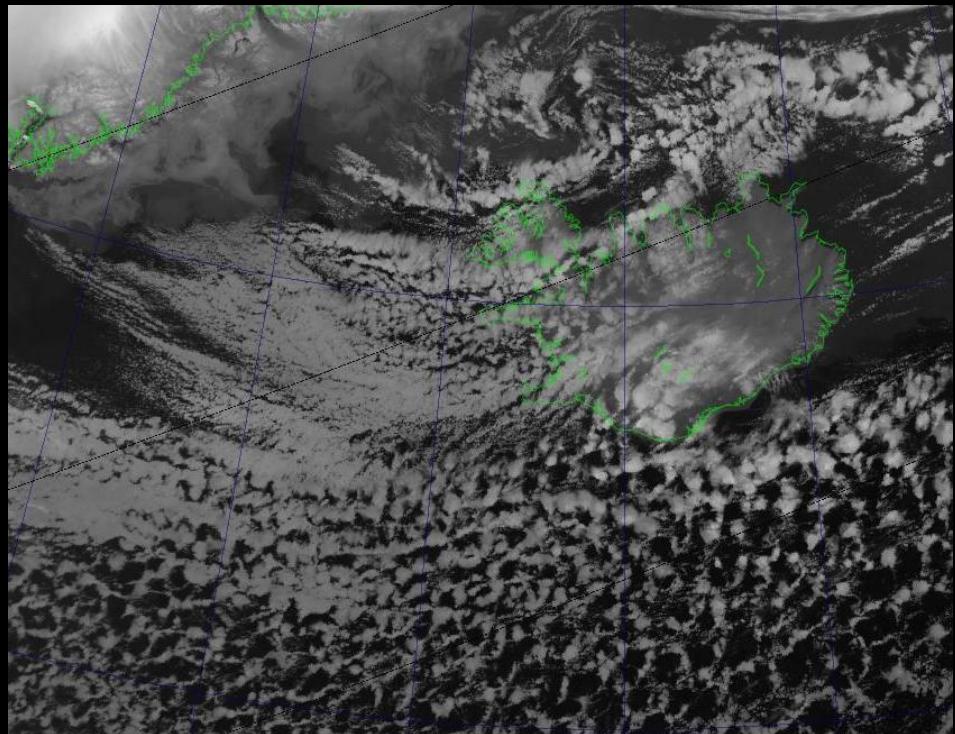


**Veðurstofa  
Íslands**



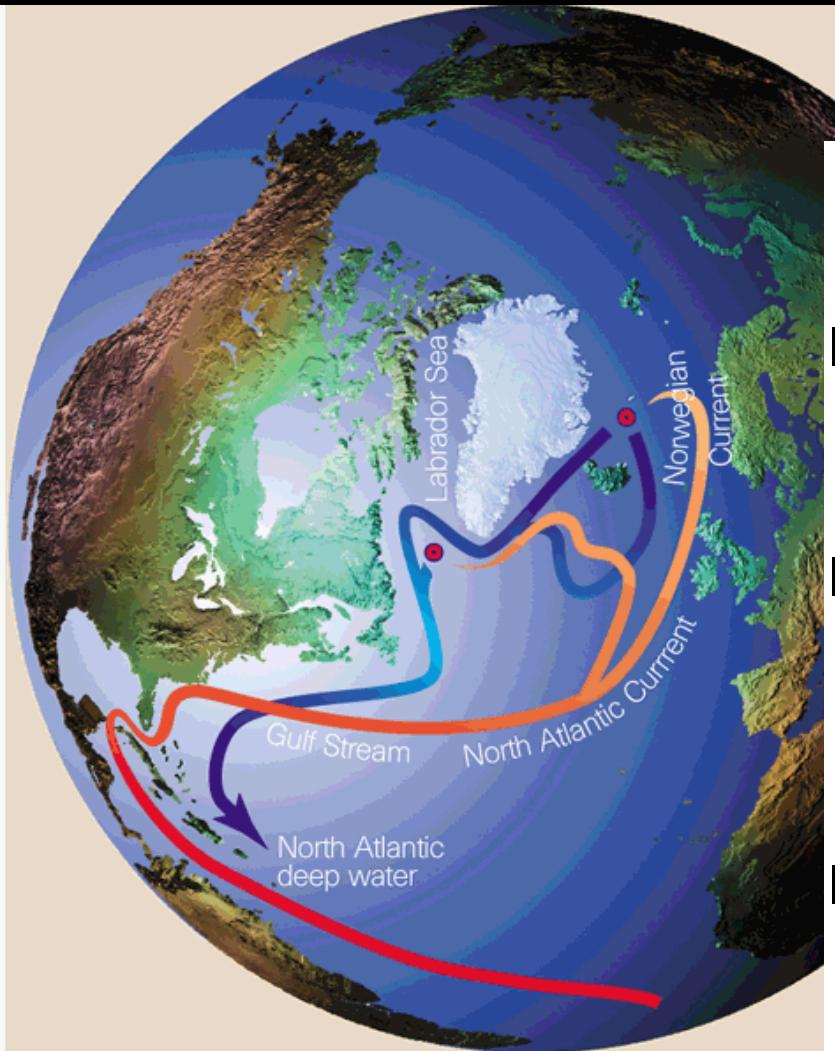
**Élja veður 10. janúar 2012**

Guðrún Nína Petersen



# Lóðstreyymi á opnu hafi

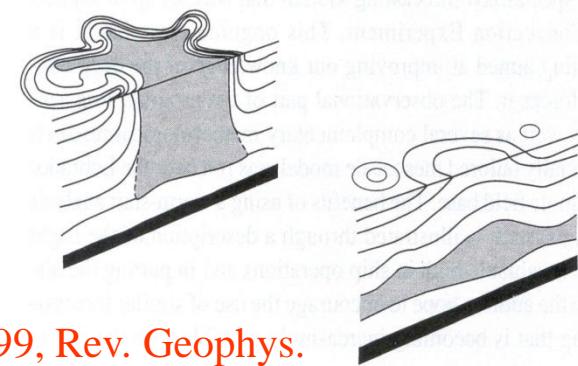
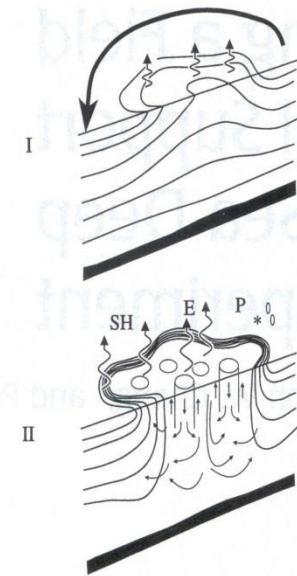
„Viðsnúningur“ hita-seltuhringrásinnar



I - Pre-conditioning

II - deep convection

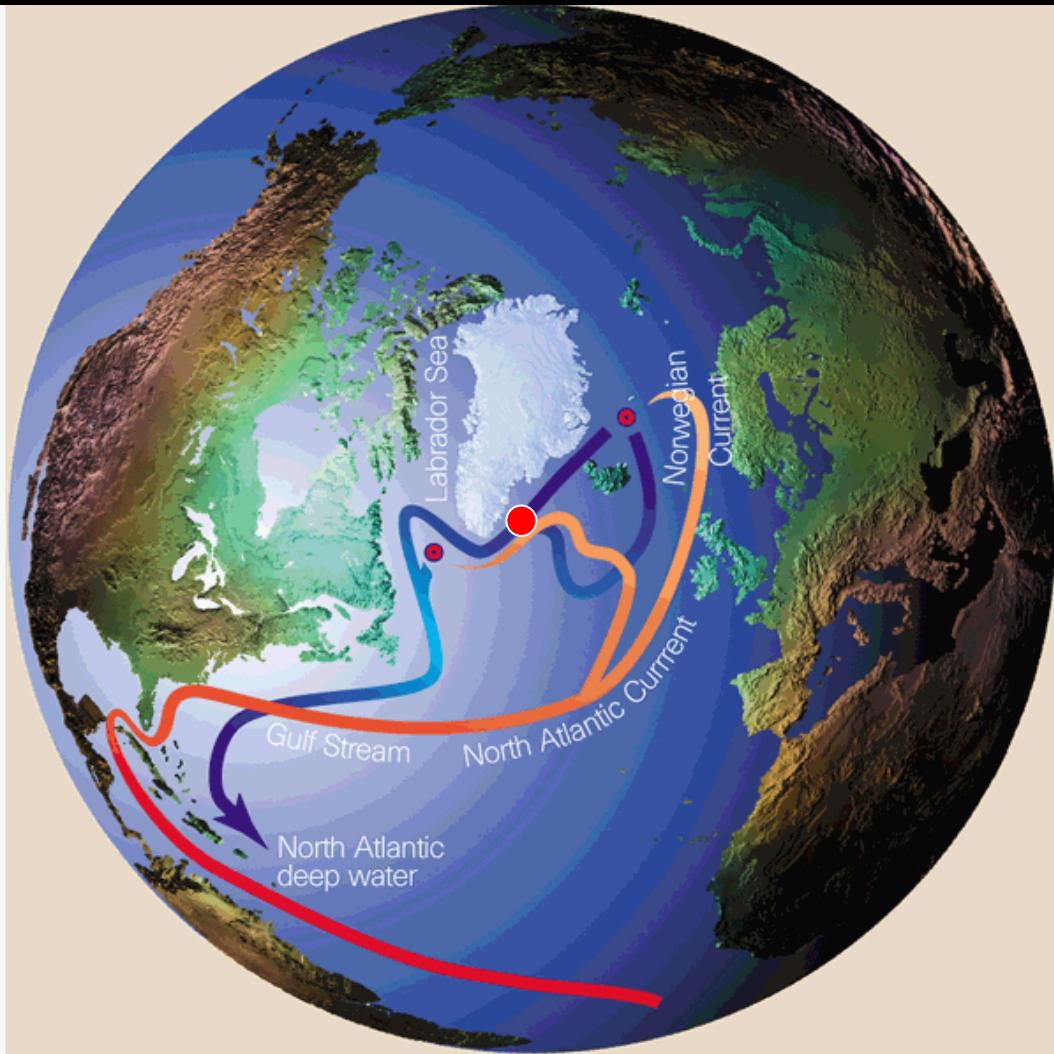
III - lateral exchange  
& spreading



Frá Rahmstorf 1999, Nature

Frá Marshall and Schott 1999, Rev. Geophys.

