


**Herbert GMOSE, Alexander KANN**

# **Products and Evaluation of Seasonal Forecasts at ZAMG, Vienna**

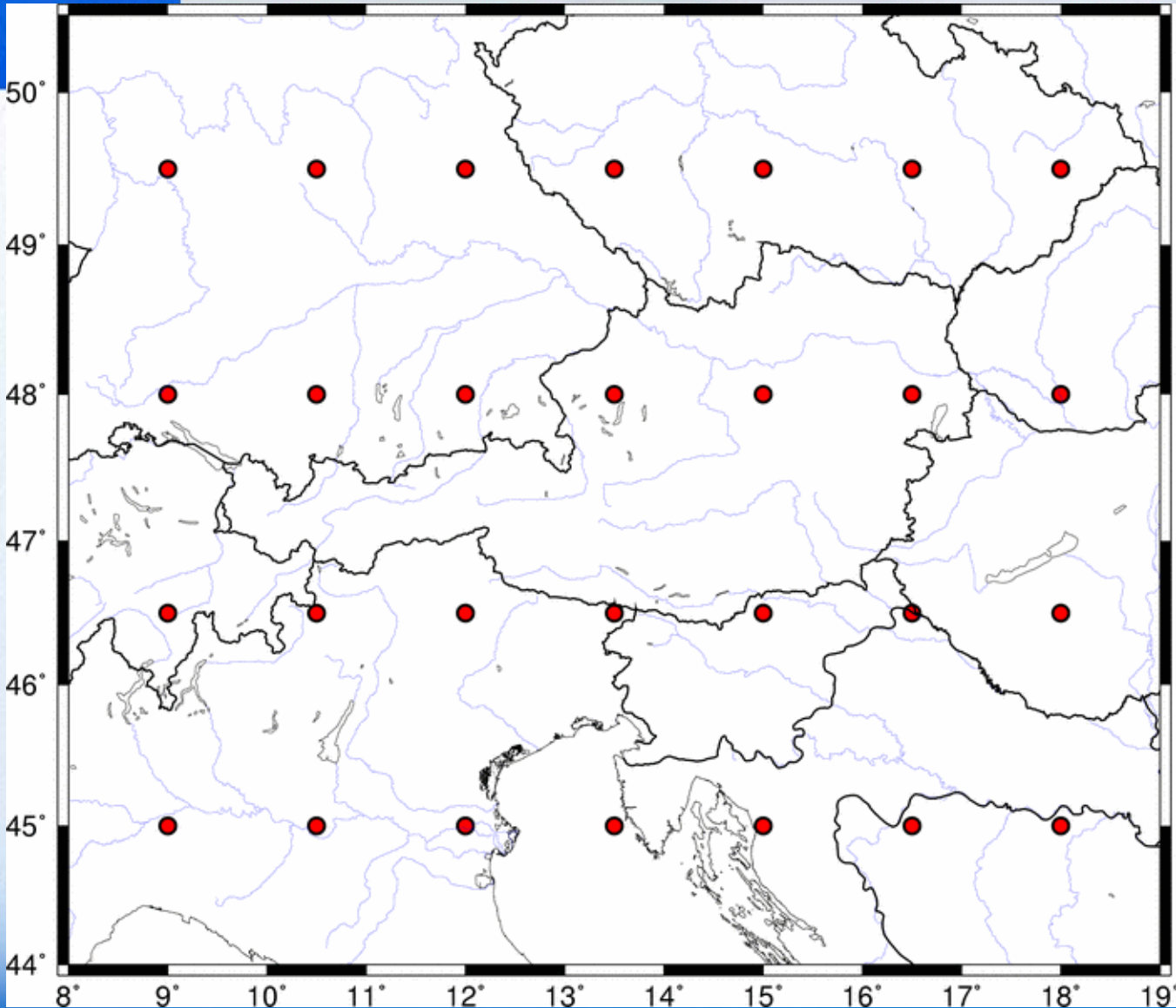
Zentralanstalt für Meteorologie und Geodynamik 

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**[Alexander.Kann@zamg.ac.at](mailto:Alexander.Kann@zamg.ac.at)**

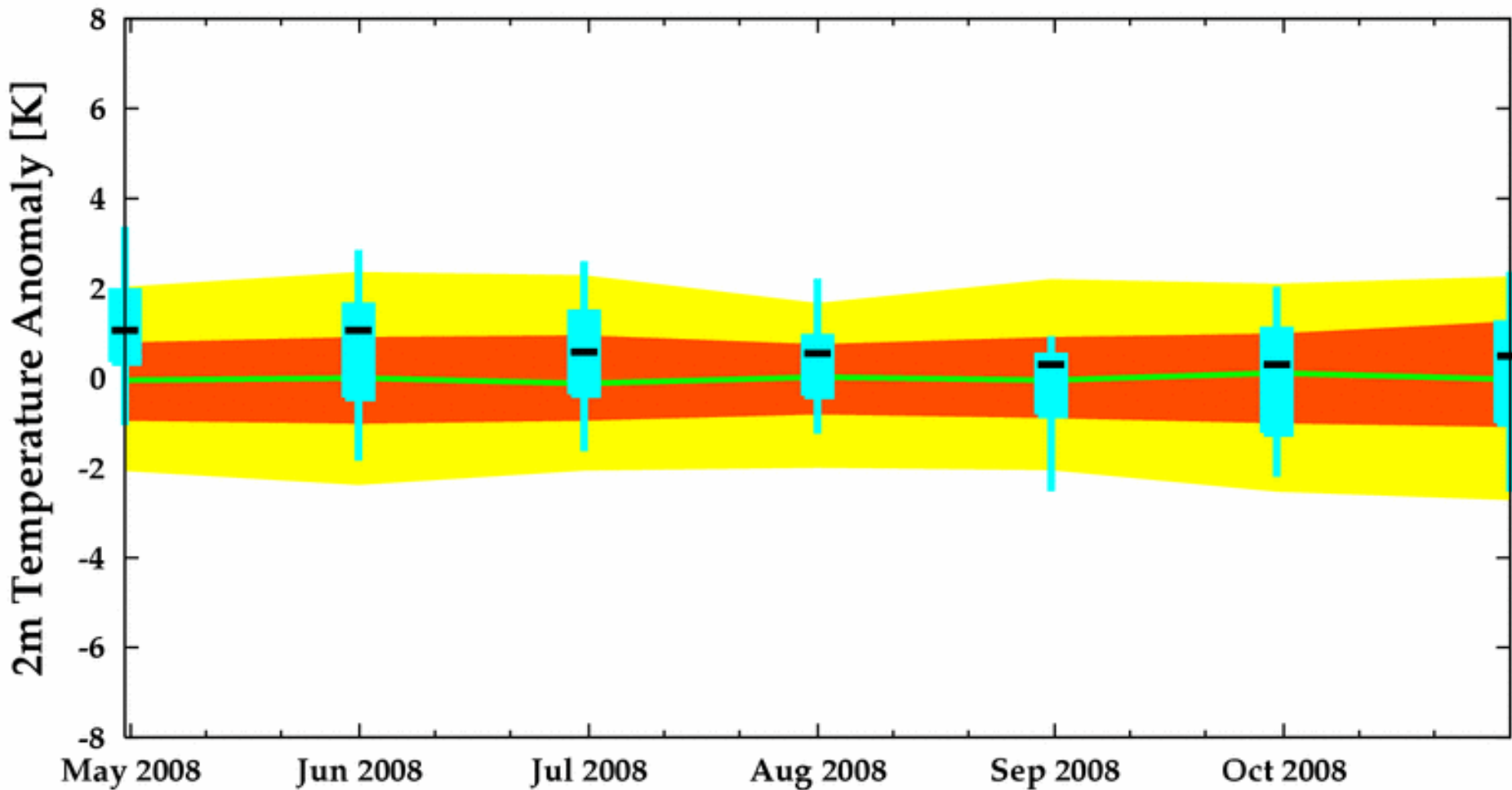
- **Products of seasonal forecasts**
  - **in the**
  - **ZAMG intranet**

- **The covered area surrounding Austria.**



- **Temperature**

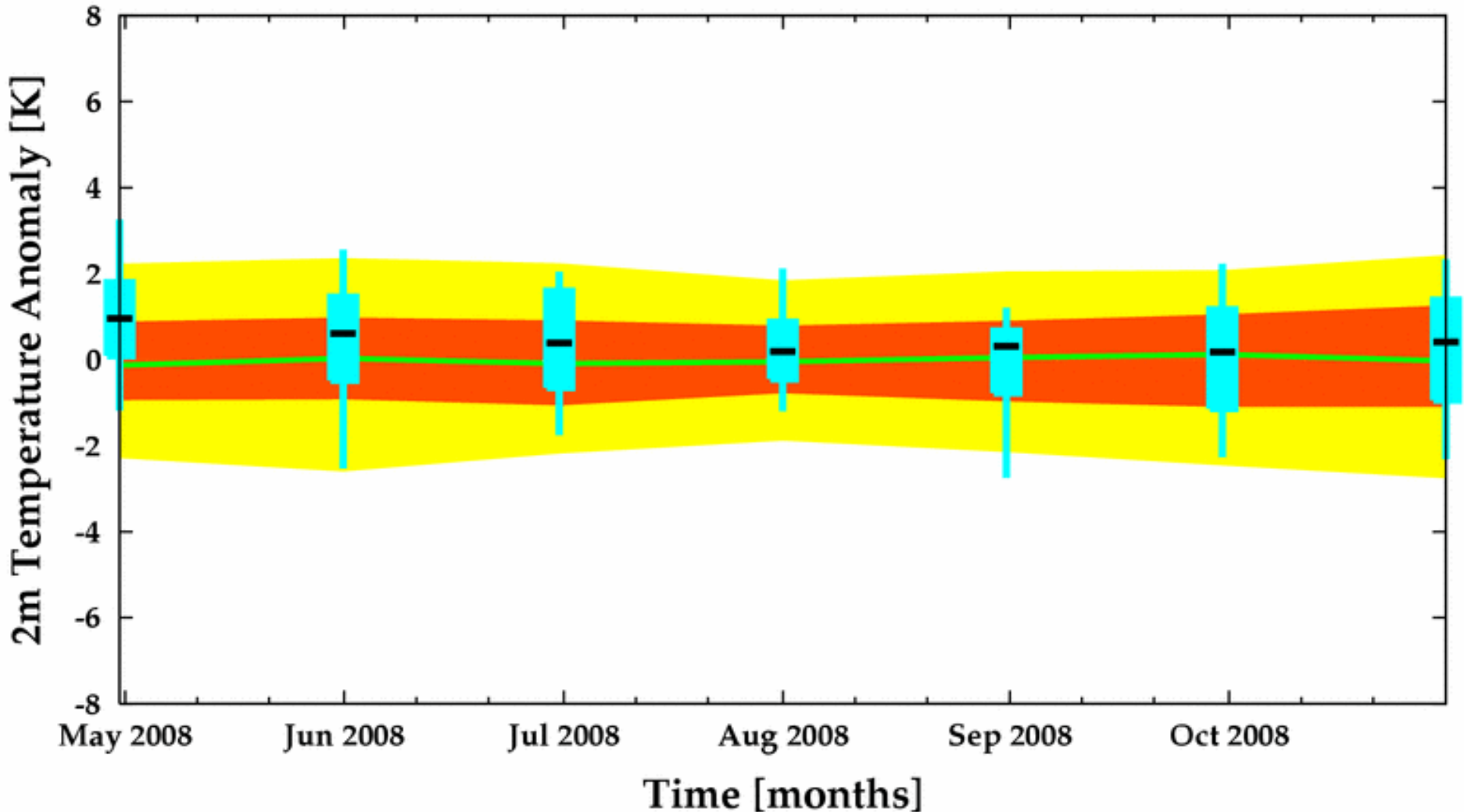
# Klimagramm of Monthly Mean 2m Temperature Anomaly ECMWF Seasonal Forecast System 3 (41 members) Reference Climate 1981-2006 (286 members)



Time [months]  
Averaged area: Austria (9E-18E, 45N-49.5N)

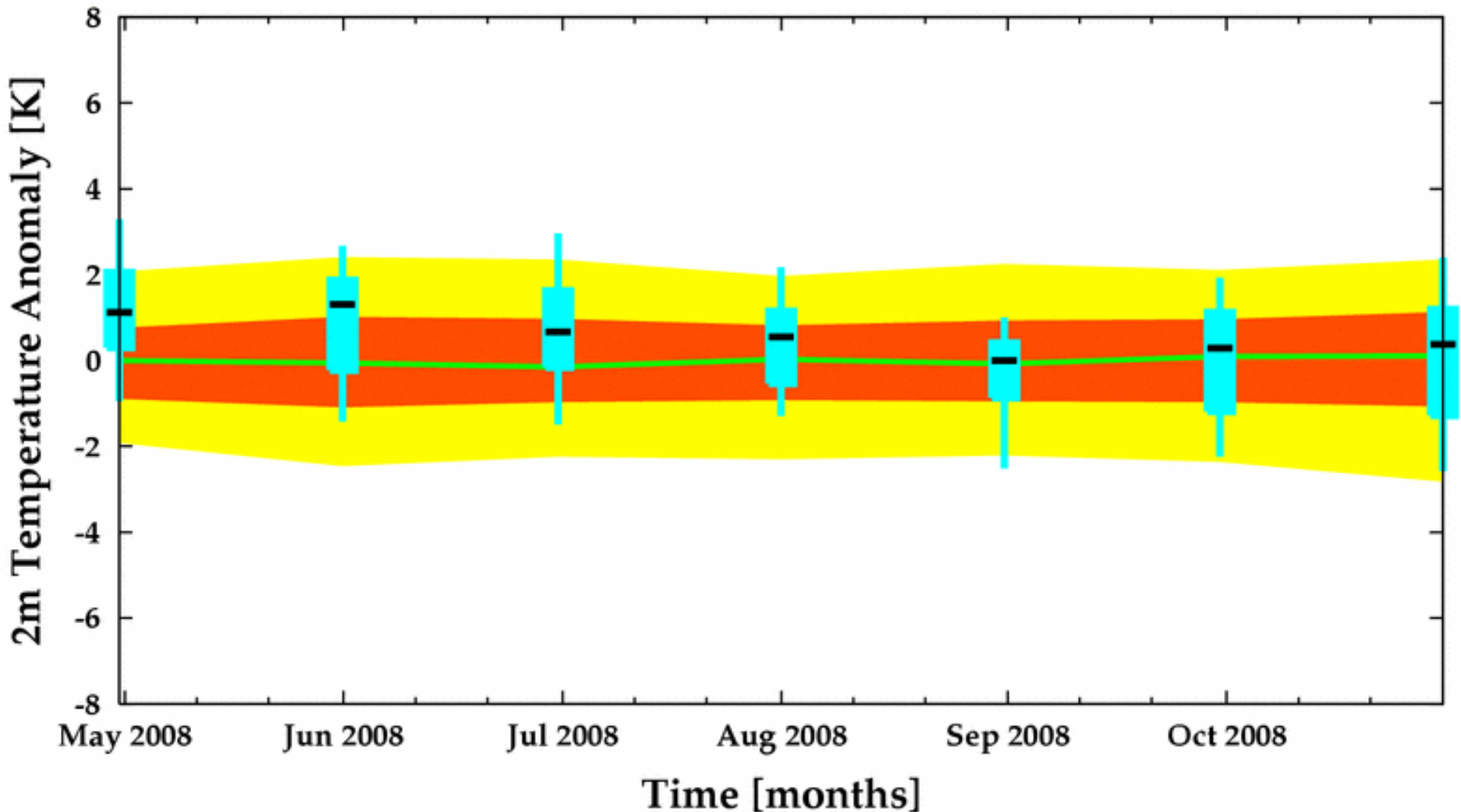
# Klimagramm of Monthly Mean 2m Temperature Anomaly

ECMWF Seasonal Forecast System 3 (41 members)  
Reference Climate 1981-2006 (286 members)



Averaged area: Austria (North) (9E-18E, 48N-49.5N)

