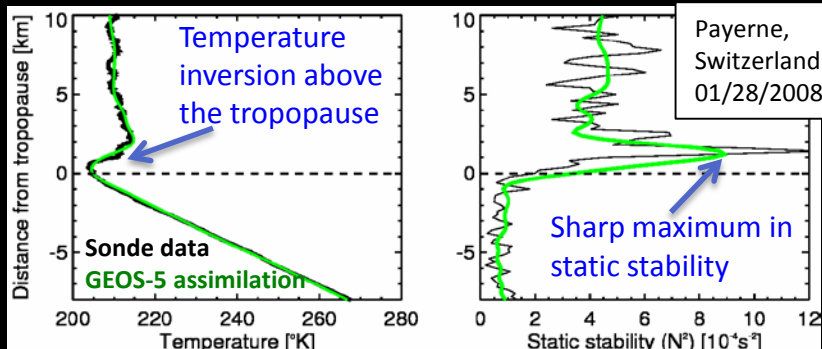




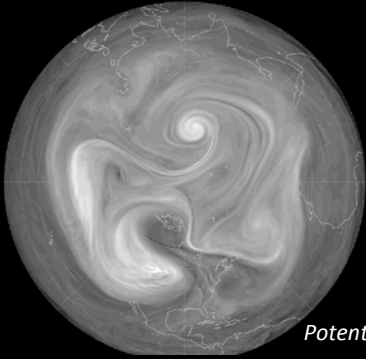
The Tropopause Inversion Layer in GEOS-5: A Connection with Stratospheric Circulation

Concepts



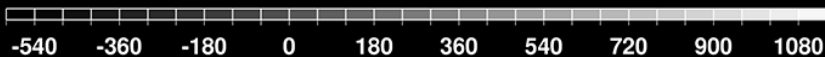
The Tropopause Inversion Layer (TIL): a rapid increase in temperature with height above the tropopause and a local maximum in static stability – important for wave propagation and transport of gases in the atmosphere.

2013 01 22 21UTC



Potential vorticity field (PV Units) at 10 hPa during an SSW

Sudden Stratospheric Warming (SSW) events are large-scale disturbances of the wintertime polar circulation in the stratosphere, characterized by a weakening of zonal winds. SSWs occur every few years.



Main result – linking the concepts

This GEOS-5 based study confirms a connection between SSW events and the TIL. When middle-stratospheric winds are weak during SSWs in 2006, 2009 and 2013 the TIL in high latitudes gets stronger – the sharpness of the tropopause increases. Multiyear GEOS-5 analyses provide an opportunity to study the processes involved in detail.

