

## Homogenization of daily peak wind gust series from Spain and Portugal

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### Abstract

Daily peak wind gusts series from 80 stations (7 from Portugal and 73 from Spain) spanning 54 years (1961-2014) were subjected to a robust quality control, reconstruction and relative homogenization protocol using the R package 'Climatol', with and without using MM5 model simulation outputs as homogeneous reference series.

As daily series are much noisier than their monthly aggregates, homogenization at the monthly scale was also performed, resulting in the detection and correction of 171 shifts in the series (almost double than the 87 shifts corrected directly on the daily series).

Discussions of the results include comparisons of different statistical parameters derived from:

- The raw series
- Series homogenized directly at the daily scale
- Series homogenized at the monthly scale
- Daily series adjusted with the monthly homogenization correction factors

And the statistical parameters compared include:

- Trends
- Return periods
- Number of days with peak wind gust greater than the 90 percentile

Lessons learned will help in improving the methodology to analyze climatological series of extreme weather events, and particularly our understanding of the daily peak wind gust variability and trends.