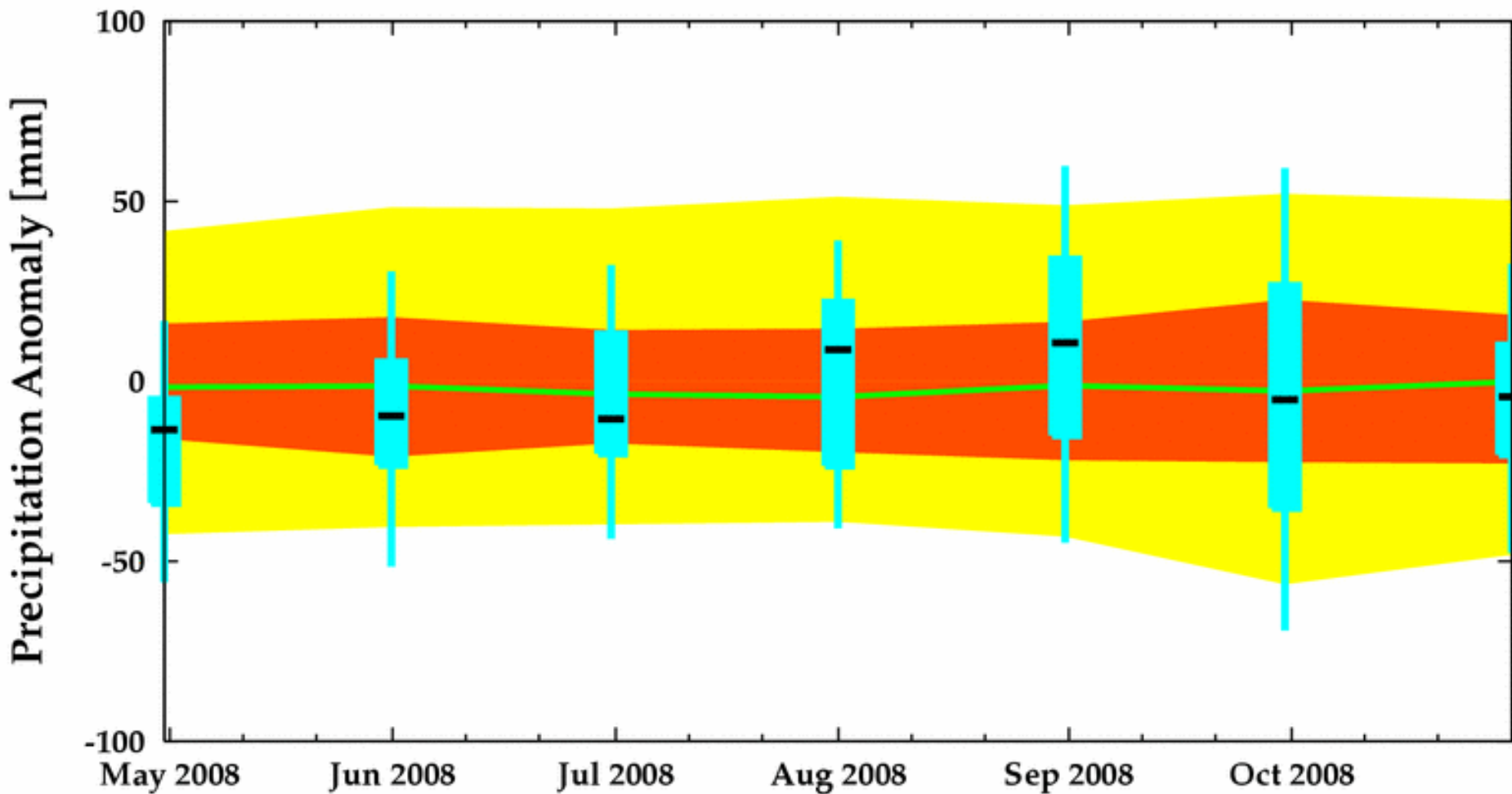
# Klimagramm of Monthly Mean 2m Temperature Anomaly ECMWF Seasonal Forecast System 3 (41 members) Reference Climate 1981-2006 (286 members)



Averaged area: Austria (South) (9E-18E, 45N-46.5N)

- **Precipitation**

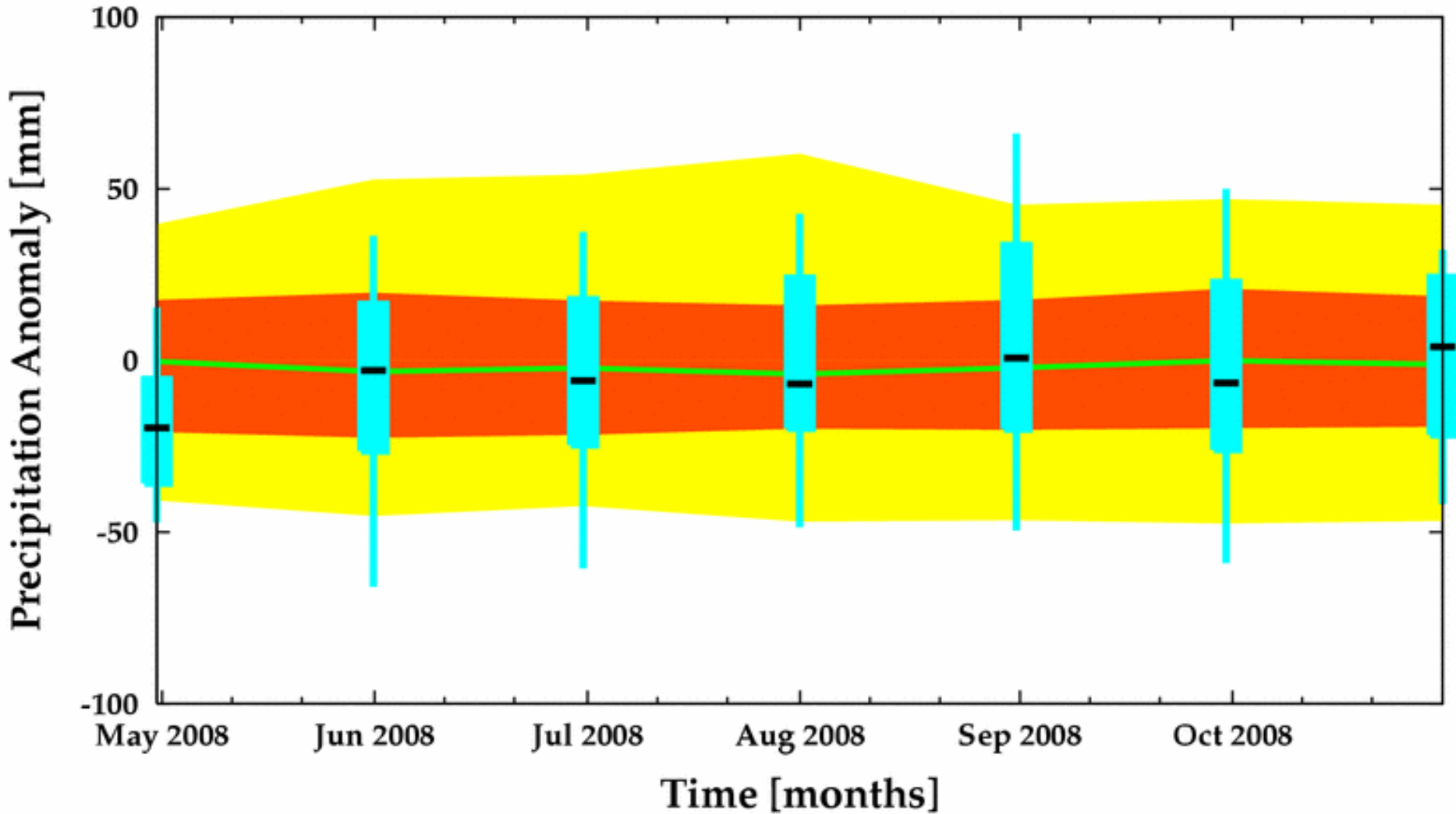
# Klimagramm of Monthly Mean Precipitation Anomaly ECMWF Seasonal Forecast System 3 (41 members) Reference Climate 1981-2006 (286 members)



Time [months]

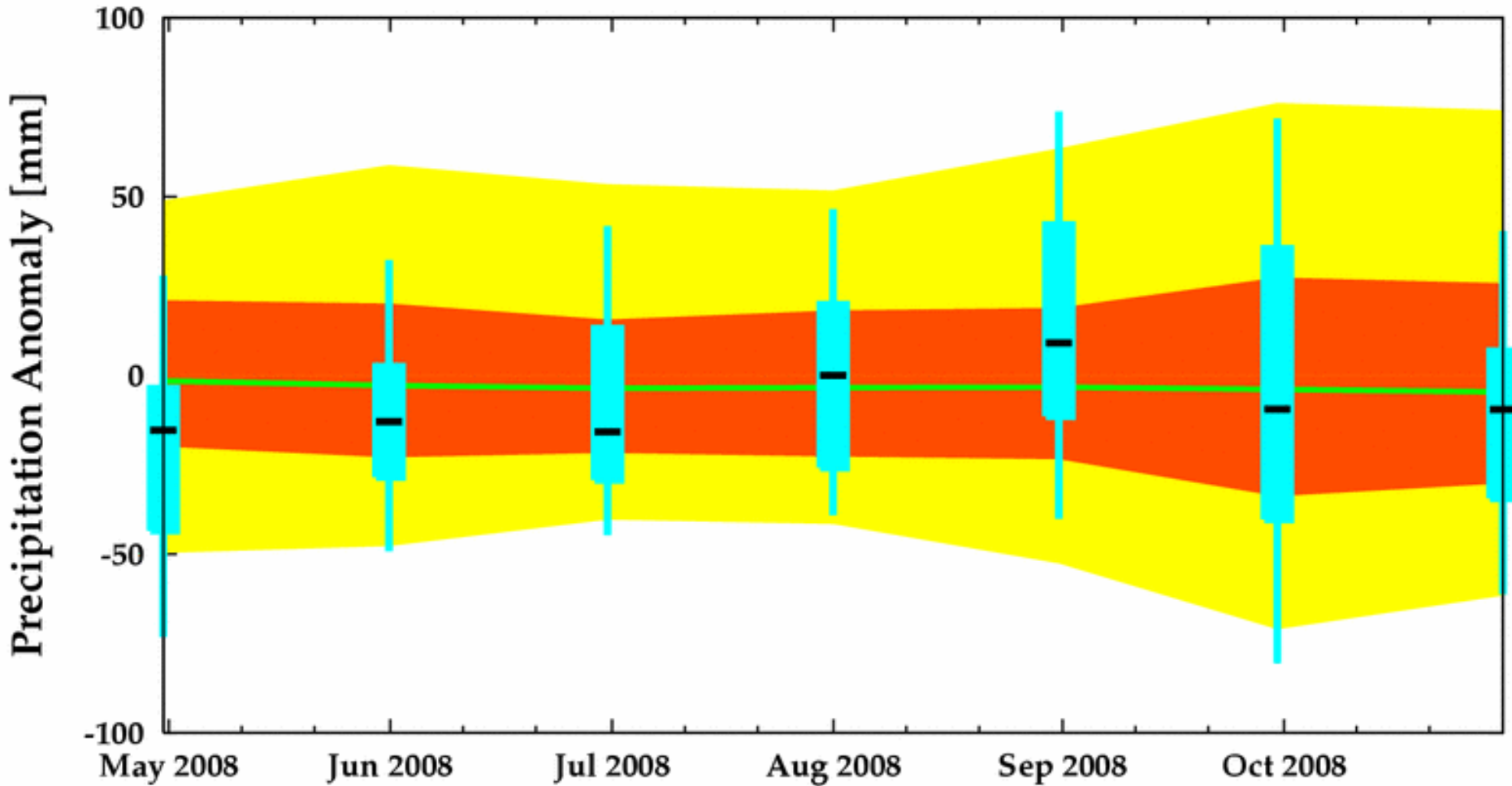
Averaged area: Austria (9E-18E, 45N-49.5N)

# Klimagramm of Monthly Mean Precipitation Anomaly ECMWF Seasonal Forecast System 3 (41 members) Reference Climate 1981-2006 (286 members)



Averaged area: Austria (North) (9E-18E, 48N-49.5N)

# Klimagramm of Monthly Mean Precipitation Anomaly ECMWF Seasonal Forecast System 3 (41 members) Reference Climate 1981-2006 (286 members)



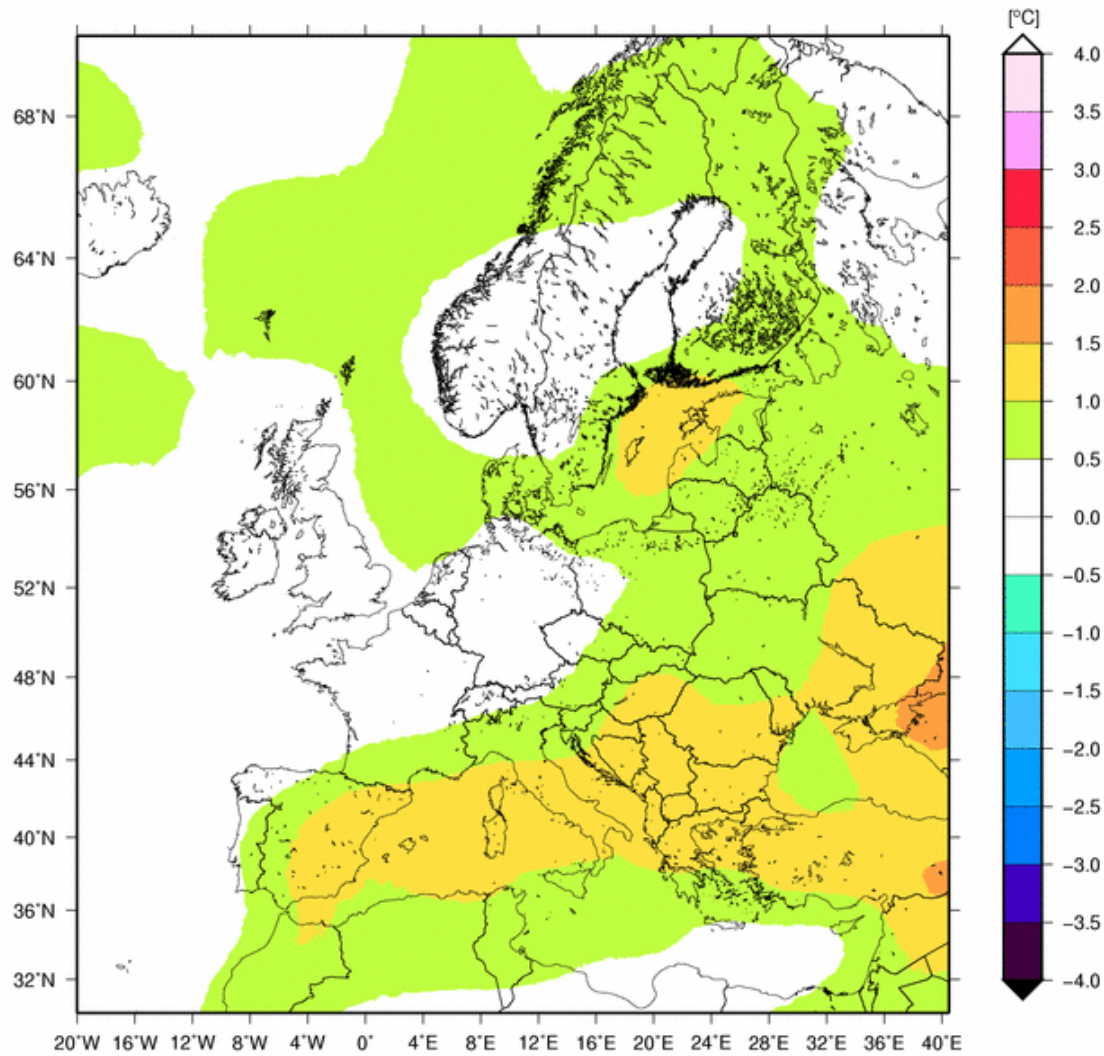
Averaged area: Austria (South) (9E-18E, 45N-46.5N)

- **Distributions over Europe**

- **Temperature distributions**
  - **by thresholds**

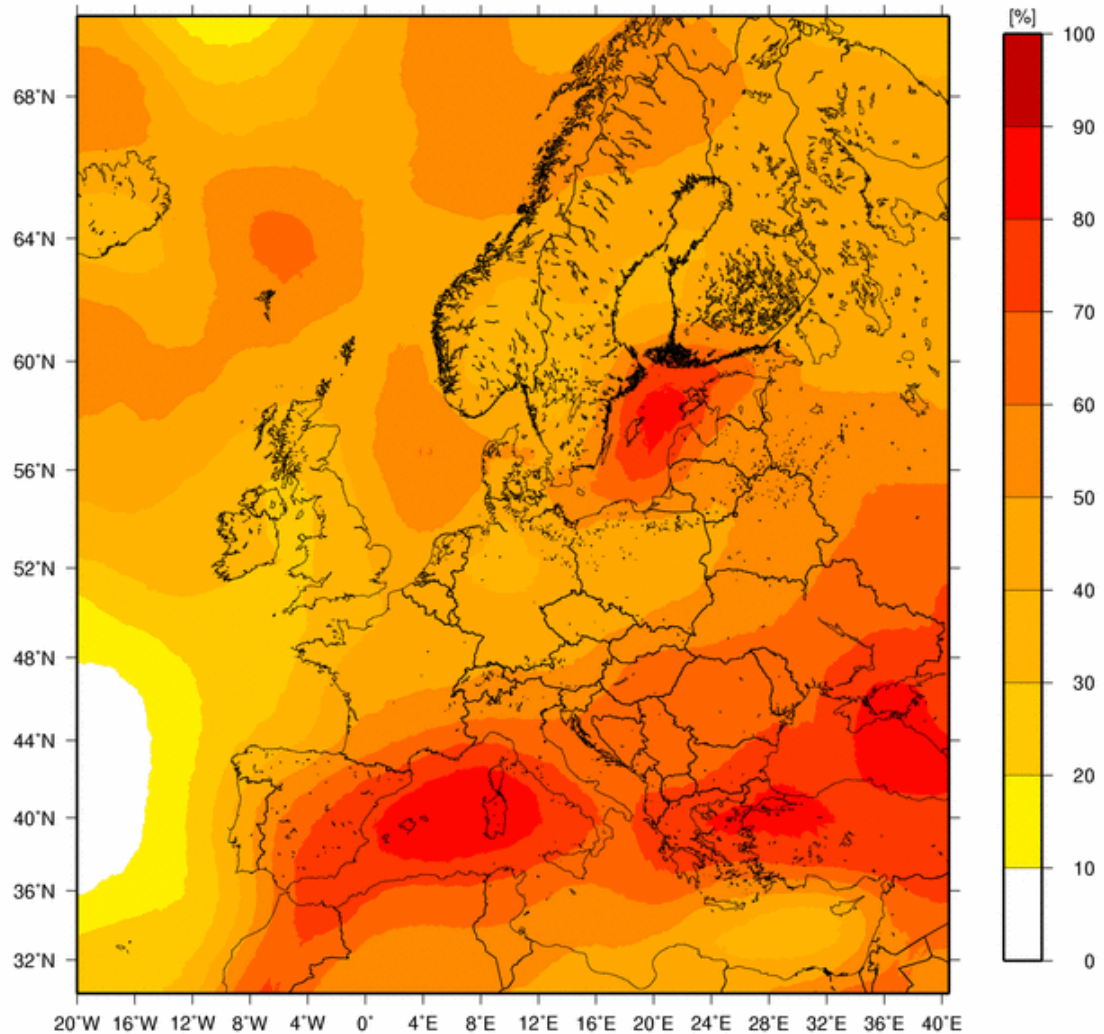
## 2m Temperature Anomaly [°C], Ensemble-Mean

