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NATIONAL INSTITUTE FOR COMPUTATIONAL SCIENCES

# NICS

## How does Earth's Climate Respond to Ozone Depletion?

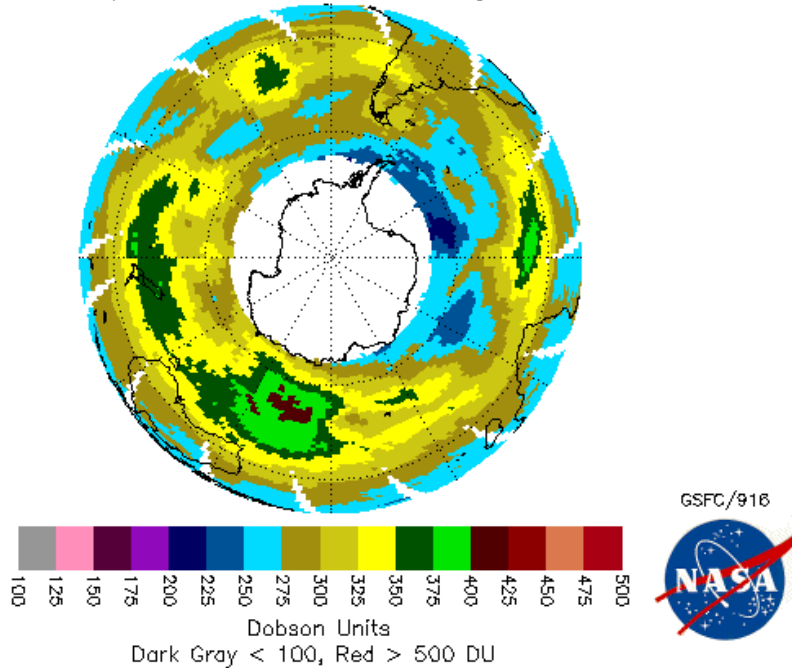
**Cecilia Bitz**  
Atmospheric Sciences  
University of Washington



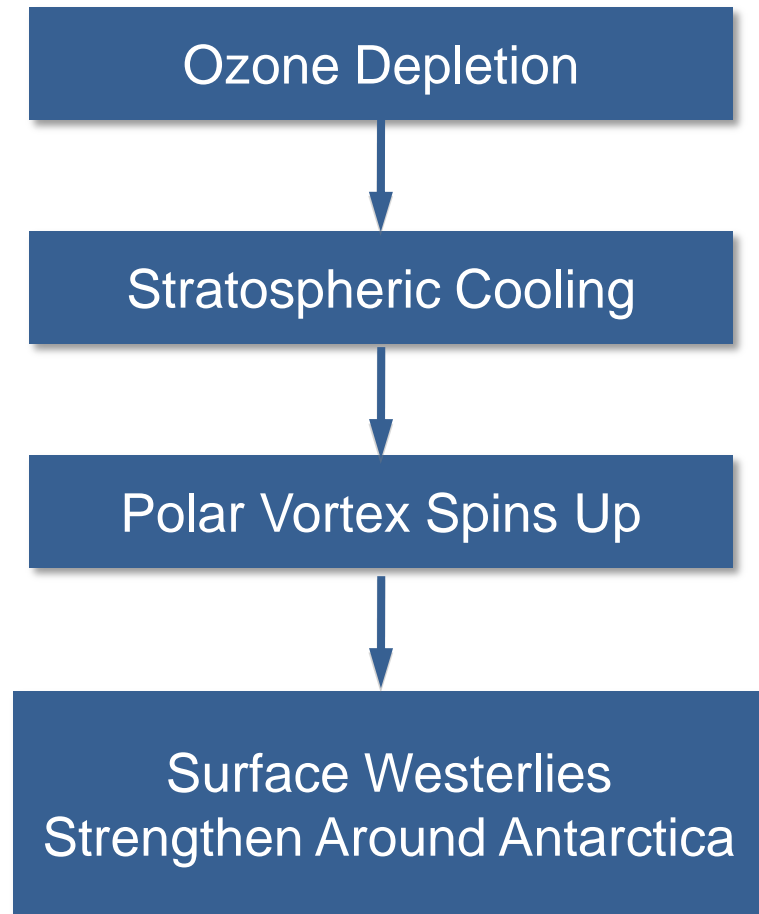
# How does Earth's climate respond to ozone depletion?



