

Extreme winds in Greenland-Iceland region

in a new high-resolution dataset

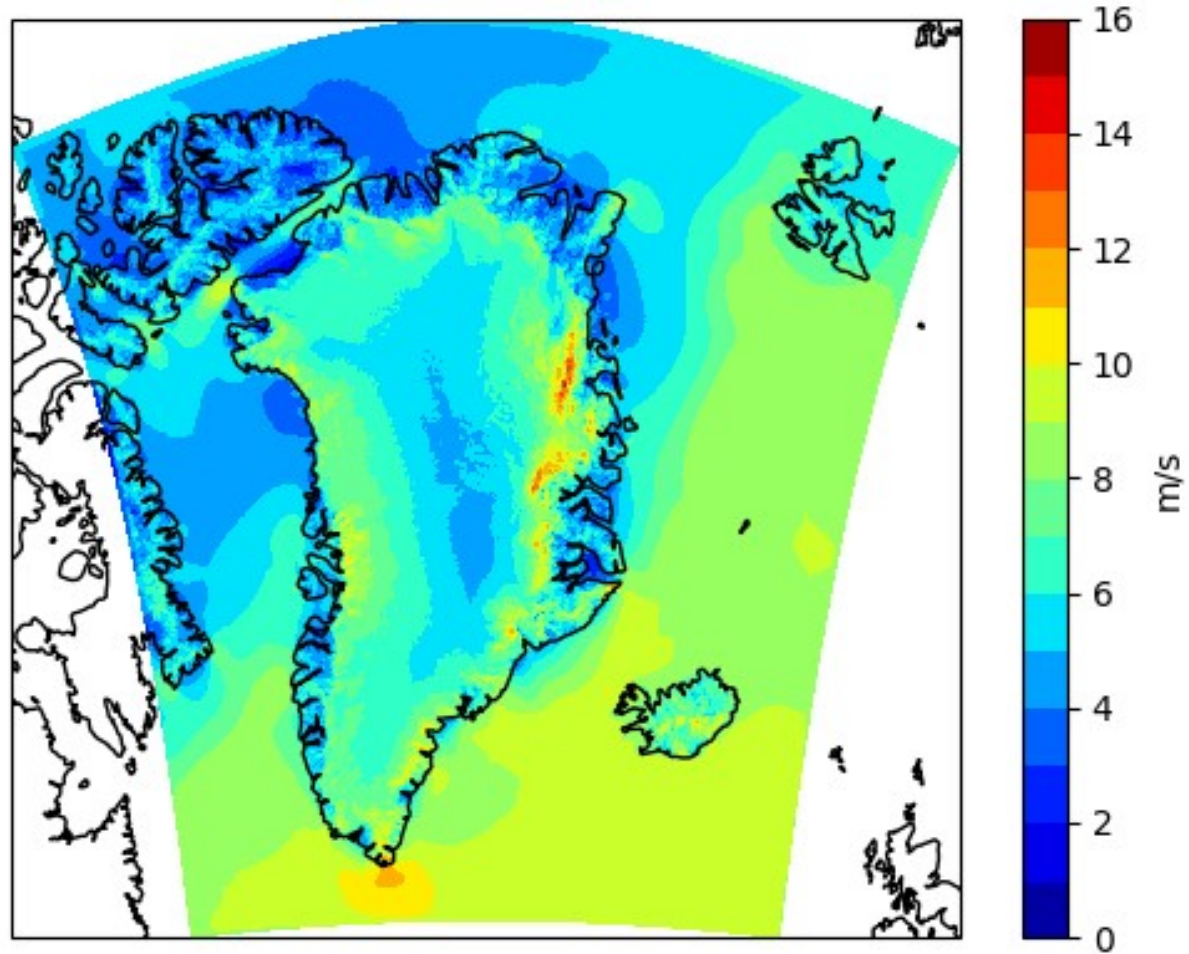
CARRA Dataset

- C3S Arctic Regional Reanalysis
- Created with HARMONIE-AROME model
- West domain covers Iceland and Greenland
- East domain covers Svalbard and northern parts of Skandinavia
- Boundary conditions from ERA5 global reanalysis
- 2.5km resolution
- Data for years 1998 to 2019

