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Northern hemisphere winter storm tracks of the Eemian interglacial and the last glacial inception

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Abstract. Climate simulations of the Eemian interglacial and the last glacial inception have been performed by forcing a coupled ocean-atmosphere general circulation model with insolation patterns of these periods. The parameters of the Earth's orbit have been set to conditions of 125 000 and 115 000 years before present (yr BP). Compared to today, these dates represent periods with enhanced and weakened seasonality of insolation in the northern hemisphere. Here we analyse the simulated change in northern hemisphere winter storm tracks. The change in the orbital configuration has a strong impact on the meridional temperature gradients and therefore on strength and location of the storm tracks. The North Atlantic storm track is strengthened, shifted northward and extends further to the east in the simulation for the Eemian at 125 kyr BP. As one consequence, the northern parts of Europe experience an increase in winter precipitation. The frequency of winter storm days increases over large parts of the North Atlantic including the British Isles and the coastal zones of north-western Europe. Opposite but weaker changes in storm track activity are simulated for 115 kyr BP.

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Citation: Kaspar, F., Spanghehl, T., and Cubasch, U.: Northern hemisphere winter storm tracks of the Eemian interglacial and the last glacial inception, Clim. Past, 3, 181-192, 2007. [Bibtex](#) [EndNote](#) [Reference Manager](#)



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