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## Using the best available physiography to improve weather forecasts

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Iceland is a windy country and the accurate forecasting of wind storms, temporally and spatially, is of high importance for society. One of the main goals in NWP at the Icelandic Meteorological Office (IMO) during the last years is to improve wind forecasts. A well known systematic error of NWP systems is to apply too high surface roughness for Iceland and thus systematically predict too low winds over the island.

The operational NWP model of IMO is the limited area model HARMONIE-AROME. An inspection of the description of physiography in the default version revealed an outdated and incomplete description with errors in e.g. glacier extent, vegetation fraction, leaf area indices (LAI) and soil depths. Existing data bases were used to improve each cover type definition and thus build a new land-cover database, the ECOCLIMAP-II/Iceland data base. The data bases used were Corine (CLC2012), soil and vegetation databases from the Agricultural University of Iceland as well as MODIS LAI and albedo products. Furthermore the sand/clay databases and the topographic database were upgraded with the best available local data. In addition, the subgrid-scale wind drag parametrization was turned off.

This development has improved the HARMONIE-AROME wind forecasts for strong winds significantly, outperforming all other NWP models. This has clear positive impact on public safety. With increasingly higher horizontal resolution of NWP models local land-cover updates such as these become more important.