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Phases of the Reykjavik 2012 downslope windstorm

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The study describes an extreme and extended windstorm that occurred in the area commonly known as the Reykjavik wake in northerly flow. Unlike in most northerly flows, the downslope windstorm which is usually confined to the foothills of the Esja mountain, propagated over the city of Reykjavik, more than 10 km downstream of Mt. Esja. There was great temporal and spatial variability in the winds and this variability is to some extent reproduced in high-resolution numerical simulations. The fluctuations in the wind pattern downstream of Mt. Esja coincide with variations in the vertical structure of the flow, particularly the elevation of an inversion located close to mountain top level. The variations correspond to the flow pattern moving between Type E and Type S windstorm described in Agustsson & Olafsson (Meteorol. Atm. Phys., 2010) which makes this windstorm the first documented case of a single windstorm moving from one category to another.