*Ini: May 2008; valid for: July 2008*



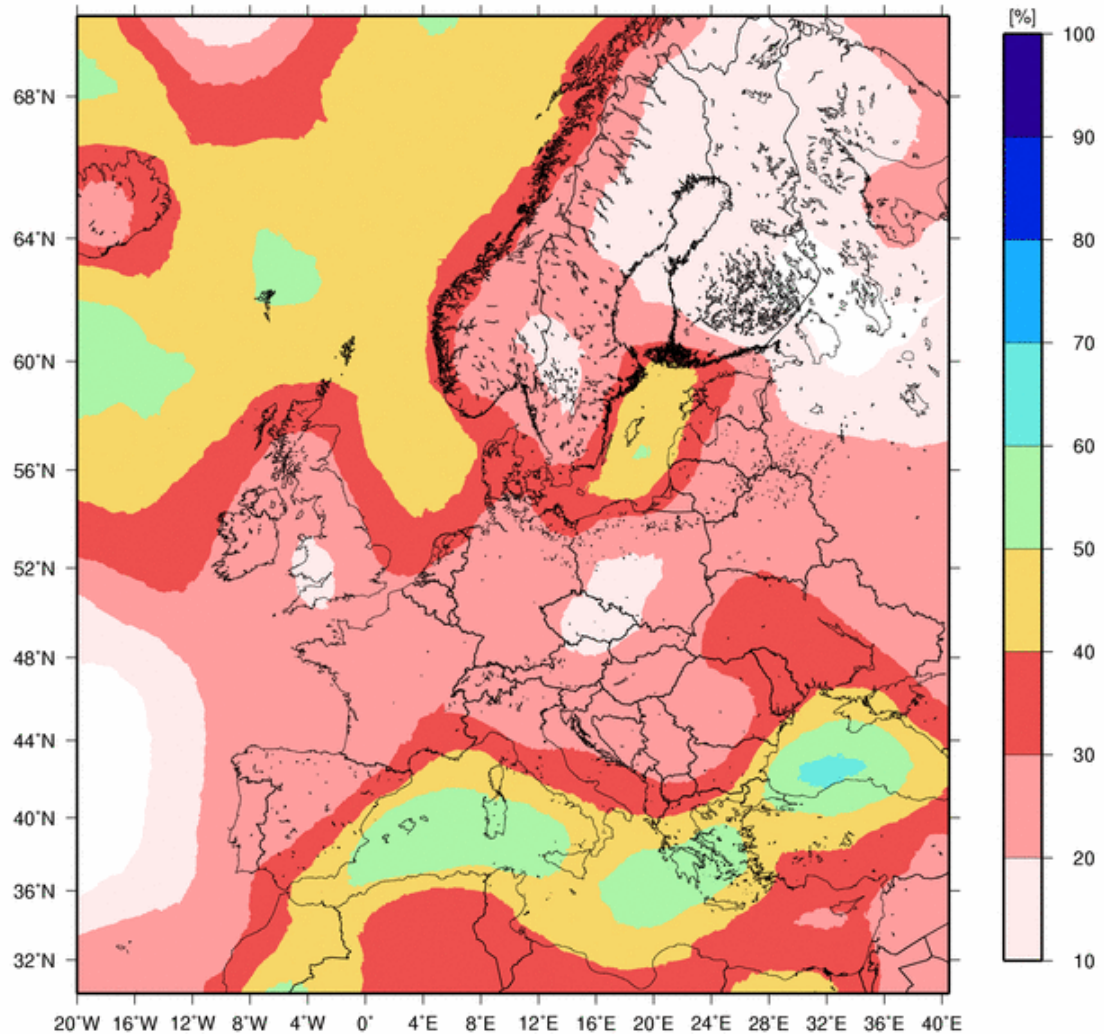
## 2m Temperature Anomaly: Probability $T2M_{\text{anomaly}} > 0.5^{\circ}\text{C}$

*Ini: May 2008; valid for: July 2008*



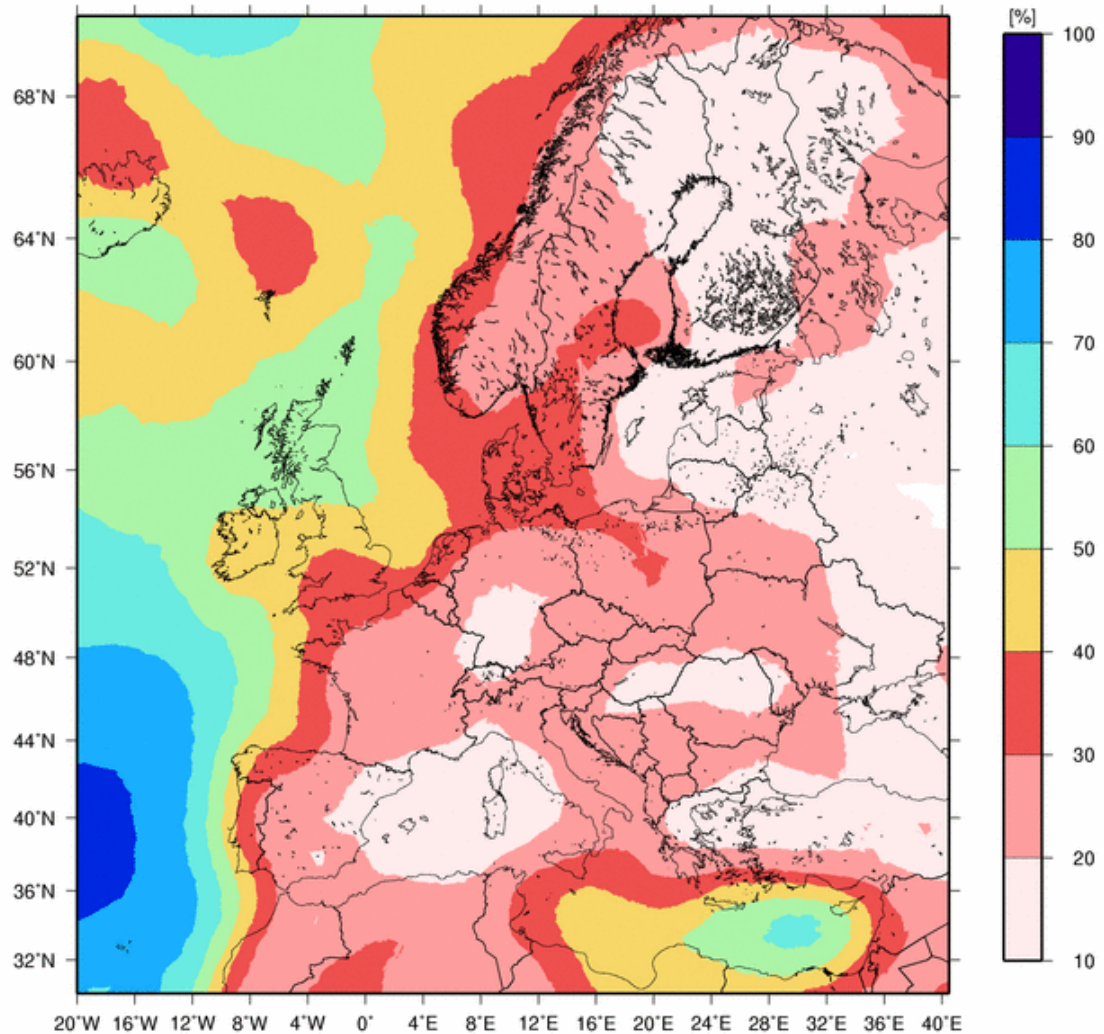
### 2m Temperature Anomaly: Probability for: $0.5^{\circ}\text{C} < T2M_{\text{anomaly}} \leq 1.5^{\circ}\text{C}$

*Ini: May 2008; valid for: July 2008*



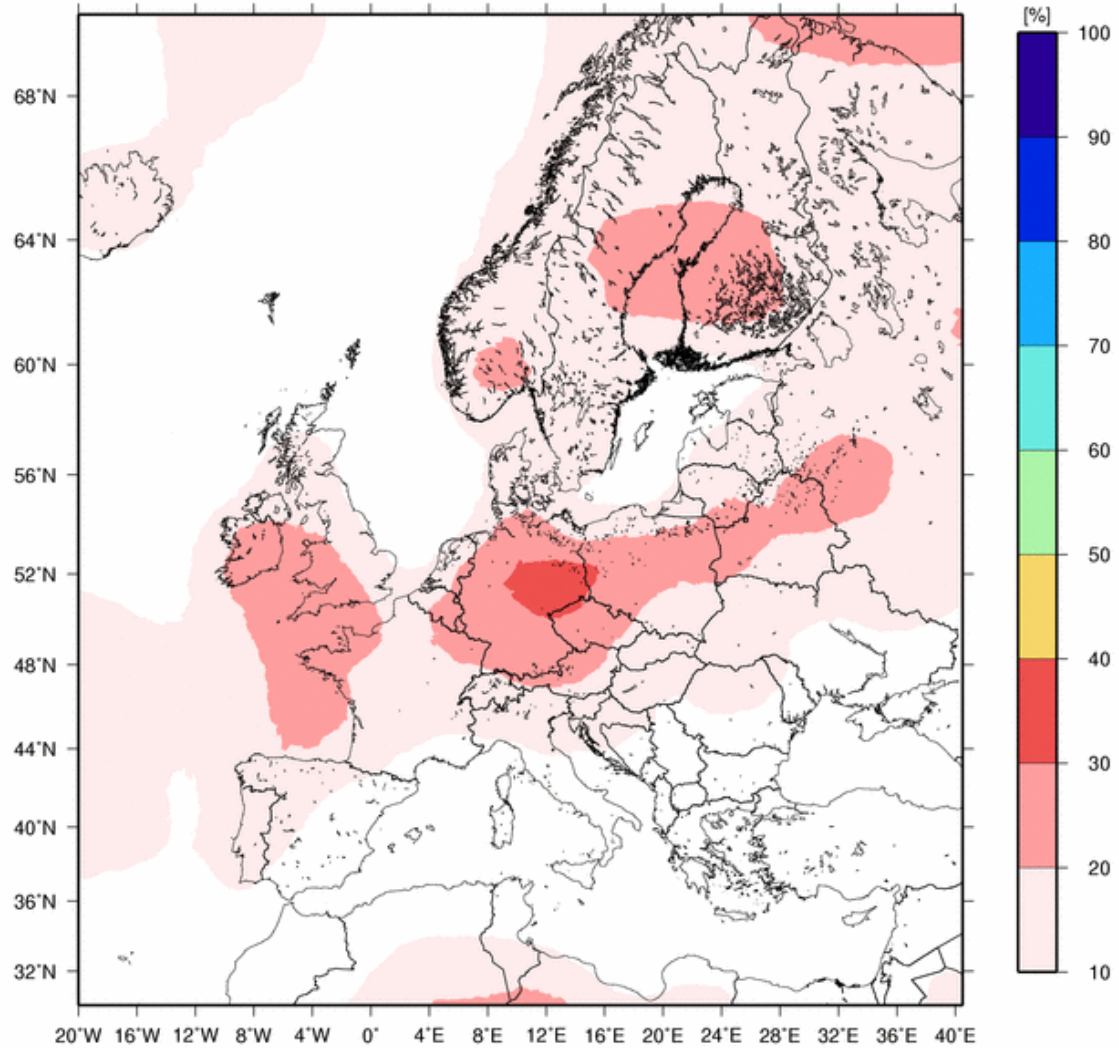
2m Temperature Anomaly: Probability for:  $-0.5^{\circ}\text{C} < T2M_{\text{anomaly}} \leq 0.5^{\circ}\text{C}$

*Ini: May 2008; valid for: July 2008*



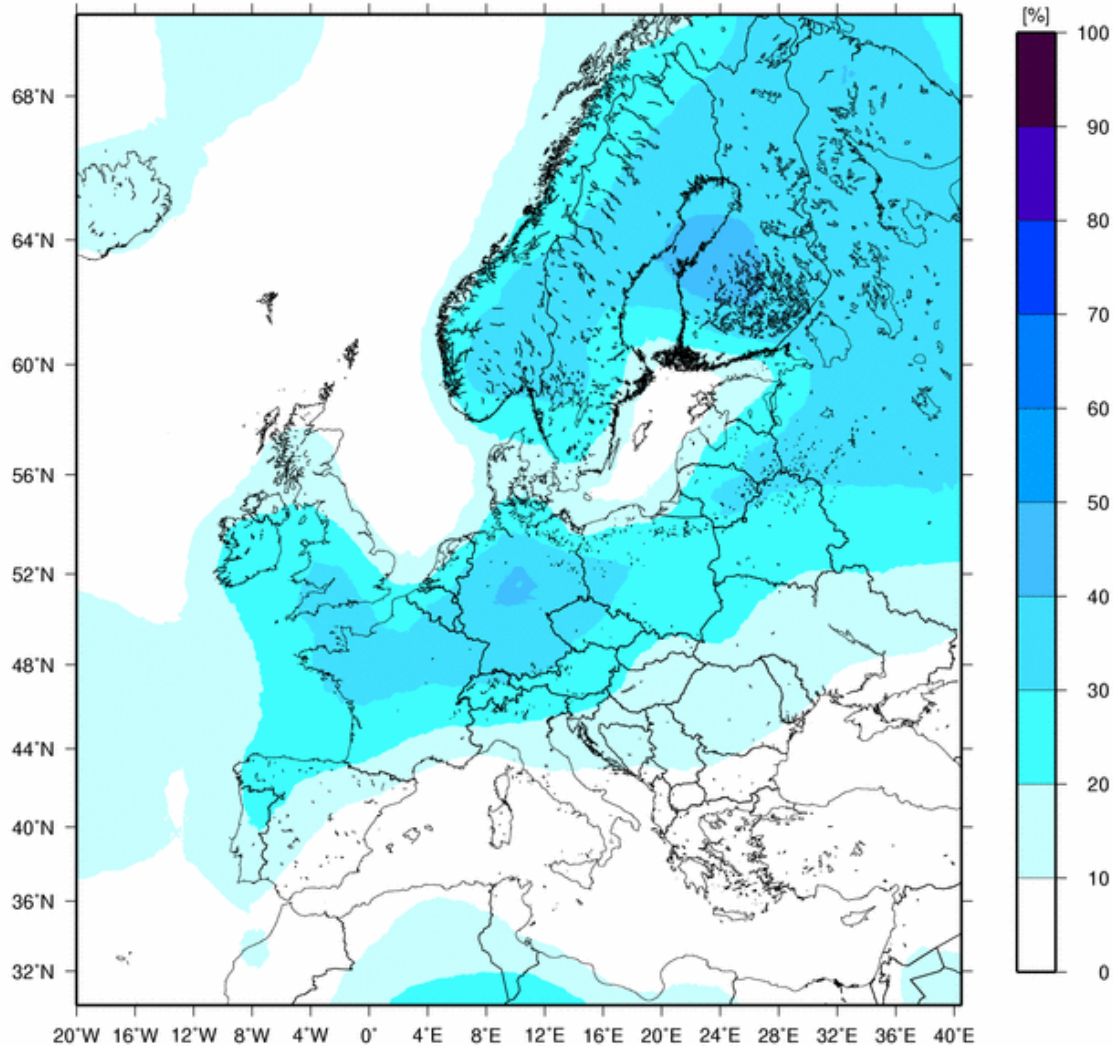
2m Temperature Anomaly: Probability for:  $-1.5^{\circ}\text{C} < T2M_{\text{anomaly}} \leq -0.5^{\circ}\text{C}$

