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Patterns of the fine-scale wind climatology of Iceland from numerical downscaling

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The climatology of winds over Iceland are investigated by dynamic downscaling of the ECMWF reanalysis to a 3 km horizontal grid. The fine-scale simulations reveal clear patterns of local winds, i.e. wakes, blockings and jets, generated by the topography at different scales. These patterns can mostly be explained with existing theories of orographic flows. However, the reason for the abscence of some features predicted by theory is not clear. The climatological wind anomalies (very strong or very weak winds) are often generated where the impact of the small-scale topography acts to enhance the impact of the mountains at the scale of Iceland itself.