



Dynamical Timescales Near the Tropopause

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The region of the Stratosphere just above the Tropopause has a decorrelation time of around 60 days, the largest in the extra-tropical atmosphere. The property is potentially exploitable to improve seasonal prediction in the Troposphere. In this presentation we seek to understand if the long decorrelation timescales which are observed just above the Tropopause are related to the radiation physics or Stratospheric dynamics in this region.

We use a very simple dynamical core which parameterises radiation physics using a simple Newtonian cooling scheme. By changing the timescale of the Newtonian cooling we are able to simulate two different dynamical regimes near the tropopause. In one regime, decorrelation timescales are dominated by the Newtonian cooling parametrisation. In a second regime, long decorrelation timescales related to Stratospheric dynamics occur, which exceed the input cooling rates by 30-40 days. The presentation will discuss the two dynamical regimes and the consequence of the change of behaviour for Stratosphere-Troposphere coupling in simplified numerical models and in the real atmosphere.