*Ini: May 2008; valid for: July 2008*



## 2m Temperature Anomaly: Probability $T2M_{\text{anomaly}} \leq -0.5^\circ\text{C}$

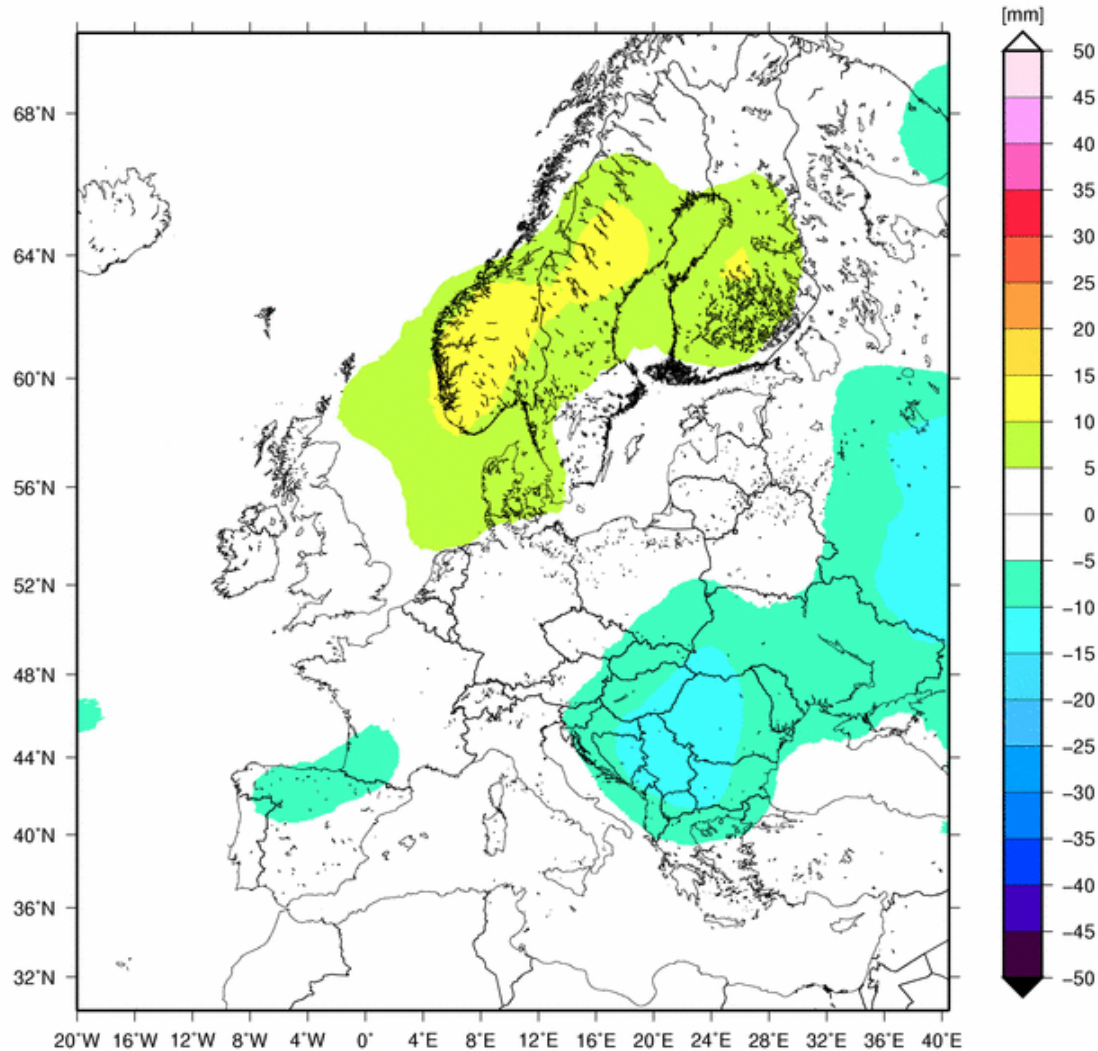
*Ini: May 2008; valid for: July 2008*



- **Precipitation distributions**
  - **by thresholds**

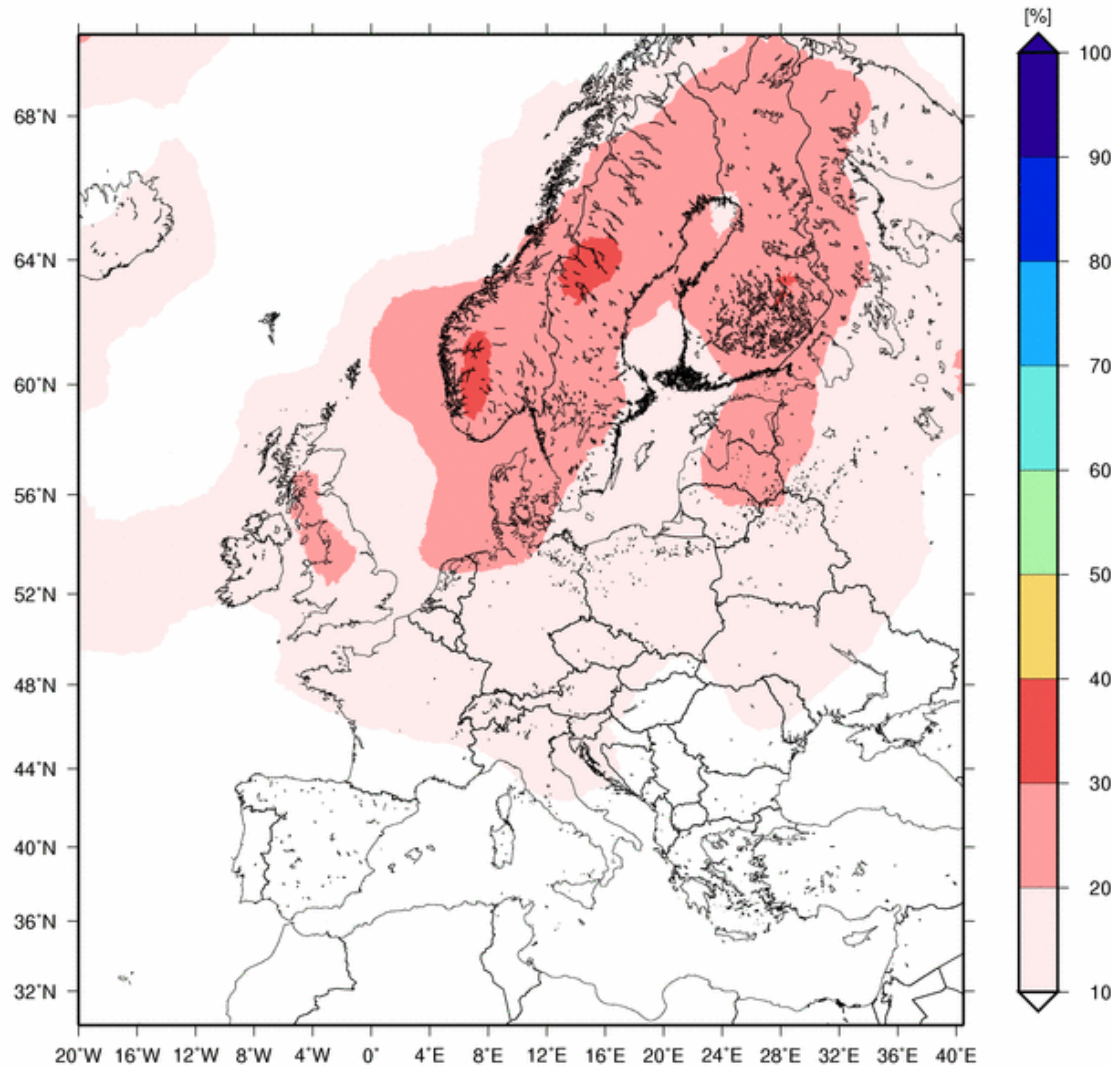
## Precipitation Anomaly [mm], Ensemble–Mean

*Ini: May 2008; valid for: July 2008*



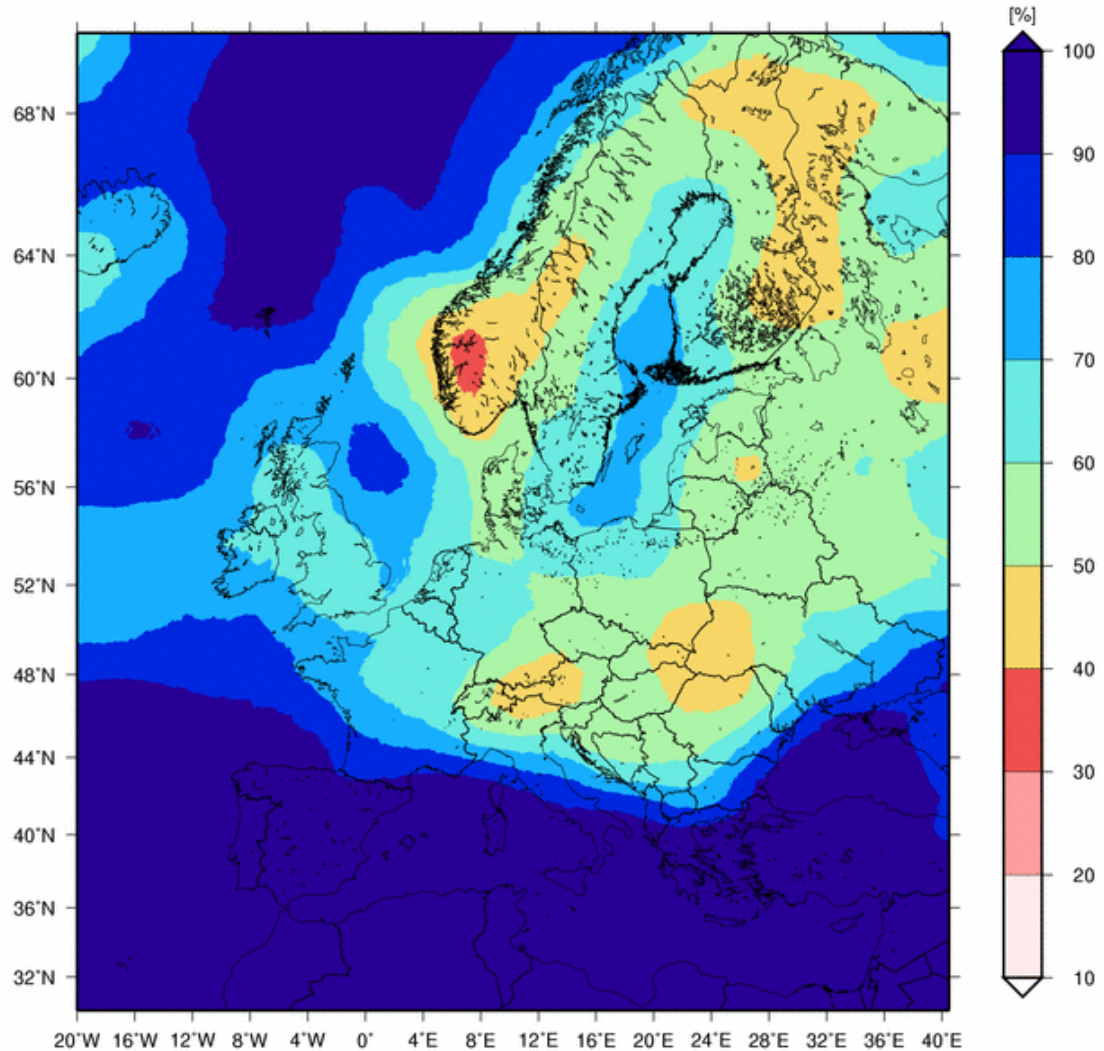
### Precipitation Anomaly: Probability for: $25\text{mm} < RR_{\text{anomaly}} \leq 75\text{mm}$

*Ini: May 2008; valid for: July 2008*



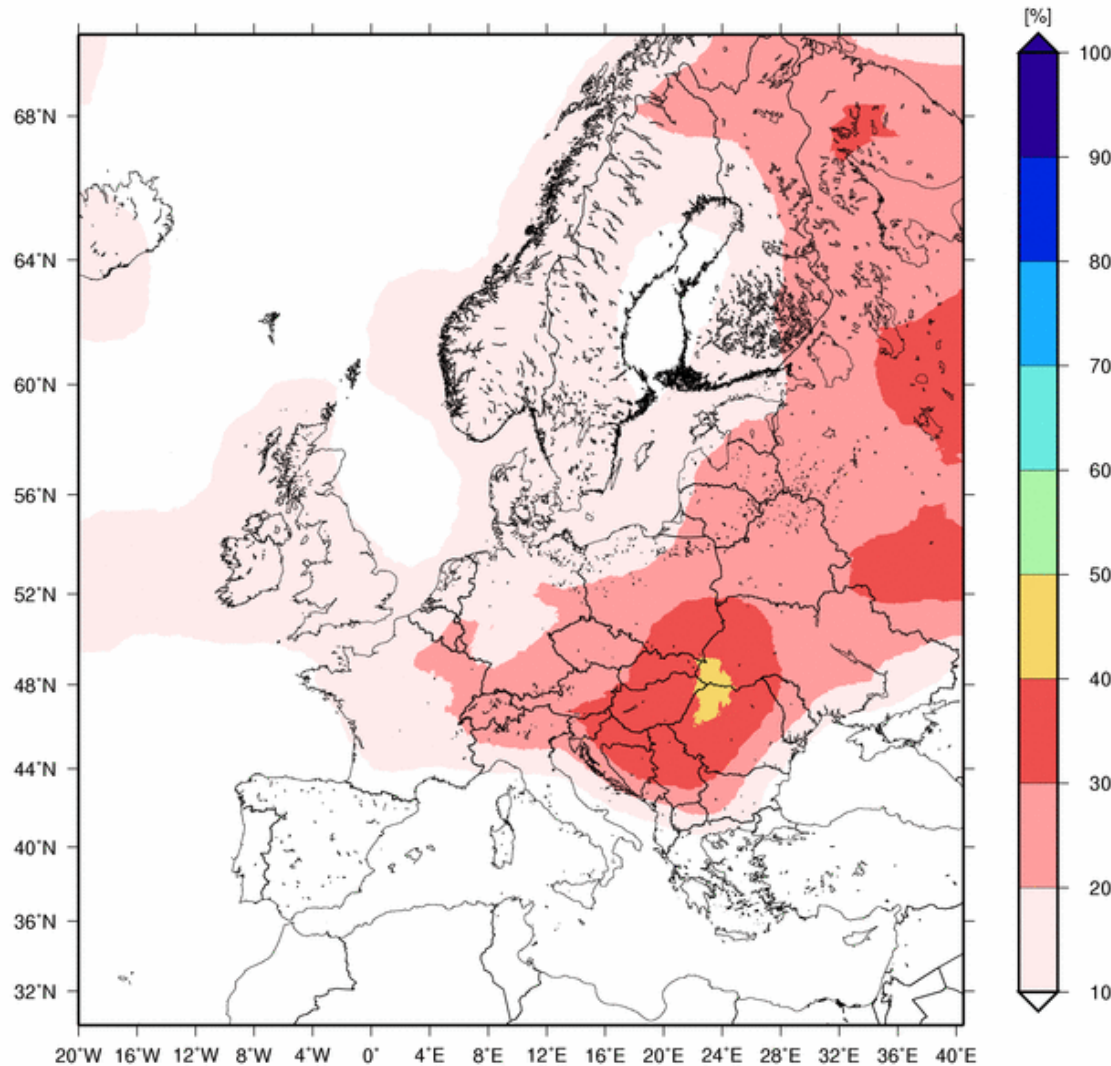
### Precipitation Anomaly: Probability for: $-25\text{mm} < \text{RR}_{\text{anomaly}} \leq 25\text{mm}$

