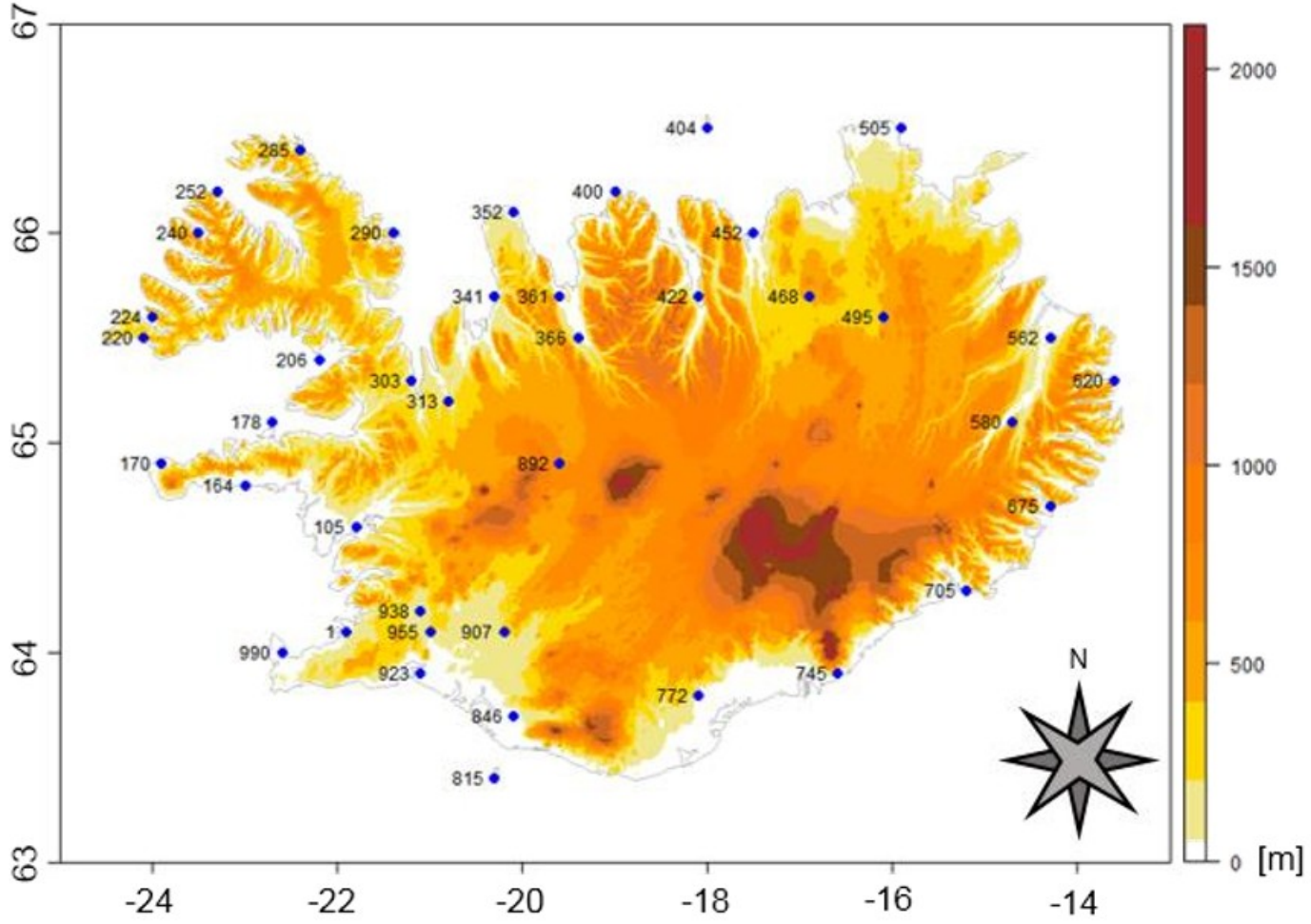
Dugir hitatregðan í mánaðarspár?

Haraldur Ólafsson og Lísa Degenhardt

Minnið í yfirborði jarðar (sjávarhiti, snjór, jarðraki)

Loftstraumar



- 40 stöðvar. Nærliggjandi stöðvar sameinaðar í eina tímaröð
- Mánaðameðaltöl hita í um 60 ár

Ársmeðaltalið

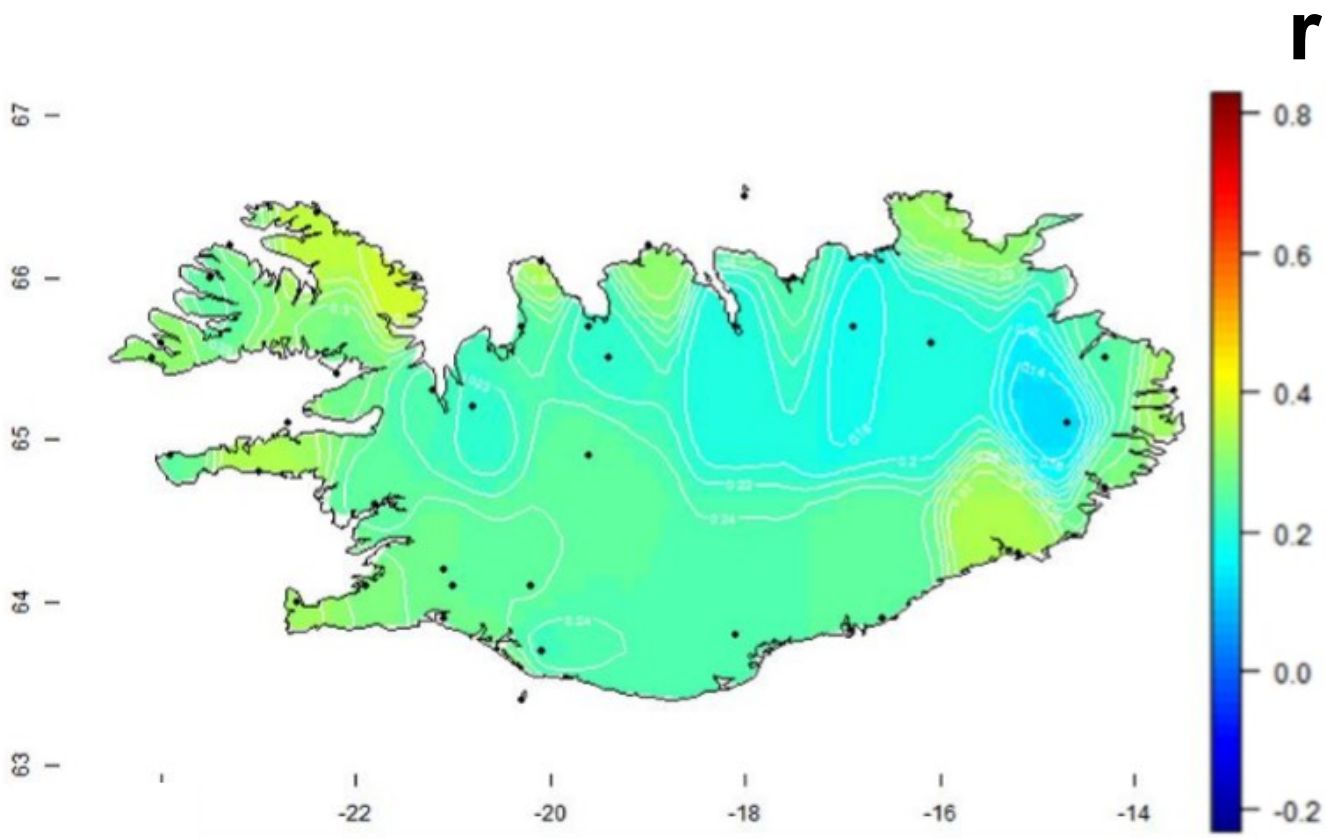
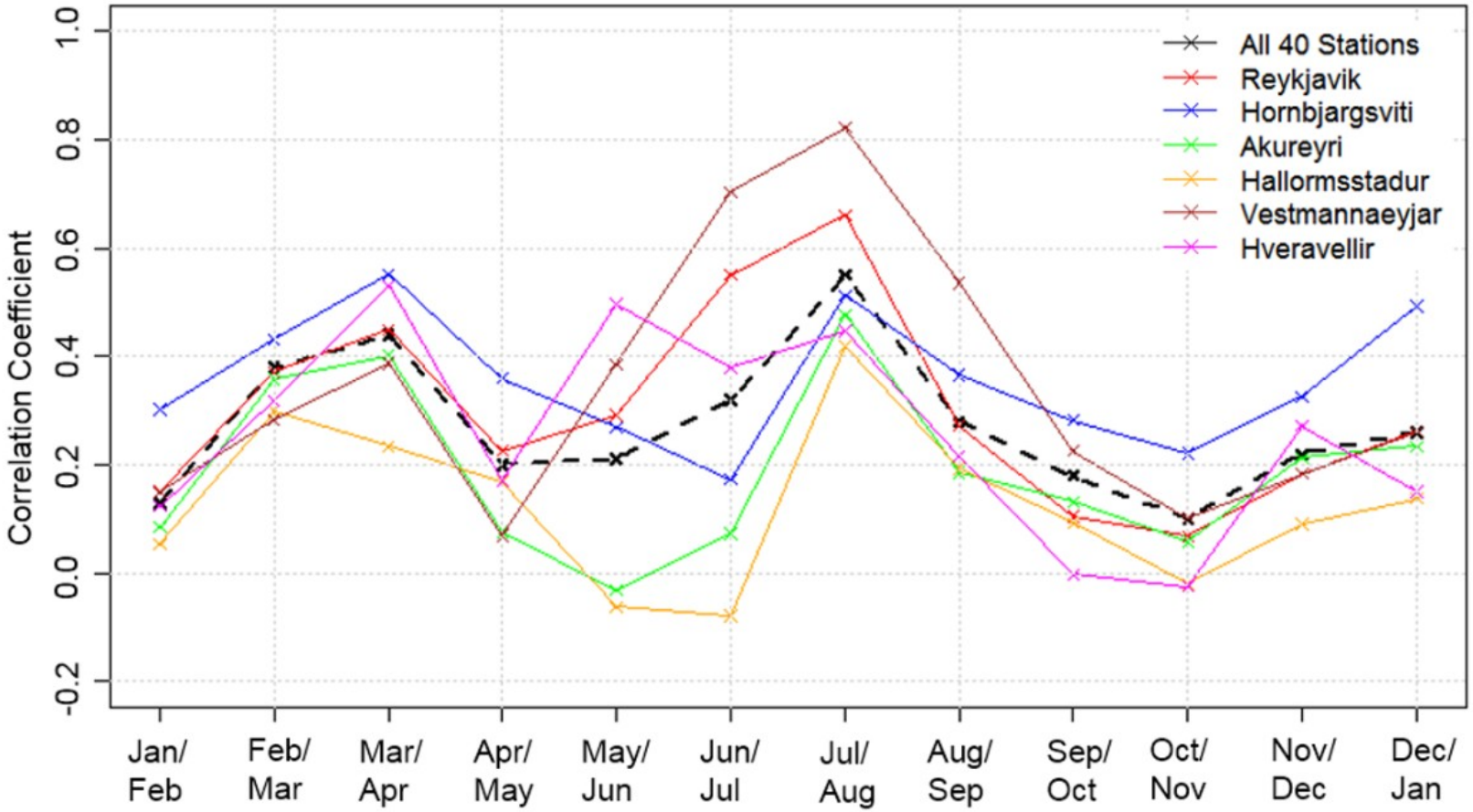
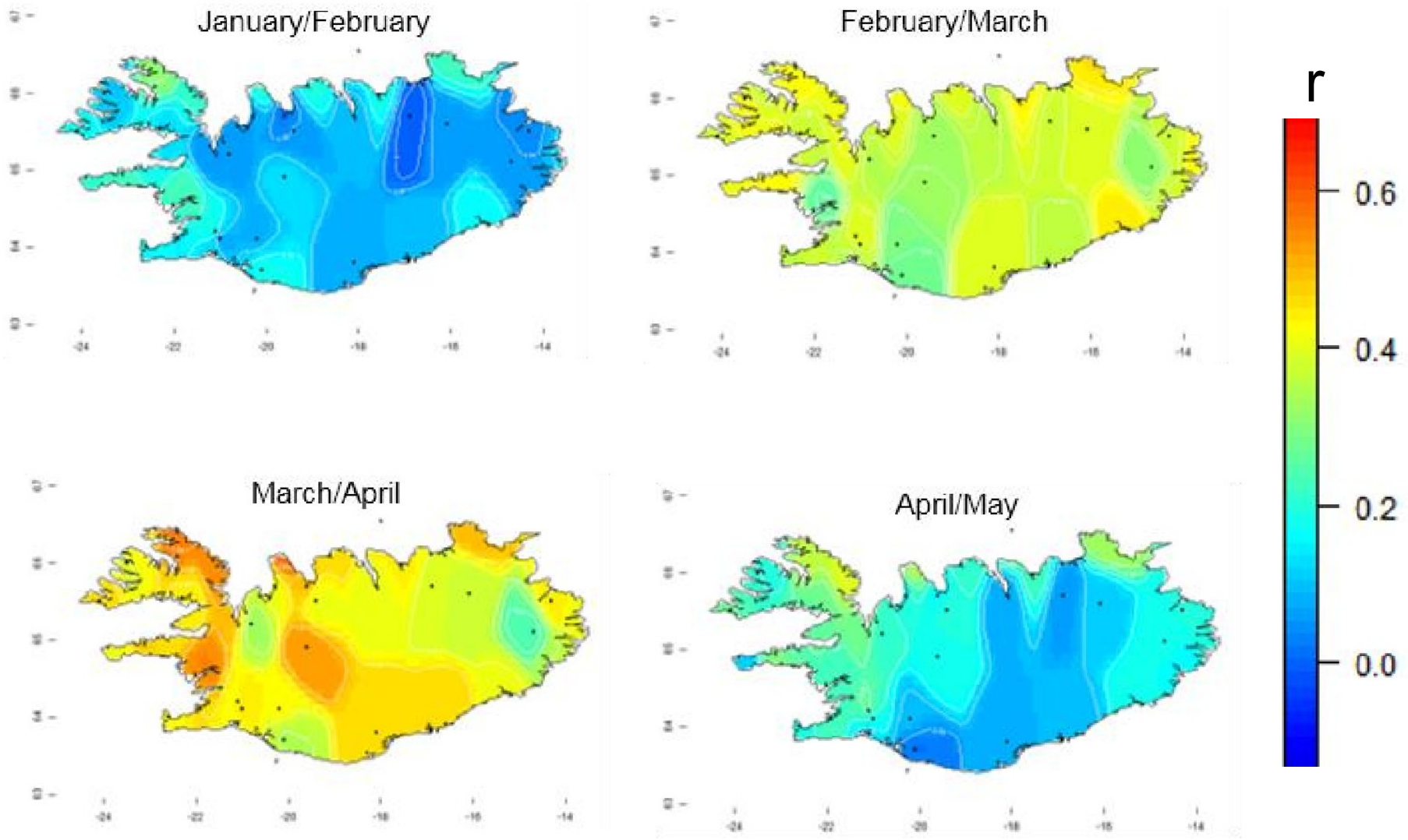
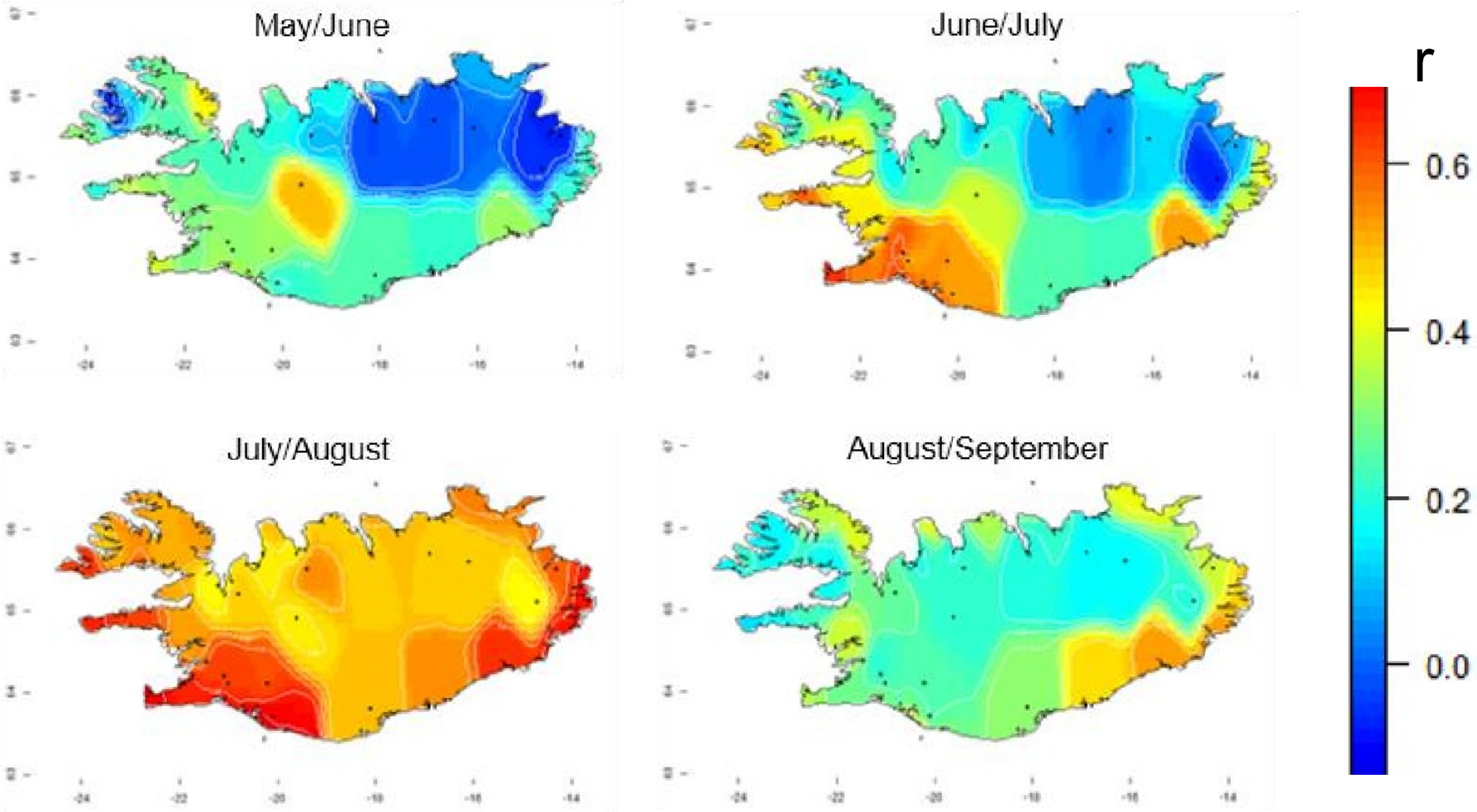
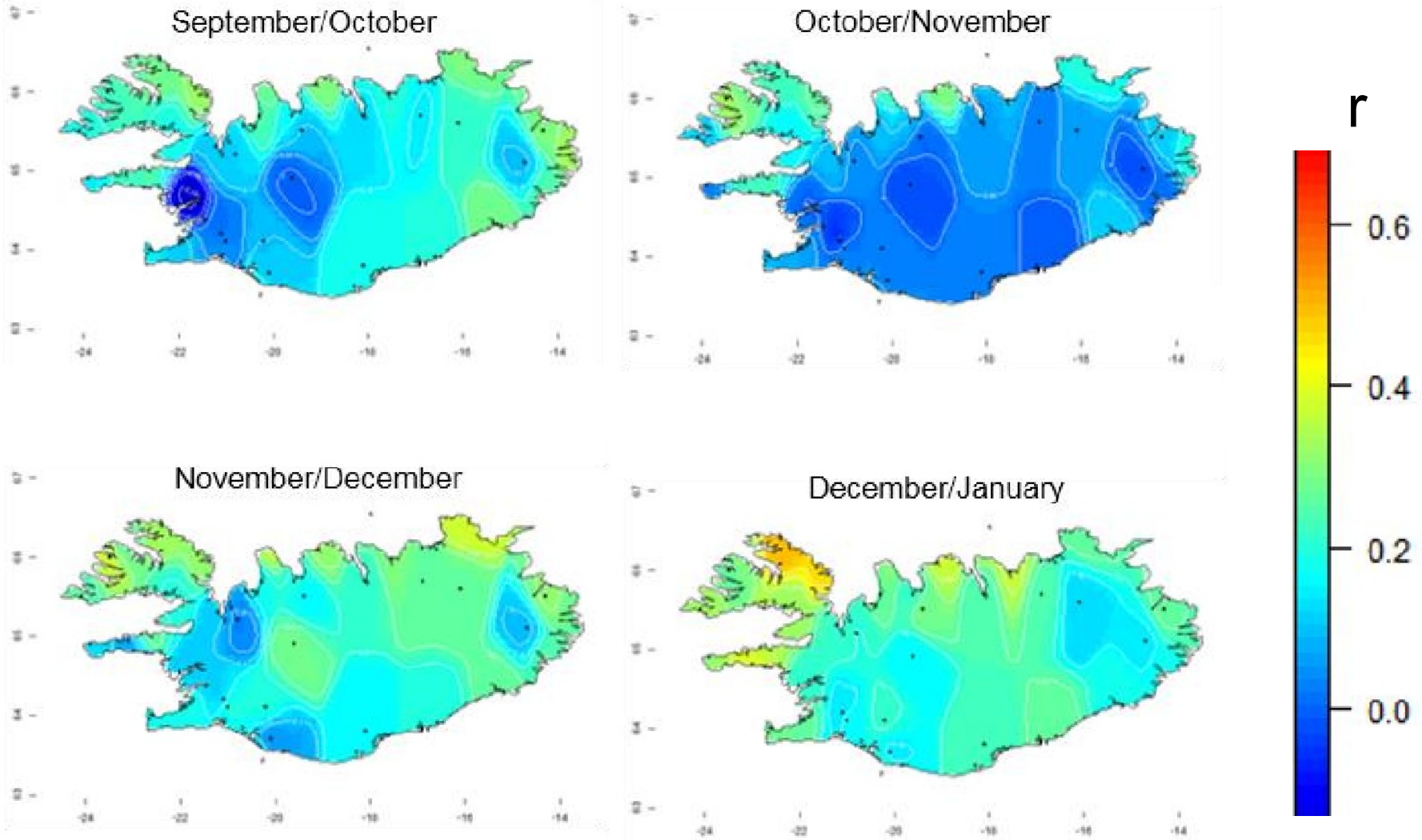


