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Decadal Variability and Extremes of European Winter Storm Frequency and Intensity according to the Twentieth Century Reanalysis

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Winter storms are extensive fields of extreme wind speeds, resulting from intense extra-tropical cyclones, causing enormous socio-economical losses over Europe. As part of the *MiKlip* initiative our project deals with the assessment of decadal predictability of synoptic-scale European winter wind storms in terms of their frequency and intensity.
The results presented here depict the first steps, analyzing decadal variability of winter storm frequency and intensity over Europe as to be found in the new *Twentieth Century Reanalysis* (20CR). For this purpose, two different event tracking schemes were applied to this dataset. One scheme identifies extra-tropical cyclones, based on MSLP and its laplacian, the other is based only on surface wind speeds, thus identifies storm events diagnosed as extensive areas of extreme (>= local climatological 98th percentile) wind speeds. Both approaches deliver estimates of frequency and intensity of the same meteorological phenomena.
Based on these two approaches, the period of 1871-2008 (ONDJFM) is investigated with respect to decadal variabilities and extremes of winter storm frequency and intensity.
Additionally taking into account the *HadISST1.1* dataset, which was used to force the 20CR, atmospheric and oceanic variability patterns like the *North Atlantic Oscillation* and the *Atlantic Multidecadal Oscillation* are analyzed regarding their relationship to frequency and intensity of European winter storms. The physical mechanisms behind these relationships are also investigated, starting with those already known from studies of the seasonal predictability of winter storms.