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Analysis of forecast errors in a NWP model

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We have compared differences between radiosonde observations in SW-Iceland and 48 hour forecast by numerical weather prediction models over a period of five years (2000-2004). Temperature and height of the pressure levels of 925, 850 and 500 hPa were compared in search for systematic errors. In the overall mean, the predictions have little bias. There are however slight seasonal variations and indications of situations where the models do relatively poorly. At 500 hPa there is a cold bias in the forecasts in late winter, but no such bias in the autumn and early winter. Strong winds from the SE and NE at 925 and 850 hPa are rather poorly predicted, compared to westerly winds at same levels. We attribute the error in the northeasterly winds to errors in the representation of the orography of Iceland and the errors in the southeasterly winds to large horizontal gradients and rapid temporal change in winds associated with fronts.