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Stratospheric impact on surface climate on seasonal time scales

Tuesday, 19 November 2019 09:00 (30 minutes)

This talk presents an overview of evidence, from the Met Office seasonal to decadal forecasting team, of the impact of the stratosphere on surface climate in observations and models. Stratospheric sudden warmings can be predicted deterministically almost two weeks in advance, impact the North Atlantic Oscillation, and enhance skill in seasonal forecasts. ENSO, and the Quasi-Biennial Oscillation in the tropical stratosphere, both also impact the winter north Atlantic via stratospheric teleconnection pathways. In the southern hemisphere, the southern annular mode is impacted by stratospheric anomalies with a two month lead time. Finally, stratospheric water vapour concentrations, influenced in models by ozone, clouds, convection, and advection schemes, are known to impact on surface climate. Thus an accurate representation of the modelled stratospheric climatology and variability, via model resolution, upper boundary height, and a good representation of physical processes, is essential to increase the skill of seasonal forecasts.

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Track Classification: Workshop: Stratospheric predictability and impact on the troposphere