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Cyclogenesis in the lee of Iceland

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During the Greenland Flow Distortion Experiment (GFDEX), aerial observations were made of a mesocyclone that formed south of the mountains of S-Iceland in northerly low-level flow on 27 February 2007. At the initial stage, the cyclone remained stationary and had the characteristics of a weak wake. In a second stage, the cyclone encounters a middle-tropospheric trough arriving from the region between Iceland and Greenland. Following the encounter, the cyclone deepens and moves eastwards, away from the mountains.

A numerical study of the cyclone, validated by observations from a GFDEX flight, reveals a multiple impact of the topography on the cyclone: the low level wake is initiated in northerly flow impinging Iceland, while the development of the upper trough is associated with channelling of a cold air outbreak by Greenland and Iceland.