



Northern hemisphere storm tracks in an ensemble of IPCC climate change simulations

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Winter (November -March) storm track activity on the Northern Hemisphere is computed for several models which contributed to the “diagnostic exercise for the IPCC”. The quantity considered is the standard deviation of 2-6 day band-pass filtered sea level pressure data. Climate change signals are defined as the difference between climatological storm track means for the SRES A1b scenario periods 2081-2100 and 1960-2000. The signal mainly consists of increasing storm track activity over the North Atlantic between Newfoundland and the British Isles and over the North Pacific near the Aleutian Islands. A pattern correlation for the Hemisphere confirms that the models are generally able to reproduce the observed patterns of this quantity, with maximum values over Newfoundland and over the central North Pacific. Correlations with the NCEP data based storm tracks for the years 1960-2000 range from 0.94 to 0.98 for the individual models, and 0.98 is also reached using the observed pattern and the multi-model mean. The agreement between the signals (difference between scenario and control periods) is rather high, with correlations between 0.48 and 0.78 between the signals from individual models and the ensemble mean. Individual signals patterns are mostly correlated with each other, but even a zero correlation can be found for a certain pair of models. We conclude that the ensemble mean pattern of storm track change is a comparatively reliable estimate of projected storm track changes.