Figure 4: Annual mean of smoothed correlation coefficient of monthly mean temperature.


Correlation Coefficient
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
All 40 Stations
Reykjavik
Hornbjargsviti
Akureyri
Hallormsstadur
Vestmannaeyjar
Hveravellir
Jan/ Feb
Feb/ Mar
Mar/ Apr
Apr/ May
May/ Jun
Jun/ Jul
Jul/ Aug
Aug/ Sep
Sep/ Oct
Oct/ Nov
Nov/ Dec
Dec/ Jan


January/February
February/March
March/April
April/May
r
0.6
0.4
0.2
0.0

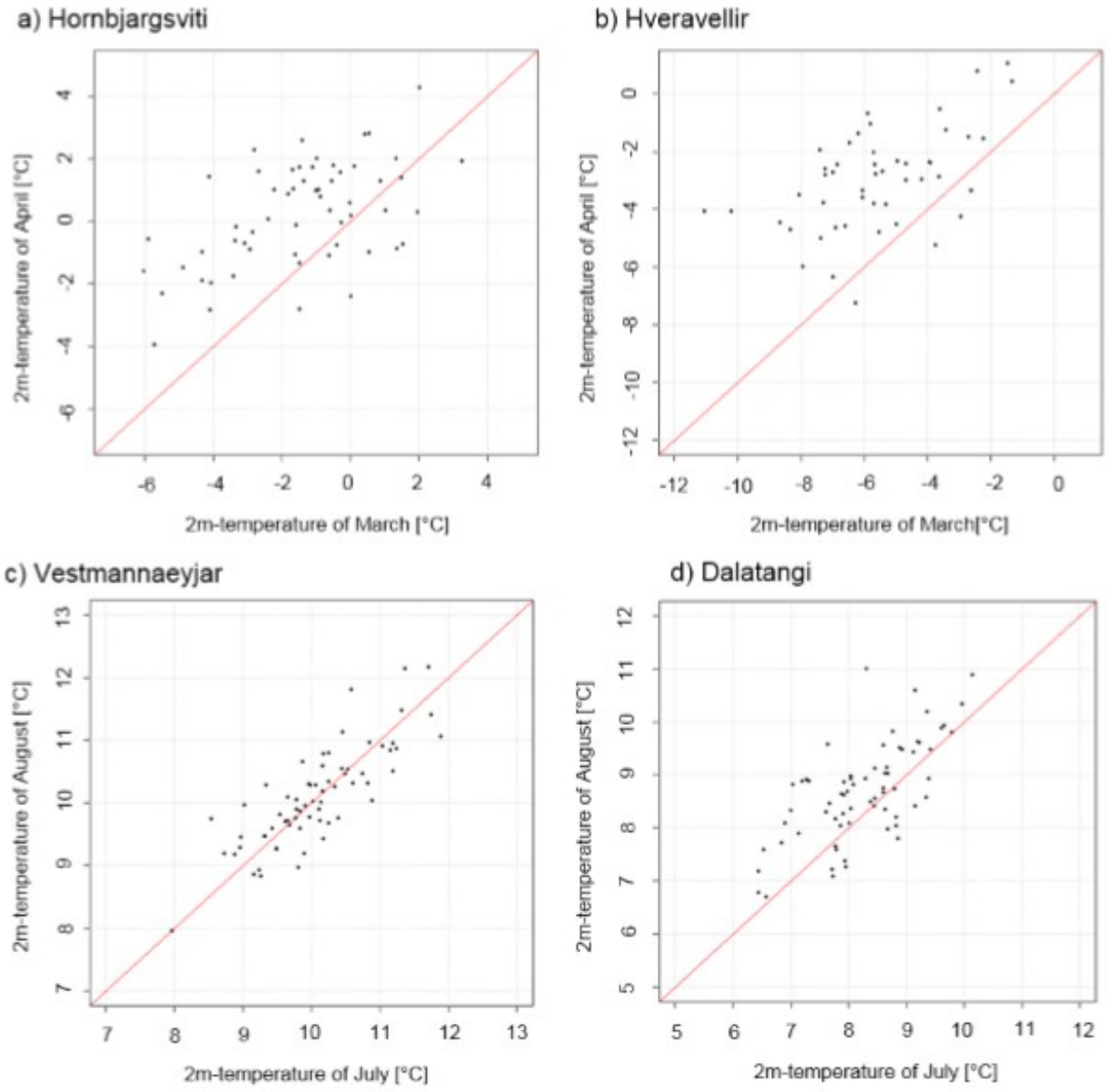

May/June
June/July
July/August
August/September
r
0.6
0.4
0.2
0.0


September/October
October/November
November/December
December/January
r
0.6
0.4
0.2
0.0

