



Meteoalarm severe wind gust thresholds from uniform periods in ECA&D

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The main aim of our work is to propose new thresholds for Meteoalarm severe weather warnings which are based on the local climate, specifically for the severe wind gust warnings because the variability of these thresholds is currently rather extreme and unrealistic. In order to achieve this we added validated wind data to the database of the European Climate Assessment and Database project (ECA&D) and analysed them. We also developed wind related indices for ECA&D in order to facilitate further research.

Since 2007 most of the severe weather warnings issued by the National Weather Services in Europe can be found on one website: www.meteoalarm.eu. For the 30 participating countries colour codes (yellow, orange, red) are presented on a map of Europe to reflect the severity of the weather event and its possible impact. The thresholds used for these colour codes obviously depend on the type of severe weather, but should also reflect local climate (for example: identical heat waves will have a more significant impact in Sweden than in Spain). The current Meteoalarm guideline is to issue second level warnings (orange) 1-30 times a year and third level warnings (red) less than once a year (being the total number of warnings from a specific country for all of the different sorts of severe weather events in that year). There is no similar guideline for specific sorts of severe weather events and participating countries choose their own thresholds. As a result we see unrealistic differences in the frequency and thresholds of the warnings for neighbouring countries. New thresholds based on return values would reflect the local climate of each country and give a more uniform indication of the social impact. Additionally, without uniform definitions of severe weather it remains difficult to determine if severe weather in Europe is changing.

ECA&D receives long series of daily data from 62 countries throughout Europe and the Mediterranean. So far we have 7 countries that provide us with wind data. Quality control and homogeneity tests are conducted on all data before analysis is carried out. For wind data the standard ECA&D homogeneity tests (SNHT, Pettitt, Buishand and Von Neuman Ratio) are performed on the wind gust factor (the ratio of the maximum daily gust to the daily average wind speed) and a relatively new test (Petrovic's ReDistribution Method) on wind direction data. For the Dutch data we compared the results of the homogeneity tests with the available meta-data. Inhomogeneous series are not corrected but the older part (before the most recent break) is excluded from further analysis.