



The spatial relationship between wind storms and cyclones

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Winter storms associated with strong cyclones are usually expected to occur south of the cyclone core. This is where most of the life span the cold front of the cyclone is located.

An objective method is applied to the ERA40 dataset, which identifies and tracks extreme wind fields, defines their core at every time step, and matches them to the responsible cyclone. It was found that the majority of extreme wind cores is indeed located south of the cyclone centre. However, we also found a considerable number (28%) of extreme wind tracks north of the cyclone core. Such events most often occur over the North Atlantic in the vicinity of Iceland and to some extent in the Mediterranean region. This study shows the spatial distribution of such events. The dependence of the storm location on the synoptic development of the cyclone is analysed and the spatial extent and severity (based on affected area, duration and wind speed) of the wind storms north and south of the cyclone are compared.