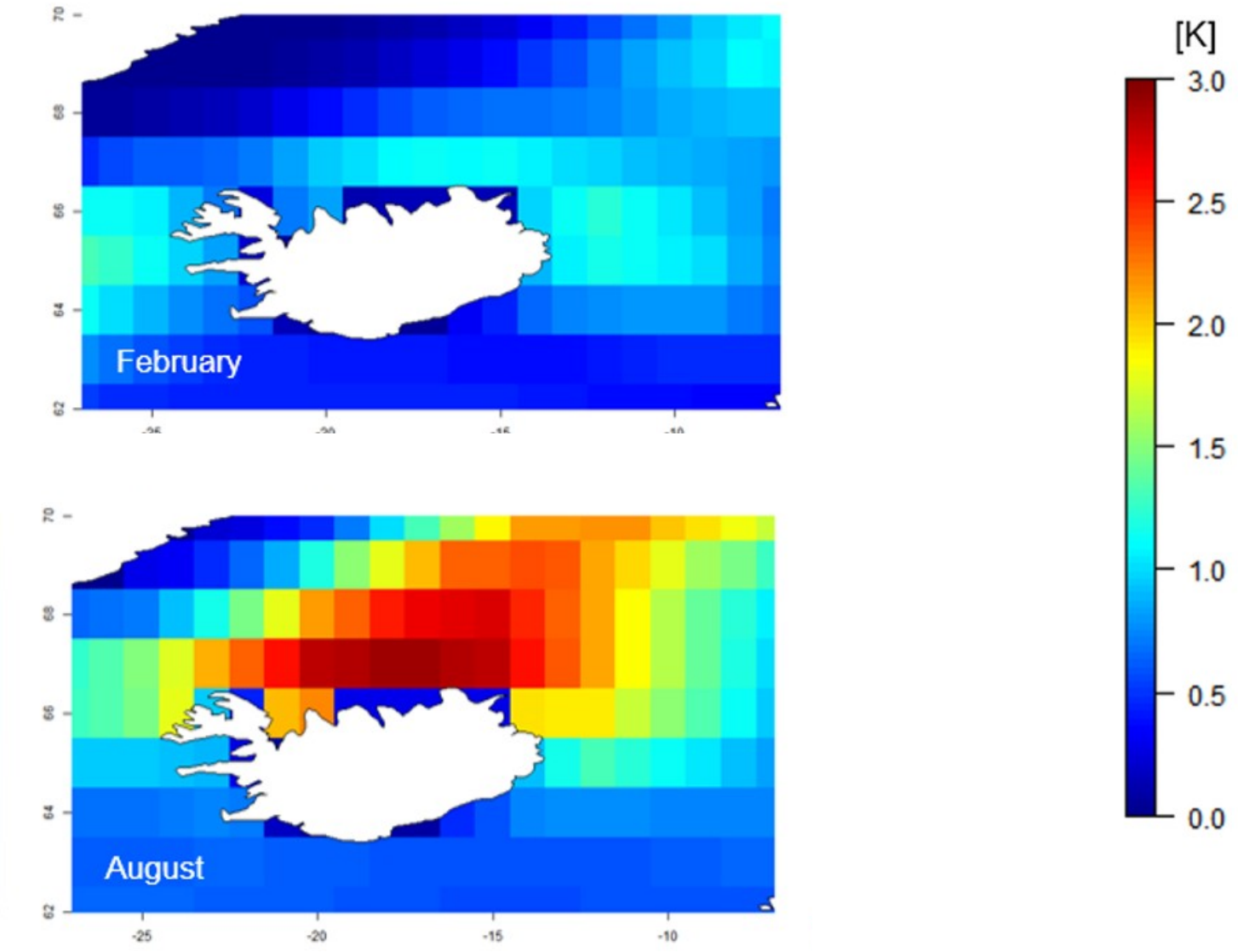
Months	Minimum	Mean	Maximum
January/February	-0,01	0,13	0,30
February/March	0,26	0,37	0,45
March/April	0,23	0,44	0,59
April/May	0,01	0,20	0,41
May/June	-0,09	0,21	0,50
June/July	-0,08	0,33	0,70
July/August	0,42	0,56	0,82
August/September	0,13	0,28	0,53
September/October	-0,16	0,17	0,33
October/November	-0,08	0,10	0,34
November/December	0,03	0,22	0,39
December/January	0.13	0,26	0,49

r

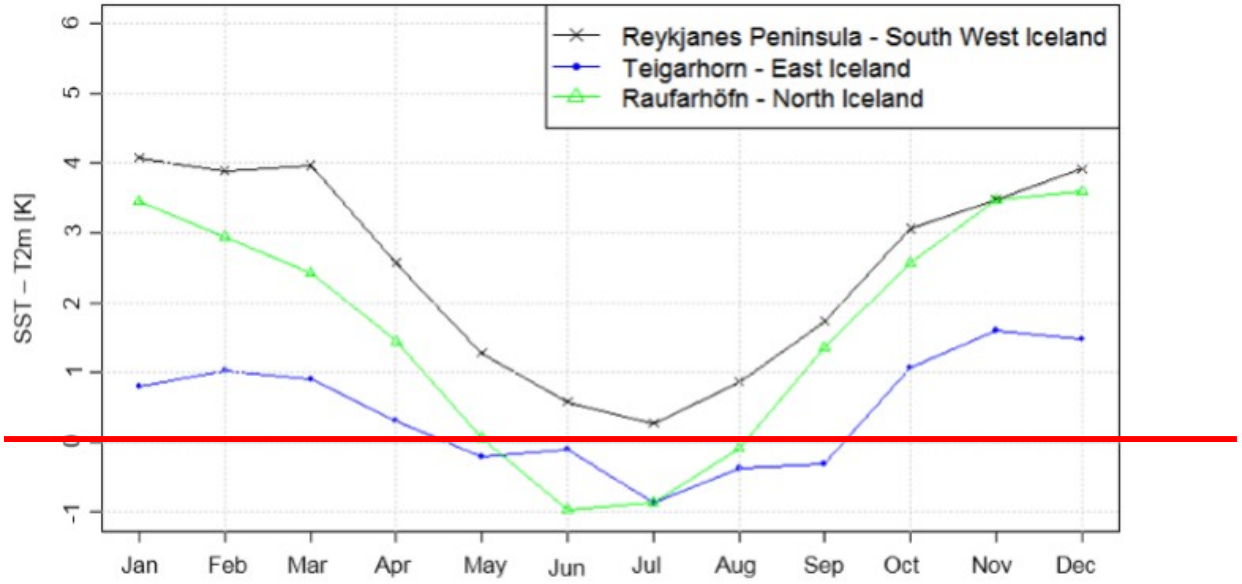
Table 2: Minimum, mean and maximum values of the correlation coefficient individual sets of consecutive months (Fig.2).


a) Hornbjargsviti
2m-temperature of April [°C]
2m-temperature of March [°C]
b) Hveravellir
2m-temperature of April [°C]
2m-temperature of March[°C]
c) Vestmannaeyjar
2m-temperature of August [°C]
2m-temperature of July [°C]
d) Dalatangi
2m-temperature of August [°C]
2m-temperature of July [°C]

Staðalfrávik sjávarhita (CERA-20C)



Munur á sjávarhita og lofthita



Difference between sea surface temperature and 2m-temperature at the Reykjanes Peninsula (southwest Iceland), Teigarhorn (east Iceland) and Raufarhöfn (north Iceland) from 1981 to 2008.

Staðalfrávik snjódýptar

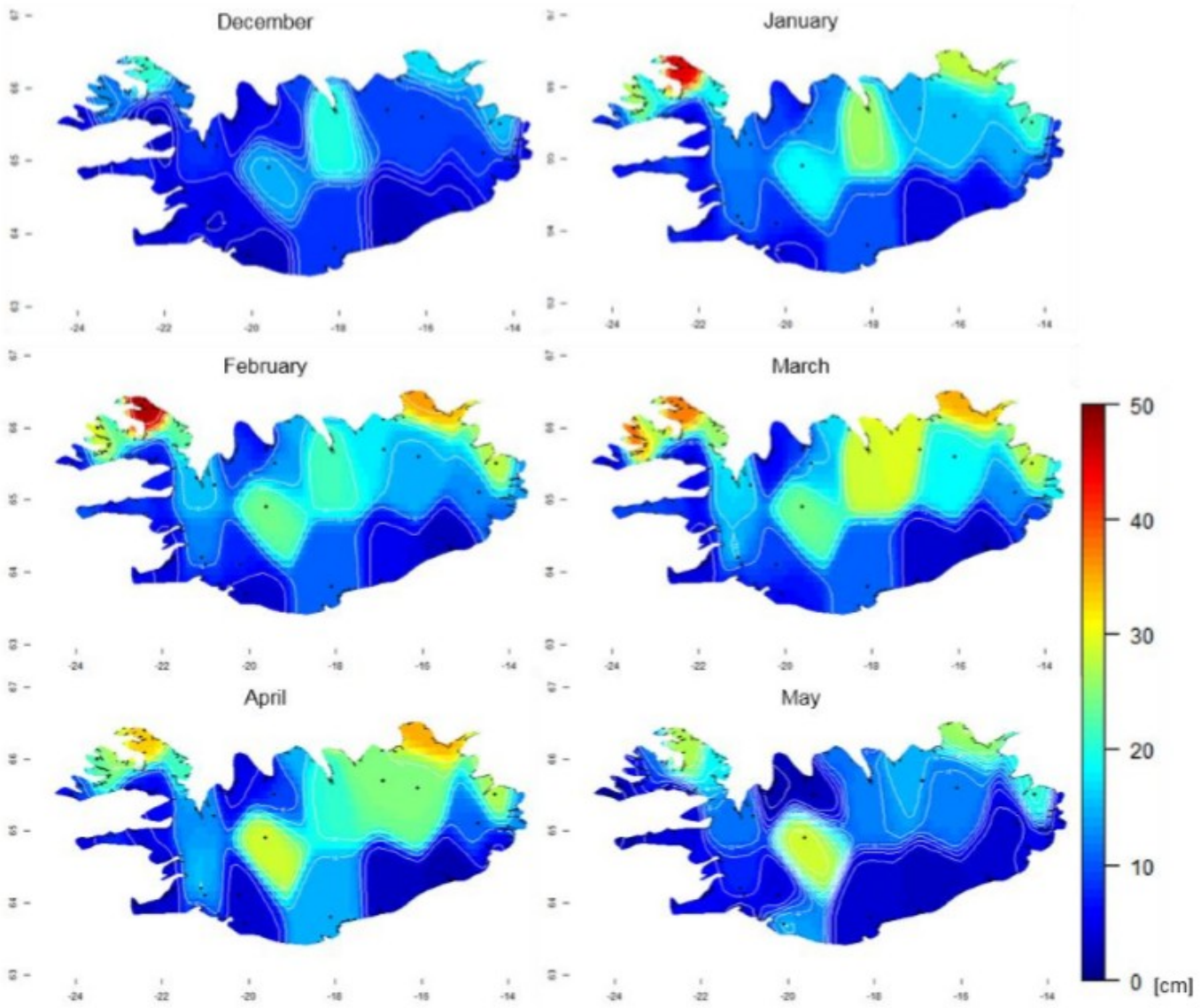
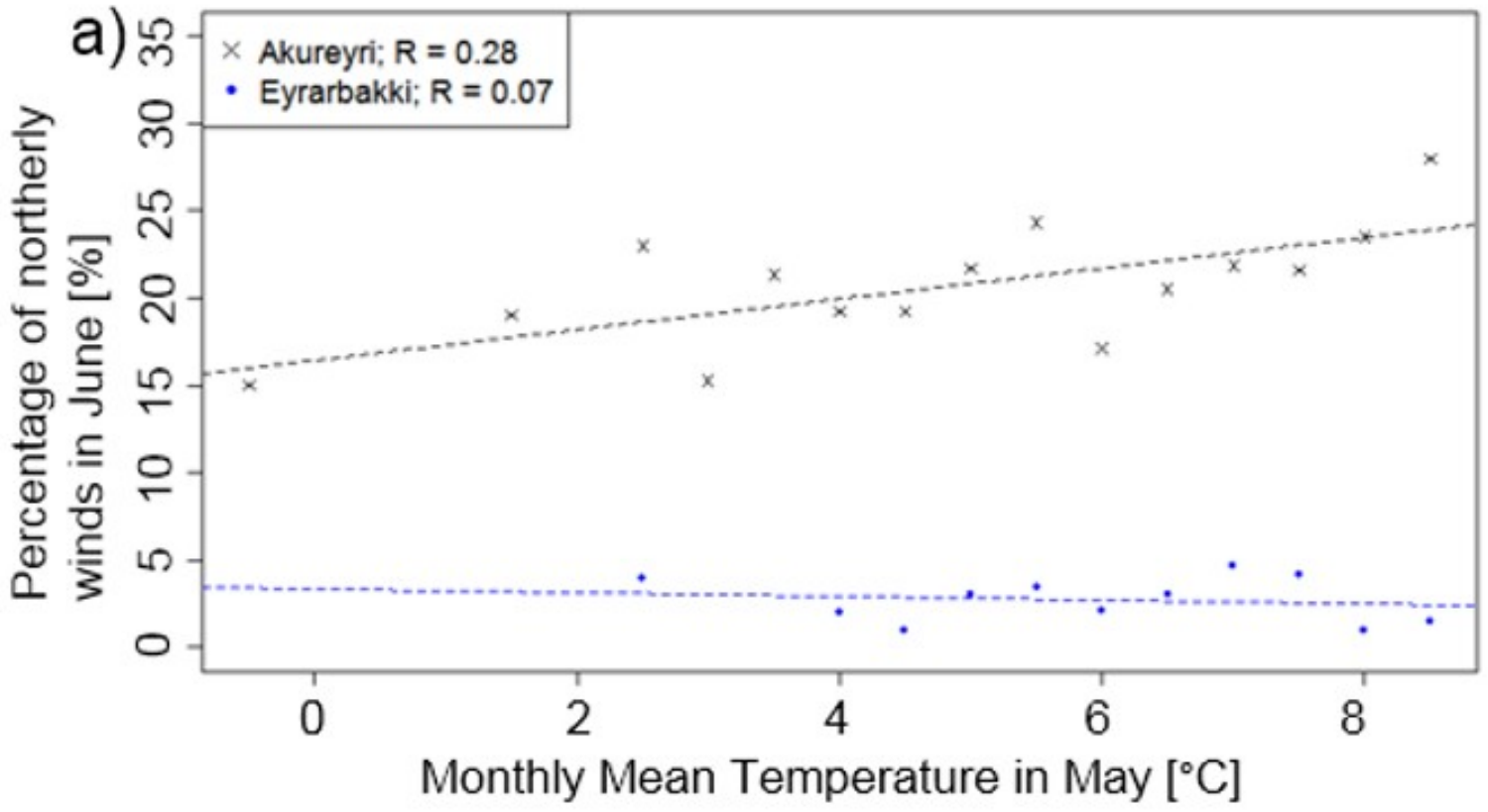


Figure 10: Smoothed standard deviation of observed snow depth from December until May.

