Variability and trend of the stratospheric subtropical barrier

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**PROBLEM STATEMENT**

- Variability and trends in the dynamical barrier located in the subtropical stratosphere.
- The barrier or edge region separates inner tropical region from mid-latitudes and acts as border of the tropical pipe.
- Probability Density Functions of long-lived tracers allow to estimate the position of the region of minimum gradient (i.e. the edge of the dynamical barrier) merging different observations and model data.

**Questions:**
- Annual variability of the “edge” region in the stratosphere?
- Interannual variability and impact of the QBO?
- Trends in position and intensity?
- How it compares to state-of-the art climate models?

**TRENDS IN THE BARRIER POSITION**

**Effective of QBO**

**Comparison with WACCM CCMVal REF-2 simulations**

**CONCLUSIONS**

- Annual variability of the “edge” region in the stratosphere?
- QBO modulates the position through planetary waves
- Equator (pole) ward in W (E) phase

- Observations show significant trend in position in the SH stratosphere but no trend in intensity
- Role of $\nu^2$ EP flux?
- WACCM is in very good agreement

**SATELLITE DATA SETS**

- Global coverage
- Measurement continuity
- Unprecedented long data series
- PDF helps in merging different sensors

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