EP/TOMS Total Ozone for Aug 1, 2000



White = Missing Data



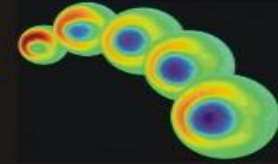
GEN:216/2000



# Total Ozone Mapping Spectrometer



Ozone Processing Team - NASA/GSFC Code 613.3

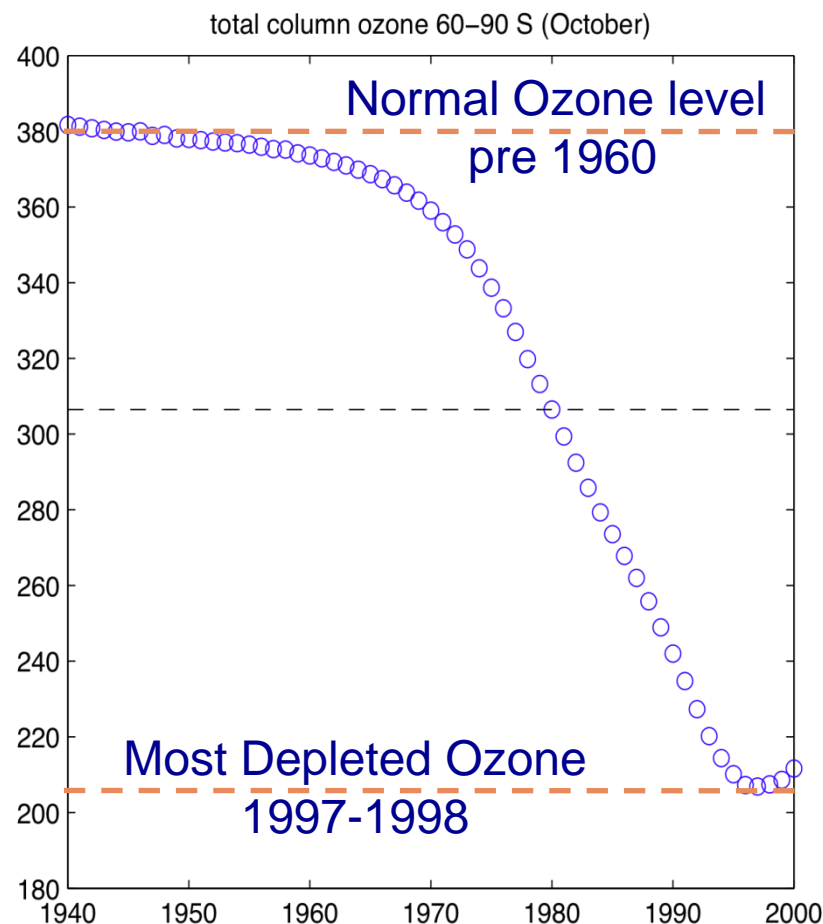


1998



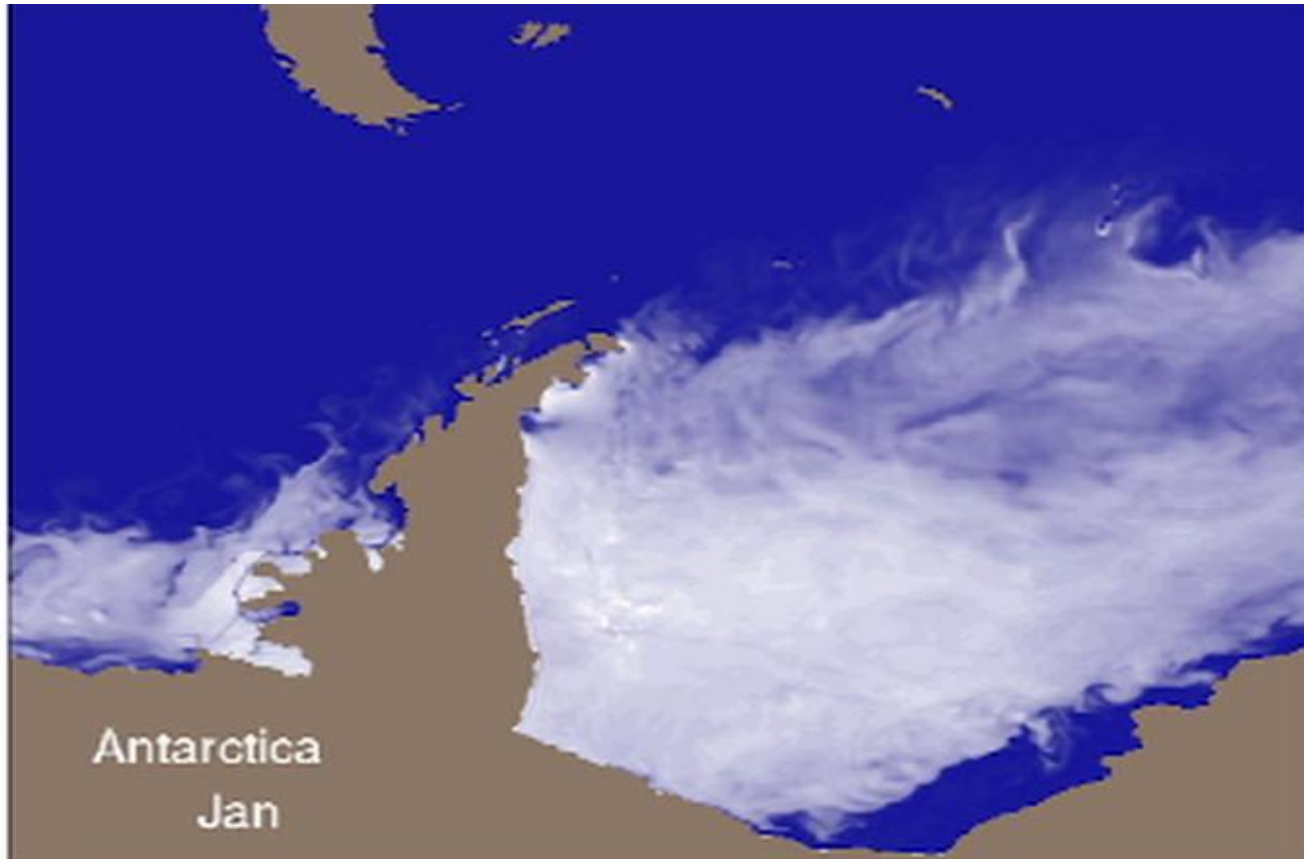
# Understanding Ozone

- **Ozone was destroyed in the late 20th Century primarily by chlorofluorocarbons (CFCs).**
- **Ozone is expected to recover as a result of the Montreal Protocol**
- **Scientists have an incomplete understanding of the influence of ozone changes on climate in part owing to the typical coarse resolution of climate models**



# Antarctic sea ice under normal winds

What happens to the ocean and sea ice when westerly winds strengthen?