Ef maí er hlýr, er norðanátt algengari á Akureyri síðdegis í júní

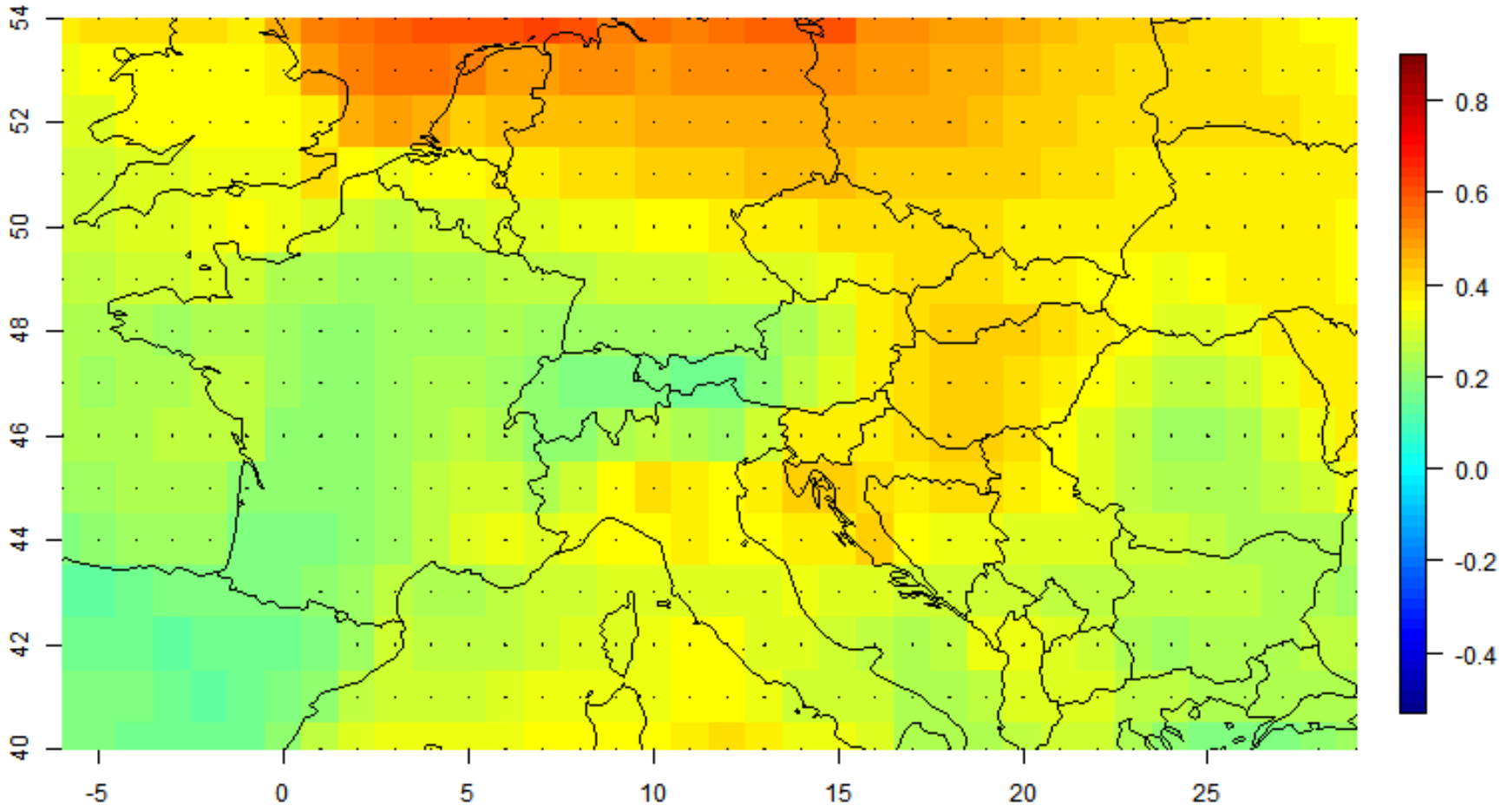


Fylgnin dugir í spár, stundum fyrir suma landshluta

- síðla vetrar
- um hásumar, sérstaklega sunnanlands

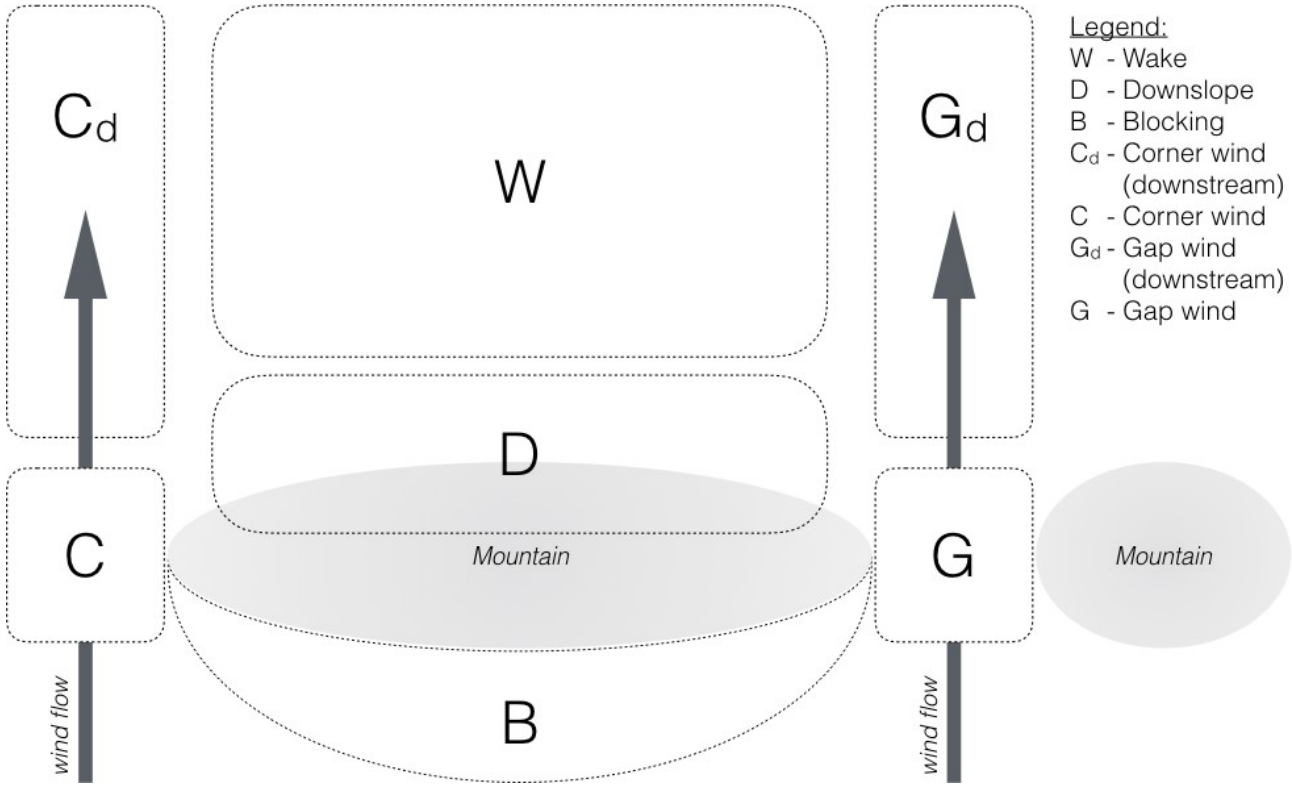
Milt vor virðist ýta undir svalt sumar fyrir norðan – samspil snjóa og hafgolu

