



The extreme Northern Hemisphere winter of 2013/4: The role of tropical SSTs

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The winter of 2013/4 stood out for its extreme cold weather in eastern North America and very strong North Atlantic jet stream, bringing severe flooding to the UK in particular. The extreme weather was not confidently forecast by any seasonal prediction system, begging the question of whether there was any remote driver that could have been used to improve the forecasts, and whether the numerical models used are deficient in some important way. We analyse in particular the role of tropical sea surface temperatures (SSTs). We show that, in both the ECMWF and Met Office forecast models, imposing the positive SST anomalies that were present in the tropical west Pacific causes cold anomalies in eastern North America, through a teleconnection mediated by a Rossby wave train. This indicates that these SST anomalies had a role in causing the extreme American weather. Results from further sets of model ensembles will be presented to show additional significant influences from Tropical Atlantic and Indian Ocean SST anomalies.