# Lóðstreymi á opnu hafi



Frá Rahmstorf 1999, Nature

Mögulega lóðstreymi á  
Grænlandshafi

Pickart et al. 2003, Nature  
Pickart et al. 2003, Deep Sea Res.  
Bacon et al., 2003, GRL

Hluti þess djúpvatns sem var talið  
að myndaðist á Labradorhafi,  
Myndast á Grænlandshafi

# Flæði jöfnur

- Skriðbungi
- Skynvarmi
- Dulvarmi

$$\tau = -\overline{\rho u' w'}$$
$$SH = C_p \frac{\overline{\rho w' \Theta'}}{v}$$
$$LH = L_v \frac{\overline{\rho w' q'}}{v}$$
$$w' = w - \bar{w}$$

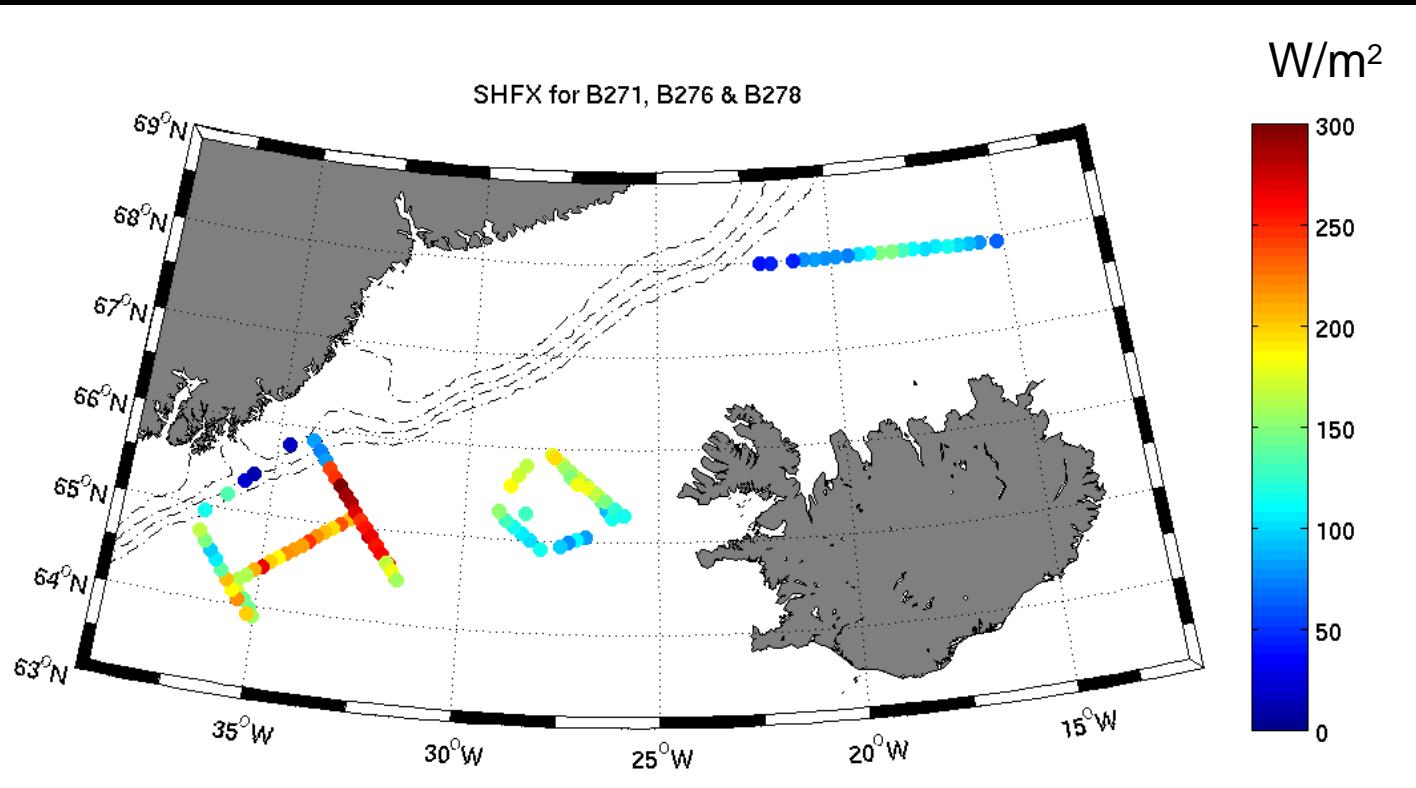
## Bulk flæði

- Skriðbungi
- Skynvarmi
- Dulvarmi

$$\tau = \rho C_{DN} U^2$$
$$SH = \rho C_p C_{HN} U (\Theta_s - \Theta)$$
$$LH = \rho L_v C_{EN} U (q_s - q)$$



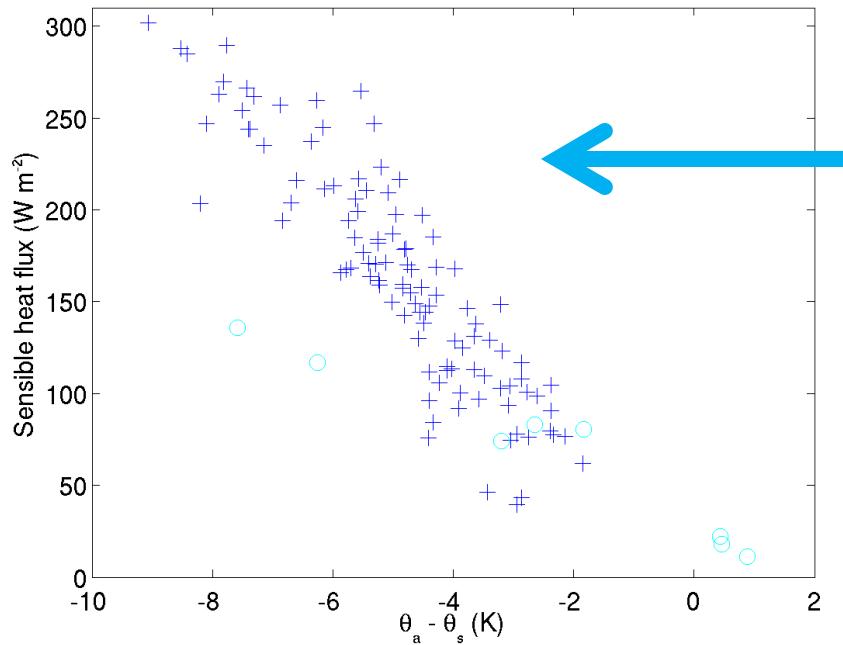
# Mælt flæði af skynvarma mars 2007



Petersen & Renfrew 2009

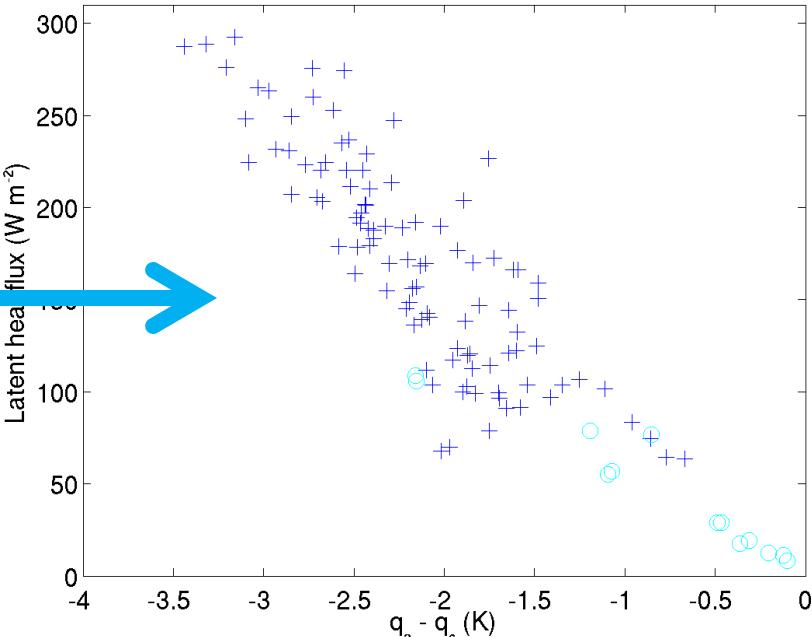
Veðurstofa  
Íslands





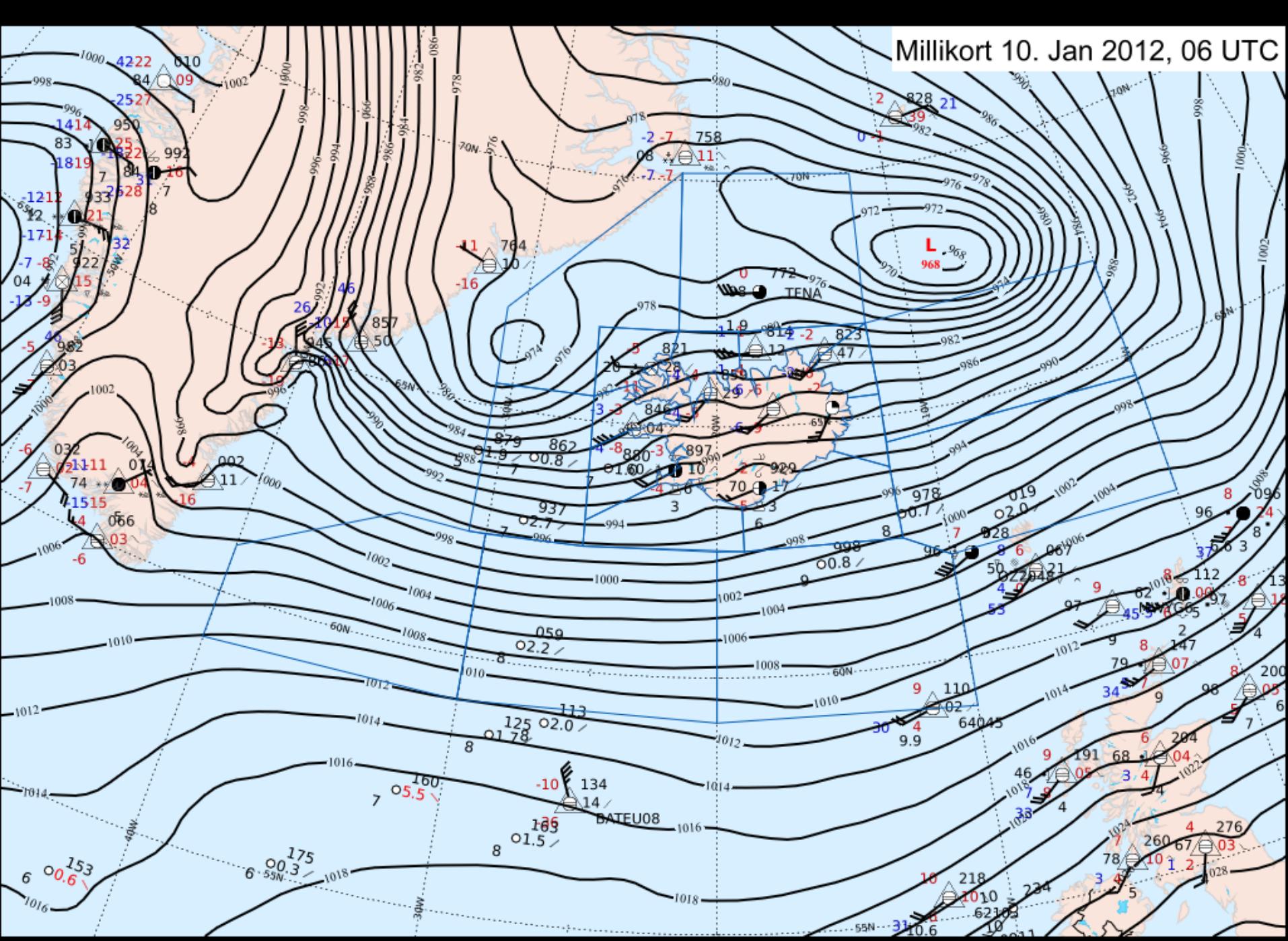
Flæði af skynvarma  
50-300  $\text{Wm}^{-2}$