Fylgni við sjóinn almennt hærri en til landsins

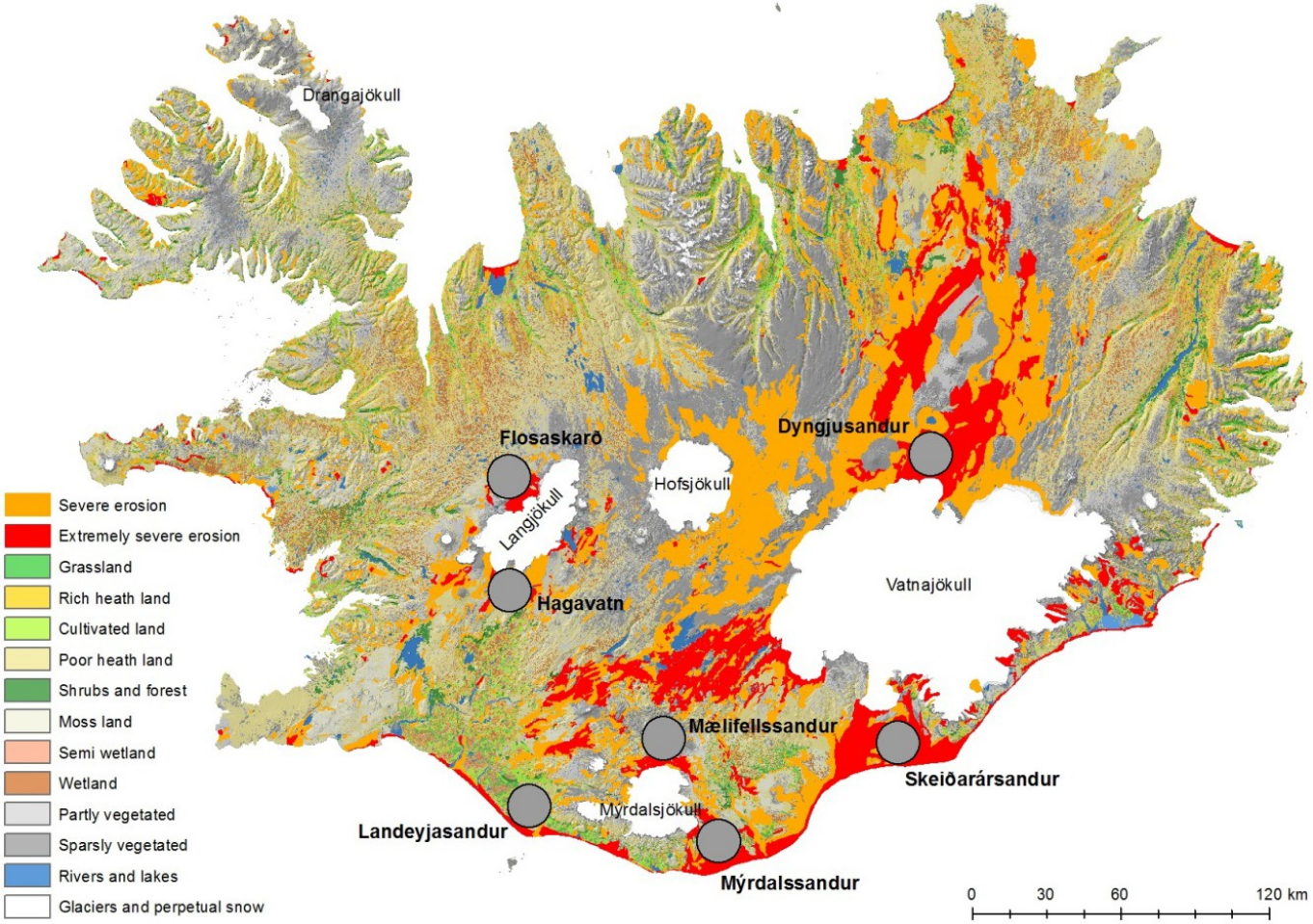


Sögulok

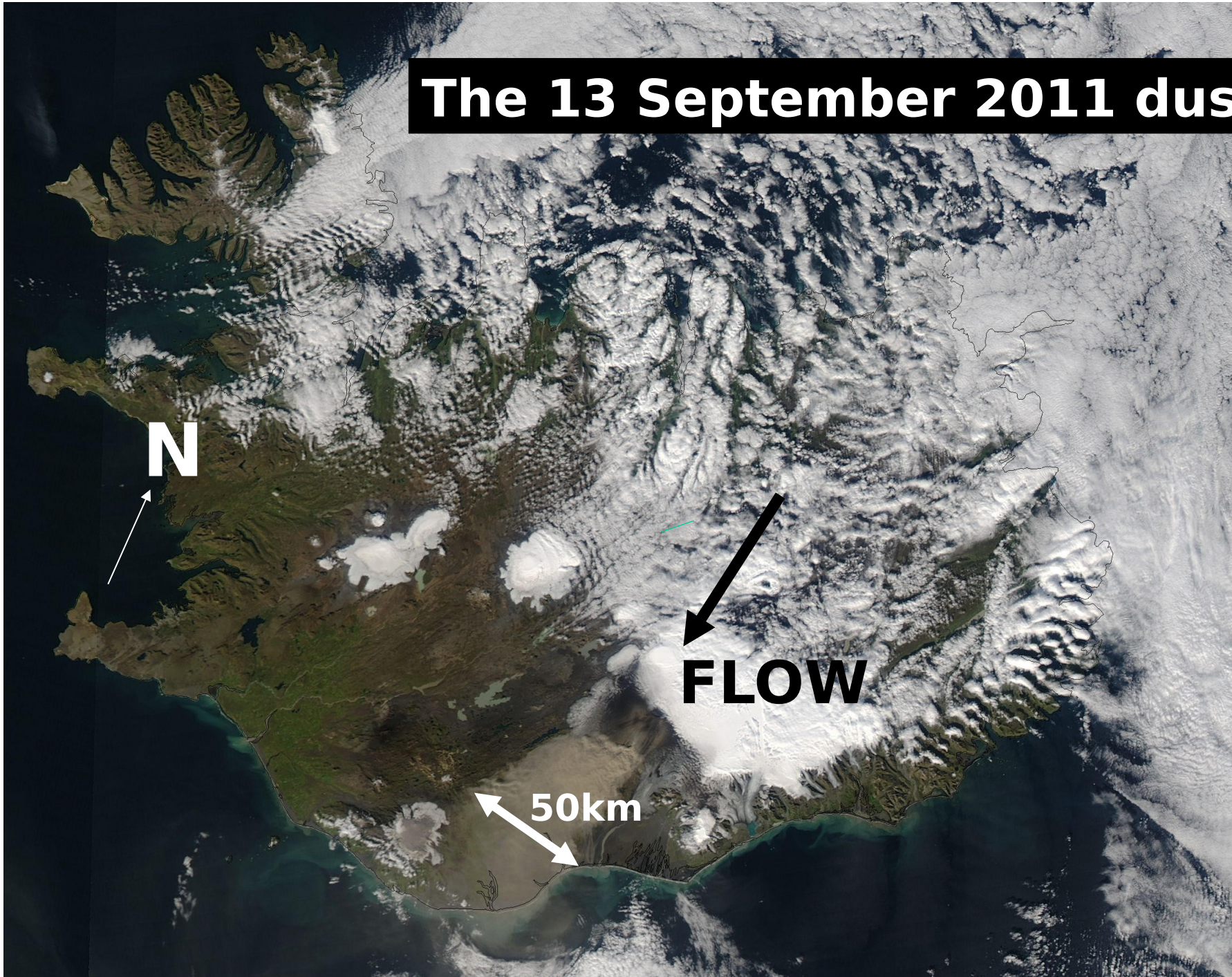
The relevant „locally generated winds“

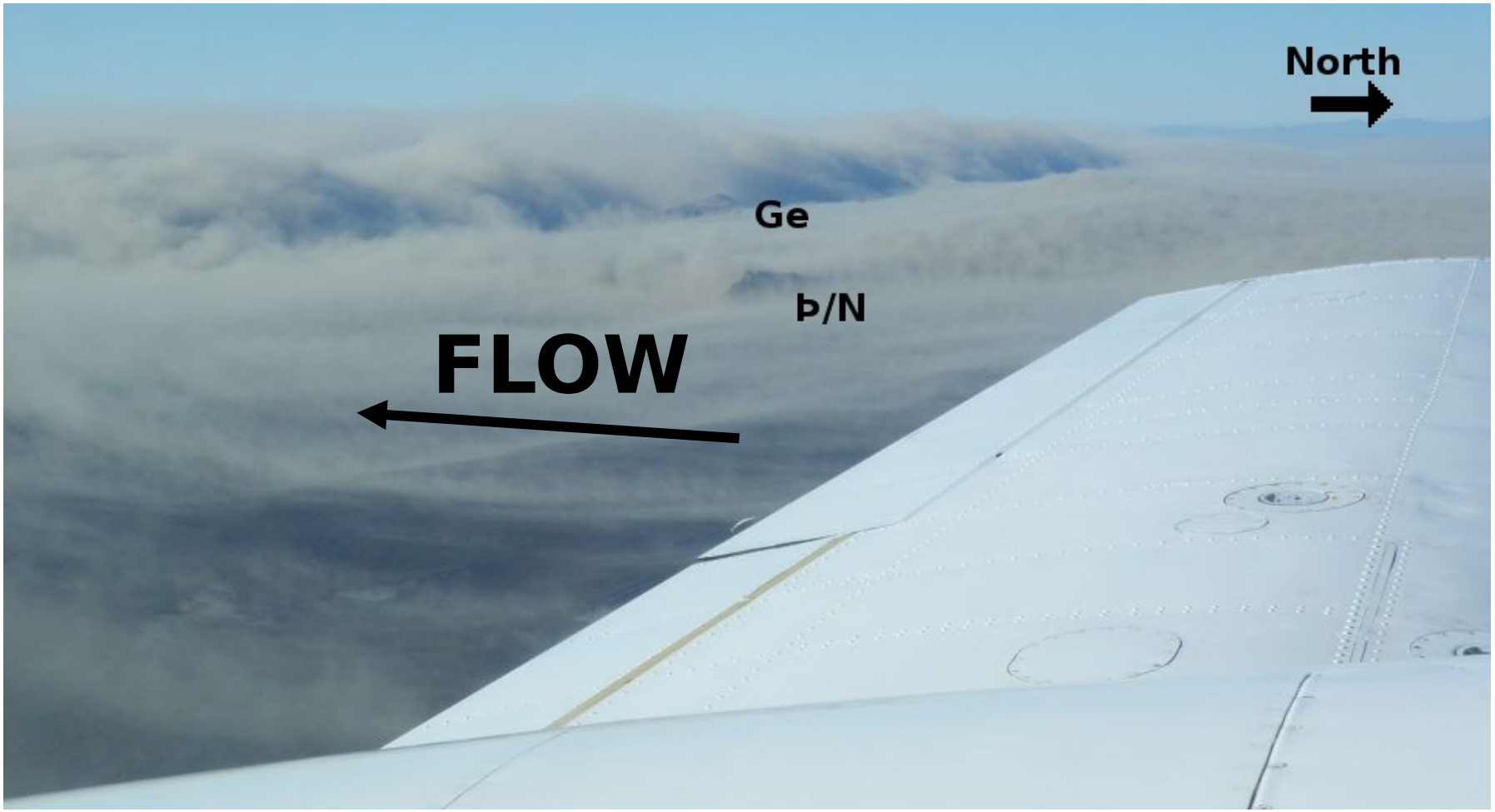


From Ruff & Ólafsson, 2016



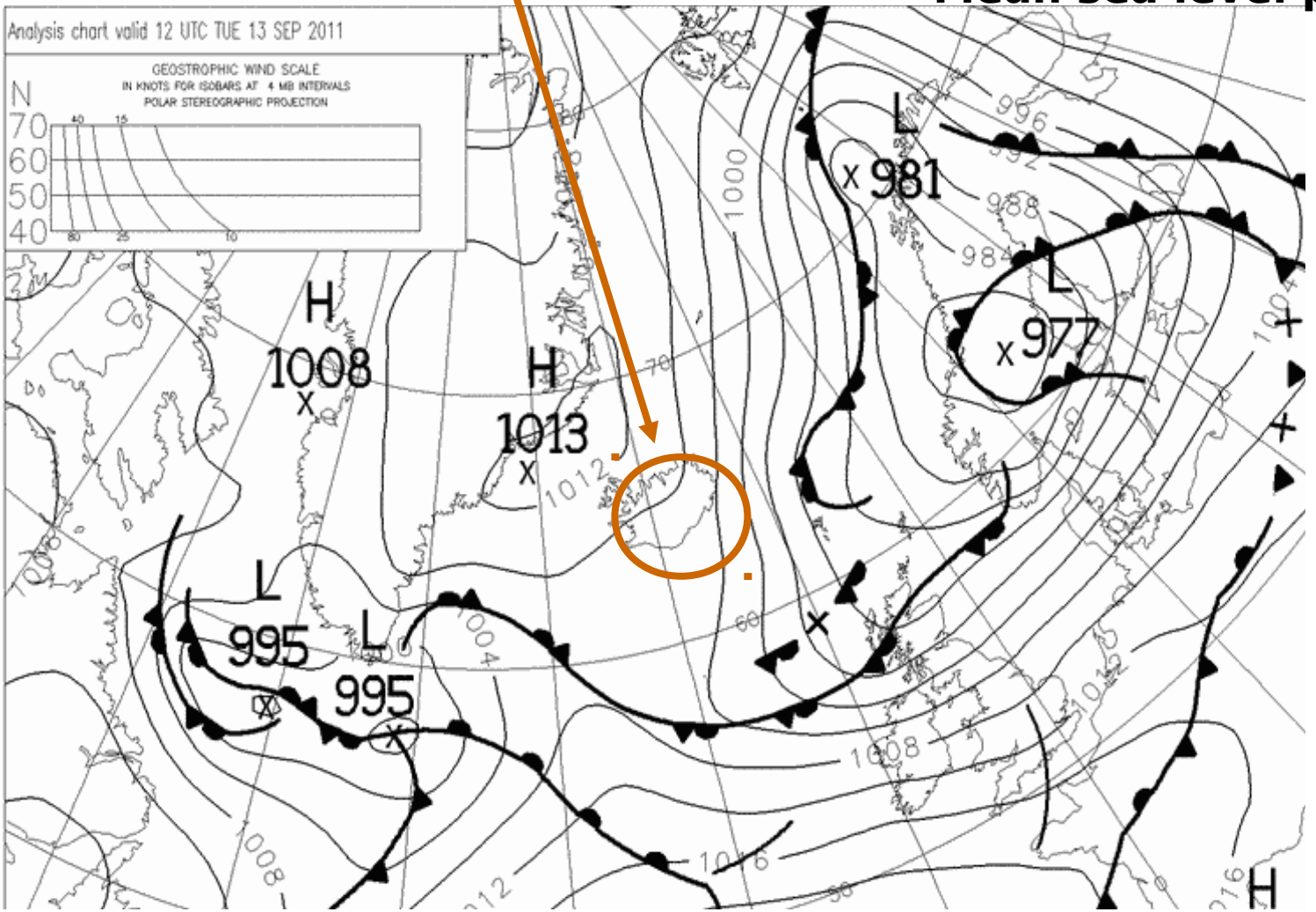
Arnalds et al.

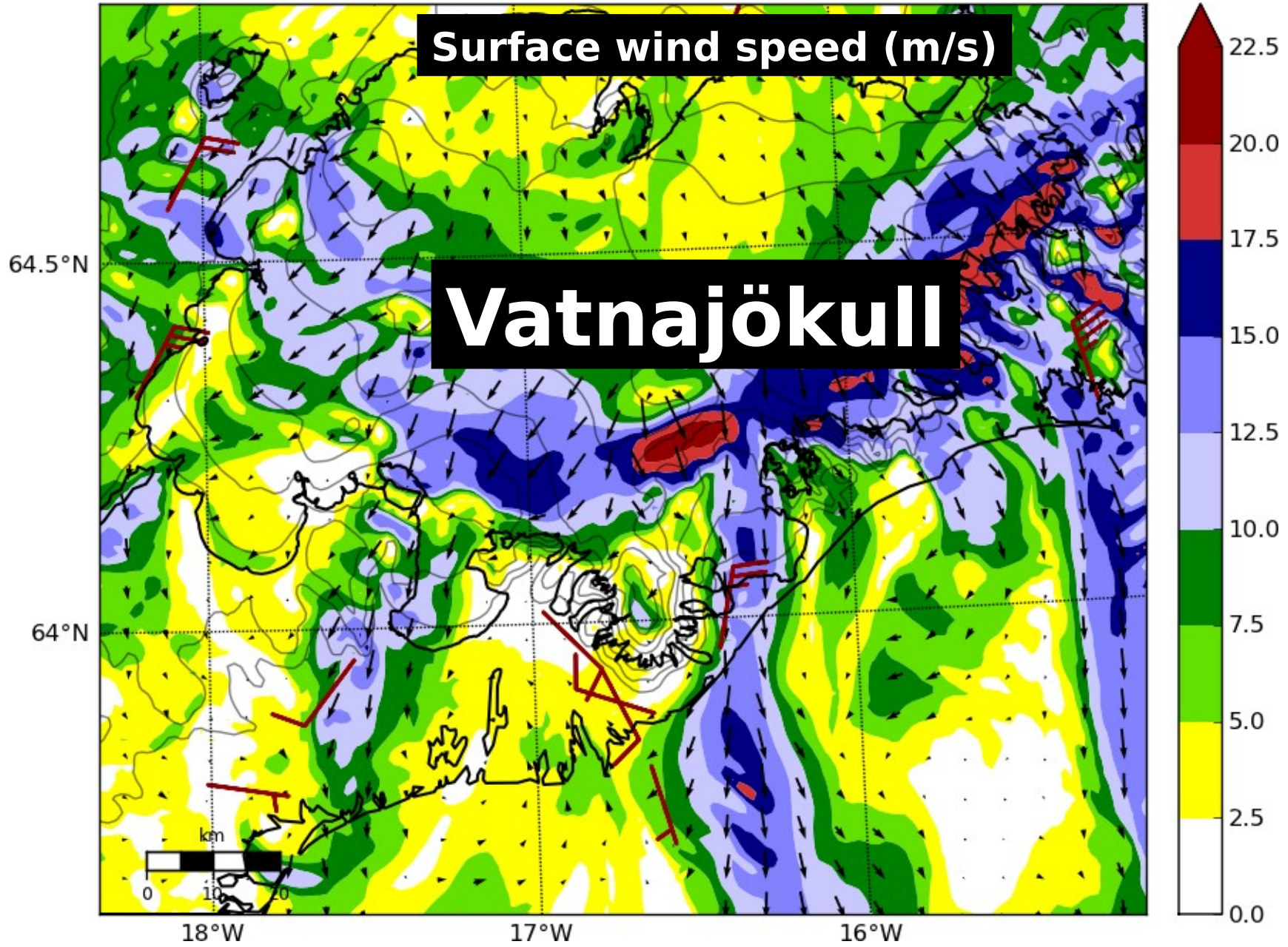

The 13 September 2011 dus
N
FLOW
50km


North
Ge
Þ/N
FLOW

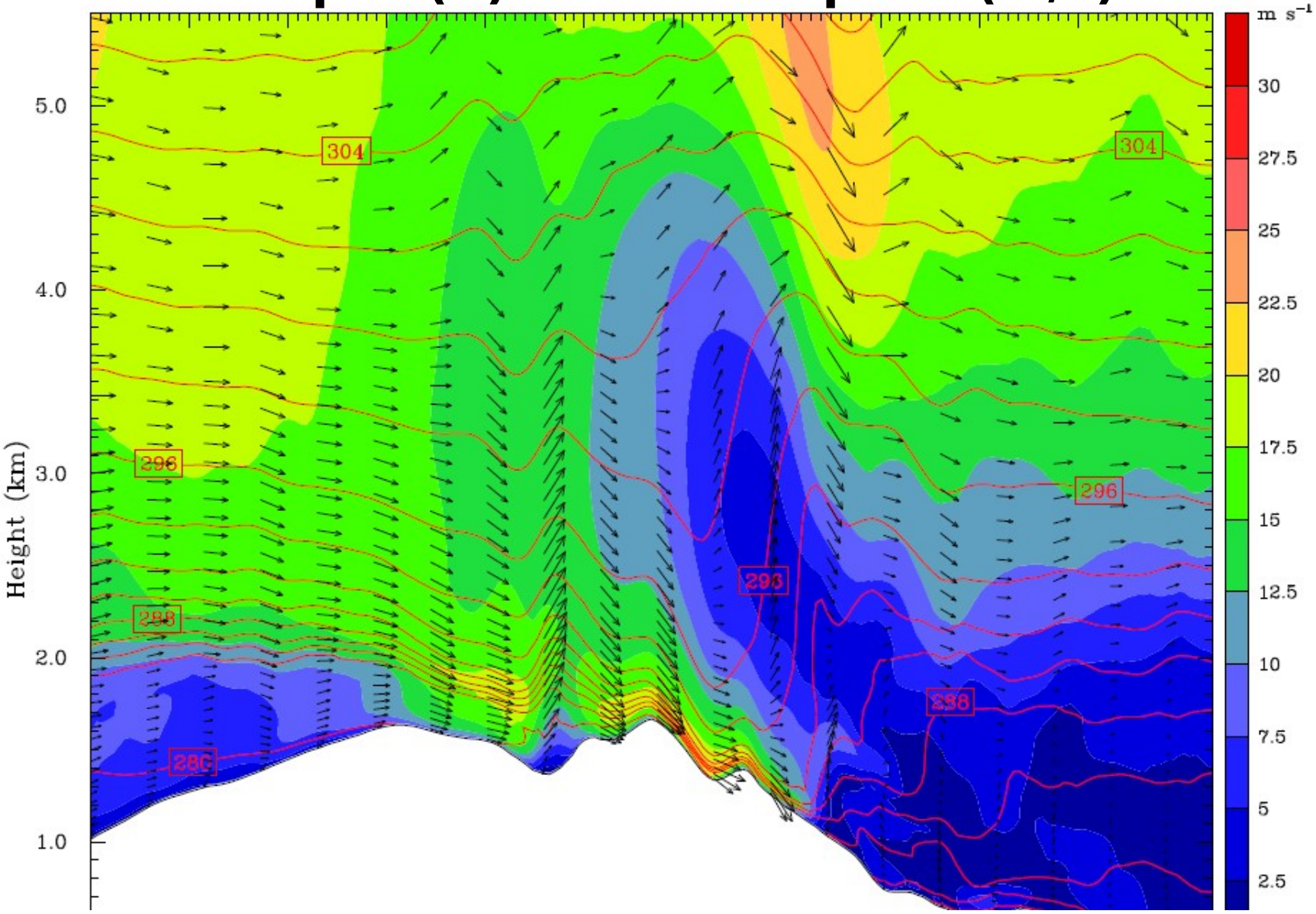
This does NOT look like a major dust-stor

