

# 201802 - Heatwave - Arctic

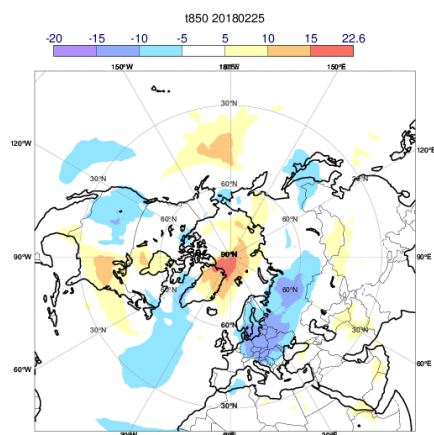
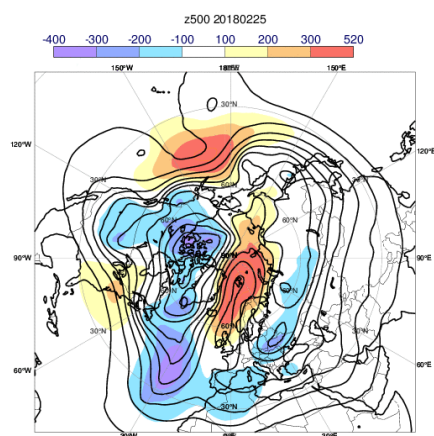
Status: Finalised Material from: Linus

## 1. Impact

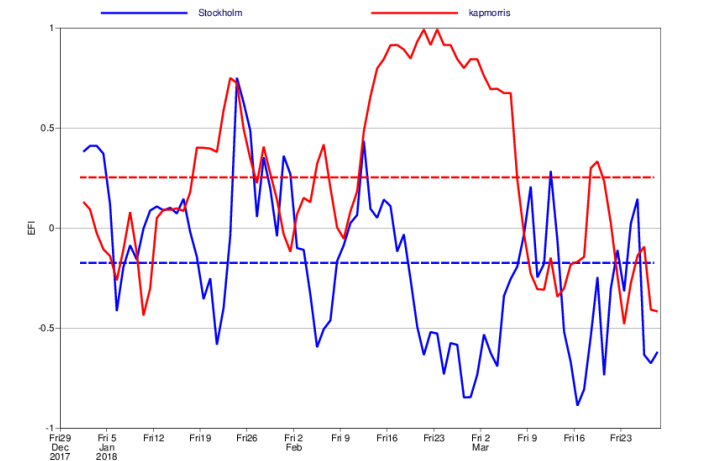
Around 20-25 February northern Greenland and central Arctic experienced a strong heatwave, and the temperatures on northern Greenland (Kap Morris) reached +6C and the ice opened along the coast.

## 2. Description of the event

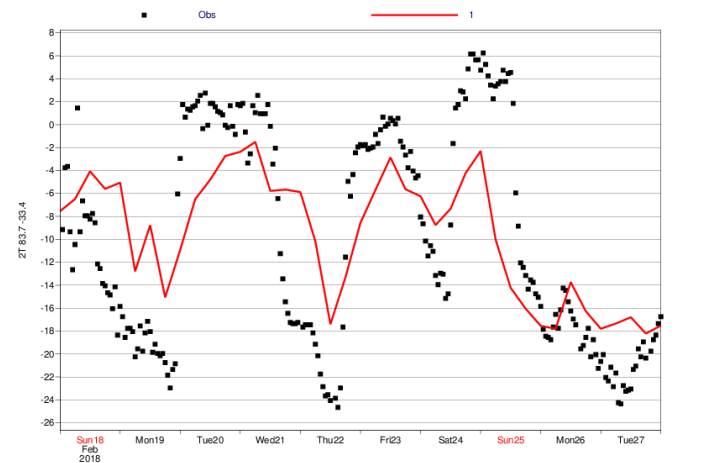
The plots below show the analysis anomalies on 25 February for z500 and t850 (shading). The z500 plot includes the full field as black contours. On this day a strong ridge over north-eastern Atlantic brought warm air to the Arctic and at the same time cold air to Europe ([201802 - Cold - Europe](#)).