Flæði af dulvarma  
50-300  $\text{Wm}^{-2}$

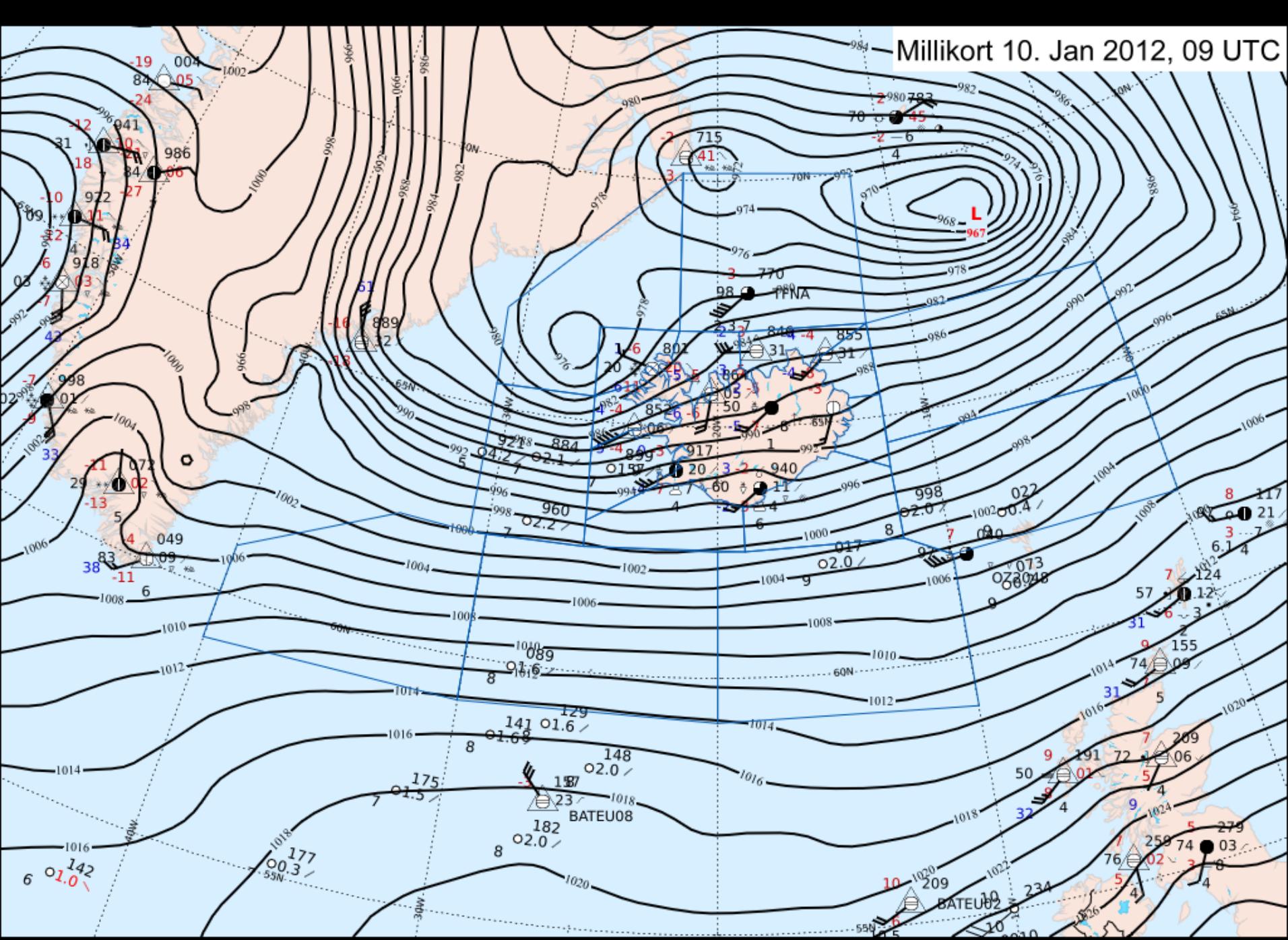


- 10 janúar 2012

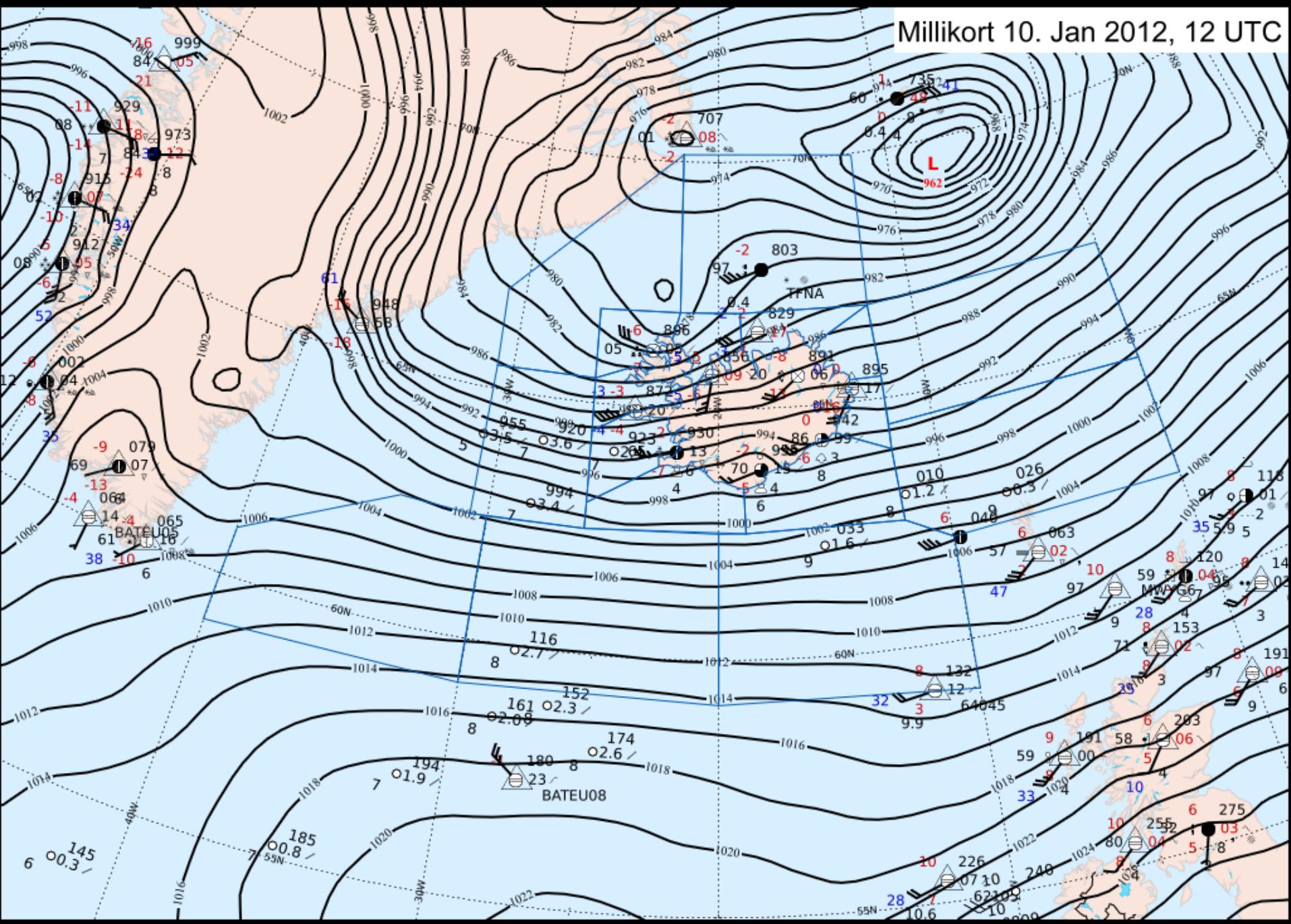
Millikort 10. Jan 2012, 06 UTC



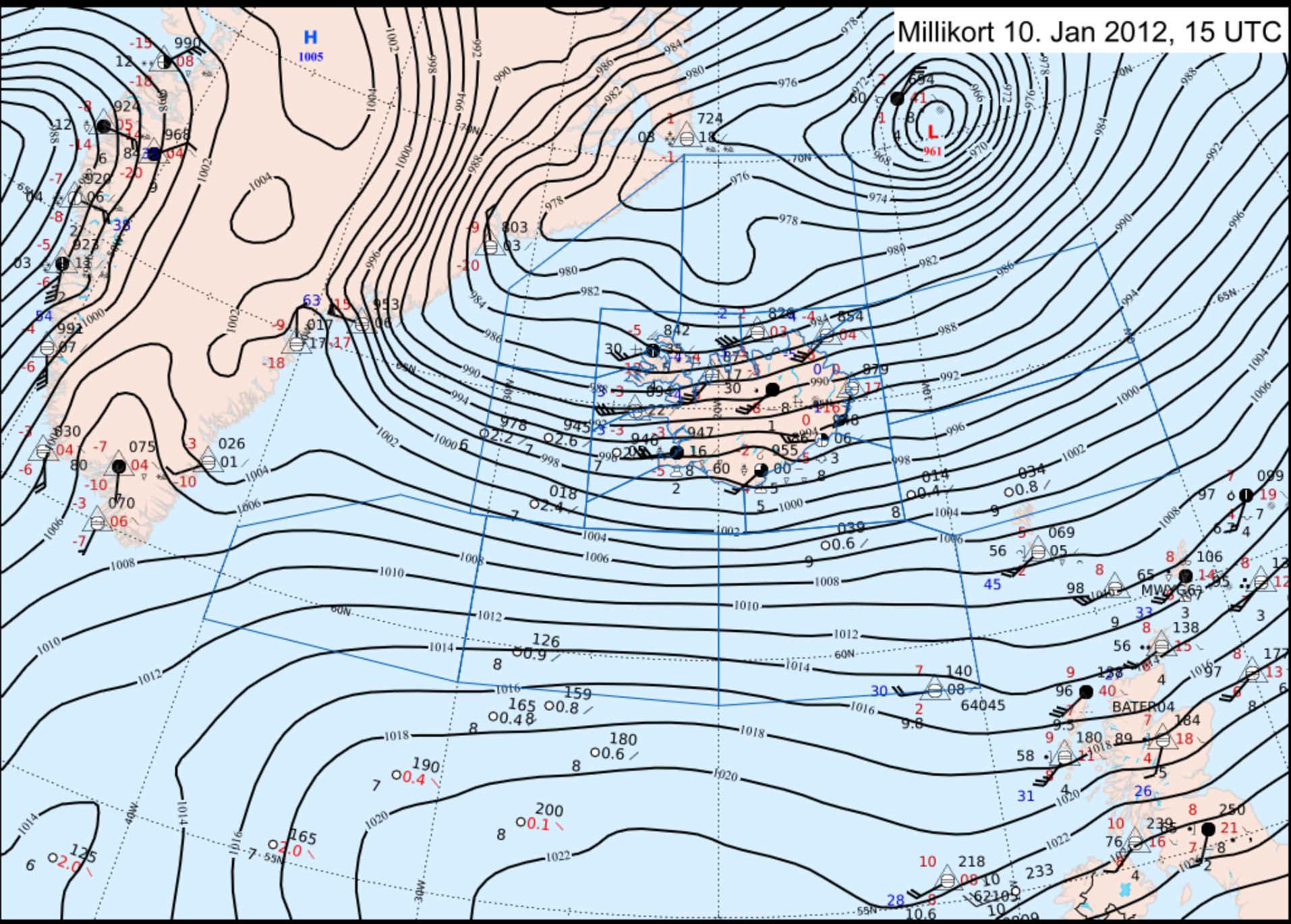
Millikort 10. Jan 2012, 09 UTC



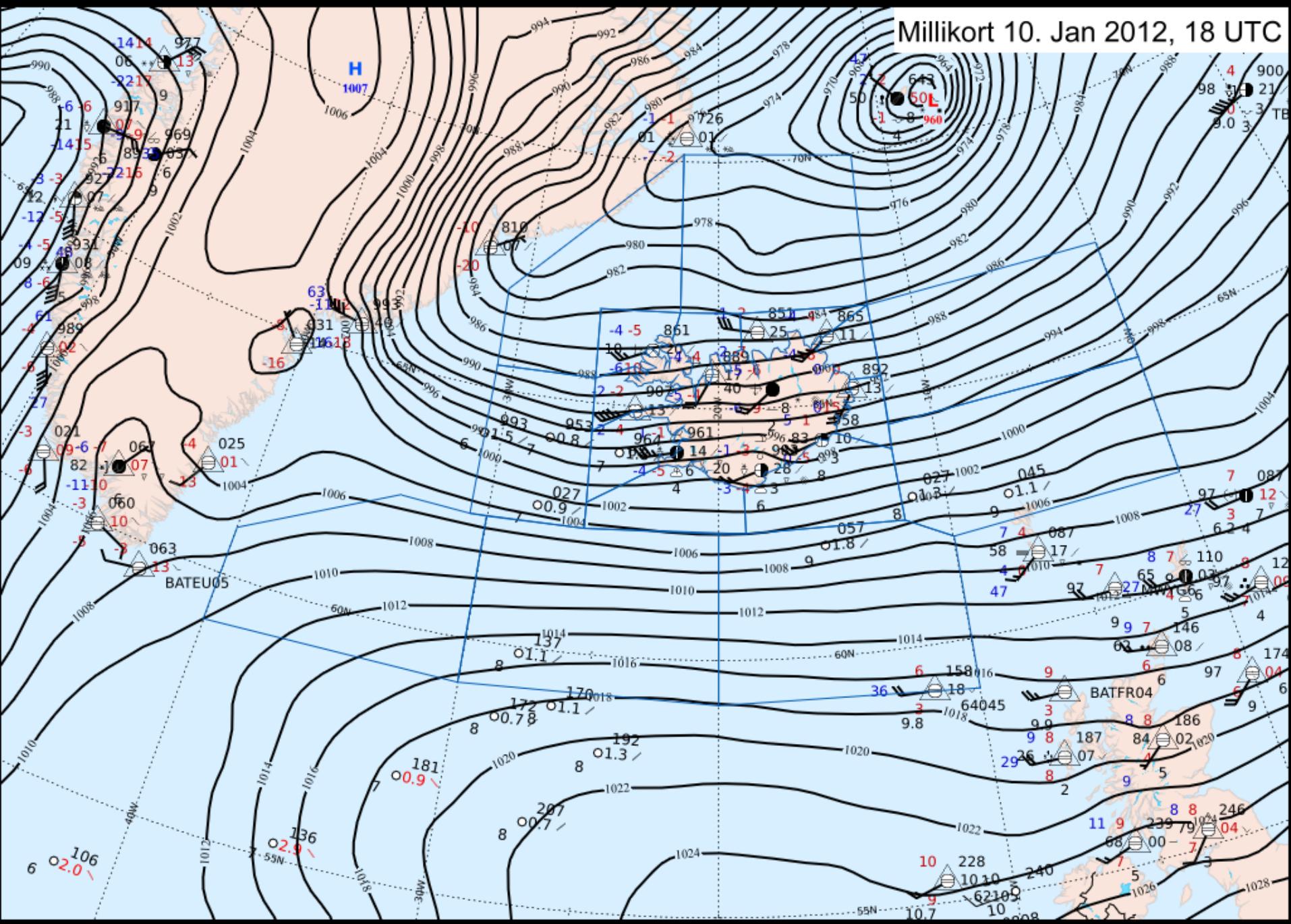
Millikort 10. Jan 2012, 12 UTC