Mean sea level press



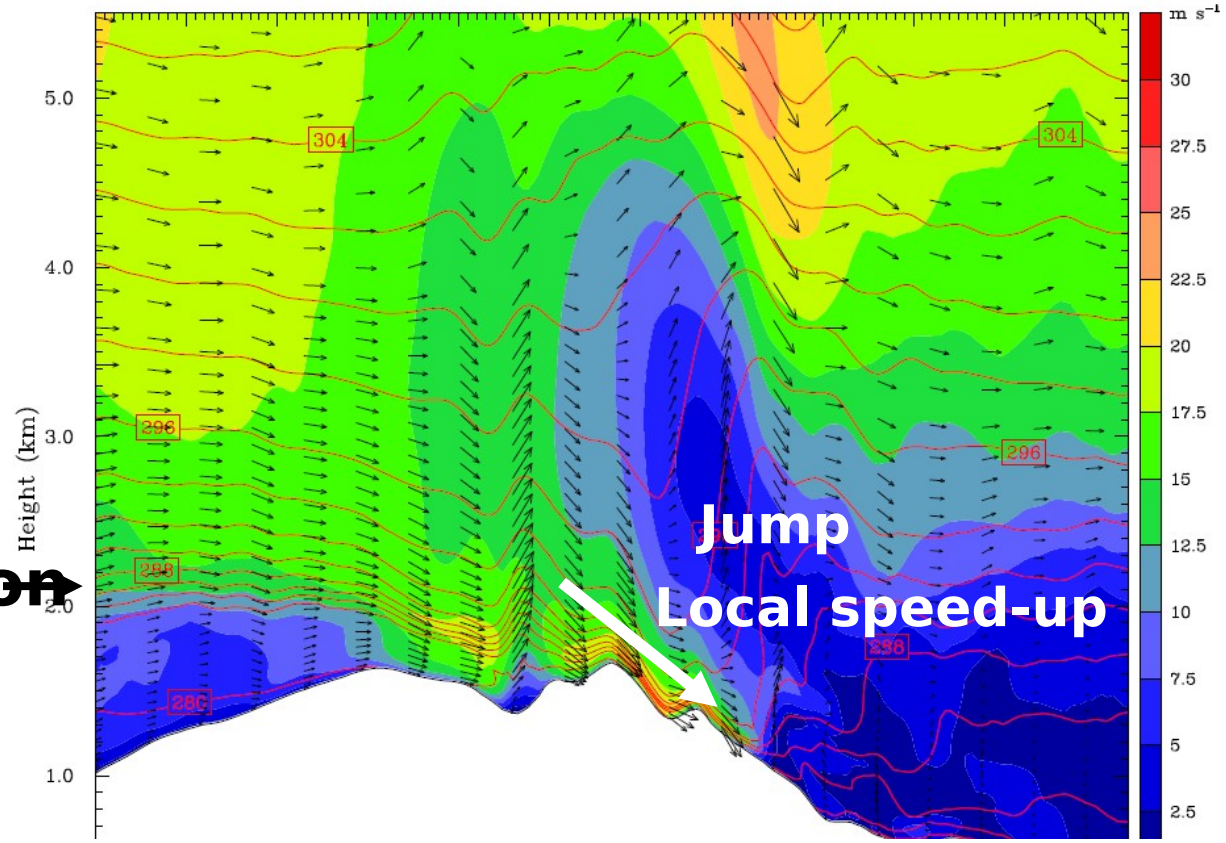

Surface wind speed (m/s)
Vatnajökull
64.5°N
64°N
18°W
17°W
16°W
km
0
10
20
22.5
20.0
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0

Isentropes (K) and wind speed (m/s)



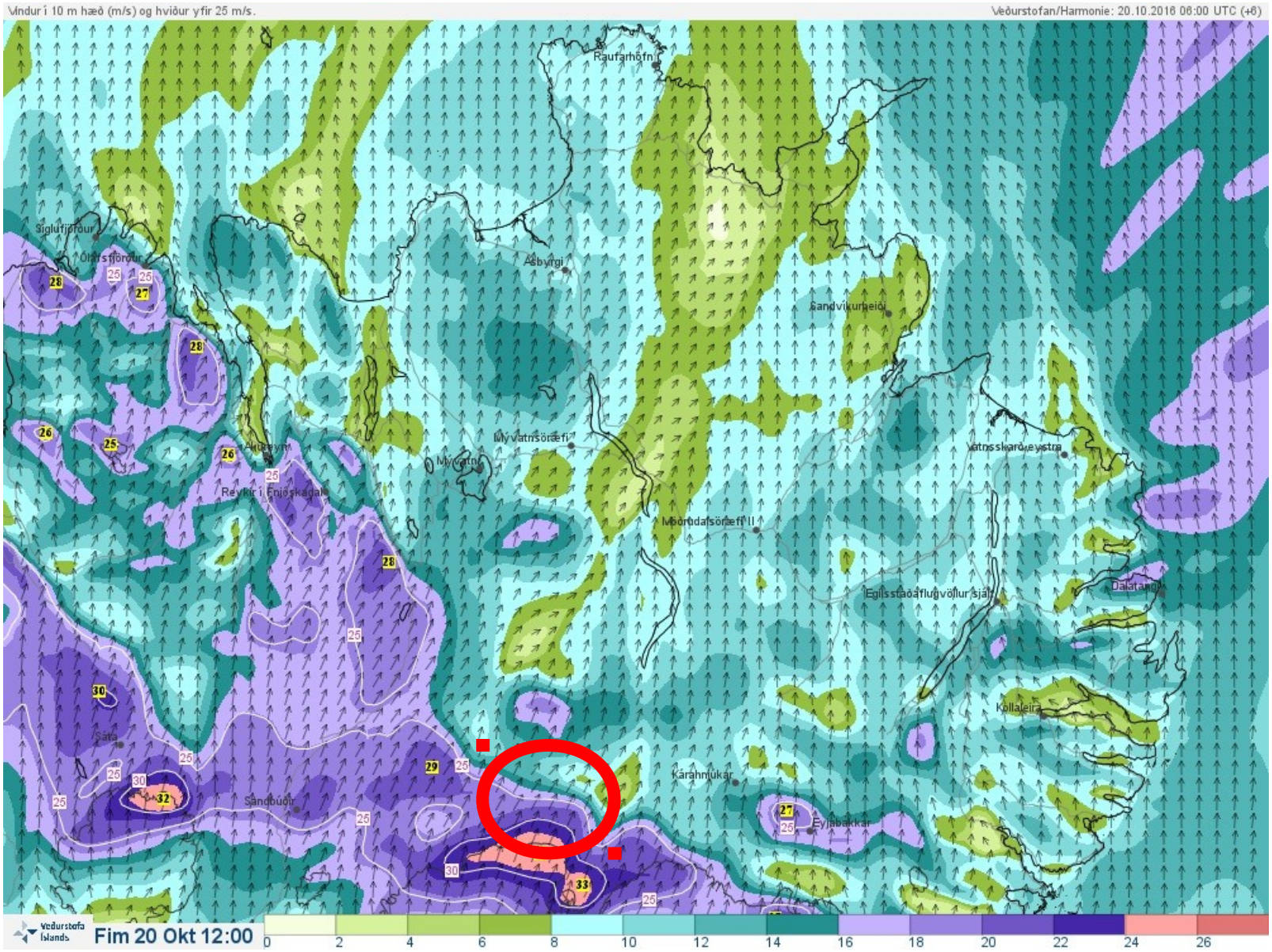
Hydraulic jump
Supercritical flow becomes subcritical

Gravity wave in stratified flow
Maximum wind speed in the descending part of the flow

