



Investigating the Predictability of the 2007/2008 and 2003/2004 Stratospheric Sudden Warmings in the Northern Hemisphere

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Understanding of the dynamical coupling between the troposphere and the stratosphere is important particularly in the context of a stratospheric influence on surface weather patterns and climate. Stratospheric Sudden Warmings (SSWs) are a phenomenon that may demonstrate this two-way vertical link between the troposphere and stratosphere. It is largely accepted that upward propagating planetary waves may be the cause of SSWs. In addition, there is increasing interest in the connection between the state of the stratosphere during a SSW event and the subsequent state of the troposphere. Such a connection implies that improved predictability of SSWs may lead to improved tropospheric predictability on the monthly to seasonal timescale.

This study investigates the predictability of such warming events by running forecasts from different initial conditions prior to the two Northern Hemisphere SSWs that occurred in the winters of 2007/2008 and 2003/2004. These warmings are of particular interest due to the disturbed state of the stratosphere prior to the warming which is believed to make the events more difficult to capture effectively in models. The ability therefore to predict such complicated scenarios could be useful in enhancing seasonal weather predictability.