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# Over-extreme extra-tropical winds in climate models

**H.W. van den Brink** (1) and F.M. Selten (1)
(1) Koninklijk Nederlands Meteorologisch Instituut

It is a common approach in climate science to fit an extreme value distribution to meteorological extremes (such as wind, precipitation and temperature) in order to estimate return values that even may exceed the observational period.

In case of extrapolation outside the observed range, an important but un-provable assumption is that the until present never observed extreme values are generated by the same mechanism that has caused the observed extremes, and that no other mechanism comes into play.

However, the data of the MPI-ECHAM5 model, generated in the ESSENCE project, indicate specific extra-tropical regions in which the extrapolation from annual wind extremes fails to estimate the 1000-year return wind speed correctly. This hints on the existence of another, very rare, mechanism that produces over-extreme winds in these regions.

There are indications that these over-extreme winds are generated by cyclones that are strongly influenced by (or even merged with) a nearby, other cyclone. The interaction between both cyclones may result in wind speeds that exceed the wind speeds of ‘normal’ cyclones of the same rarity.