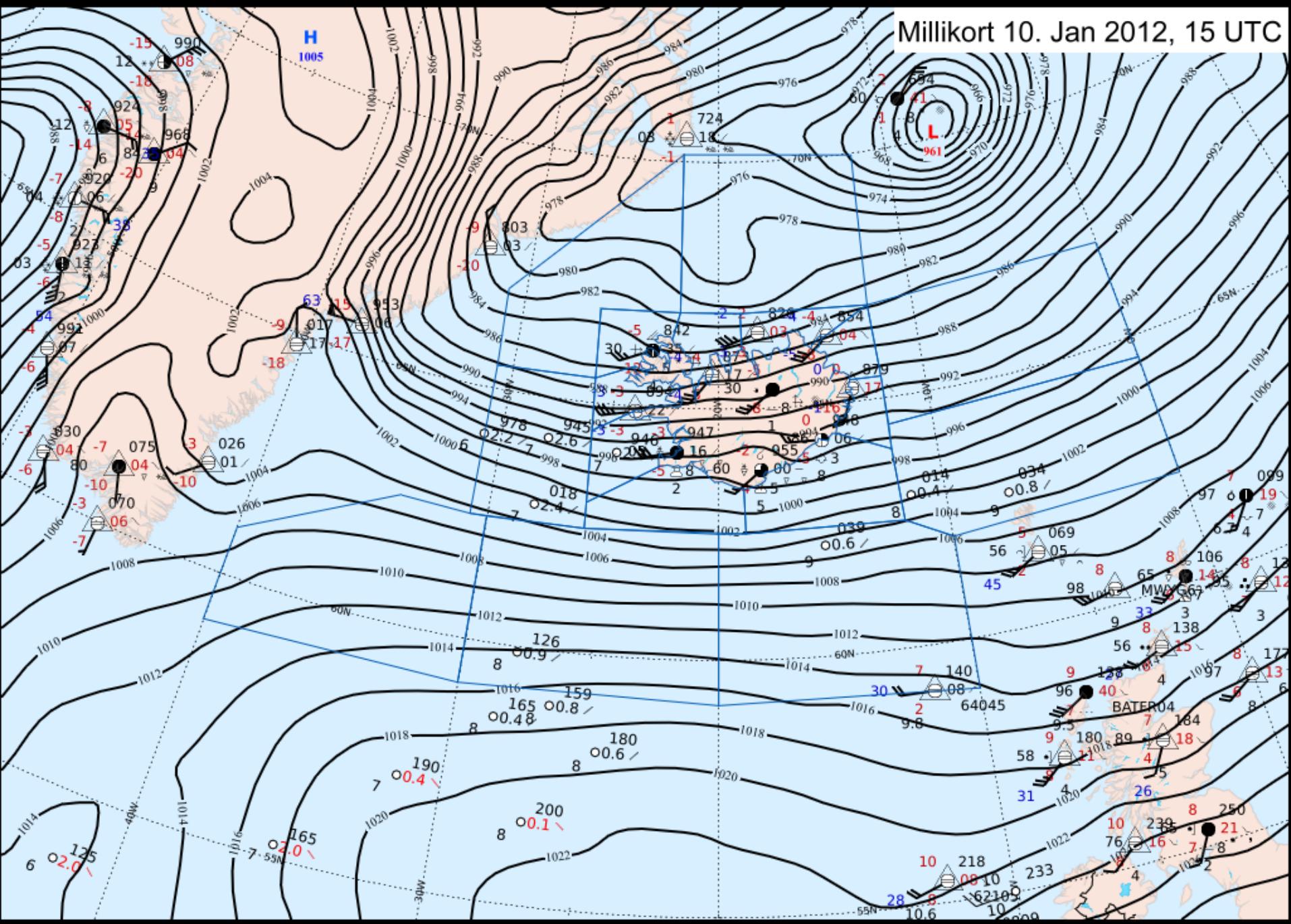
Millikort 10. Jan 2012, 15 UTC



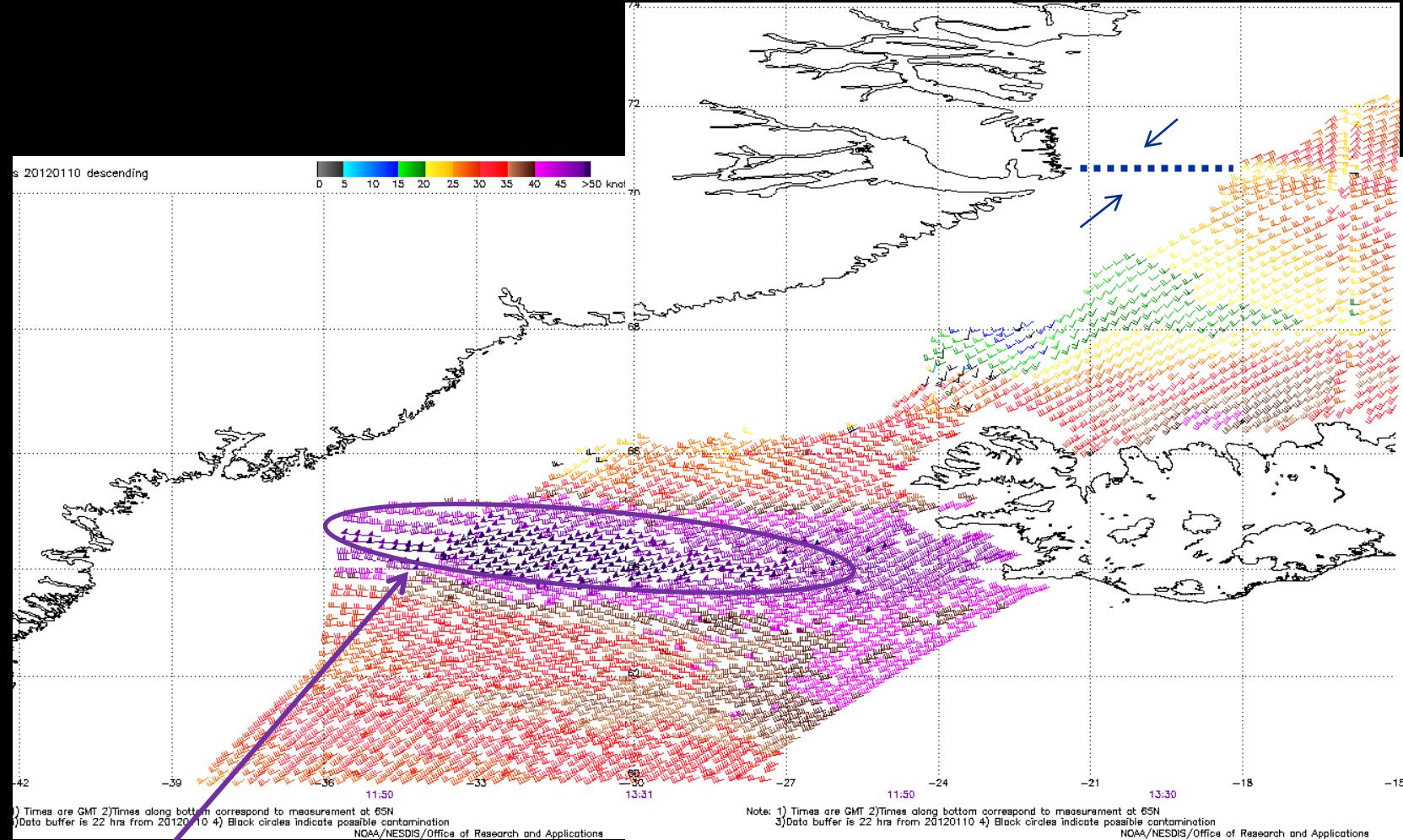
Millikort 10. Jan 2012, 18 UTC



Millikort 10. Jan 2012, 15 UTC



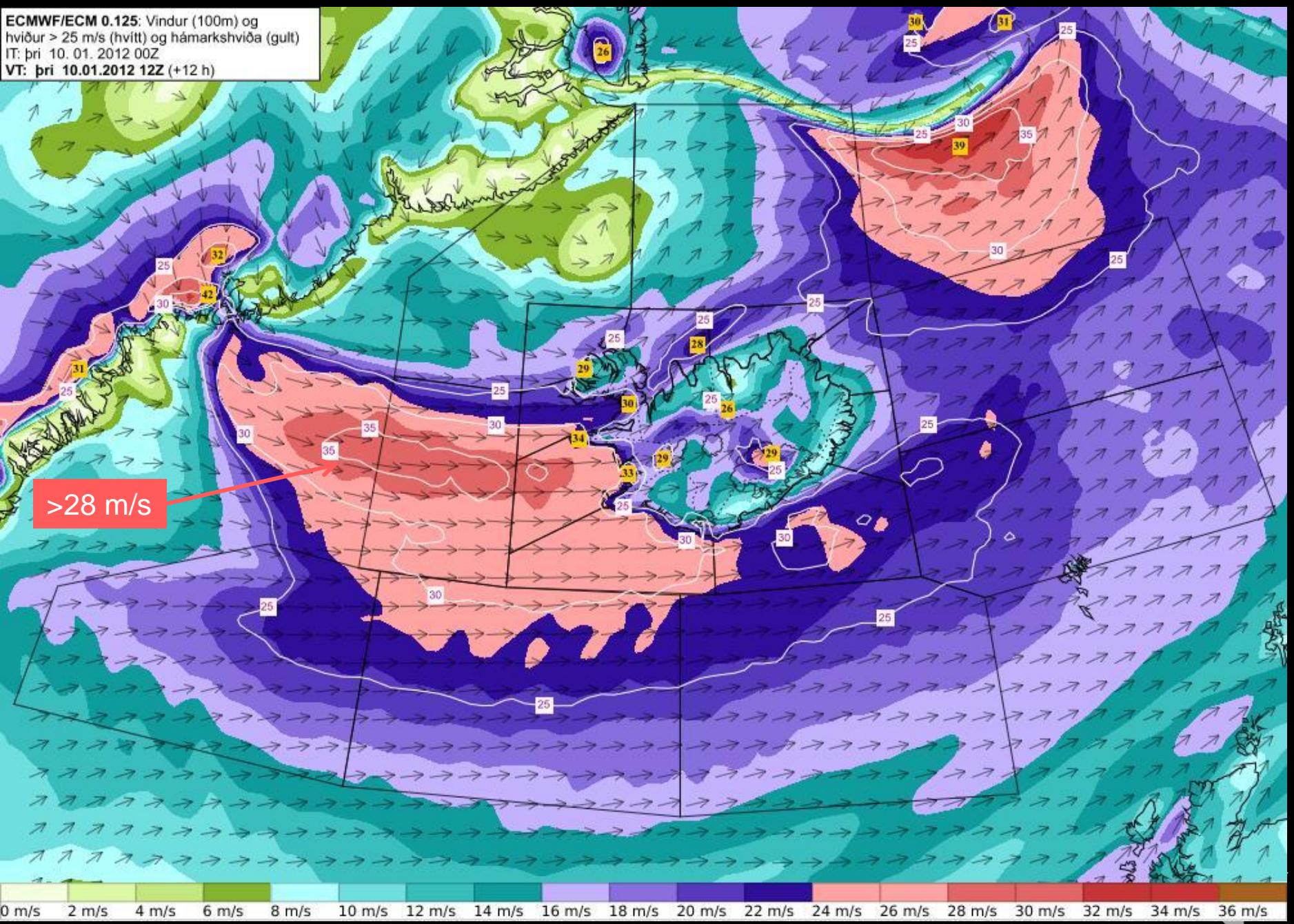
# ASCAT vindar 10. janúar 2012



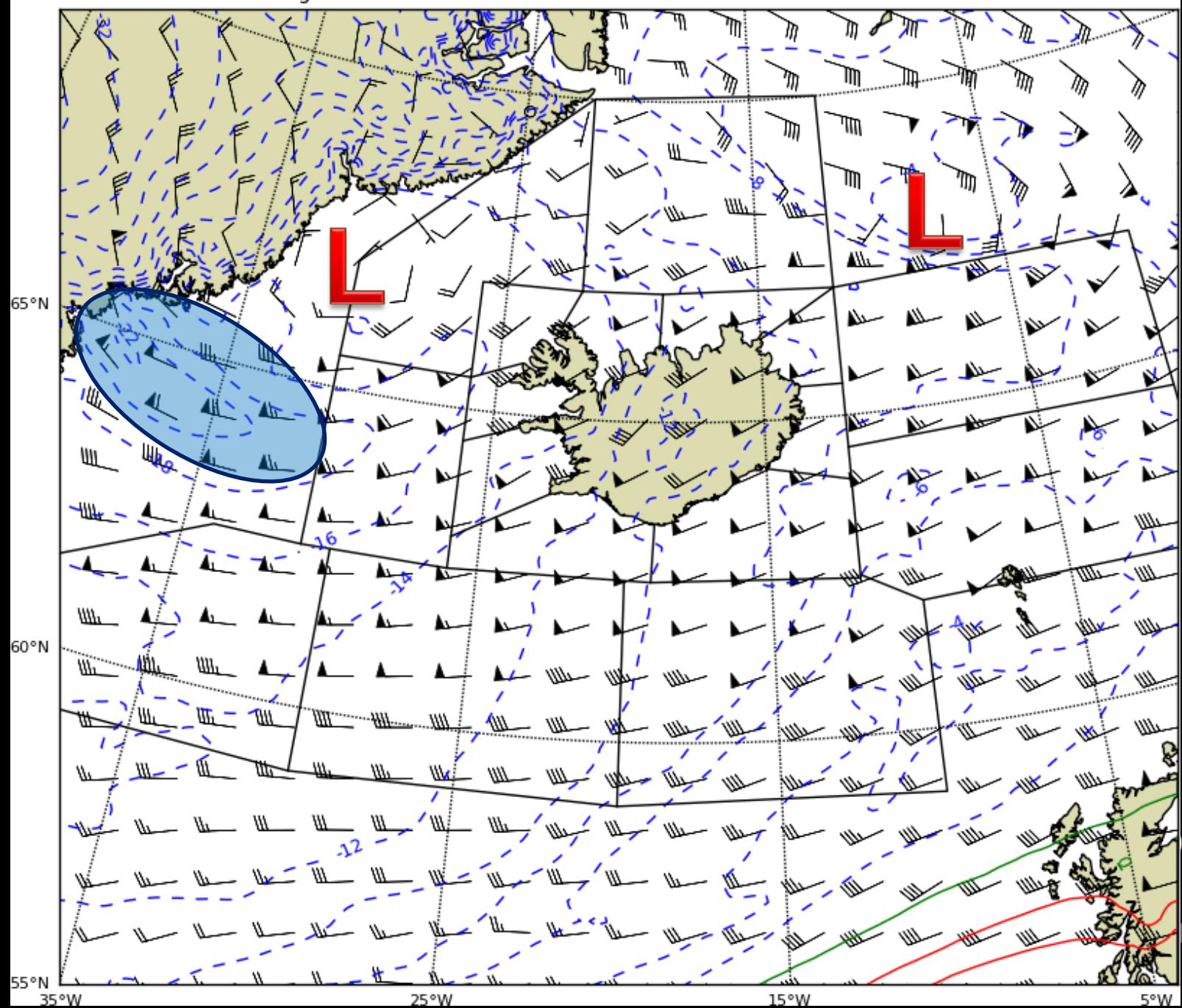
