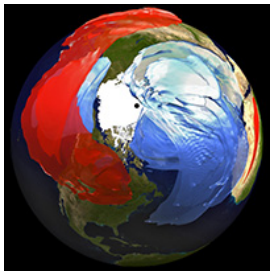

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Sudden stratospheric warmings in reanalyses and their tropospheric fingerprint

Tuesday, 19 November 2019 11:00 (30 minutes)

Sudden stratospheric warmings (SSWs) are the largest instance of the wintertime polar stratosphere and constitute one of the clearest examples of stratosphere-troposphere coupling in both directions. They are preceded by anomalously high upward-propagating wave activity, whose sources are located in the troposphere. In turn, SSWs also impact the tropospheric circulation up to two months after the occurrence of the event. Thus, a better understanding and model representation of SSWs processes would help to improve medium-long range surface weather forecasts.

This talk focuses on the representation of SSWs in reanalyses with a special focus on their tropospheric effects near-surface. First, we present an inter-reanalyses assessment of the representation of the most important aspects of SSWs by reanalyses. Our results reveal a very good agreement among all reanalyses for representing SSWs in the satellite era. However, larger discrepancies appear in the preceding period, probably due to the smaller number of observational data to assimilate and so, the stronger influence of the characteristics of the reanalysis models.
As a second step, we show the extraordinary rainy and windy conditions of March 2018 in southwestern Europe that ended the most severe drought in southwestern Europe. This anomalous weather happened after the occurrence of an intense SSW and our analysis gives evidence that it played a relevant role in the record-breaking precipitation event.

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