



Evidence for interhemispheric stratosphere-mesosphere coupling derived from noctilucent cloud properties

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Recent model studies indicate a coupling between the winter stratosphere and the polar summer mesosphere. The link between these two widely separated regions is the pole-to-pole meridional circulation which is strongly dependent on gravity waves. Planetary waves modulate the propagation of gravity waves, and thus also the pole-to-pole transfer in the mesosphere. We study this interhemispheric coupling based on global datasets from the Odin satellite and the ECMWF operational analysis. In particular, we use Odin observations of noctilucent cloud (NLC) properties as a proxy for the state of the summer mesosphere and ECMWF winter stratospheric temperatures as a proxy for planetary wave activity in the stratosphere. The comparison of these two global datasets appears to confirm the predicted interhemispheric connection. The observed strong anticorrelation of winter stratospheric wave activity and summer mesospheric NLC suggests a dynamic explanation to the north/south differences and to the year-to-year variability in NLC.