



Model intercomparison of stationary waves in future climate projections

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The model-projected increase in the global mean surface temperature in response to enhanced anthropogenic forcing varies in the range 1.4-5.8°C. Part of this range is explained by differences in the anthropogenic forcing used, but even using the same forcing the inter-model differences are large. The spatial patterns of the response also varies among climate models. These patterns are important for the regional climate and day-to-day weather. In this project we study the stationary wave response to the enhanced greenhouse gas (GHG) forcing in coupled global climate model (CGCM) simulations. Physically based connections between the mean flow response to the enhanced GHG forcing and the changes in the stationary waves are sought with focus on Northern Hemisphere winter. A common signature in CGCM simulations of the response to the enhanced GHG forcing is an increase in the zonal mean upper level wind and an associated increased pole-to-equator temperature gradient at upper levels. In the present study, we examine the response to the enhanced GHG forcing as simulated by the Intergovernmental Panel on Climate Change Fourth Assessment Report ensembles of CGCMs. We hypothesise that the stationary wave response is largely determined by the change in the zonal mean background flow.