Polar lows in the ECMWF and Arome models

Matilda Hallerstig, Erik Kolstad, Linus Magnusson

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Abstract

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1 Introduction

1.1 Paragraph

Short about polar lows, what they are, why they are important, what the challenges are.

1.2 Paragraph

What the convective grey zone is, a litterature review on work on relations between convective parameterization and horizontal resolution, particularily in polar areas.

1.3 Paragraph

Short about the models (ECMWF and Arome) and why they are important. (operational in the Atlantic sector of the Arctic, increasing activity in this area) Also mention observations used. (scatterometer. evt. SAR)

2 Data and methods

2.1 Models

Describe models

- table showing differences between them. (resolution, hydrostatic/non-hydrostatic, regional/global, convection parameterisations, etc)
- Figure with the domain of Arome Arctic
- Ask Rune about Arome with deep convection?

2.2 Observations

Description of the observation data and how it was processed

- Map with geographical coverage (Can it be combined with the map of Arome Arctic domain?)
- Evt. figure or something showing temporal coverage of observations?

2.3 Diagnostic methods

How the tracking was done. What parameters are studied, and why.

2.4 Polar low cases

- Description of polar low cases
- Dates and times for the model runs
- Maps with tracks?

3 Results

- Time series along tracks
- Scatterplots for an overview of model performance
- horizontal maps showing the structure of convective cells
- Vertical cross-sections to study vertical structure and dynamics of PLs?

4 Discussion

4.1 paragraph

Pros and cons with different types of observations

4.2 paragraph

The role of convection and horizontal resolution, why did convection matter more in this case?

4.3 paragraph

Other differences between EC and Arome and how they might have affected the results. (global/regional, hydrostatic/nonhydrostatic)

5 Conclusion

Convection mattered more than horizontal resolution. Explain how this knowledge is useful for further work.

6 Acknowledgements

7 References