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Physikalisches Kolloquium

Oct. 31, 2023 at 4:15 p.m.
HS KPH

Prof. Peter Haynes
University of Cambridge

The Role Of The Stratosphere In Weather And Climate: Extratropics And Tropics

In the last 20 years or so it has been recognised that stratospheric processes have an important effect on the circulation of the troposphere and hence on weather and climate, particularly in the extratropics. The effect is now being exploited in medium range to seasonal weather prediction. The magnitude of the effect is at first surprising given that the mass of stratosphere is only about one fifth of that of the troposphere, but there are important dynamical feedback effects, both in the coupling of troposphere and stratosphere and within the troposphere itself, that amplify the tropospheric response to changes in the stratosphere.

This talk will first describe the feedback effects that operate in the extratropics and then move on to consider the tropics, where significant apparent effects of the stratosphere on the troposphere have also become evident. However, the dynamics of the tropical troposphere are very different to that of the extratropical troposphere and it cannot be assumed that the same feedbacks operate in both. Some of the physical and dynamical processes that might account for observed connections between the tropical stratosphere and the tropical troposphere will be discussed.

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