

The Stratospheric Warming of 2018 in Context of the Earth System

Steven PAWSON, Lauren ANDREWS, Lawrence COY, Richard CULLATHER, Young-Kwon LIM and
Andrea MOLOD

¹ *NASA Goddard Space Flight Center, Greenbelt, MD, USA*

The major stratospheric sudden warming in February 2018 occurred in unison with changes throughout the troposphere in the northern hemisphere. Changes in large-scale dynamics and regional weather patterns are described in this study, along with features in major features of the Earth system, such as sea ice. The focus is on analyses using the Goddard Earth Observing System (GEOS) analyses, weather prediction, and seasonal forecasts. Specific topics to discuss include:

- The morphology of the sudden warming, including planetary waves in the troposphere and stratosphere.
- Relationships with weather over North America.
- Warming over the Arctic and anomalous sea-ice distributions.
- Predictability on the one-to-four week timescales.

The predictions will be based on routine products generated using the GEOS systems, as well as targeted experiments that focus on the roles of different mechanisms (such as ice-atmosphere interactions).

Key words: sudden warming, weather, sea ice, planetary waves