Geophysical Research Abstracts
Vol. 16, EGU2014-4930-1, 2014
EGU General Assembly 2014

More hurricanes to hit Western Europe due to global warming

Reindert Haarsma, Wilco Hazeleger, Camiel Severijns, Hylke de Vries, Andreas Ster, Richard Bintanja, Geert Jan van Oldenborgh, Henk van den Brink, and Michiel Baatsen

KNMI, Research, De Bilt, Netherlands (haarsma@knmi.nl)

Using a very high resolution global climate model (∼25 km grid size) with prescribed sea surface temperatures we have investigated the change in the occurrence of hurricane-force (> 32.6 m/s) storms over Western Europe due to climate change. The results show a large increase during early autumn (Aug-Oct). The majority of these storms originate as a tropical cyclone. Using SST sensitivity experiments we have tested the hypothesis that the increase is due to the rise in Atlantic tropical SST thereby extending eastwards the breeding ground of tropical cyclones, yielding more frequent and intense hurricanes following pathways directed towards Europe. En route they transform into extra-tropical depressions and re-intensify after merging with the mid-latitude baroclinic unstable flow. Detailed analysis indicates that the development of a warm seclusion is the main mechanism for the re-intensification and that the hurricane winds are caused by a sting jet.