*Ini: May 2008; valid for: July 2008*



### Precipitation Anomaly: Probability for: $-75\text{mm} < \text{RR}_{\text{anomaly}} \leq -25\text{mm}$

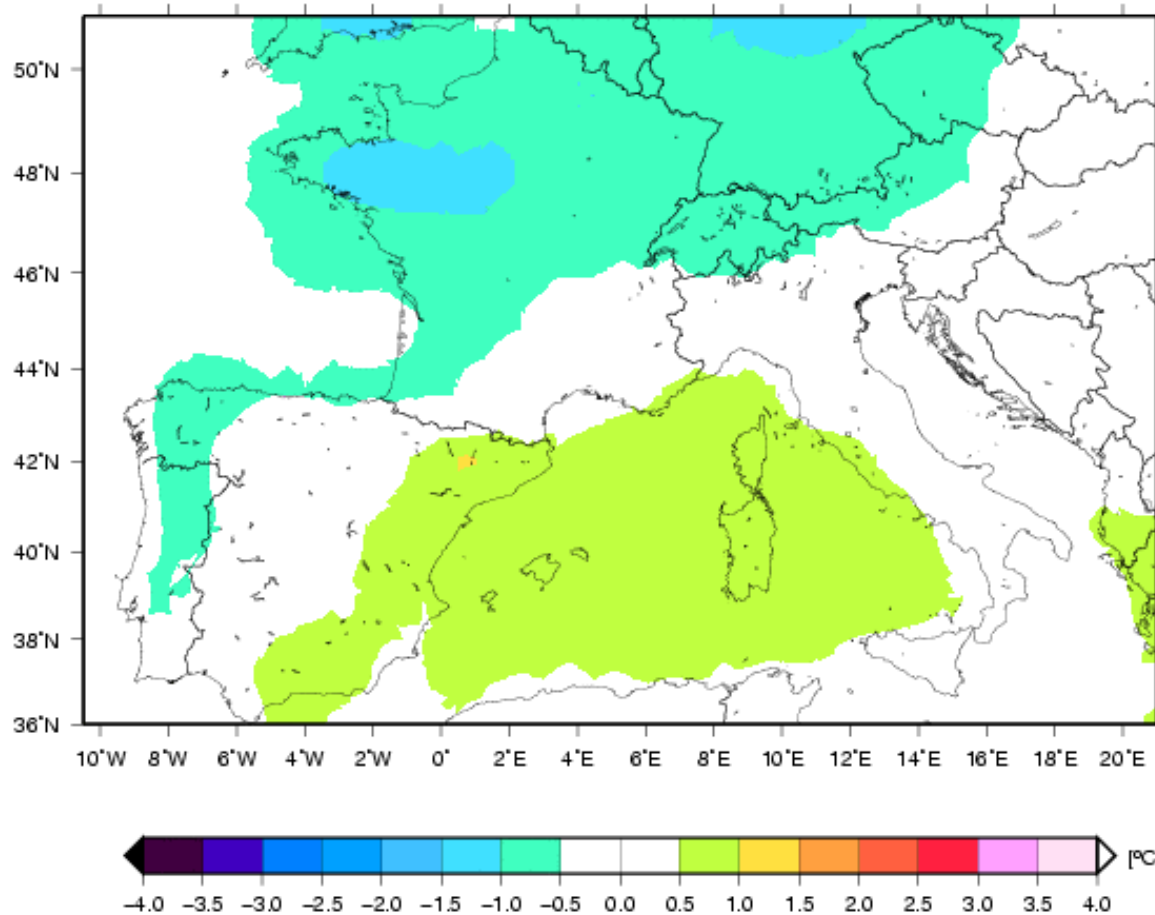
*Ini: May 2008; valid for: July 2008*



- **Products for customers**
  - **e.g.**
  - **energy companies**

*2m Temperature Anomaly [°C], 25%-Percentile*

*Ini: May 2008; valid for: July 2008*



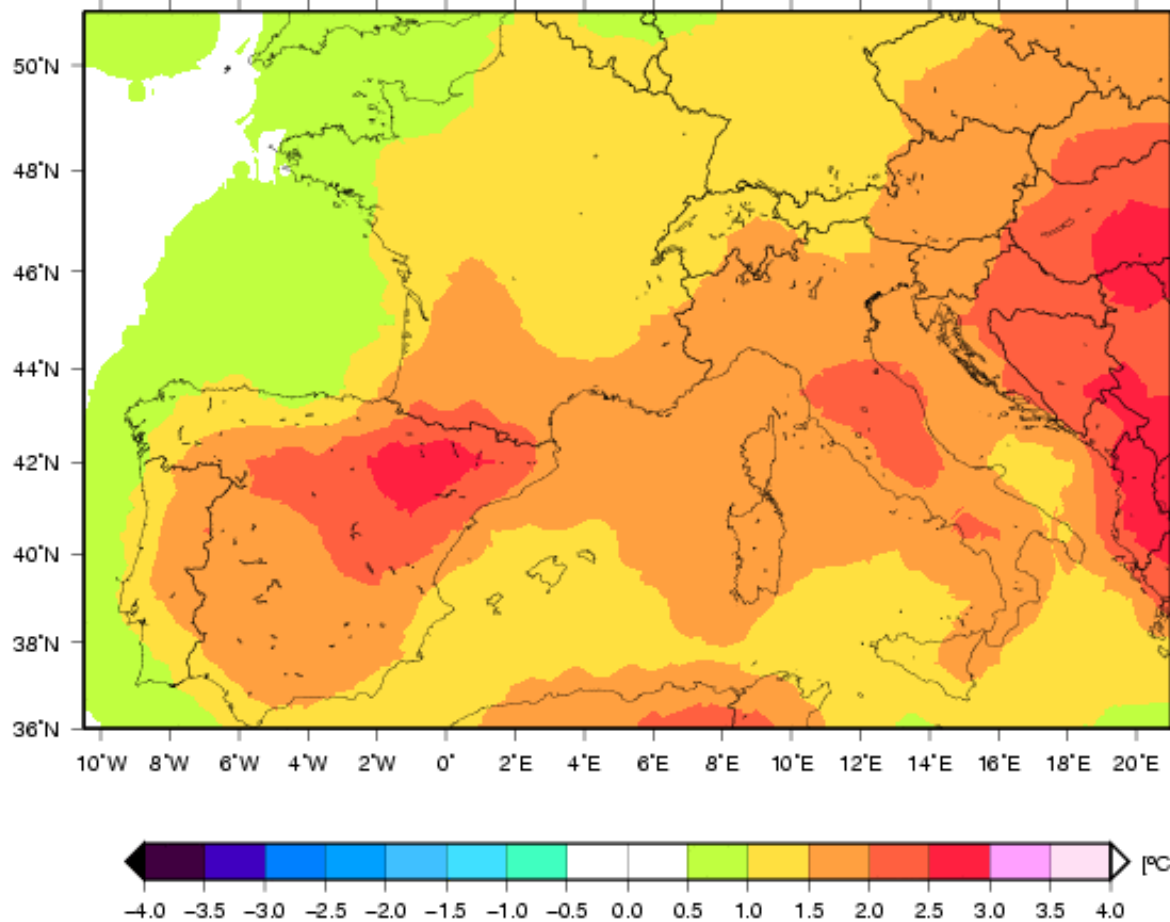
- **How can we interpret from the meteorological point of view**
  - **the 25% perzentile ?**



- The light blue areas show that 25% of the temperature anomalies are below the intervall  $-0,5$  and  $-1,5^{\circ}$ .
- The light green area shows that the temperature anomalies  $< 0,5^{\circ}$  are about 25 % .

*2m Temperature Anomaly [°C], 75%-Percentile*

*Ini: May 2008; valid for: July 2008*



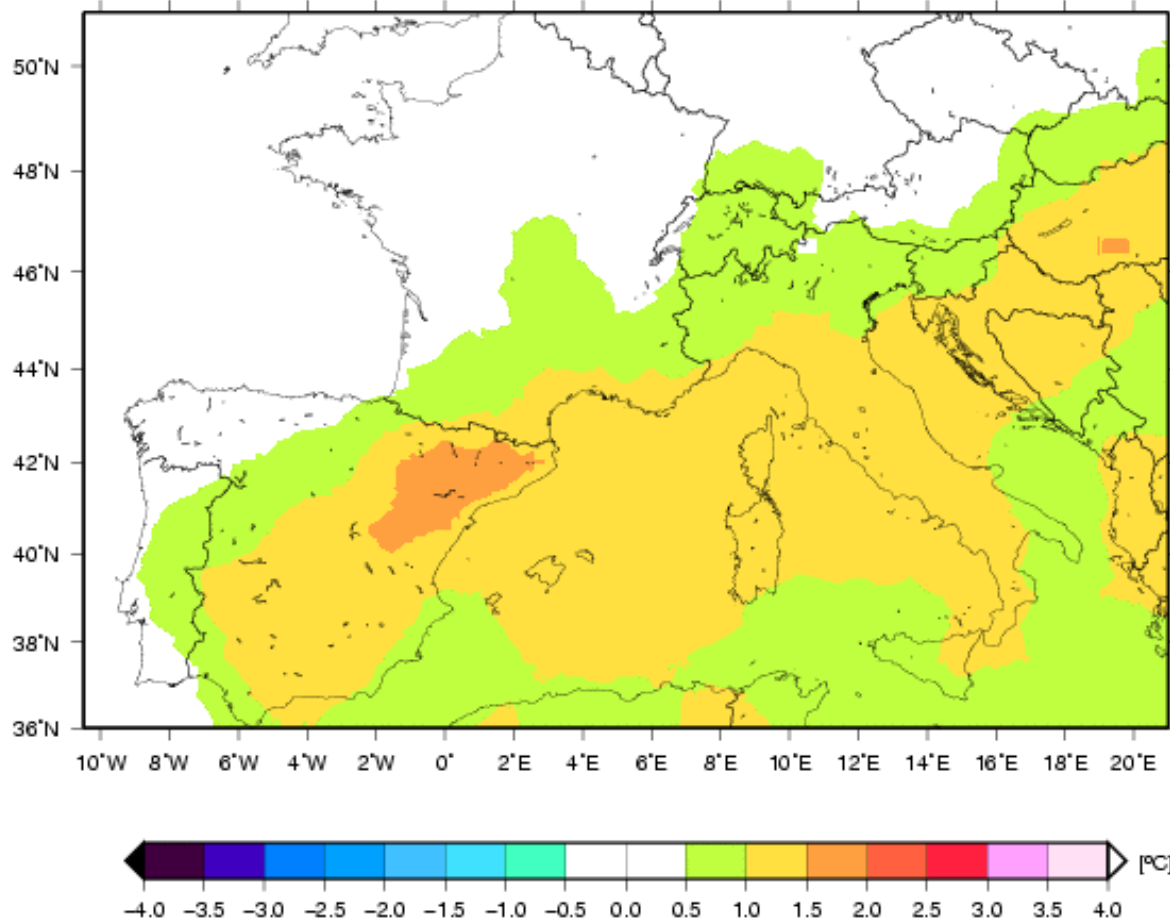
- **How can we interpret from the meteorological point of view**
  - **the 75% perzentile ?**



- **The distribution shows that the probability of temperature anomalies covers 75 % of the coloured areas.**
- **There is a probability of 25 % that there are temperature anomalies above the coloured areas.**
- **With a probability by 25% we do have solutions with higher temperature anomalies.**

*2m Temperature Anomaly [°C], Median*

*Ini: May 2008; valid for: July 2008*



- **How can we interpret from the meteorological point of view**
  - **the distribution of the MEDIAN ?**



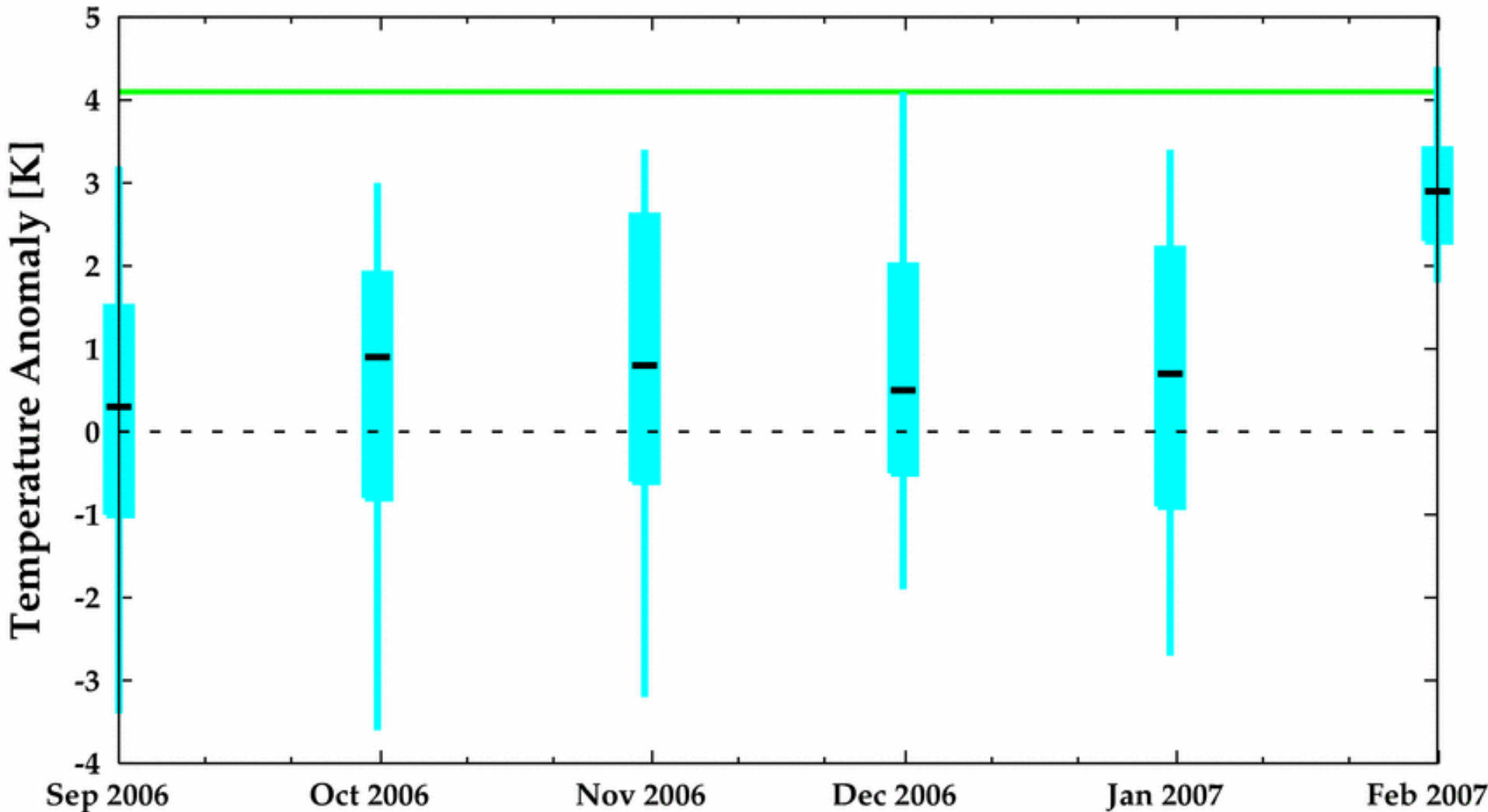
- **In the white areas there is nearly no anomaly.**
- **In the coloured areas there are estimated anomalies between 0,5 and 2,0°. Higher anomalies are not likely.**

- **VERIFICATION**

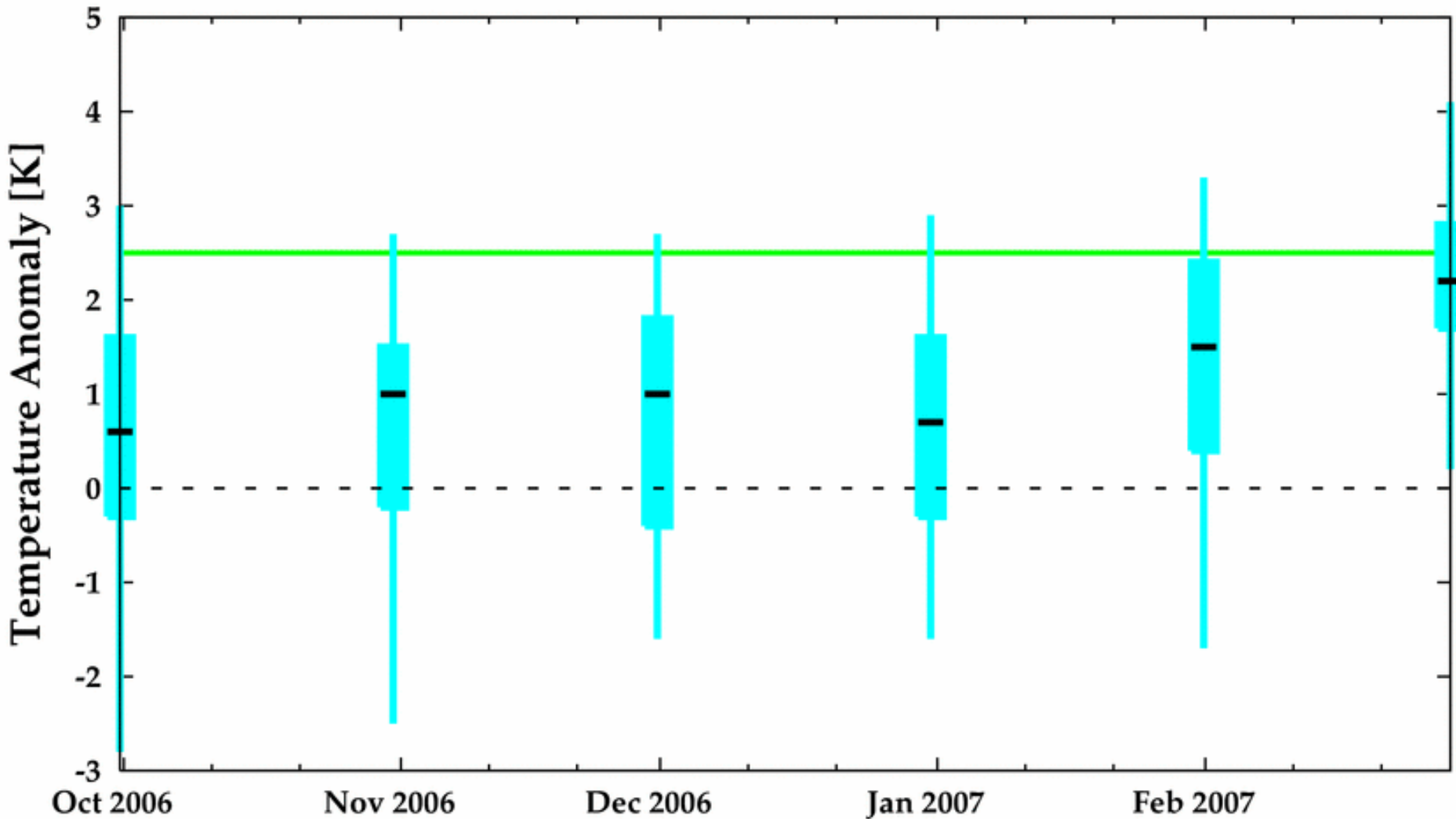
- **We verify the temperature anomalies**
- **of the operational seasonal forecast**
  - **against the**
    - **the temperature anomaly**
- **of the station 11035 (Vienna Hohe Warte).**

