



Jet stream formation and modulation in the wake of large scale orography

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The formation and modulation of the upper tropospheric jet stream in the wake of large scale orography, like the Tibetan Plateau, is studied with the GFDL global spherical model utilizing an idealized climatological setup, i.e. the Held-Suarez setup which maintains a mean baroclinic zone and mid-latitude jet stream in each hemisphere.

The impact of the size and shape of the orography on the scale and strength of the jet stream as well as on the storm track activity are investigated. Previous studies already tried to tie the eddy activity in the storm track region to upstream orography pinpointing a reduction in activity with increasing orographic height. Here we will utilize linear and non-linear arguments to shed light on the dynamical behavior and sensitivity in relation to changes in the orographic setup.

Some of the key concerns addressed are: the shift of the maximum jet stream velocity northward in the wake of the mountain, the attribution of non-linear contributions to the response as well as the possibility of jet stream splitting due to the orography.