The time-series below shows the evolution of 1-day EFI over Kap Morris (red) and Stockholm (blue) for January-April 2018 as a measure of the strength of the anomalies. The heat-wave during the end of February over Kap Morris is very clear as well as the cold period over northern Europe.



The plot below shows the evolution of 2-metre temperature observations from Kap Morris between 18 and 27 February together with the HRES forecast from 18 February 00UTC.

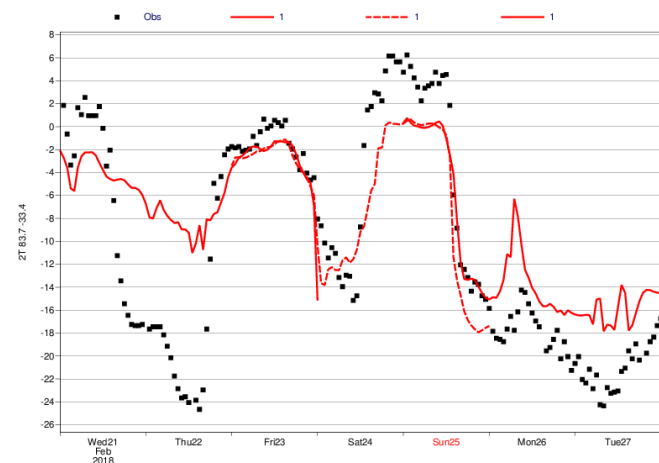


### 3. Predictability

#### 3.1 Data assimilation

#### 3.2 HRES

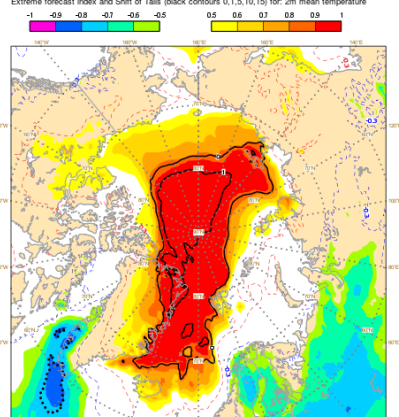
The plot below shows 2-metre temperature for Kap Morris from observations and forecasts from 21, 23 and 25 February. Note the good consistency between the forecasts despite large errors.



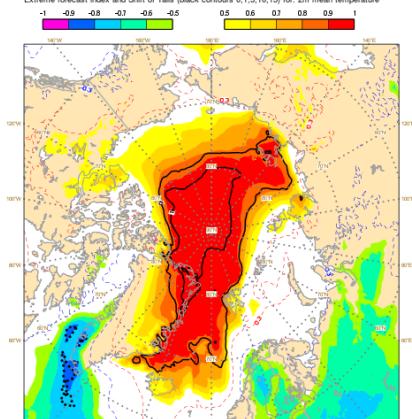
### 3.3 ENS

The plots below show the EFI and SOT for 3-day mean temperature 23-25 February. Along the north coast of Greenland the EFI values were above 0.9 already 7-9 days before the event.

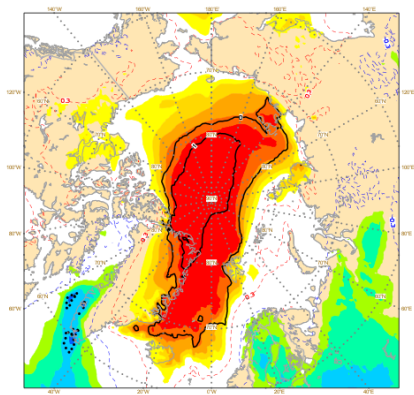
Fri 23 Feb 2018 00UTC @ECMWF VT: Fri 23 Feb 2018 00UTC - Mon 26 Feb 2018 00UTC 0-72h  
Extreme forecast index and Shift of Tails (black contours 0.1, 0.5, 1.0, 1.5) for 2m mean temperature