>50kt

Icelandus

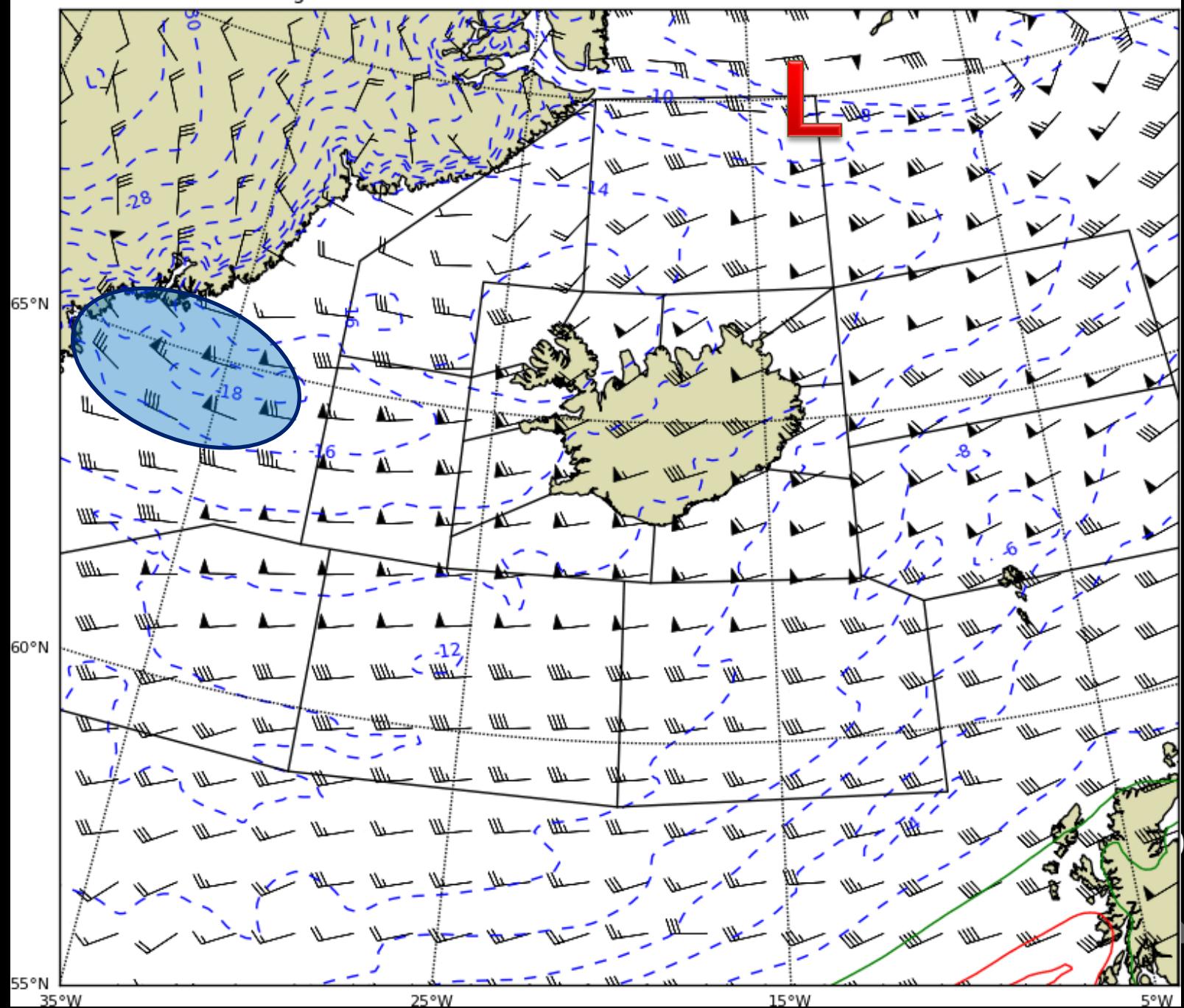
ECMWF/ECM 0.125: Vindur (100m) og  
hviður > 25 m/s (hvitt) og hámarkshvíða (gult)  
IT: þri 10. 01. 2012 00Z  
VT: þri 10.01.2012 12Z (+12 h)



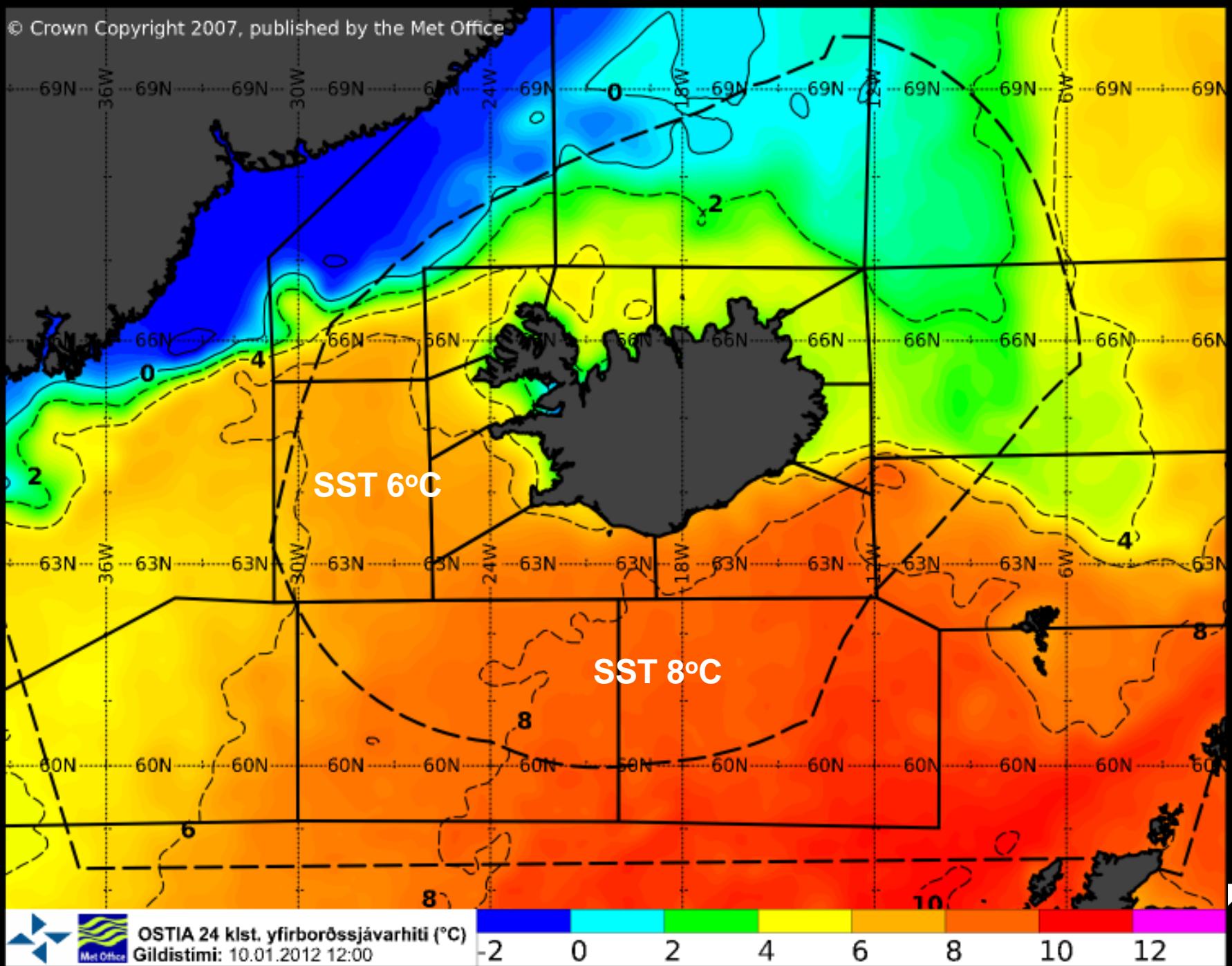
Hiti og vindur í 850hPa. IT: 2012-01-10 00:00 VT: 2012-01-10 06:00 +6H