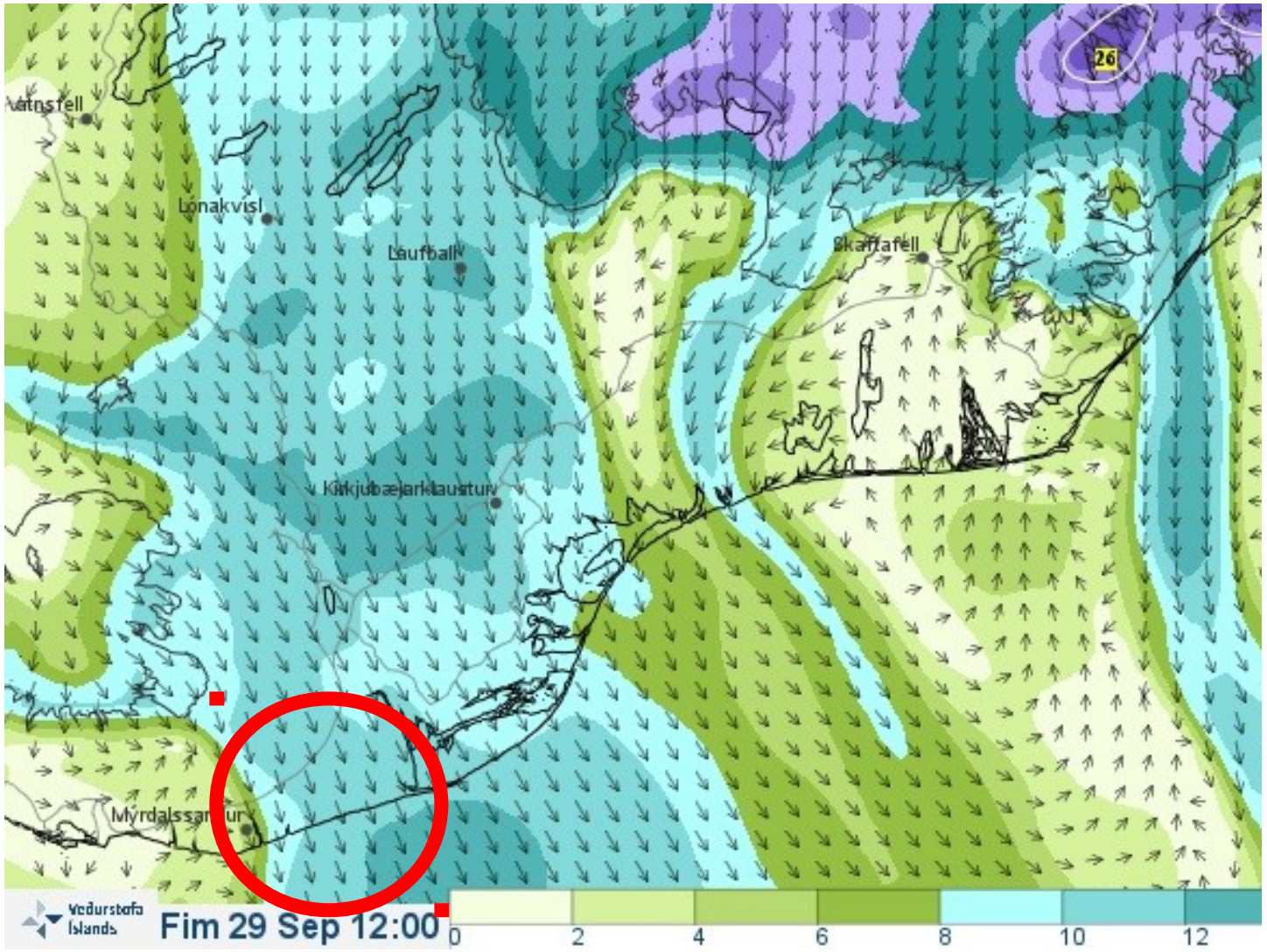


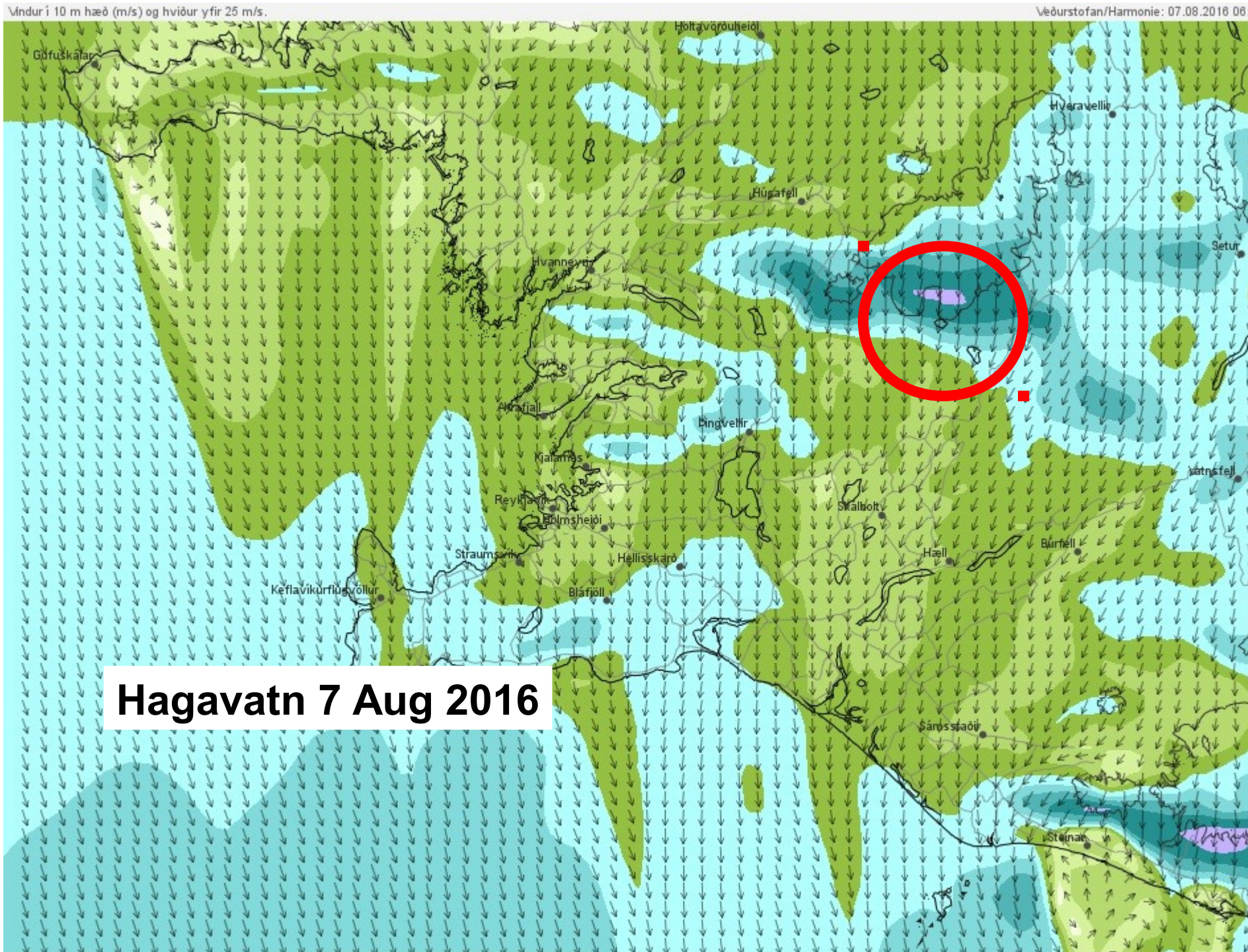
Inversion

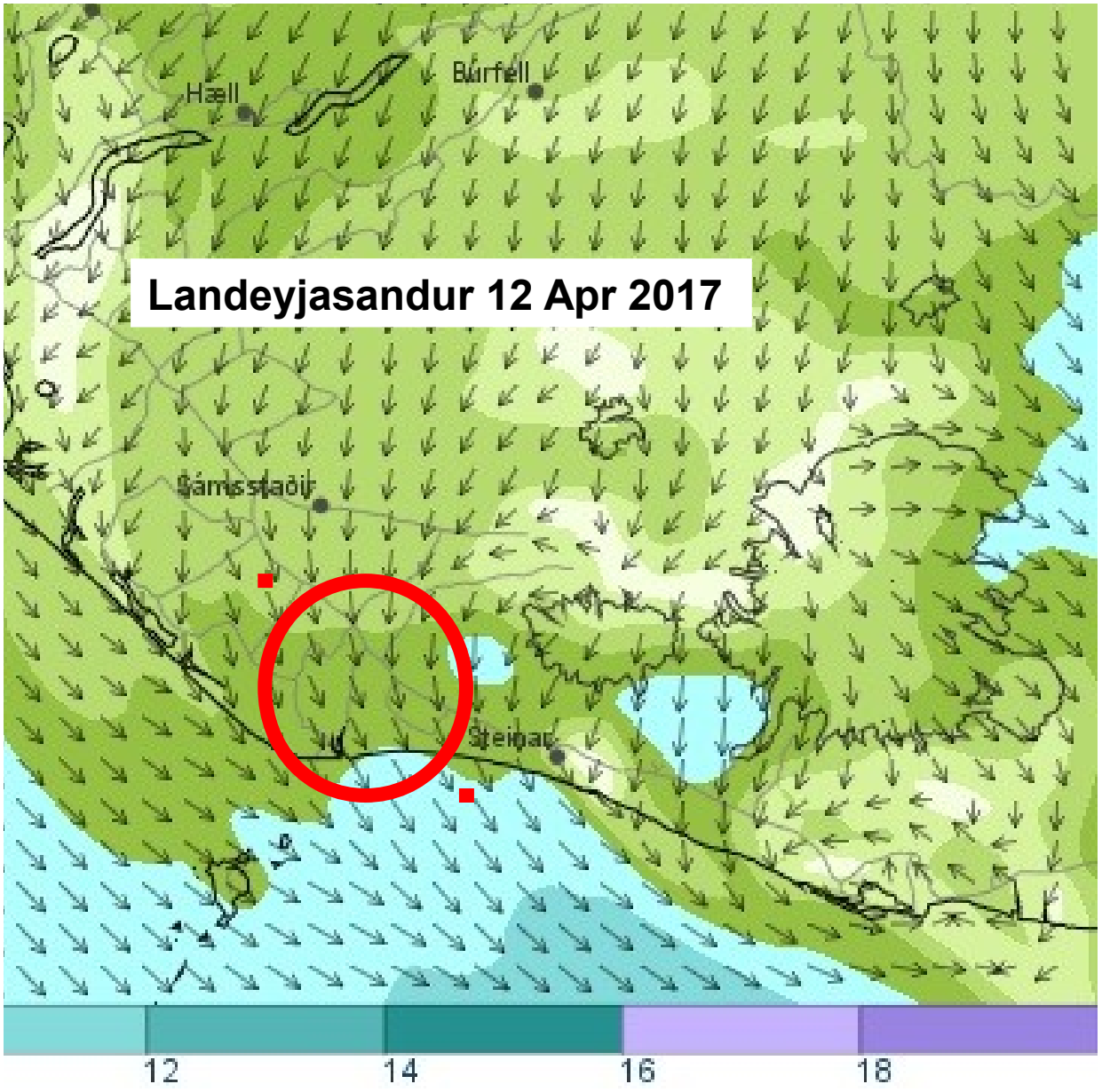
Isentropes (K) and wind speed (m/s)



Dyngjusandur 20 Oct 2016


26
Lónakvísl
Laufbali
Skaftafell
Kirkjubæjarklaustur
Veðurstofa Íslands
Fim 29 Sep 12:00
0
2
4
6
8
10
12


Vindur í 10 m hæð (m/s) og hviður yfir 25 m/s.
Veðurstofan/Harmonie: 07.08.2016 06
Hagavatn 7 Aug 2016

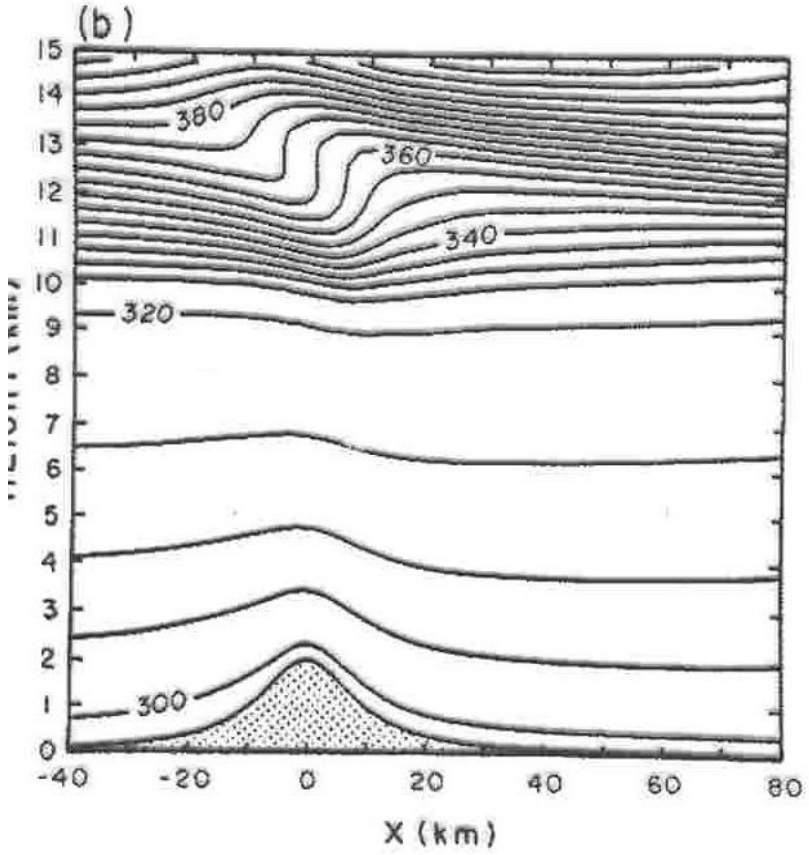

Hæll
Búrfell
Landeyjasandur 12 Apr 2017
Bámsstaðir
Steinar
12
14
16
18

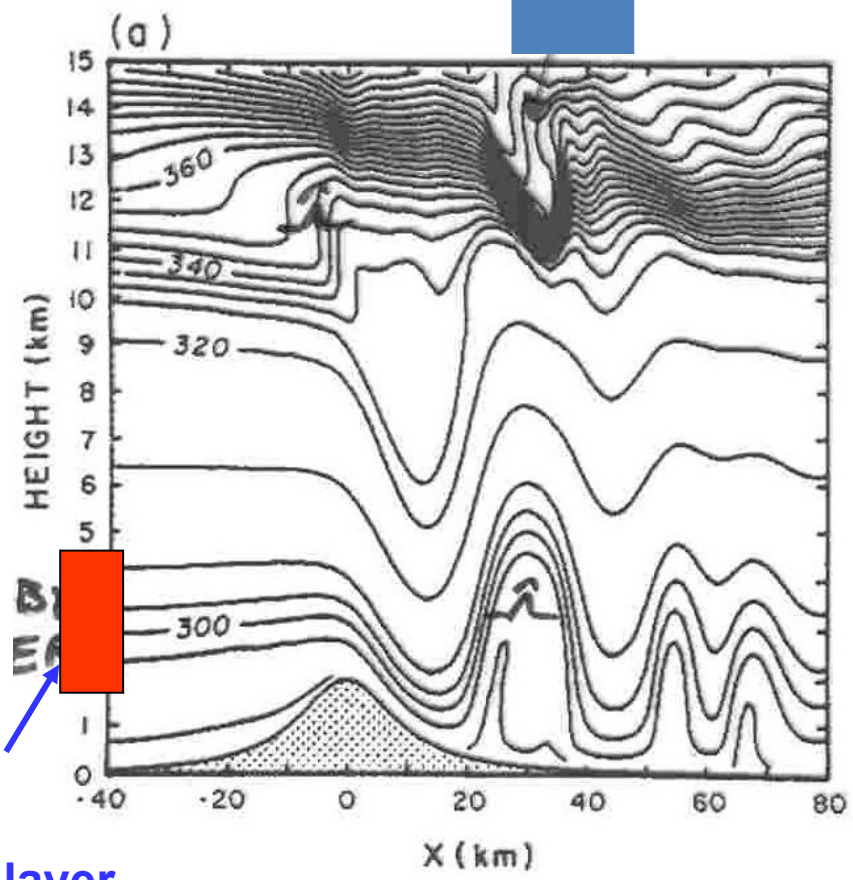
And so what?

Isentropes in two numerical simulations (K)

