Antarctica: Observations from the far side of the world.

Adam Csank

http://palaeosbios.blogspot.com/2006/06/giant-crater-found-under-antarctica.html
What is the Southern Annular Mode?

http://www.aos.princeton.edu/WWWPUBLIC/sara/statistics_course
Thompson and Wallace, 2000
Regressions on $\bar{Z}$ PC-1

(a) SH
(b) NH

(c) $z_{850}$
(d) $z_{1000}$

Thompson and Wallace, 2000
Thompson and Wallace, 2000
Thompson and Wallace, 2000

(a) SH
Z_{850}
(c) Z_{850}

(b) NH
Z_{1000}
(d) Z_{1000}

NDJFMA
MJJASO
Thompson and Wallace, 2000
Regressions on the annular modes

Thompson and Wallace, 2000
Jones and Widmann, 2004

Thompson and Wallace, 2000
Maze et al., 2006
Summary

• The SAM is expressed as a ring of high pressure anomalies surrounding a low pressure pole. In the upper atmosphere it is expressed as a strong zonal wind anomaly propagating down from the stratosphere. It varies seasonally with both an inactive and active season. Variability is expressed more as shift from more pole centred to less pole centred than as an anomalous change (like that seen in other modes).

• The SAM has a more annular (ring like) structure than the NAM and appears to have stronger centres of action, and a generally stronger representation. This is partly because of the presence of mountains in the Northern Hemisphere but also because of the difference between an ocean surrounded by land and a continent surrounded by ocean.

• Decadal variability seems to be present but is not very clear.