Hiti og vindur í 850hPa. IT: 2012-01-10 00:00 VT: 2012-01-10 12:00 +12H



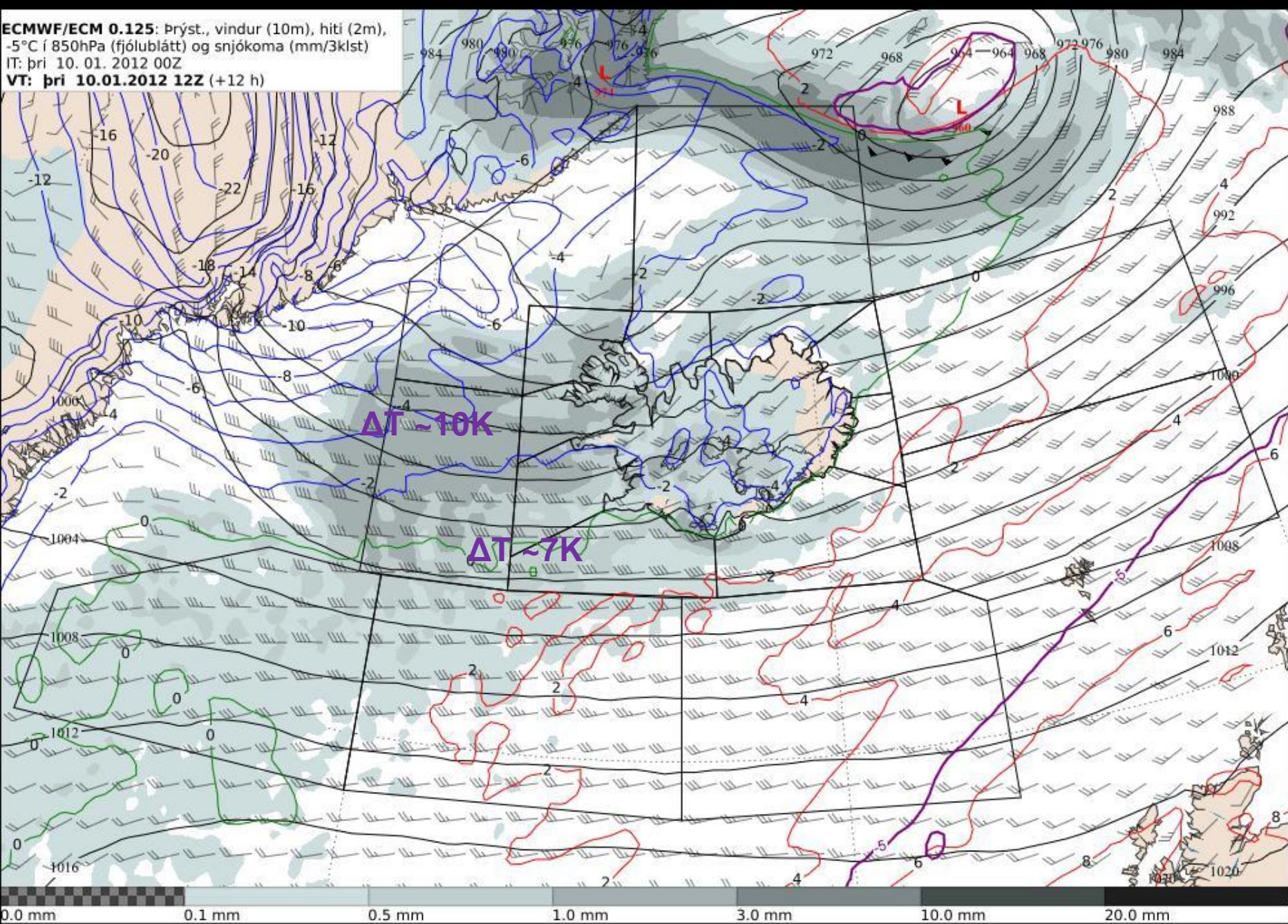
fa



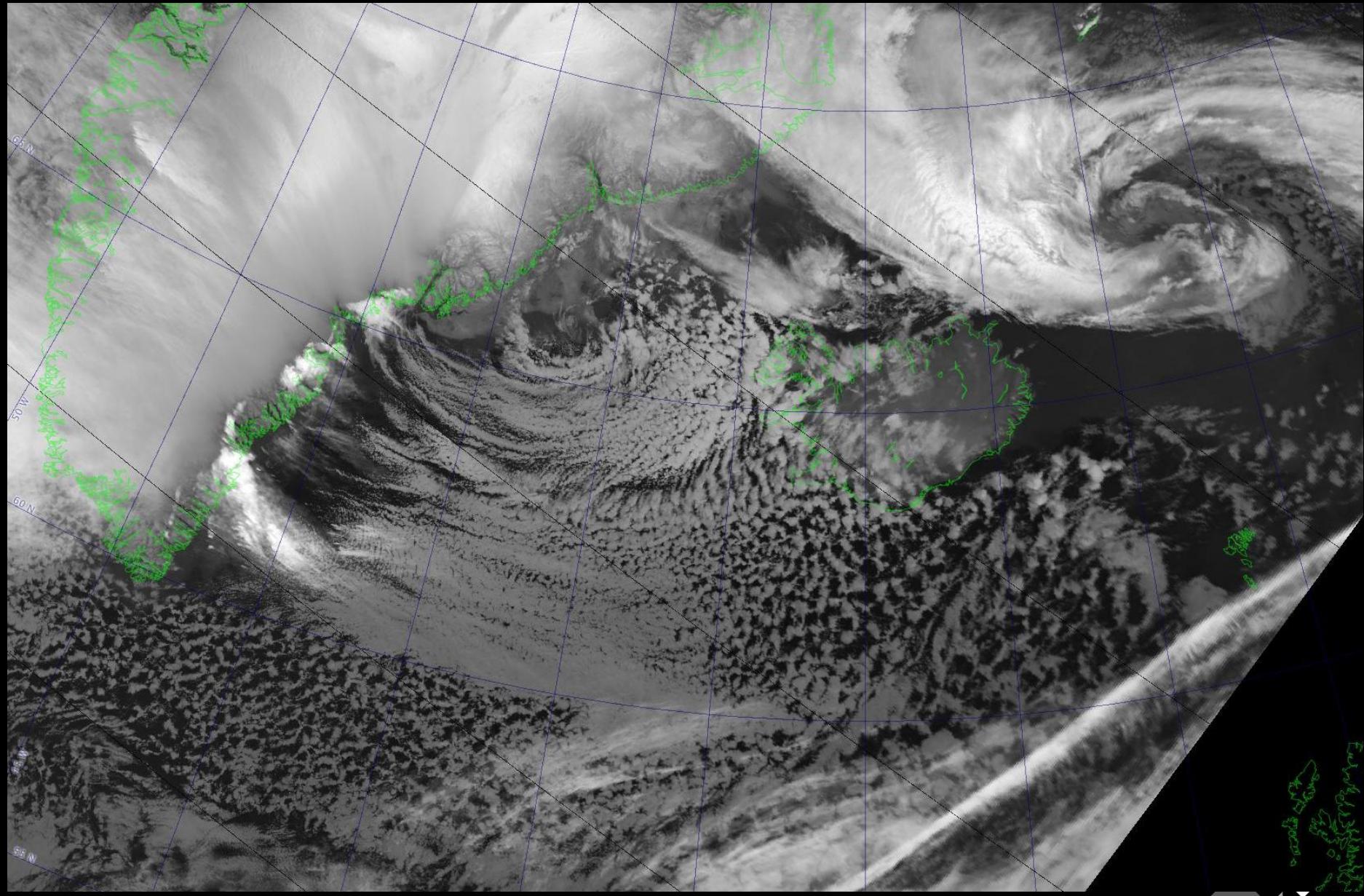
ECMWF/ECM 0.125: Þrýst., vindur (10m), hiti (2m),  
-5°C í 850hPa (fjólublátt) og snjókoma (mm/3klst)

IT: þri 10. 01. 2012 00Z

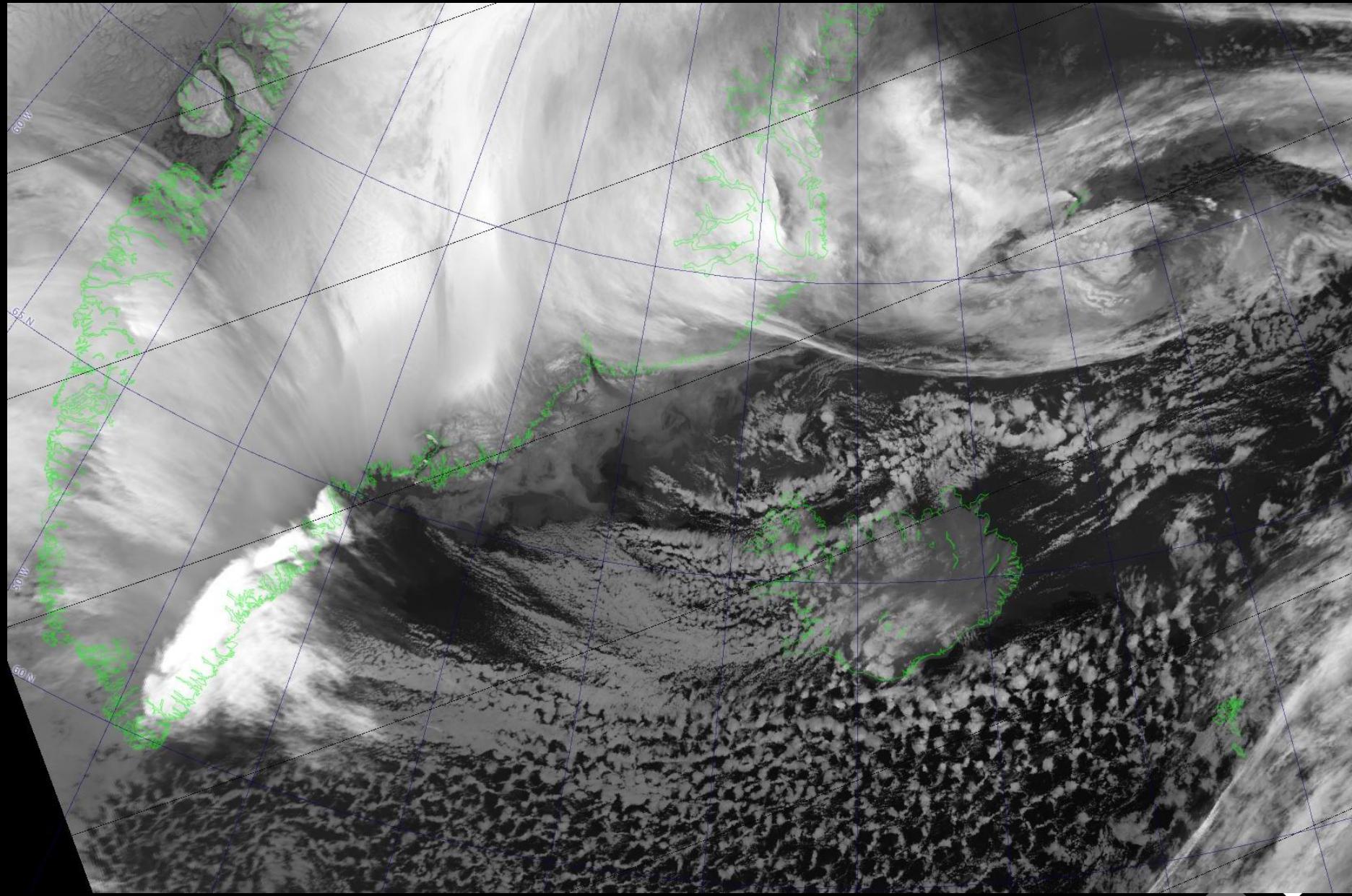
VT: þri 10.01.2012 12Z (+12 h)