- **Monthly verification**

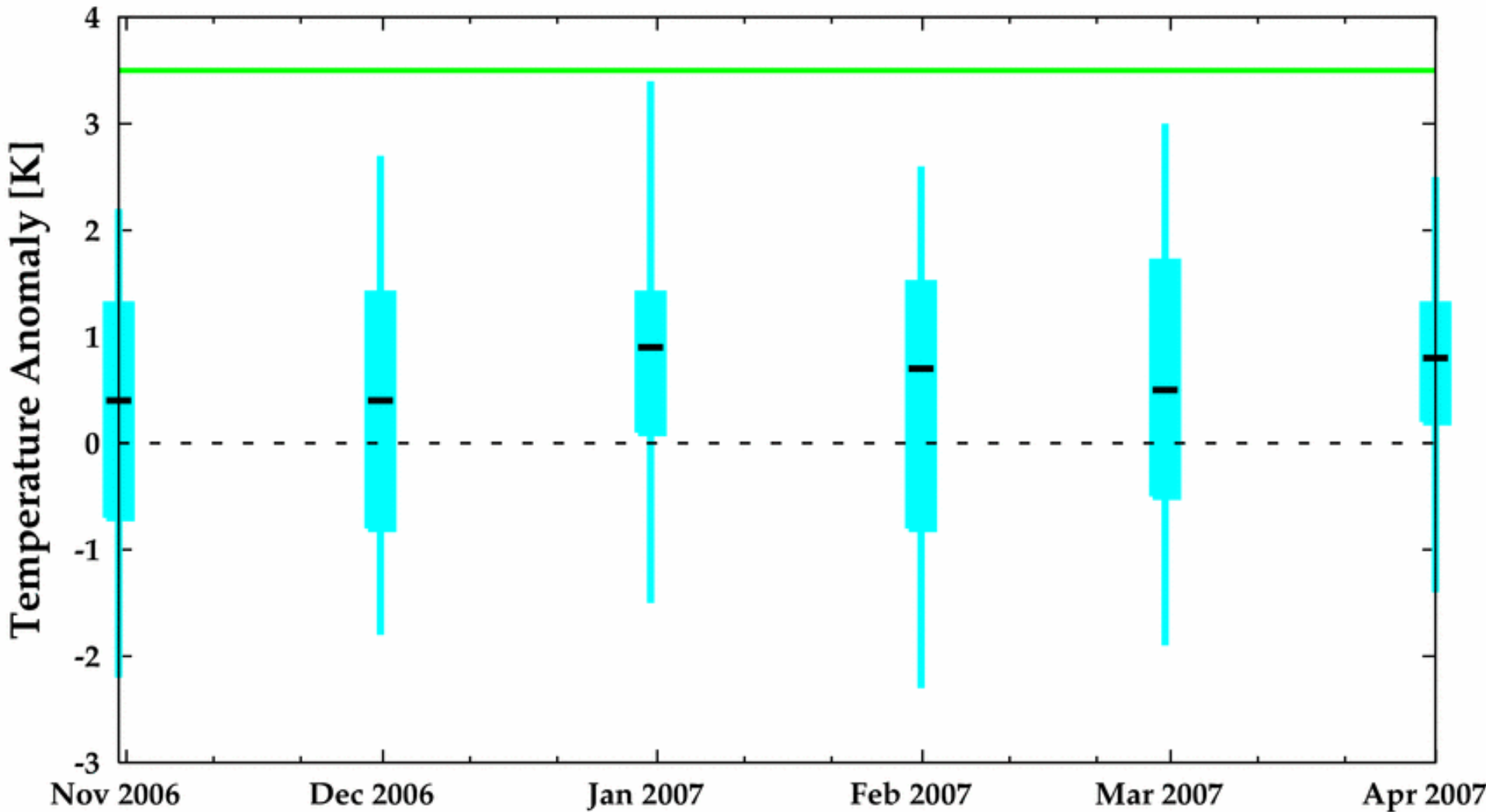
# Verification for 02/2007: Monthly Mean Temperature Anomalies Station 11035



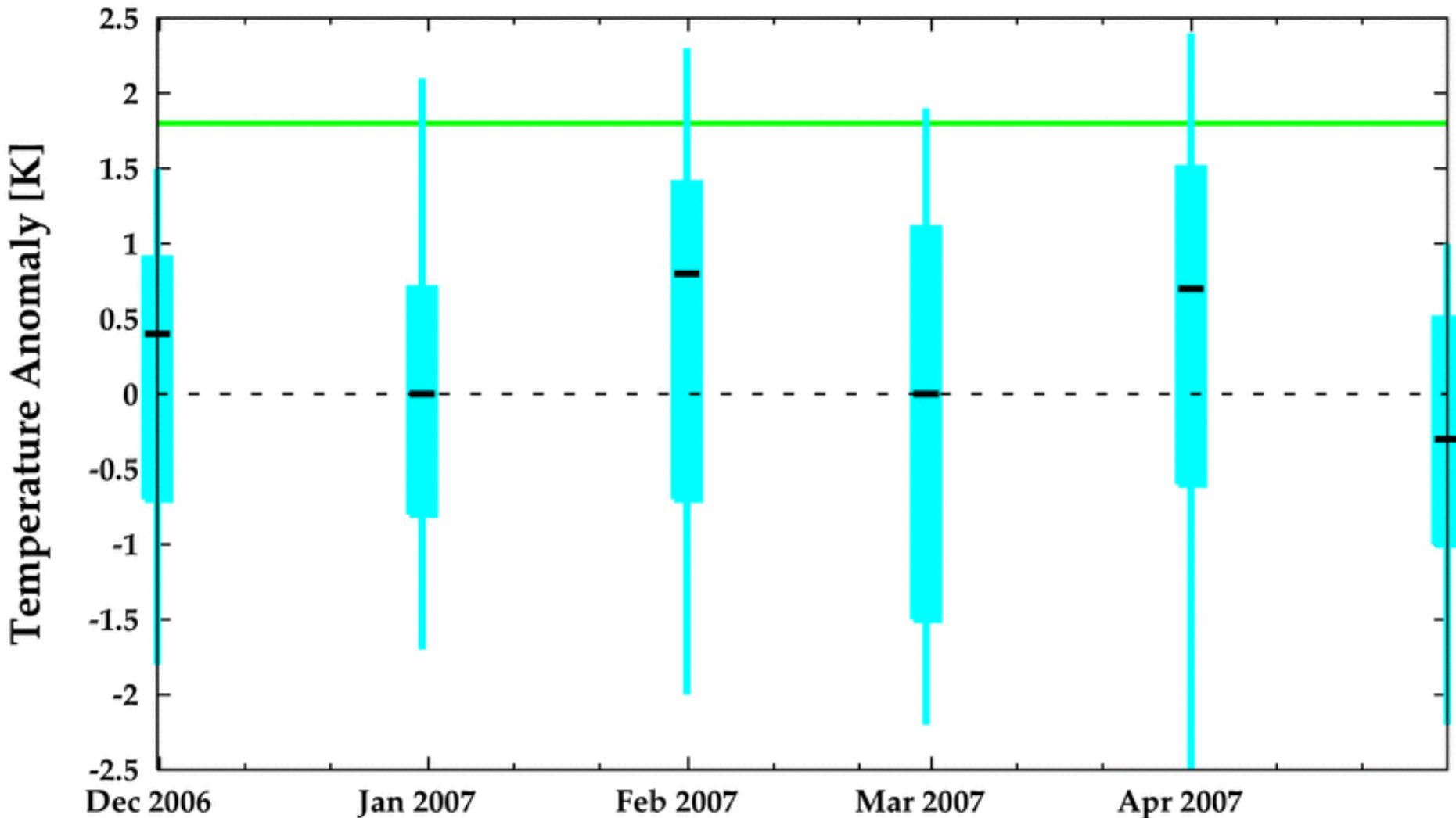
# Verification for 03/2007: Monthly Mean Temperature Anomalies Station 11035



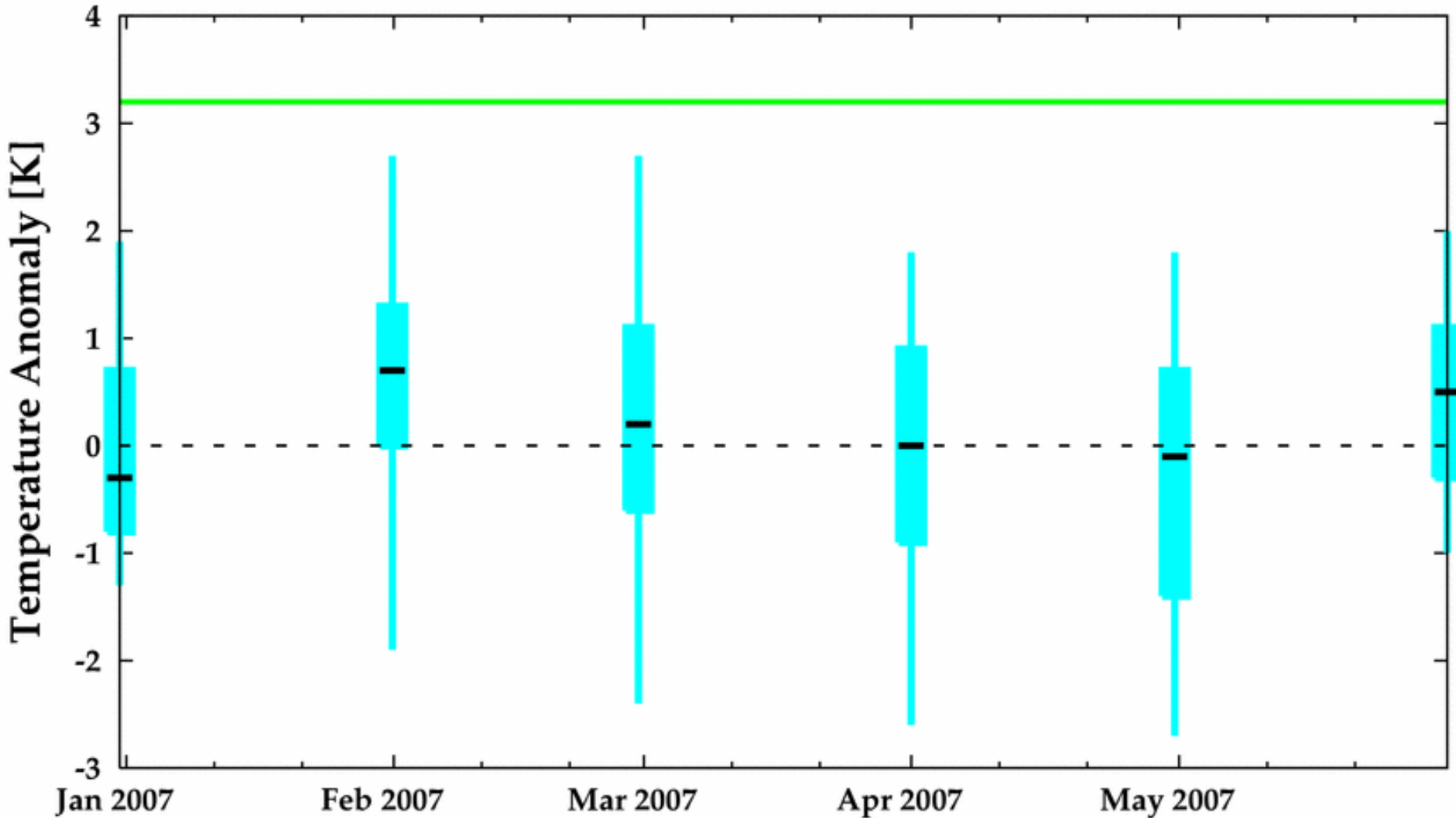
# Verification for 04/2007: Monthly Mean Temperature Anomalies Station 11035



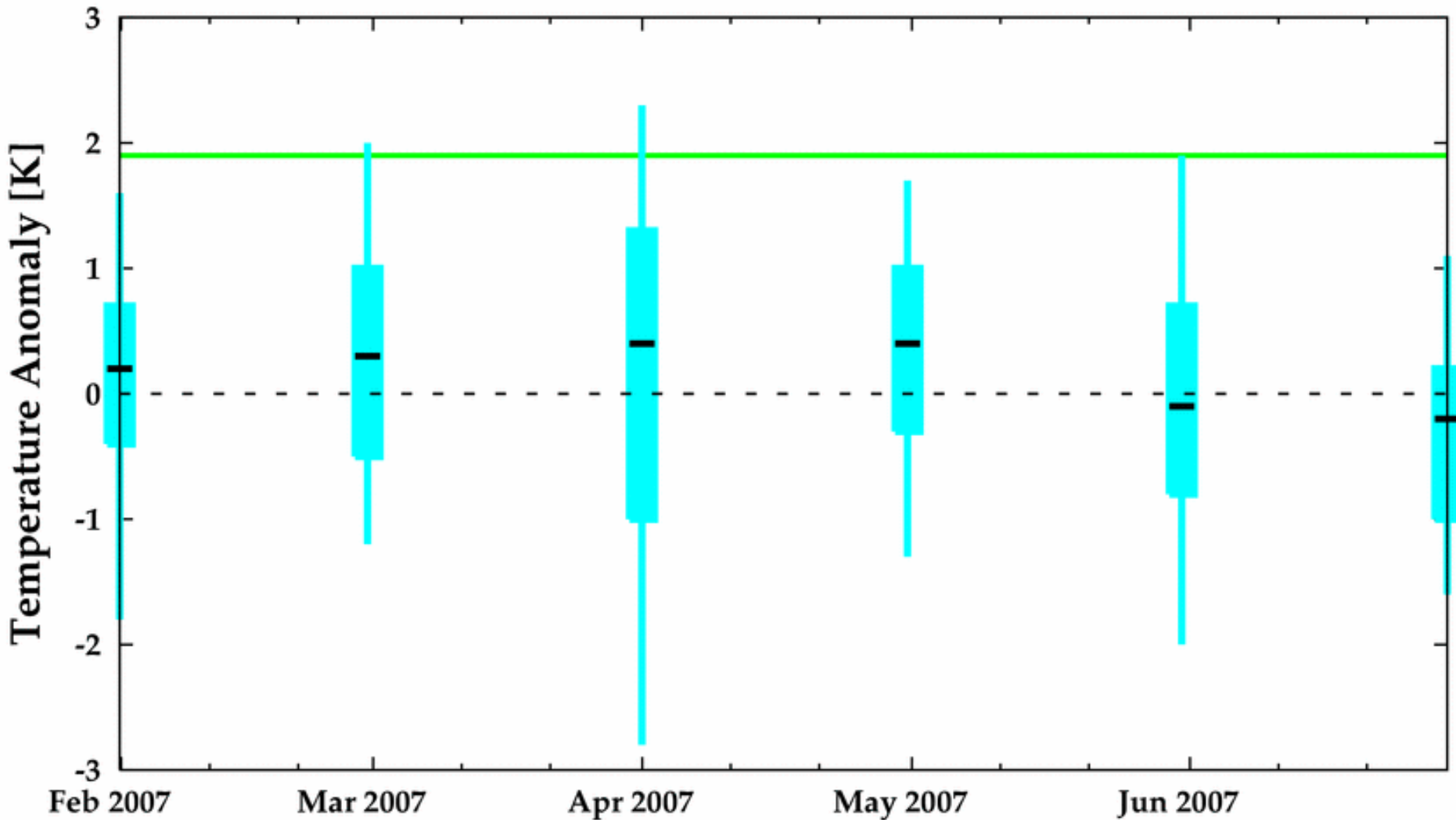
# Verification for 05/2007: Monthly Mean Temperature Anomalies Station 11035