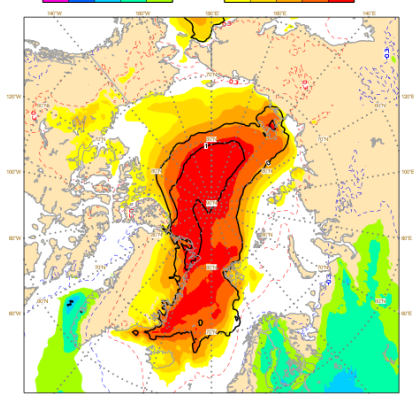
Thu 22 Feb 2018 00UTC @ECMWF VT: Fri 23 Feb 2018 00UTC - Mon 26 Feb 2018 00UTC 24-96h  
Extreme forecast index and Shift of Tails (black contours 0.1, 0.5, 1.0, 1.5) for 2m mean temperature



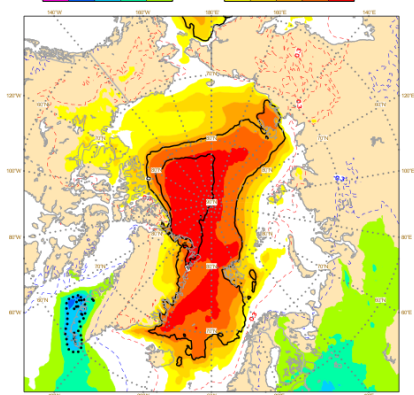
Wed 21 Feb 2018 00UTC @ECMWF VT: Fri 23 Feb 2018 00UTC - Mon 26 Feb 2018 00UTC 48-120h  
Extreme forecast index and Shift of Tails (black contours 0.1,5,10,15) for: 2m mean temperature



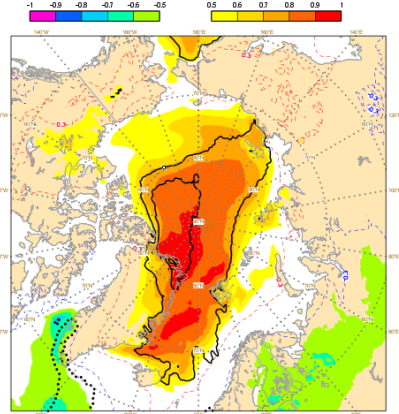
Tue 20 Feb 2018 00UTC @ECMWF VT: Fri 23 Feb 2018 00UTC - Mon 26 Feb 2018 00UTC 72-144h  
Extreme forecast index and Shift of Tails (black contours 0.1,5,10,15) for: 2m mean temperature



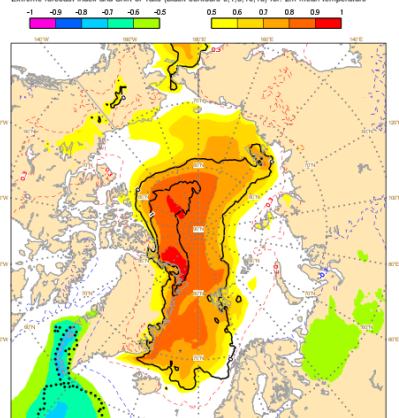
Mon 19 Feb 2018 00UTC @ECMWF VT: Fri 23 Feb 2018 00UTC - Mon 26 Feb 2018 00UTC 96-168h  
Extreme forecast index and Shift of Tails (black contours 0.1,5,10,15) for: 2m mean temperature