$\Delta T = T_{SST} - T_{2m} \Rightarrow \Delta T > 0$  þegar hafið hlýrra en andrúmsloftið



AVHRR IR 10.01. 2012 05:14 UTC



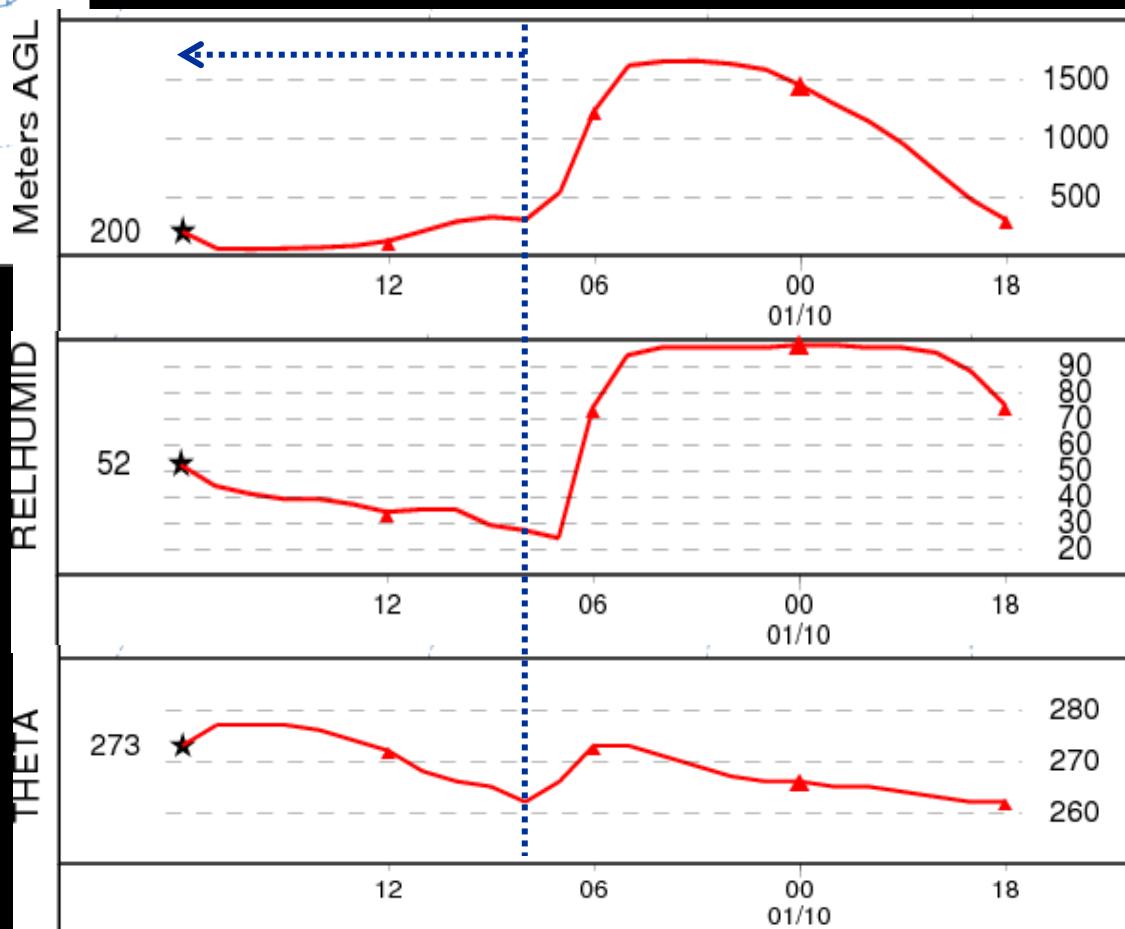
AVHRR IR 10.01. 2012 13:33 UTC

NOAA HYSPLIT MODEL  
Backward trajectory ending at 1800 UTC 10 Jan 12  
GDAS Meteorological Data

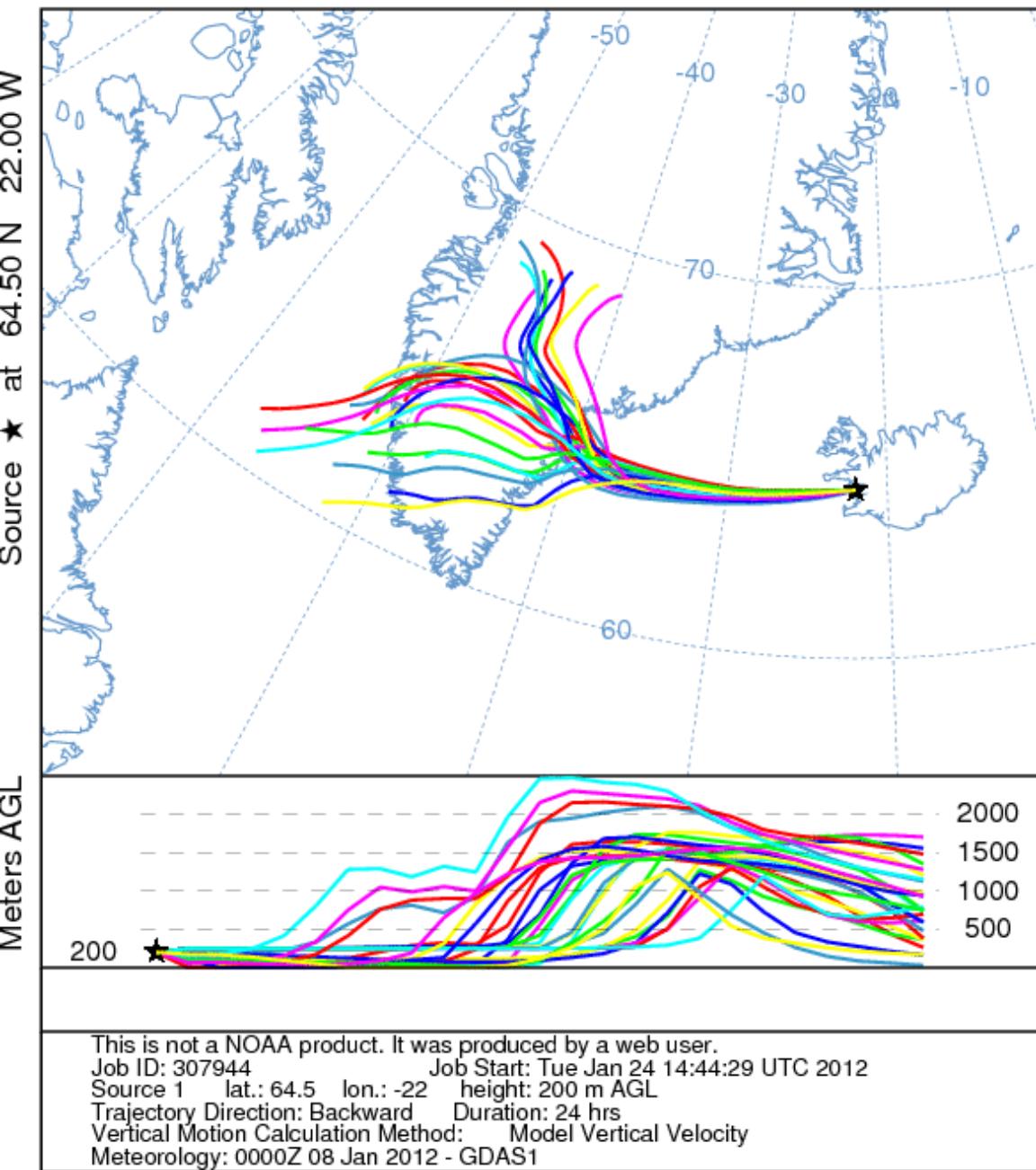


$d(RH) \sim 20\%$   
 $D(\Theta) \sim 10\text{ K}$

# Afturábak reikningar



NOAA HYSPLIT MODEL  
Backward trajectories ending at 1800 UTC 10 Jan 12  
GDAS Meteorological Data

