

ABSTRACT

A model-based study is undertaken of a synoptic-scale vortex's encounter with Greenland-scale topography. The ambient setting is a barotropic westerly flow of uniform potential vorticity. This flow is both incident upon and induces an anticyclone over the topography, and it also serves to advect the vortex toward the mountain. In a simulated evolution of the flow the vortex circumnavigates poleward around the mountain but concomitantly undergoes significant dissolution on the windward side followed by a substantial reconstitution to the lee. It eventually advects away downstream as a compact vortex of reduced amplitude. This sequence of events is interpreted in terms of the combined influence of the orographic-anticyclone and the self-dynamics of the vortex.

KEYWORDS : Vortex, Cyclone, Orography, Greenland, PV, barotropic