Little wave activity in the troposphere

Very amplified waves

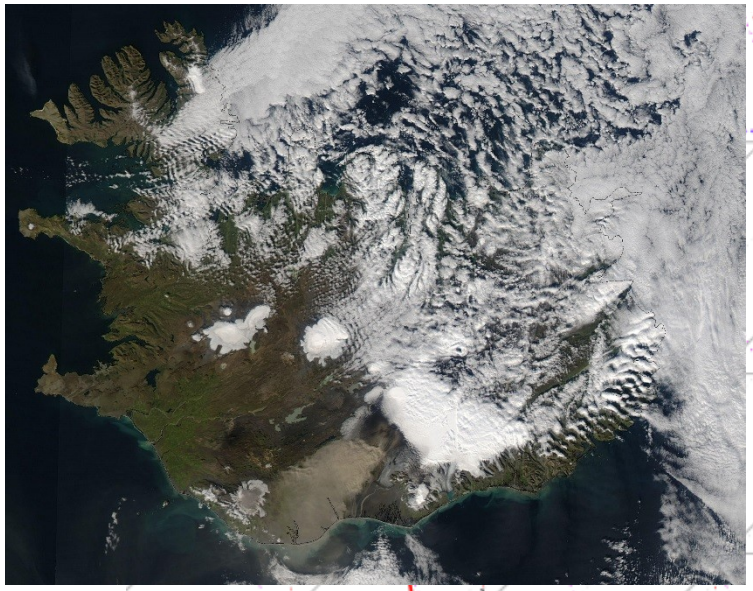


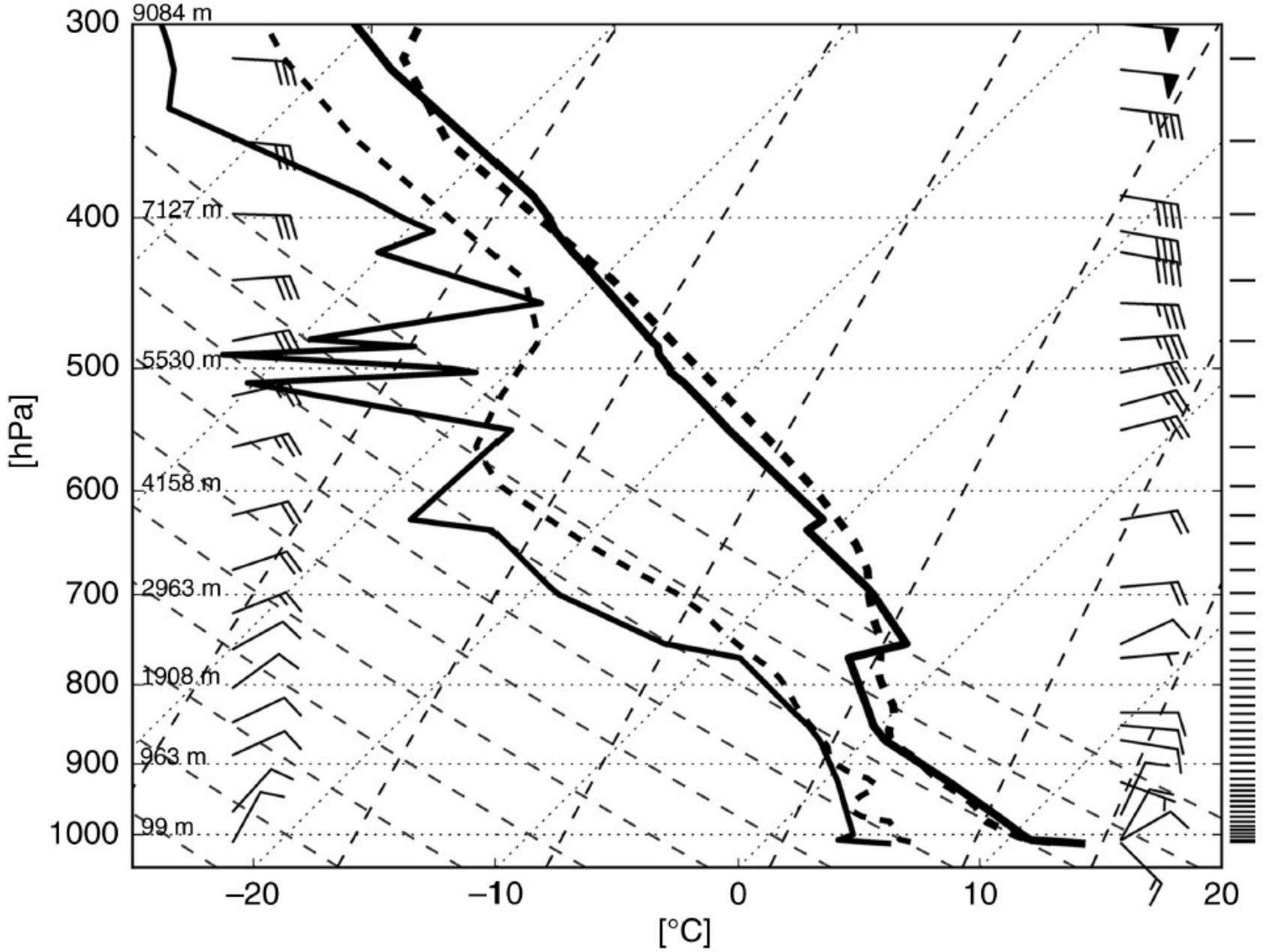


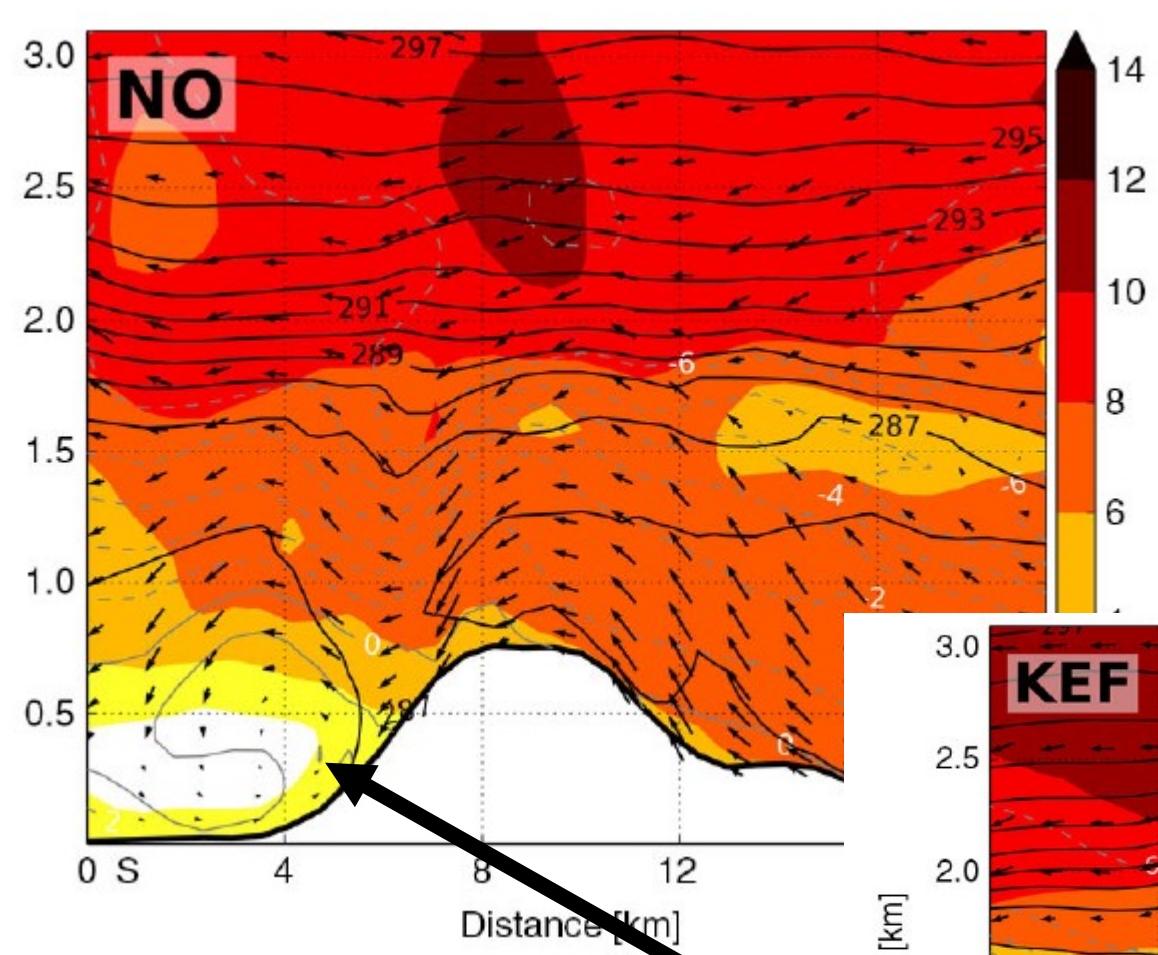
A stable layer

Durran, 1990

Observed upstream profile of the atmosphere in th

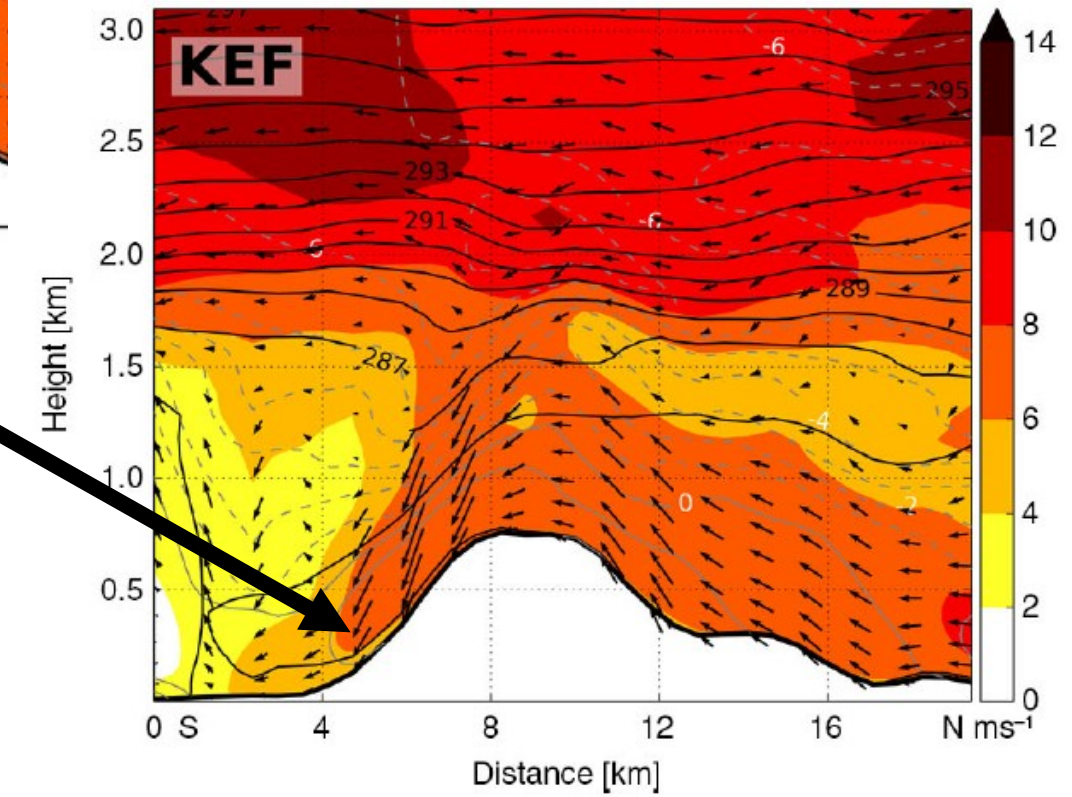



9084 m
7127 m
5530 m
4158 m
2963 m
1908 m
963 m
99 m
300
400
500
600
700
800
900
1000
[hPa]
−20
−10
0
10
20
[°C]



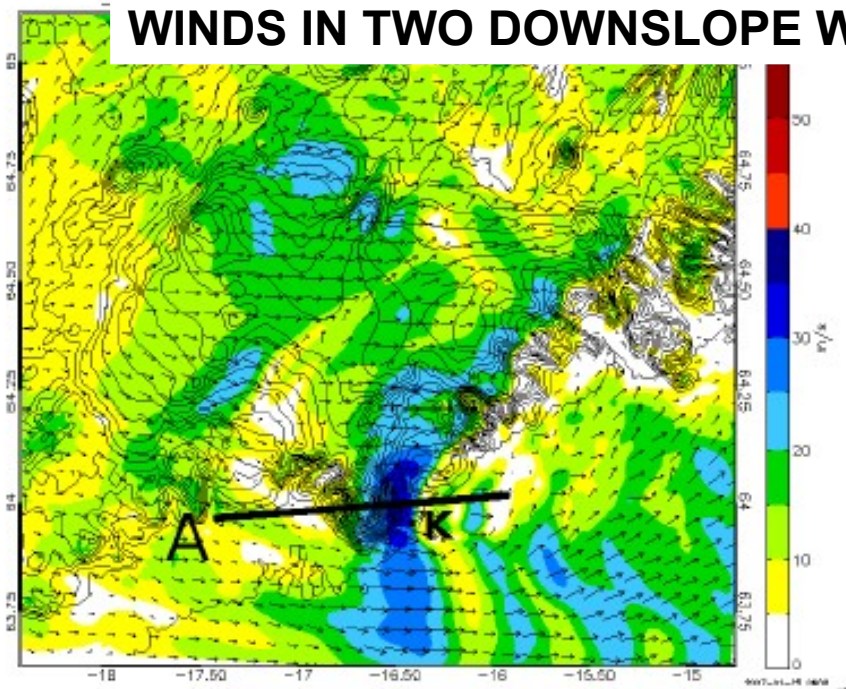
Bad inversion

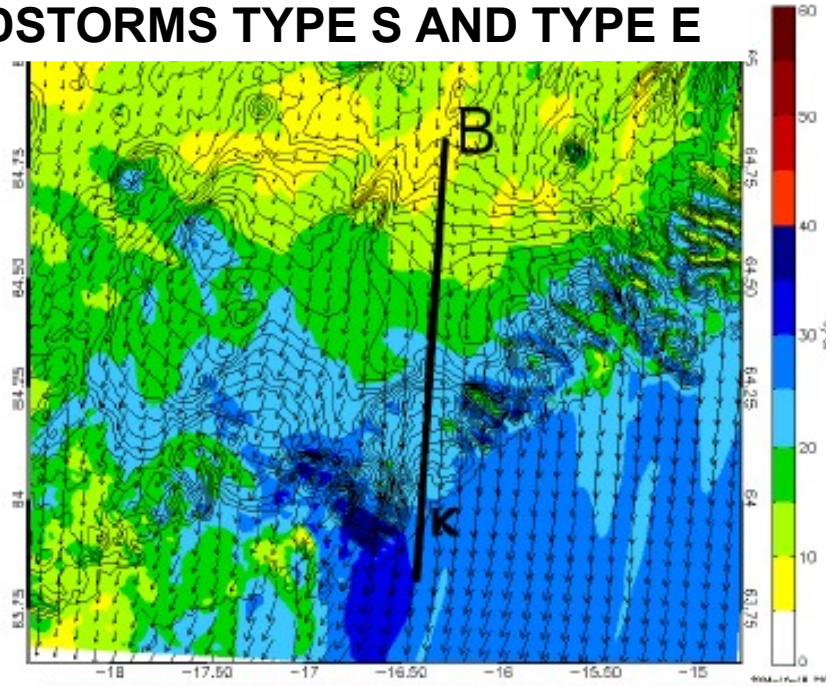
Correct inversion

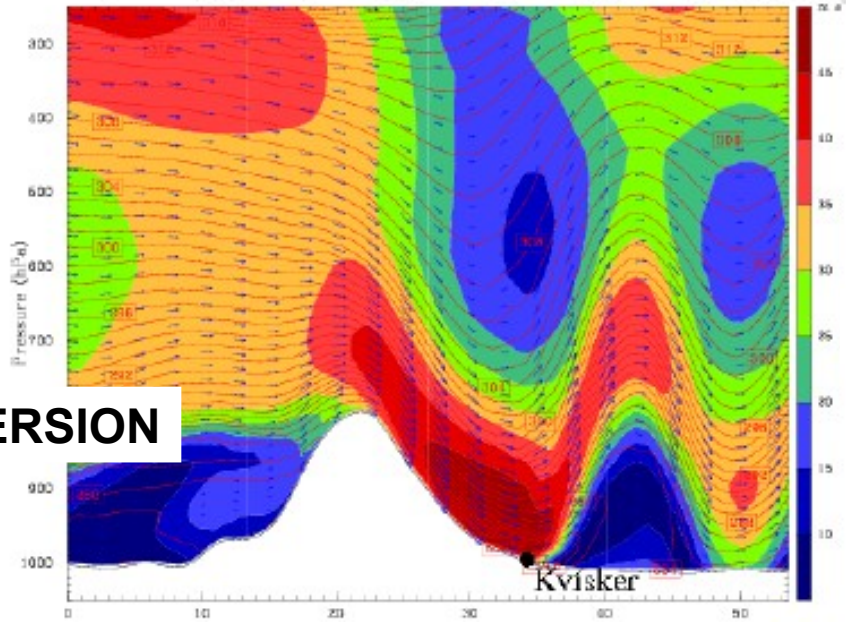


Ágústsson, Ólafsson, Jónasson, Rögnvaldsson, 2013

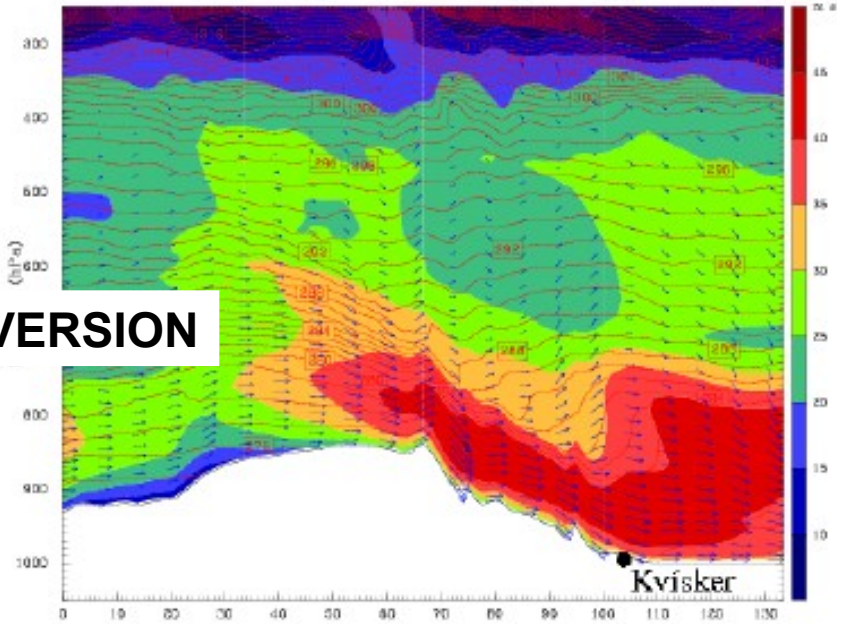
WINDS IN TWO DOWNSLOPE WINDSTORMS TYPE S AND TYPE E







INVERSION



INVERSION

Ágústsson & Ólafsson, MAP, 2010

Key points

Local acceleration is important

– consequently, the vertical profile is important

The vertical profile is not always well represented in NWP

Counting synoptic scale windstorms in climate simulations may not be adequate for assessing the frequency of windstorms in present or future climate. High-resolution simulations or details of the profile (e.g. inversions) may be crucial