

# Hindcast Experiment of the 2009 Sudden Stratospheric Warming and Following Elevated Stratopause Event by Using a High-Top Gravity Wave Resolving Model

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A series of hindcast experiments on the 2009 Sudden Stratospheric Warming (SSW) and following Elevated Stratopause (ES) event is conducted by using a high-top model named Japanese Atmospheric General circulation model for Upper Atmospheric Researches (JAGUAR). A comparative examination of hindcasts by JAGUAR in both a Gravity Wave (GW) resolving setting and a low-resolution setting with GW parametrizations reveals a superior performance of the former on reproducing detailed features of the SSW-ES event. In particular, the ES-related residual circulation in the polar mesosphere-lower thermosphere tends to show different behavior despite some effort of tuning parameters in the later. This talk will present details of such a benefit of the explicit simulation of GWs and discuss some challenges in the predictability study of the middle atmosphere.

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