Tracking sudden stratospheric warming (SSW)onset with the adjoint

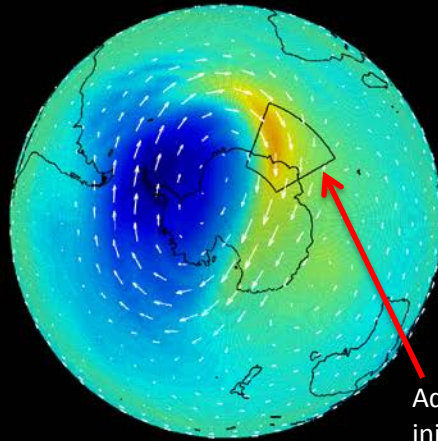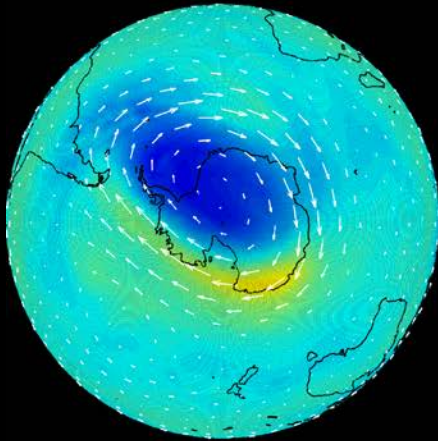GEOS-5 10 day forecast at 10hPa, southern hemisphere SSW of 2002

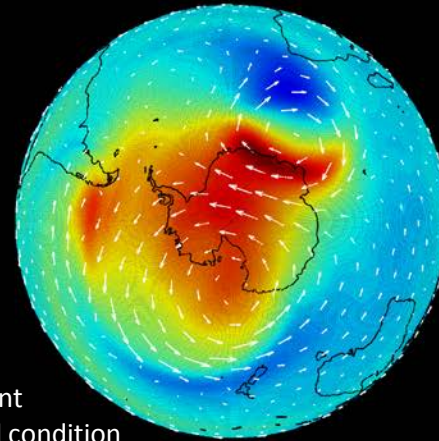18–September–2002 0000z   21–September–2002 0000z   28–September–2002 0000z

Temperature (K)
270
260
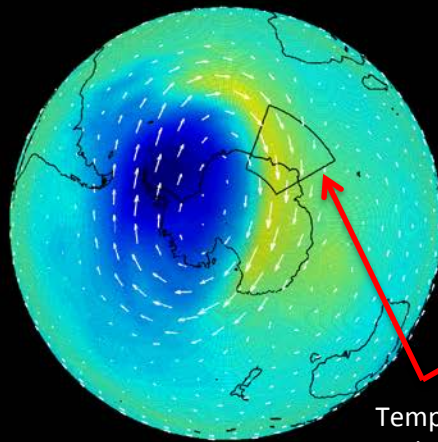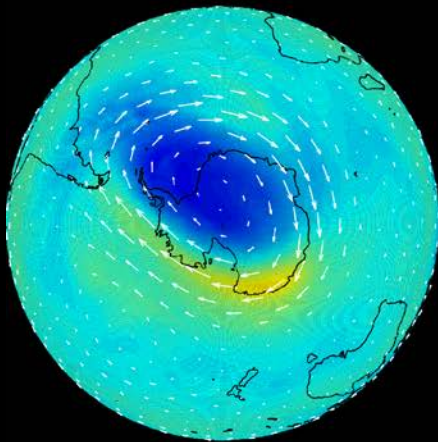250
240
230
220
210
200

Adjoint
initial condition

Forecast perturbed by adjoint sensitivity in troposphere: no SSW occurs

18–September–2002 0000z   21–September–2002 0000z   28–September–2002 0000z

Temperature (K)
270
260
250
240
230
220
210
200

Temperature
Reduced and no major SSW occurs