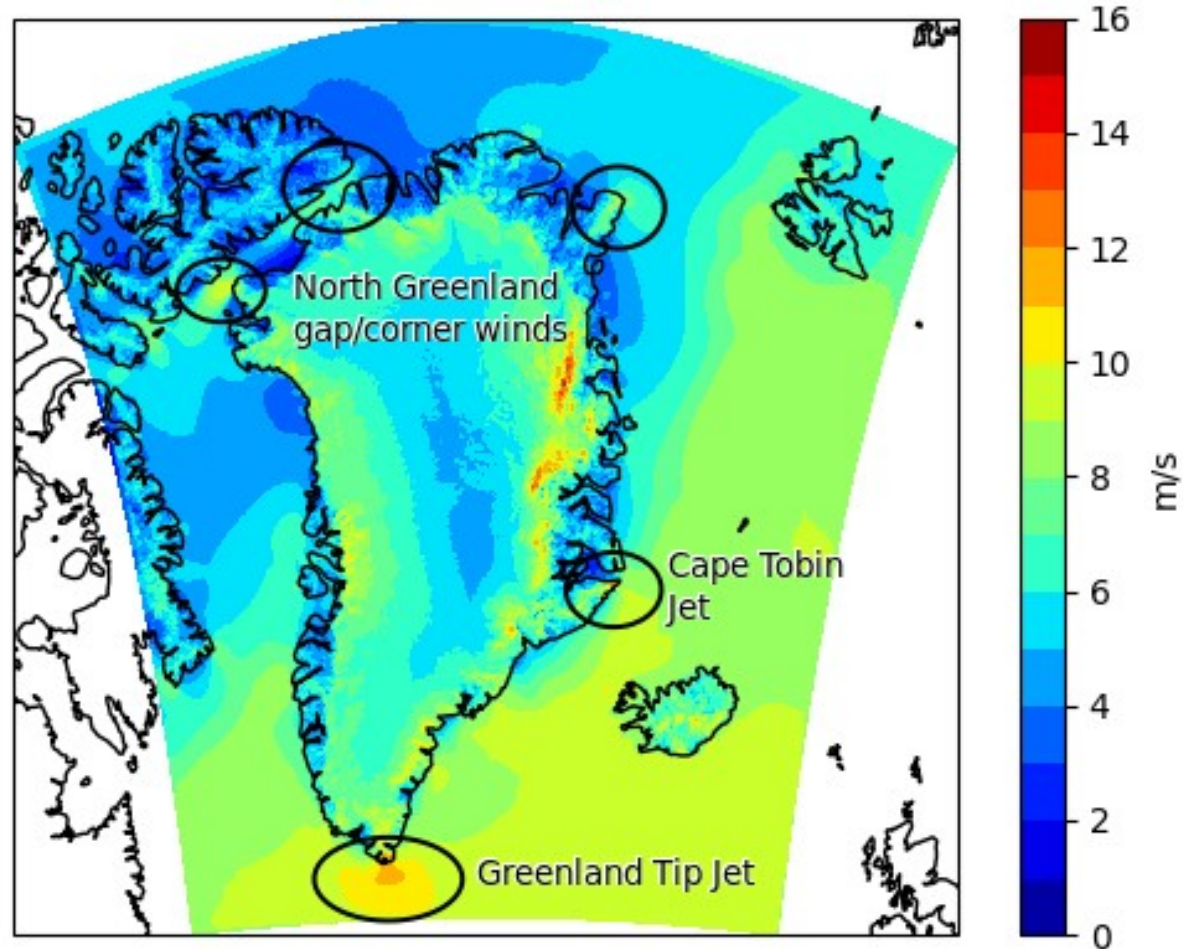
Analysis

- Windspeed at 10m
- Other variables in other parts of the dataset
- 6 hour leadtime every 12 hours
- Other leadtimes available
- Mean windspeed over whole dataset
- 99th percentile windspeed

