

Lin

Tan

University of California, Riverside

Shuhui Wang, University of California, Los Angeles, CA

Andrew Bai, St Paul Academy and Summit School, St Paul, MI

Annie Bai, St Paul Academy and Summit School, St Paul, MI

King-Fai Li, University of California, Riverside, CA

Ka-Kit Tung, University of Washington, Seattle, WA

Oral

(Student Speaker)

Extratropical stratospheric interannual variability is compounded by the nonlinear effects of the Solar Cycle and the Quasi-Biennial Oscillation (QBO). Compared to the quiescent state (when the QBO is in the westerly phase and the 11-year Solar Cycle is at the minimum), the winter polar vortex is less stable, and hence may break and cause a major warming event in the late winter (Feb-Mar), when either the QBO is in the easterly phase or the Solar Cycle is at the maximum due to the enhanced convergence of planetary waves in the extratropics.

Meanwhile, a planetary-scale cold anomaly in the stratosphere over North America is observed, indicating an exchange of airmass between the polar region and mid-latitudes during the major warming event. This cold anomaly extends downward to the surface in the southern US, leading to a temperature decrease of 0.5-1 K relative to the quiescent state. We examine the relationship between the cold anomaly and the movement of the polar jet stream.

Presentation file

[8-monday-tan-lin.pdf](#)

YouTube link

[View recording](#)

Meeting homepage

[4th Eddy Cross-Disciplinary Symposium](#)

[Download to PDF](#)