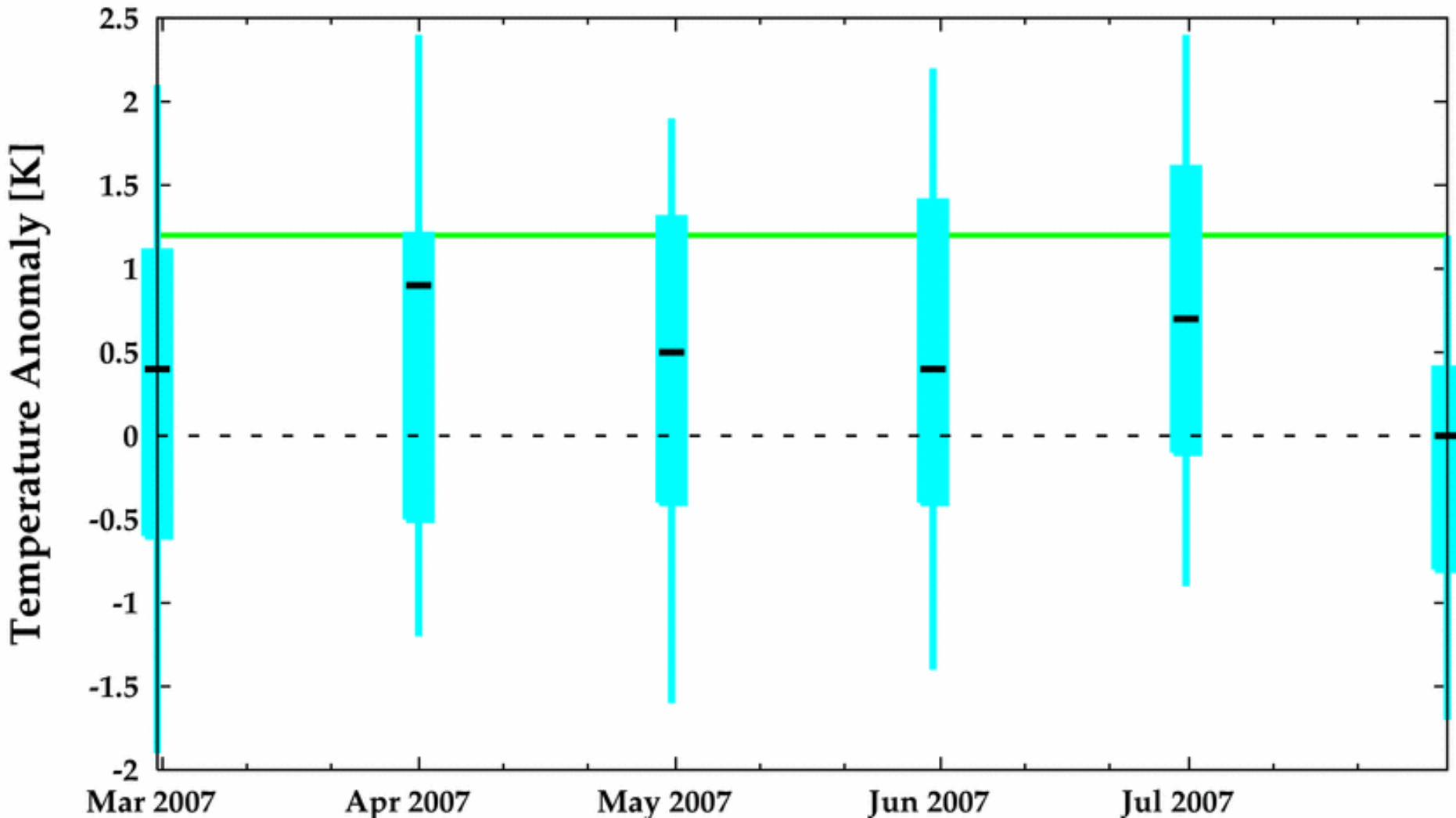
# Verification for 06/2007: Monthly Mean Temperature Anomalies Station 11035



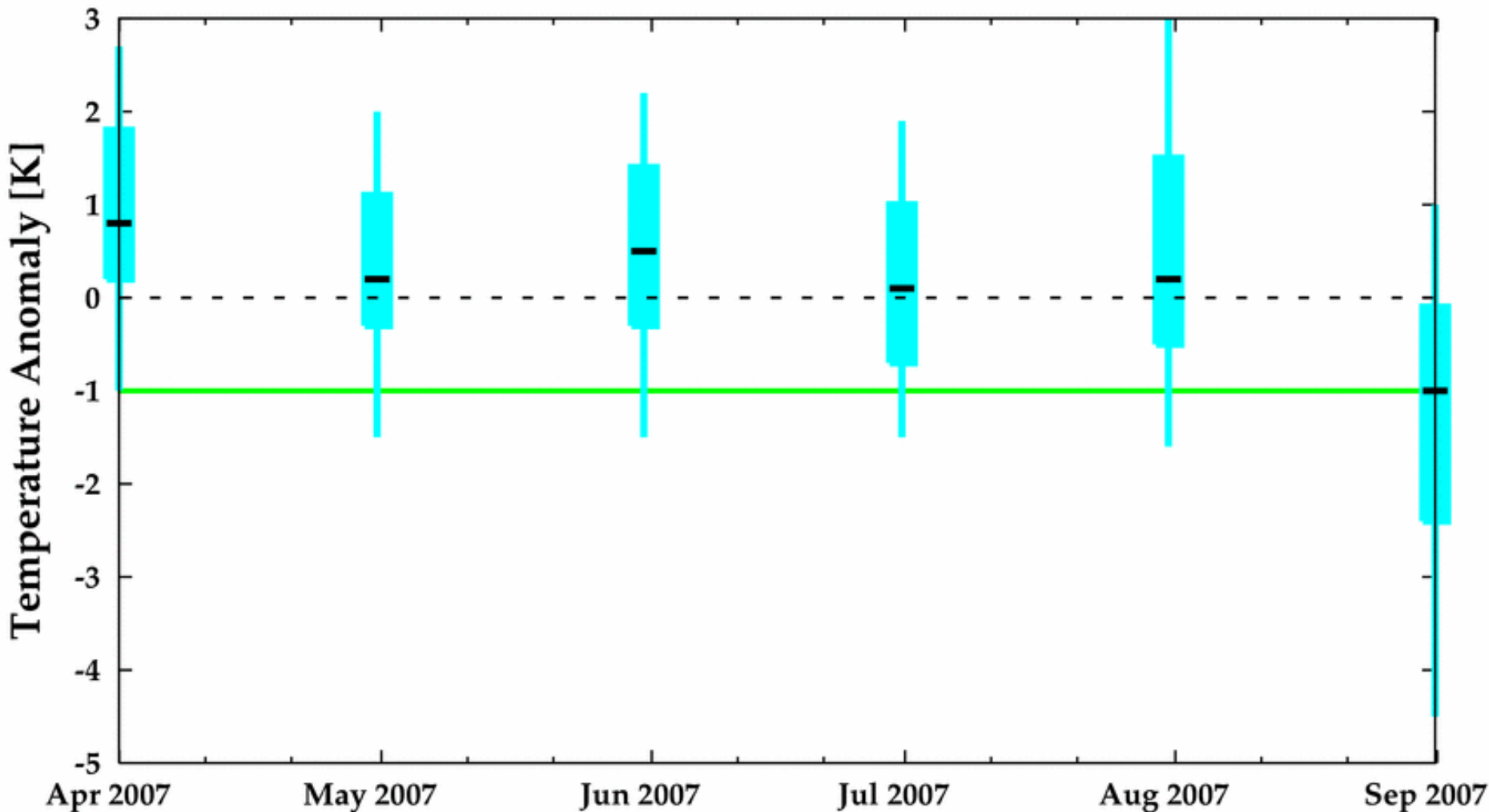
# Verification for 07/2007: Monthly Mean Temperature Anomalies Station 11035



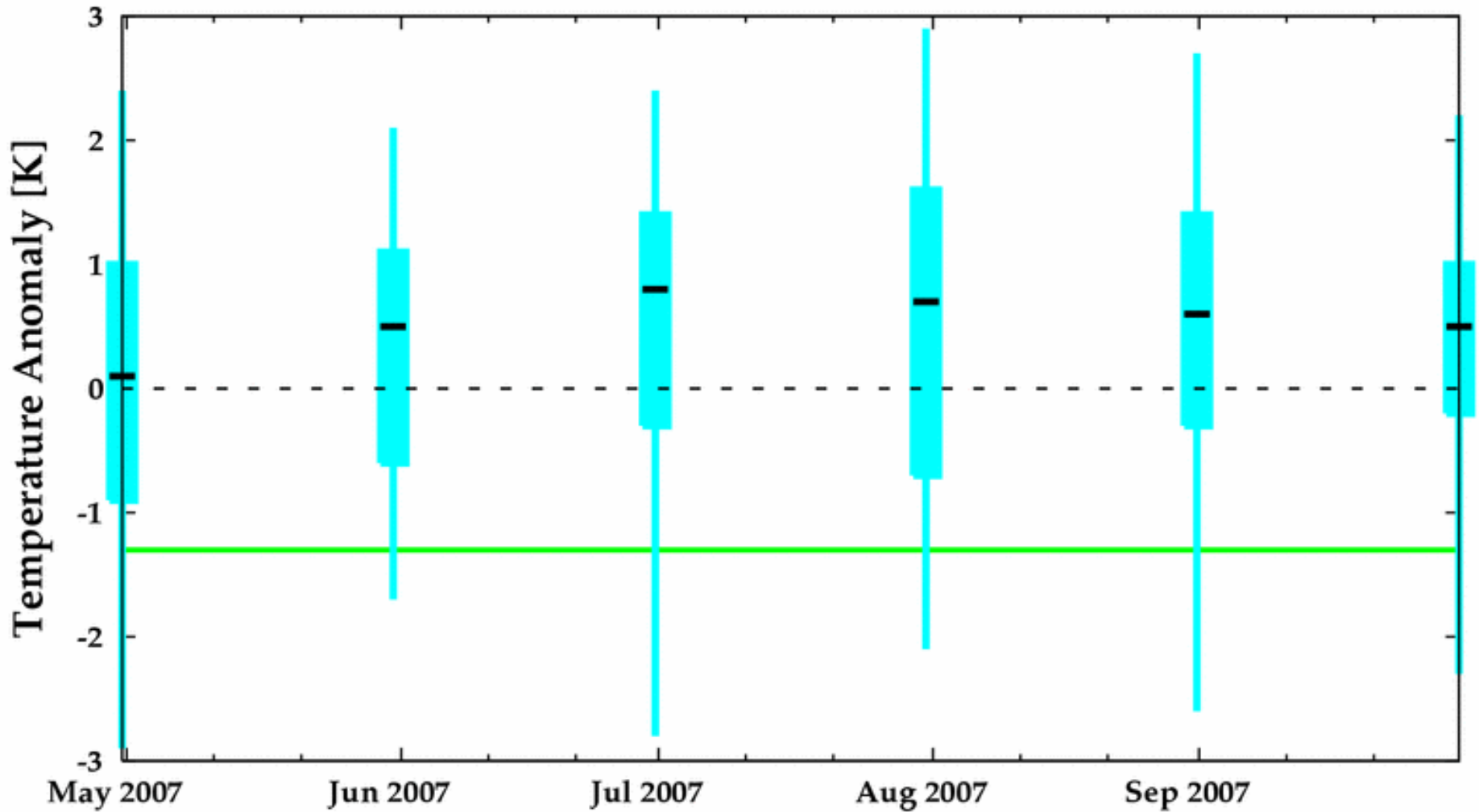
# Verification for 08/2007: Monthly Mean Temperature Anomalies Station 11035



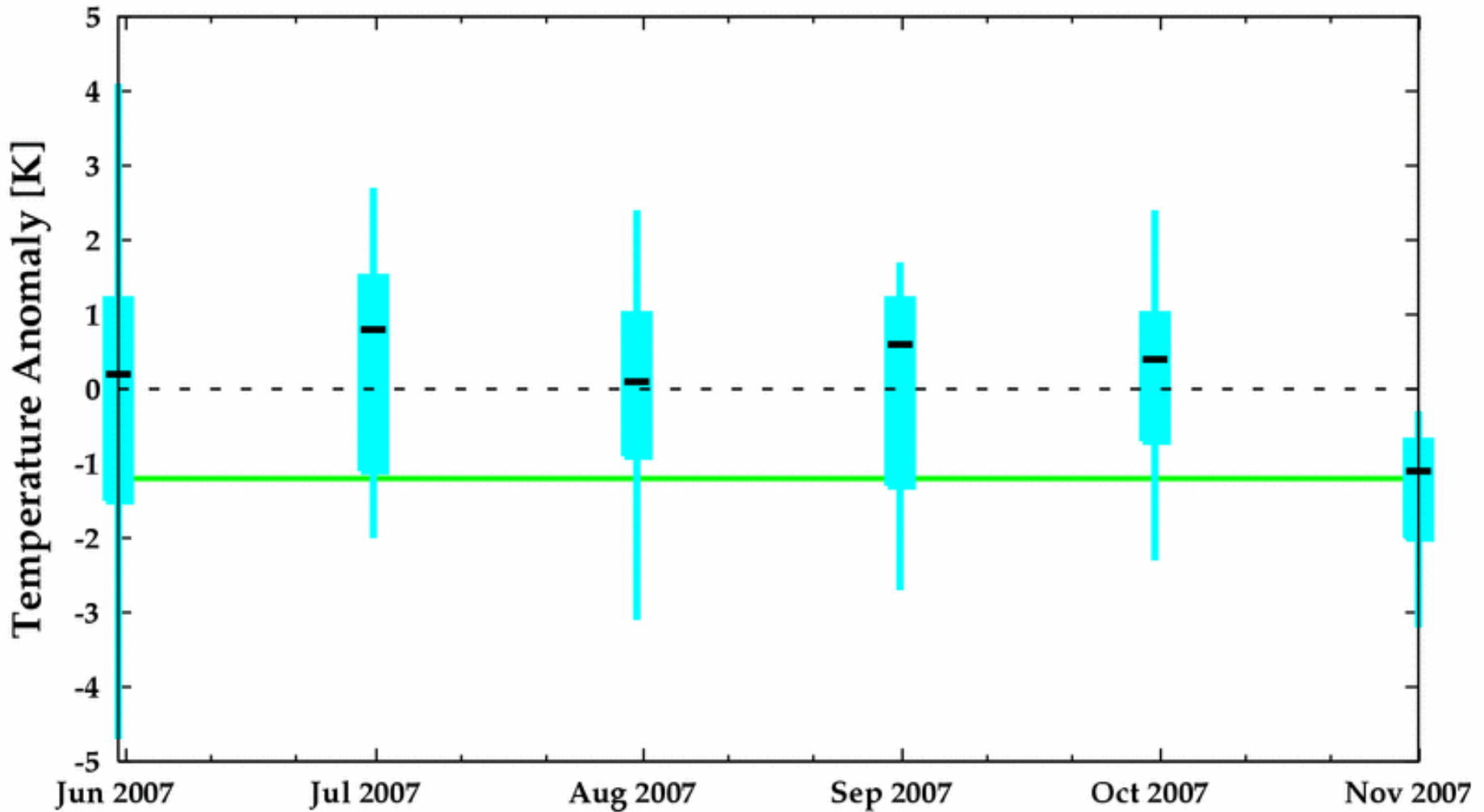
# Verification for 09/2007: Monthly Mean Temperature Anomalies Station 11035



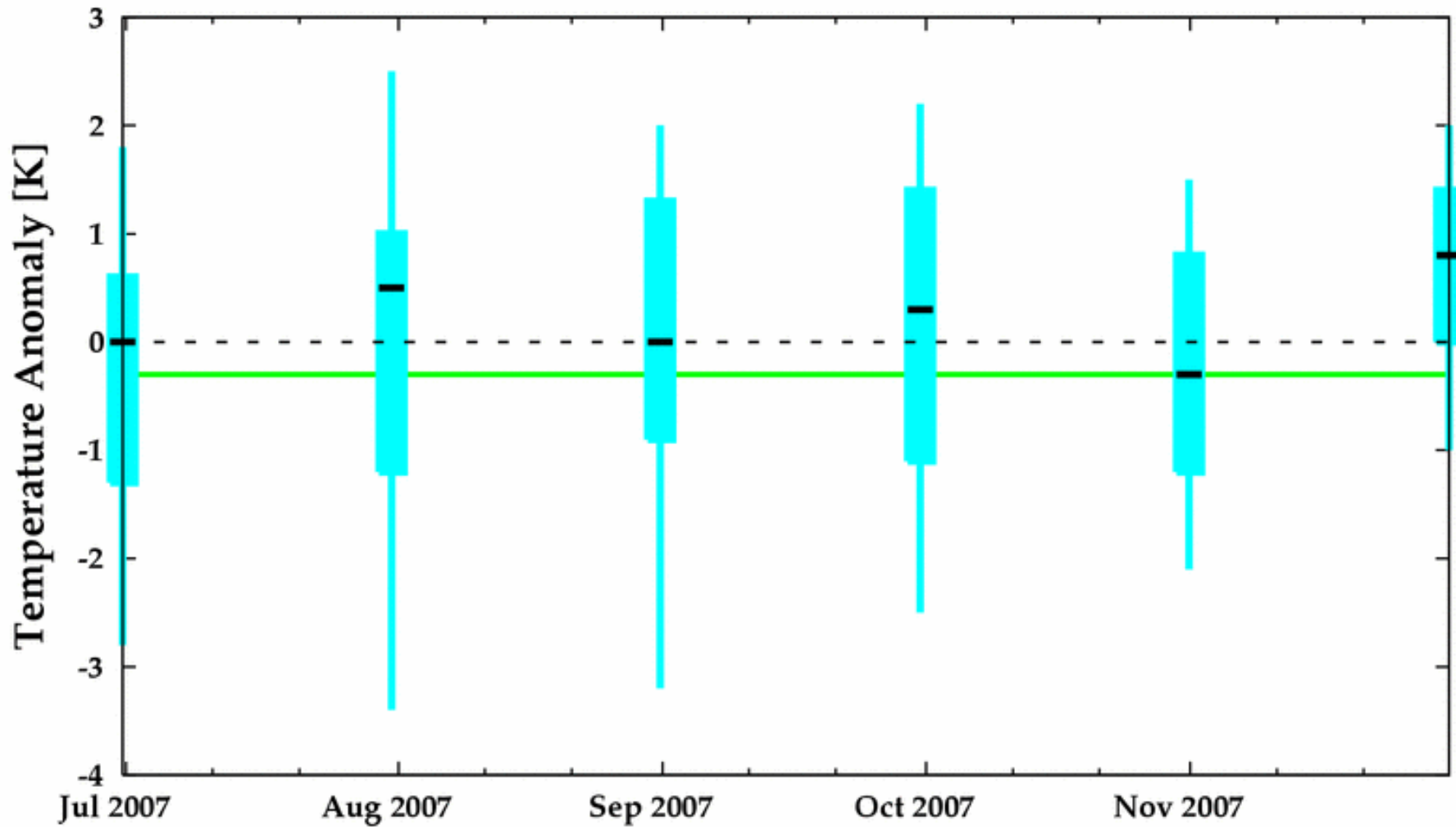
## Verification for 10/2007: Monthly Mean Temperature Anomalies Station 11035