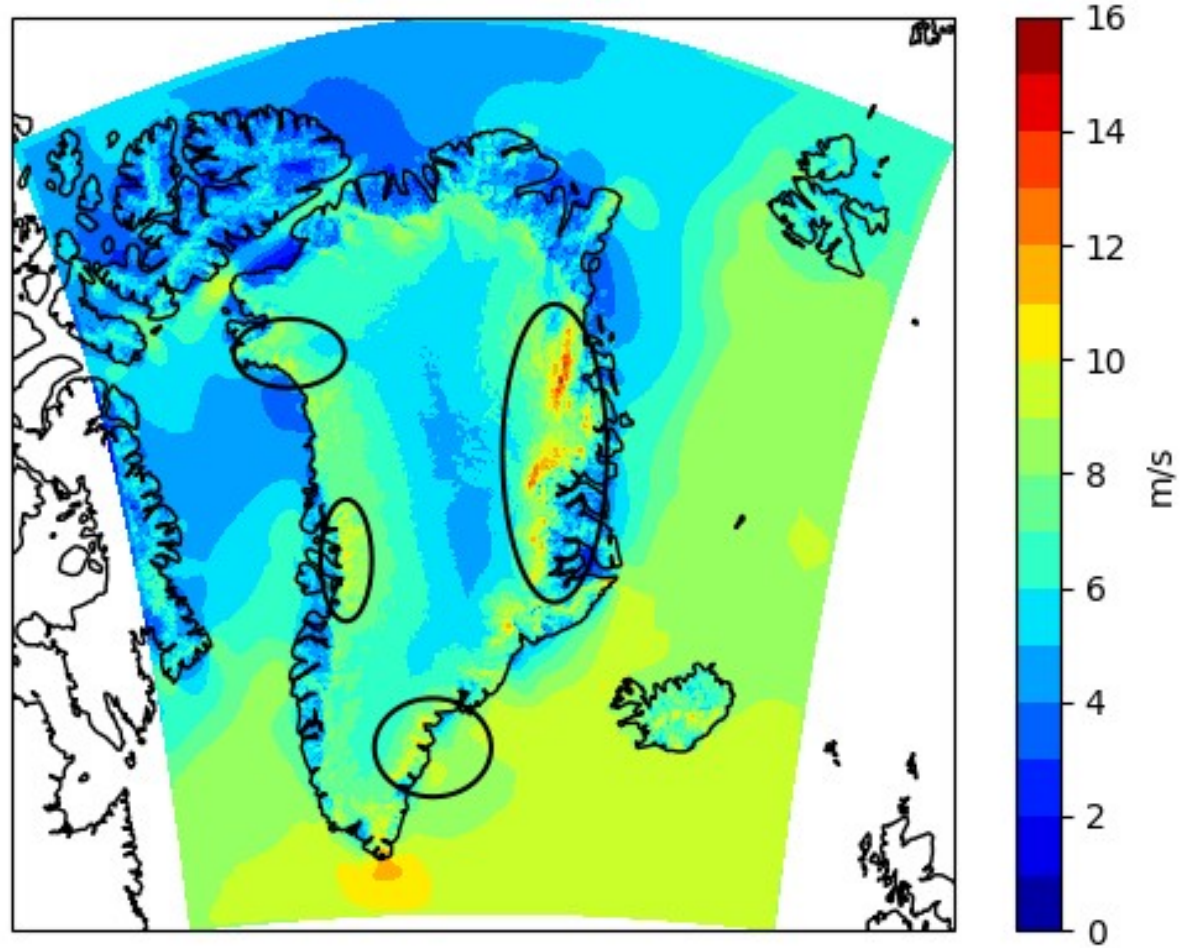
Mean windspeed



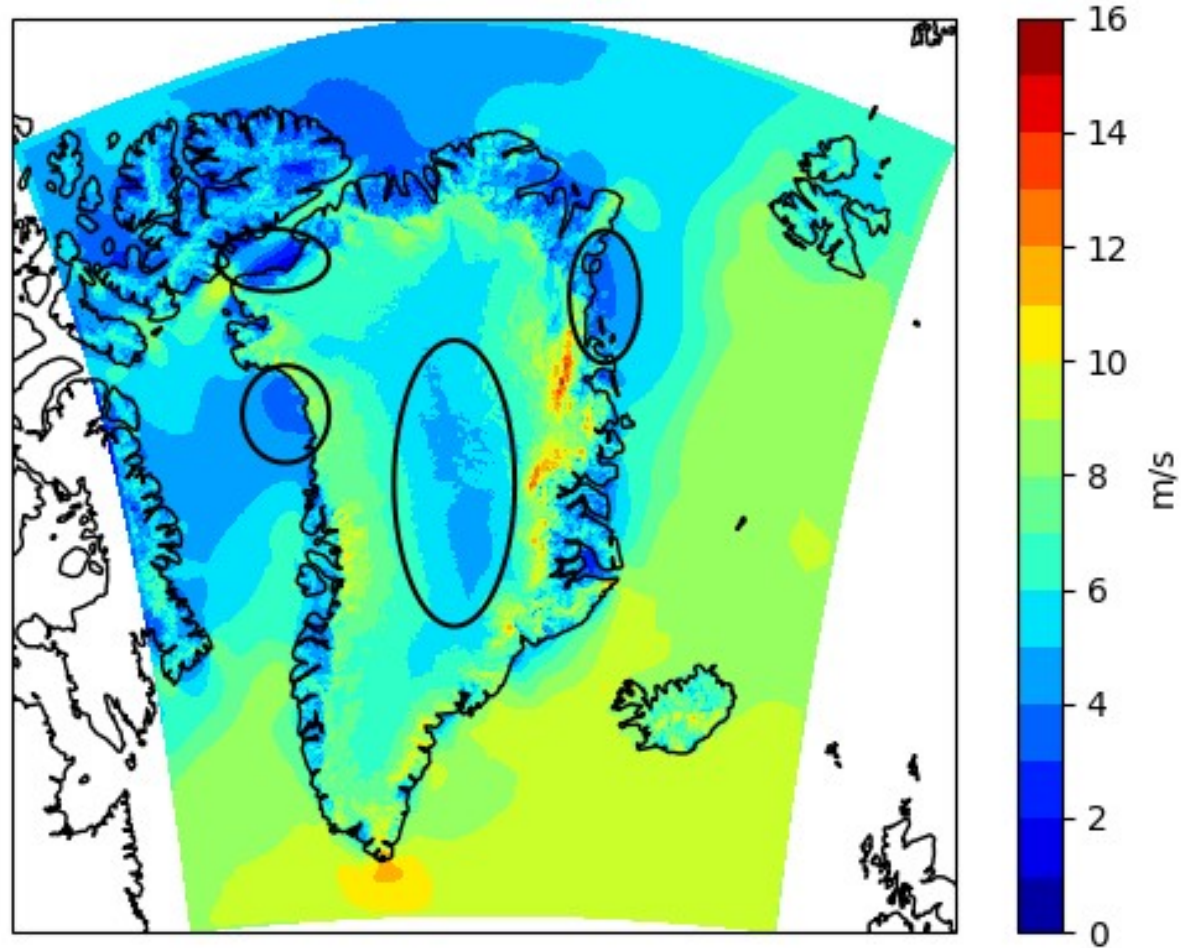
Known jets



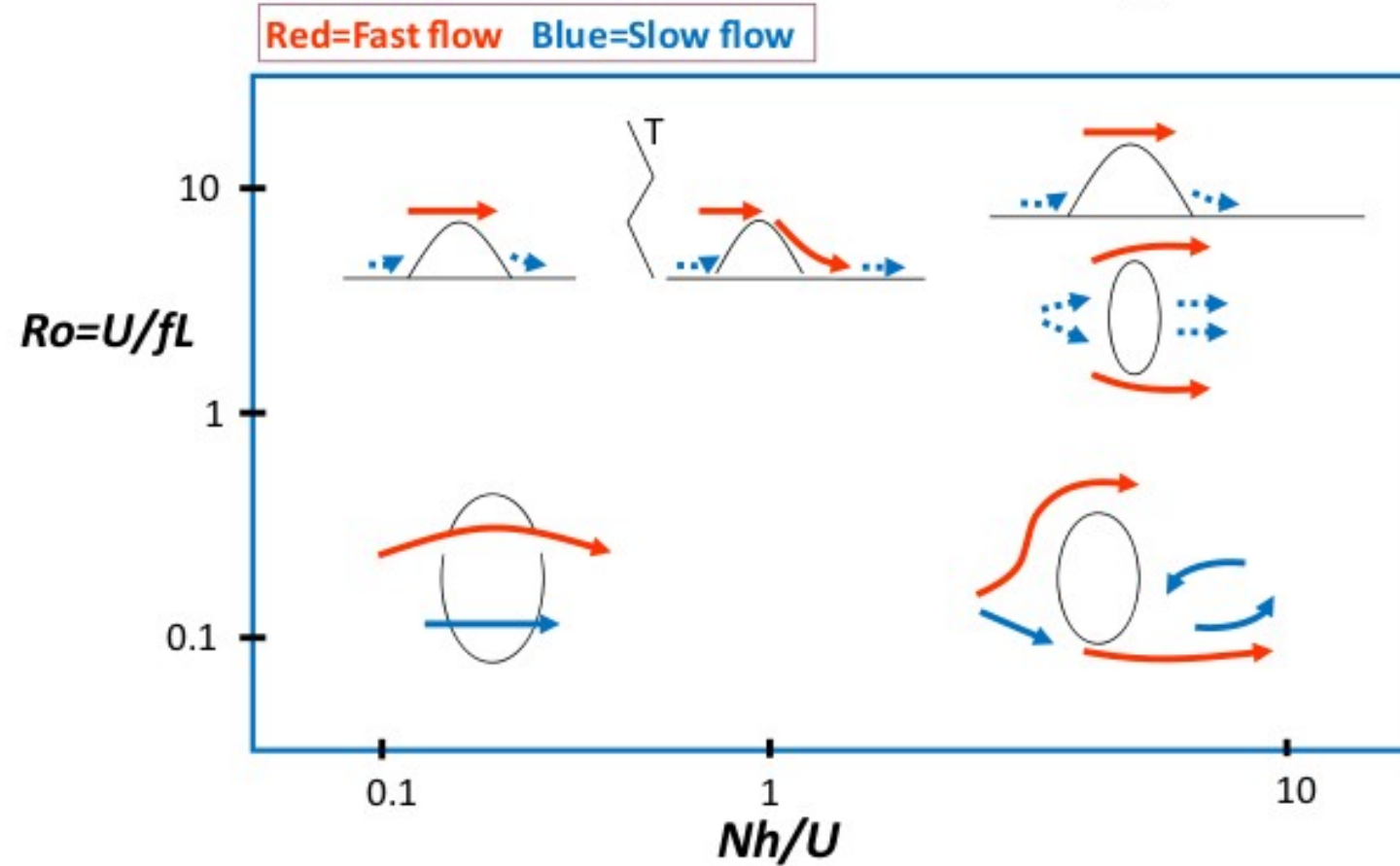
New jets



