**Motivations**

Observations

- To what extent can the onset and duration of this SSW be forecasted in multiple S2S models?

**Data and Methods**

- Daily NCEP/NCAR reanalysis (Kahay et al. 1996)
- Real-time multivariate Madden-Julian Oscillation (MJO) series (Wheeler and Hendon, 2004)
- Monthly mean time-series for the ENSO index derived from the extended reconstructed sea surface temperature version 5 (ERSSTv5) (Huang et al., 2017)
- Quasi biennial oscillation (QBO) daily series (TURKIS UNIVERSITAT BERLIN)
- 11-year solar cycle indexed by the 10.7 cm solar flux
- 11 sub-seasonal to seasonal (S2S) models in Fig. 1

**Observations**

- Monthly mean time
- Daily NCEP/NCAR reanalysis
- SSW
- Seasonal
- Solar
- Year solar cycle indexed by the 10.7 cm solar flux

**Methods**

- The 2019 New Year Stratospheric Sudden Warming and Its Predictions in 11 S2S Models

**Predictions**

- 2019 New Year Stratospheric Sudden Warming
- Methods
- Rao, J., Chaim I., Chen, H., and White, I.

**Summary**

- This mixed-type (displacement followed by elongation and split) SSW event occurred under moderate ENSO and easterly QBO phases, with solar minimum, and MJO phases 4-5.
- Nearly all of these forcing terms were significant for the SSW event forecasted in this study.
- The splitting of the stratospheric polar vortex and its persistence after the SSW onset, explained by the alternate wave-3 and wave-2 pulses, are difficult to forecast in S2S models.

**Reference:**