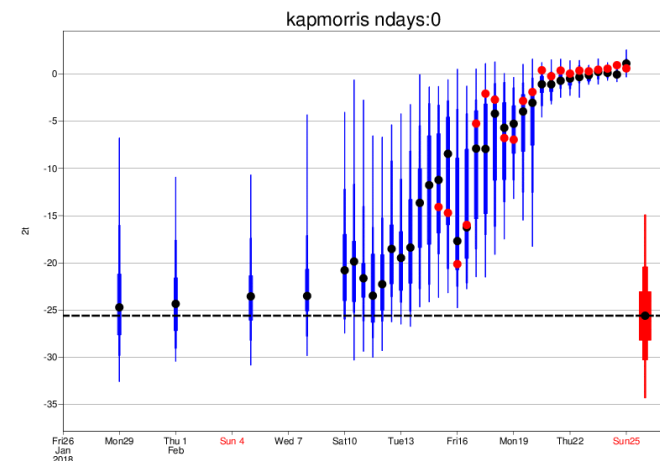
Sun 18 Feb 2018 00UTC @ECMWF VT: Fri 23 Feb 2018 00UTC - Mon 26 Feb 2018 00UTC 120-192h  
Extreme forecast index and Shift of Tails (black contours 0.1,5,10,15) for 2m mean temperature



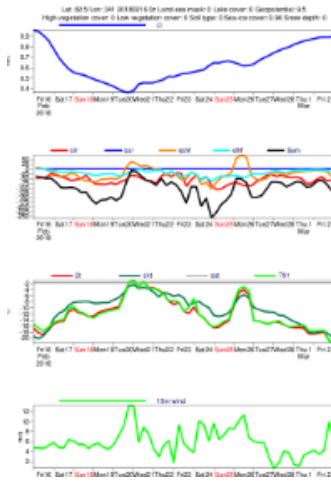
Sat 17 Feb 2018 00UTC @ECMWF VT: Fri 23 Feb 2018 00UTC - Mon 26 Feb 2018 00UTC 144-216h  
Extreme forecast index and Shift of Tails (black contours 0.1,5,10,15) for 2m mean temperature



The plot below shows the evolution of 2-metre temperature forecasts valid 00 UTC on 25 February. The ensemble forecast in blue, HRES as red dot and model climate in red.

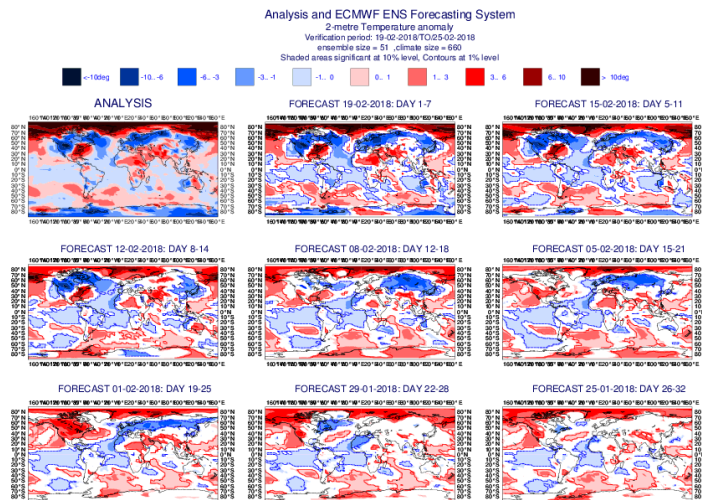


The time-series below show diagnostics from the control forecast initialised on 16 February for a point north of Greenland where the ice-cover reduced during the event.



### 3.4 Monthly forecasts

The plot below shows the analysis anomalies (first panel) and weekly mean of 2-metre temperature from monthly forecasts with different initial times. (Sorry for global projection)



### 3.5 Comparison with other centres

## 4. Experience from general performance/other cases

- The event was synoptically connected to [201802 - Cold - Europe](#)

## 5. Good and bad aspects of the forecasts for the event

- Good prediction in medium-range for heatwave
- Large short-range errors for 2-metre temperature
- Thinning of the ice for the right reason?

## 6. Additional material