Antarctica  
Jan

Weddell  
Sea

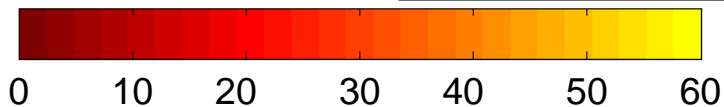
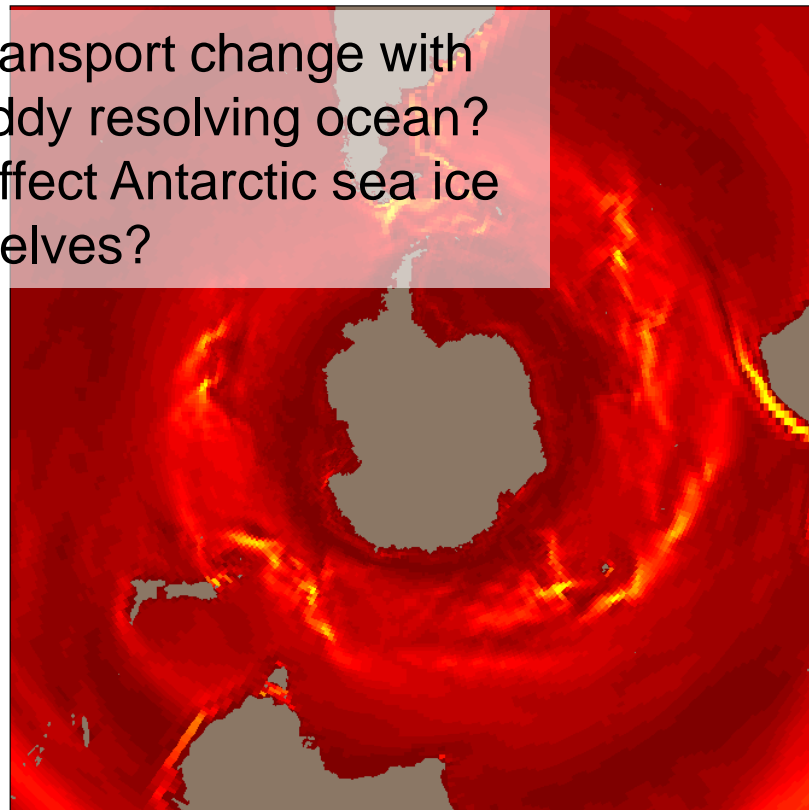
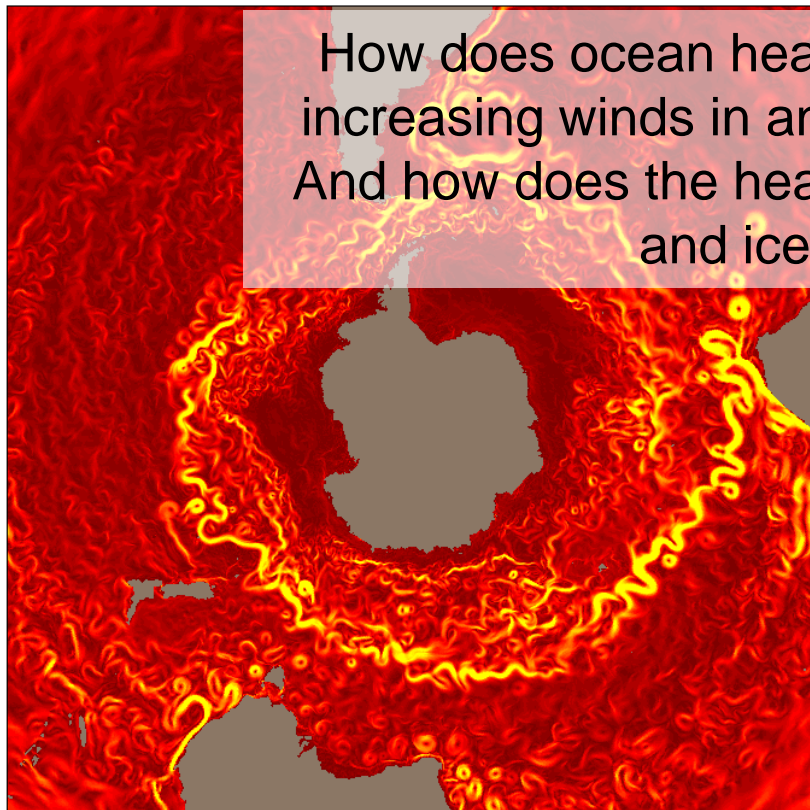


# Surface currents around Antarctica

0.1 degree Simulation

1 degree Simulation

How does ocean heat transport change with increasing winds in an eddy resolving ocean? And how does the heat affect Antarctic sea ice and ice shelves?



- Current speed in cm/s for randomly chosen October
- Simulations with the Community Climate System Model version 4.0



## Contact

### **Cecilia Bitz**

**Associate Professor in Atmospheric Sciences  
University of Washington  
[bitz@atmos.washington.edu](mailto:bitz@atmos.washington.edu)**