Significant shelters



The mountain wind diagram

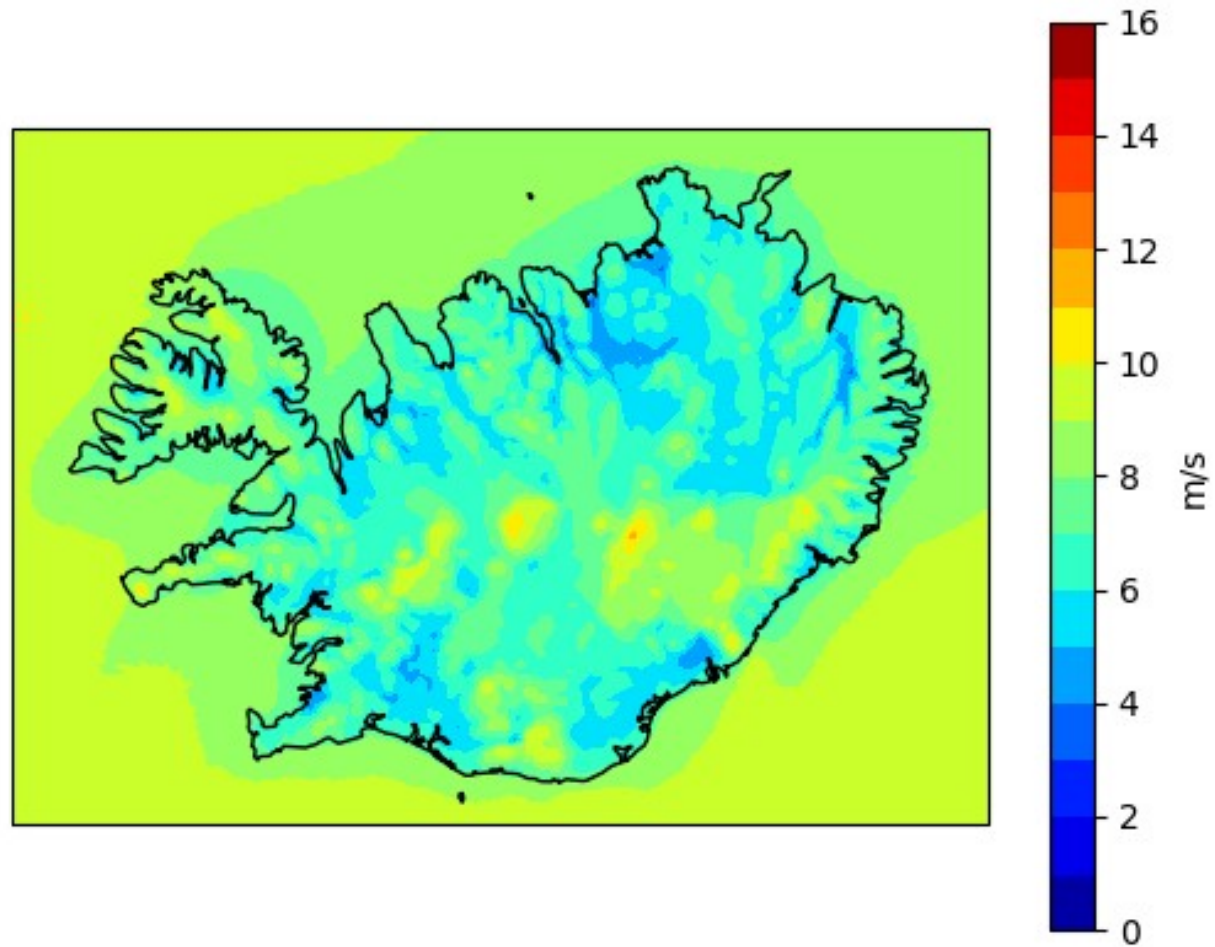


From chapter 11, Uncertainties in Numerical Weather Prediction by Haraldur Ólafsson

Main results

- Surprisingly good shelter in the center of Greenland and some coastal areas
- Gravity wave dynamics dominate wind pattern over land
- Very strong wind on both west and east coast of Greenland
- Known jets reproduced but the tip jet extends further west than expected

Iceland



Mean vs 99th percentile