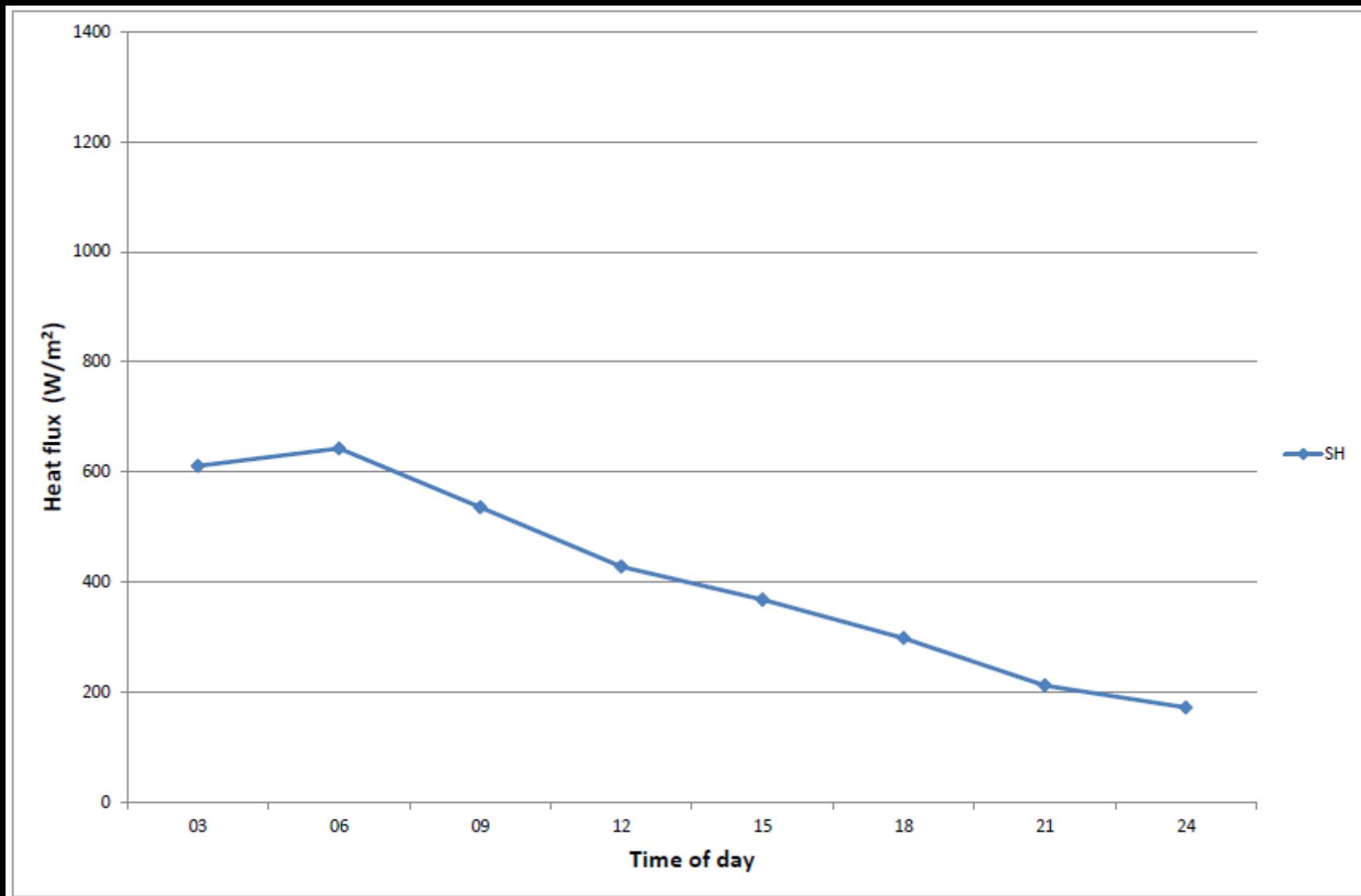


Veðurstofa  
Íslands



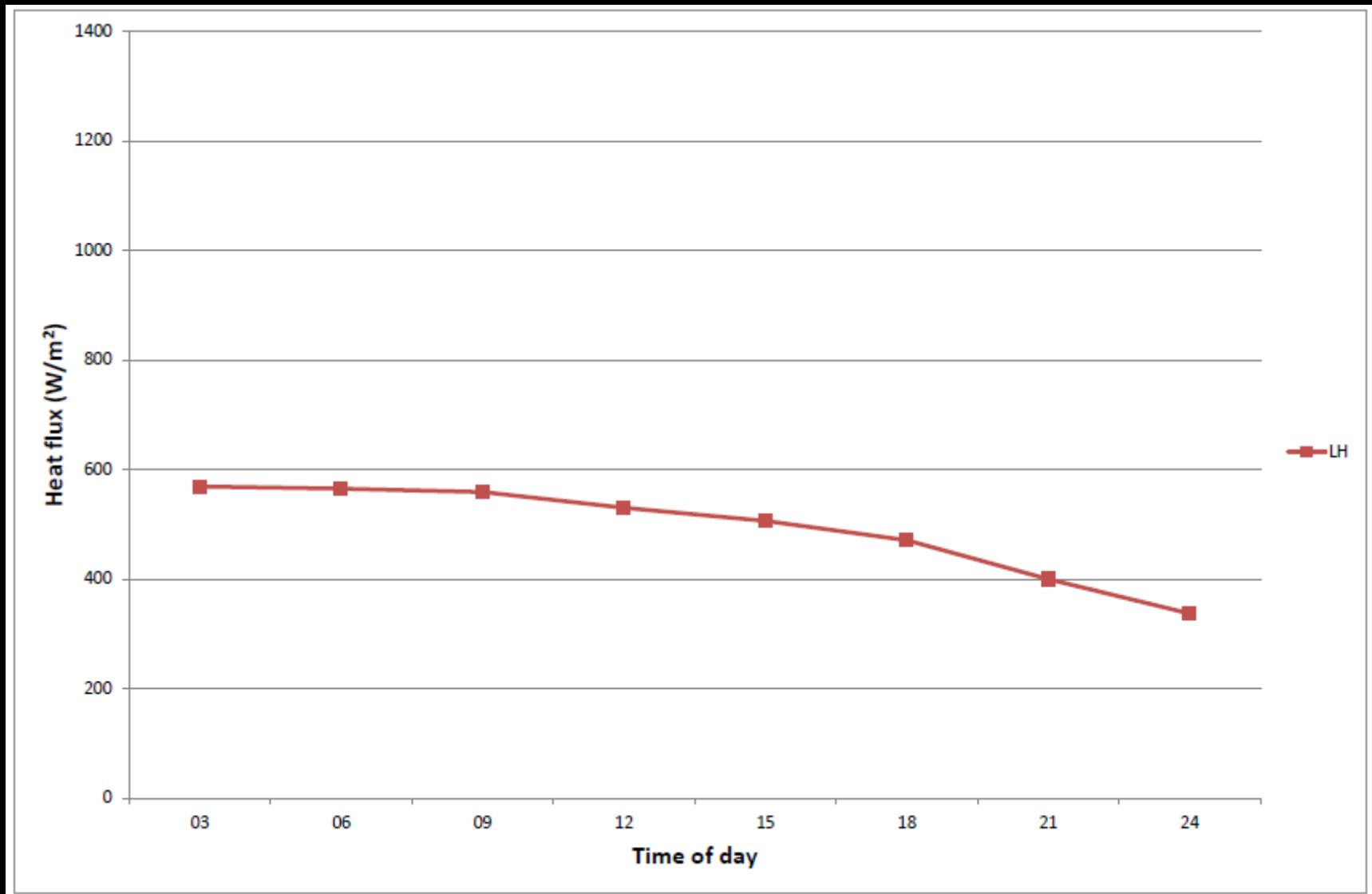
# Hámarks skynvarmaflæði á Grænlandshafi (ECMWF 0.125°)

## 10. Janúar 2012



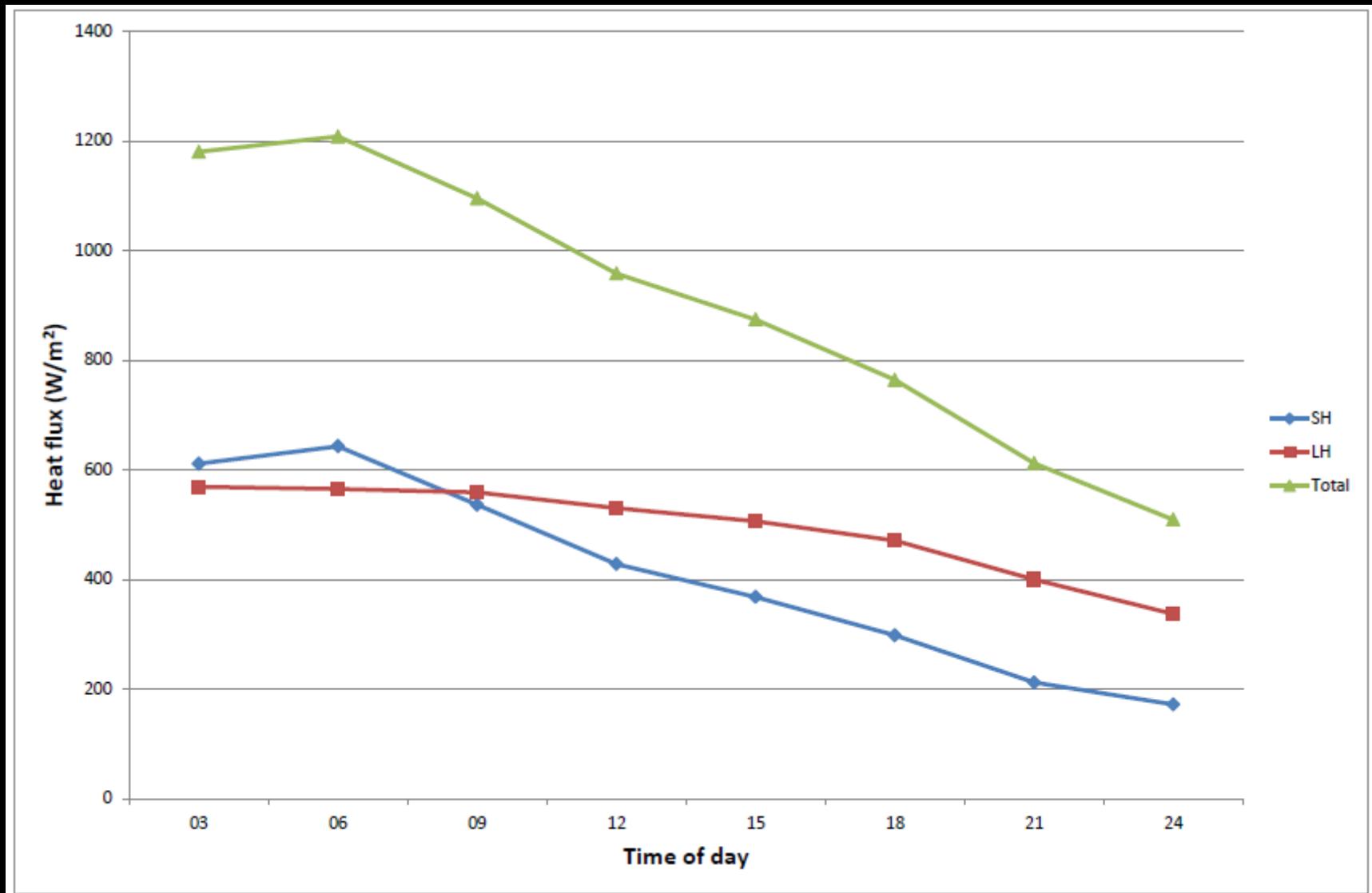
# Hámarks dulvarmaflæði á Grænlandshafi (ECMWF 0.125°)

## 10. Janúar 2012



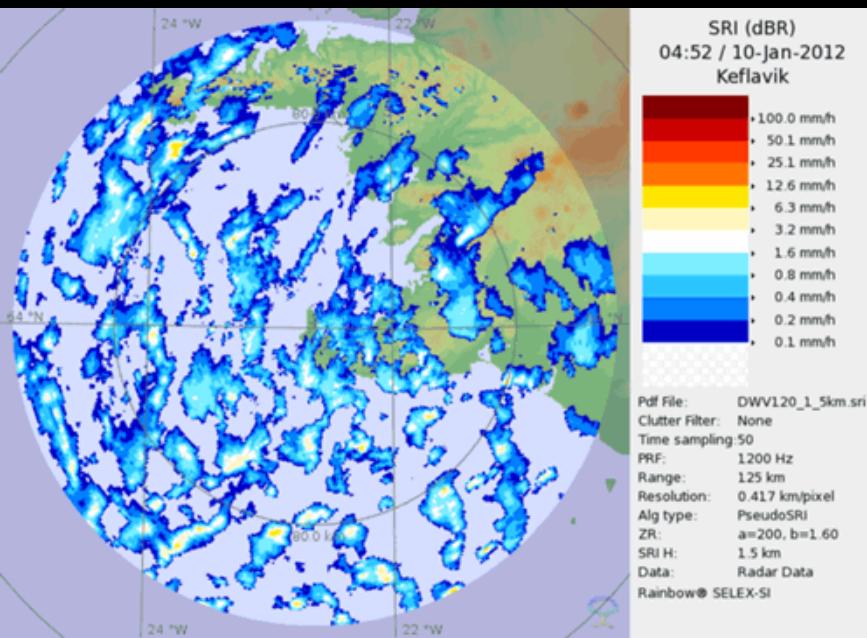
# Hámarks varmaflæði á Grænlandshafi (ECMWF 0.125°)

## 10. Janúar 2012



# Éljaveðri 10. janúar 2012

- Stöðug vestanátt af Grænlandi
- Mikil upptaka af hita og raka frá hafi upp í andrúmsloft,  $800\text{-}1200 \text{ Wm}^{-2}$
- Miklir éljaklakkar mynduðust og bárust yfir vestanvert landið



Veðurstofa  
Íslands

