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# Controls on Simulated Temperature Variability and Change in High Mountain Asia

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Regional atmospheric circulation patterns strongly shape the divergent climatic, glaciological and hydrological signals evident in different parts of High Mountain Asia (HMA). As such, it is important to consider how well key regional circulation features are represented in climate models. The present study contributes to this need by evaluating CMIP5 model representations of the Western Tibetan (Karakoram) Vortex (WTV). The WTV is an anomalous circulation pattern that is closely linked to year-round anomalies in the position/intensity of the subtropical westerly jet and the South Asian monsoon in summer. The WTV has recently been proposed as a likely contributor to the Karakoram Anomaly. Results suggest that the CMIP5 models capture the fundamental patterns characterising the WTV. However, the strength of the relationship between regional circulation and near-surface temperature variability and change is often diminished in the models compared with observations and reanalyses, although there is notable inter-model variation. For spring and summer, the diversity of skill and responses is related in part to inter-model differences in certain land surface process representations. As such, there appears to be potential for partly constraining the range of regional temperature projections based on observations, at least in parts of HMA in some seasons.