports. The results suggest that an historic agreement signed nearly three decades prior is having positive returns, not only in terms of slowing the rate of ozone depletion in Earth’s second major atmospheric layer (the stratosphere) but also in terms of creating an identifiable ozone increase. The Montreal Protocol on Substances that Deplete the Ozone Layer, which went into effect in 1989, is an international treaty designed to protect the ozone layer by phasing out the production of numerous substances responsible for ozone depletion. Understanding the degree to which the ozone is healing in response to this agreement and related efforts has remained of broad public, policy and scientific interest. Though analyses to date show some early signs of stratospheric ozone recovery since the agreement’s signing , these signs are largely in terms of a reduced rate of ozone decline and leveling off of ozone depletion; less has been documented about ozone increase in the polar regions. What’s more, in October of 2015 the Antarctic ozone hole reached a record size, providing a conflicting result. Here, to further examine polar ozone trends since 2000 in response to both controls of ozone-depleting substances and other variables, Susan Solomon and colleagues used a combination of direct ozone measurements and model calculations. They identified several consistent signals of “healing” in the Antarctic ozone layer, particularly in the month of September, when they found regular, seasonal increases in ozone column amounts. The researchers also evaluated changes in ozone health caused by natural factors including volcanic eruptions; since about 2005, they say, these eruptions have delayed healing and made a large contribution to the interannual variability in o zone loss in recent years.

**Article #18**: "Emergence of healing in the Antarctic ozone layer," by S. Solomon; D.J. Ivy at Massachusetts Institute of Technology in Cambridge, MA; D. Kinnison; M.J. Mills at National Center for Atmospheric Research in Boulder, CO; R.R. Neely III; A. Schmidt at University of Leeds in Leeds, UK.

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**News Story from Science**: A related news article by Eric Hand will be available on Wednesday, 29 June.