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Summertime thermal winds over Iceland

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The summertime thermal flow over Iceland is simulated. The simulations indicate that the upslope/valley effect may be as important as the sea breeze over Iceland in the summer. This is somewhat contradictory to what is commonly considered. Apparently, the sea breeze has a hampering effect on the upslope winds. The channeling effect of the topography gives quite strong breezes in limited areas. The simulations reveal an unknown effect of mountainous peninsulas on the sea breeze. We choose to call this the peninsula effect. The peninsula effect gives speed-up in the evening on the right hand side of the peninsulas when facing the mainland, and offshore advecting of the speed-up region. The peninsula effect may be explained by a geostrophic component of the flow along the peninsula being added to the sea breeze generated by the mainland. The advection of the peninsula speed-up in the evening is associated with advection of warm air from the peninsula over the coastal sea on the speed-up side of the peninsula. There is strong convergence and updrafts in the vicinity of glaciers. This raises questions on the climatology of summertime precipitation, which may to a substantial extent be convective in these regions. A future retreat of the glaciers may lead to a shift in the location of the convergence zones and consequently to important changes in the precipitation climatology