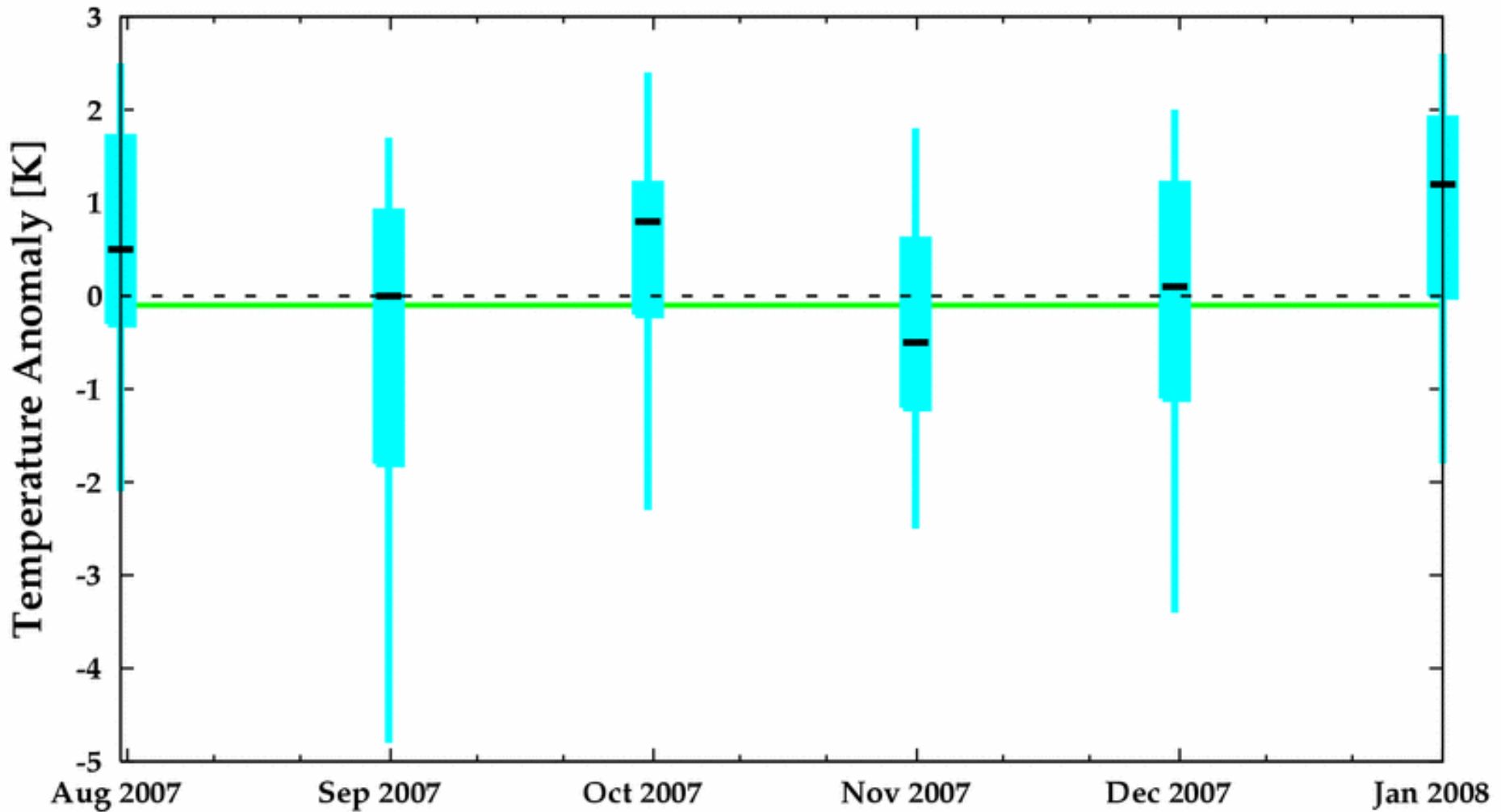
# Verification for 11/2007: Monthly Mean Temperature Anomalies Station 11035



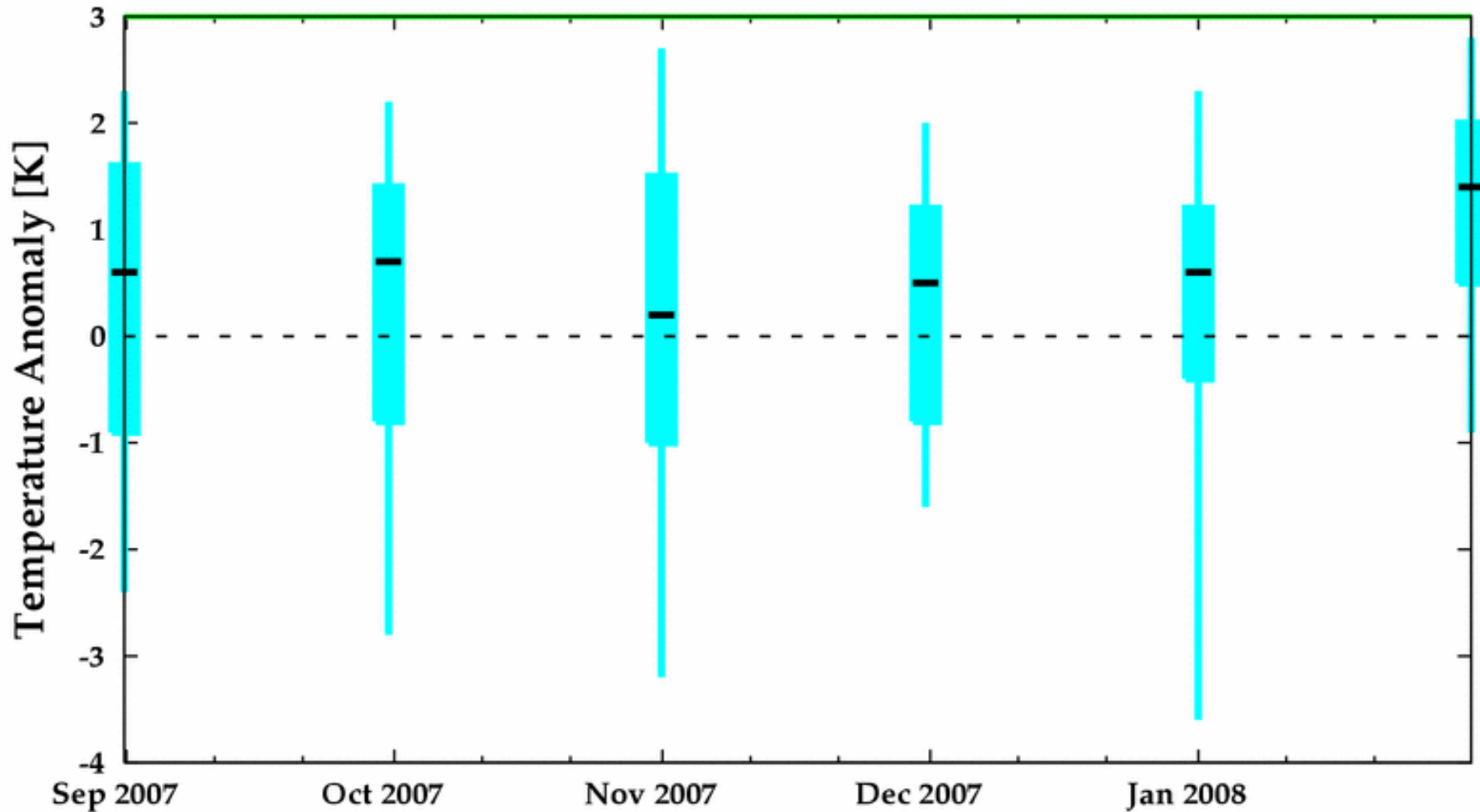
# Verification for 12/2007: Monthly Mean Temperature Anomalies Station 11035



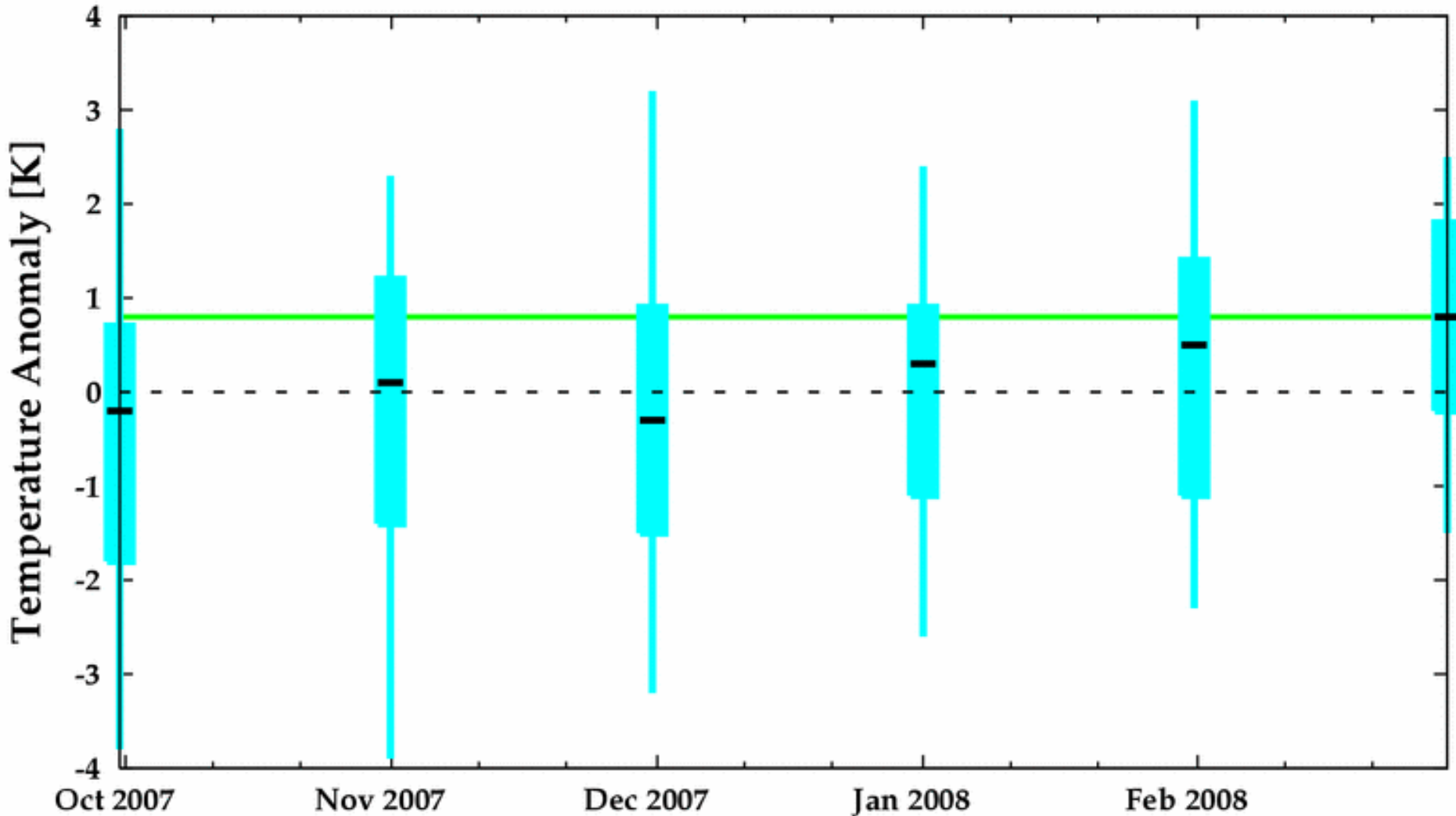
# Verification for 01/2008: Monthly Mean Temperature Anomalies Station 11035



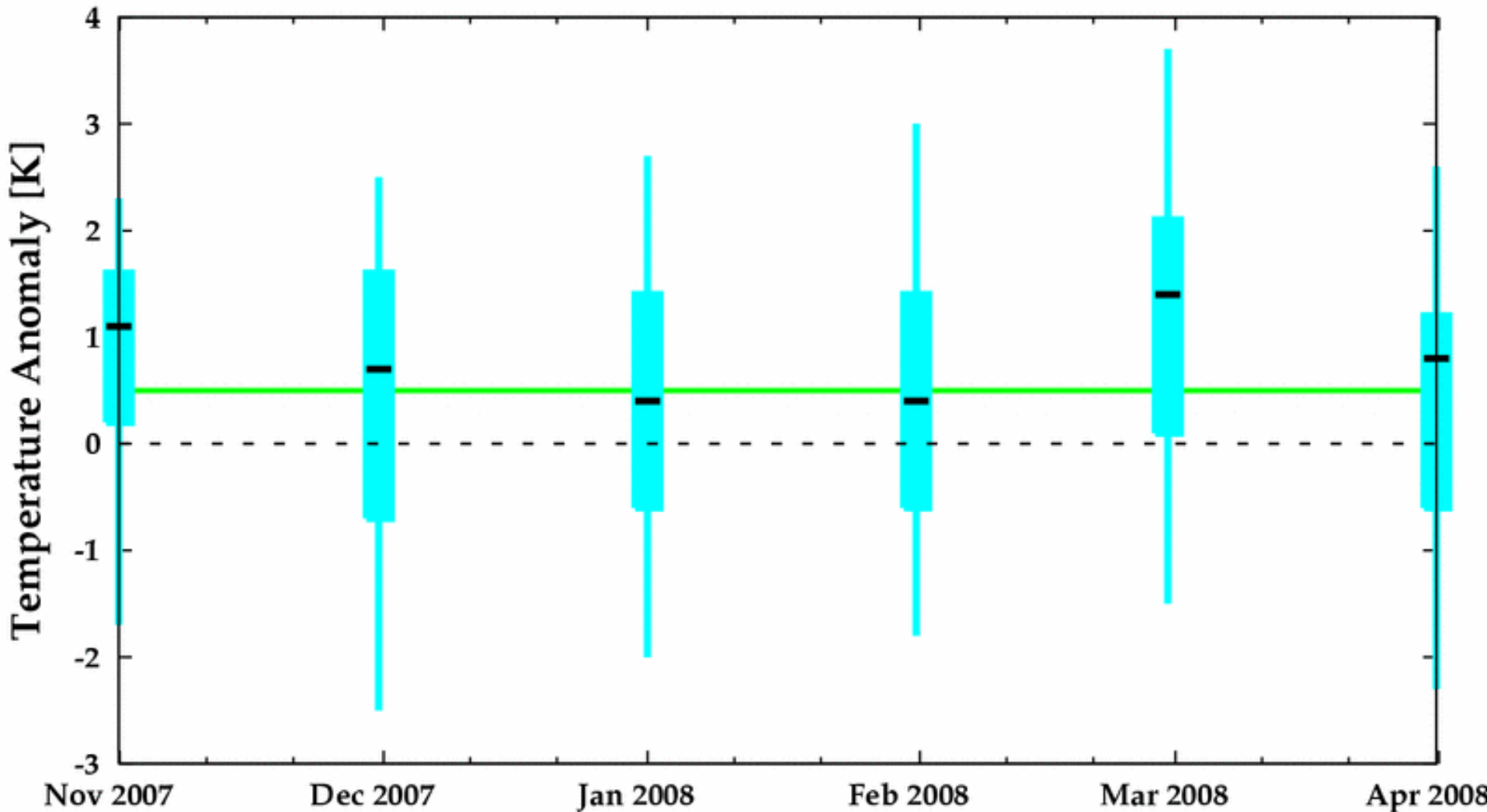
# Verification for 02/2008: Monthly Mean Temperature Anomalies Station 11035



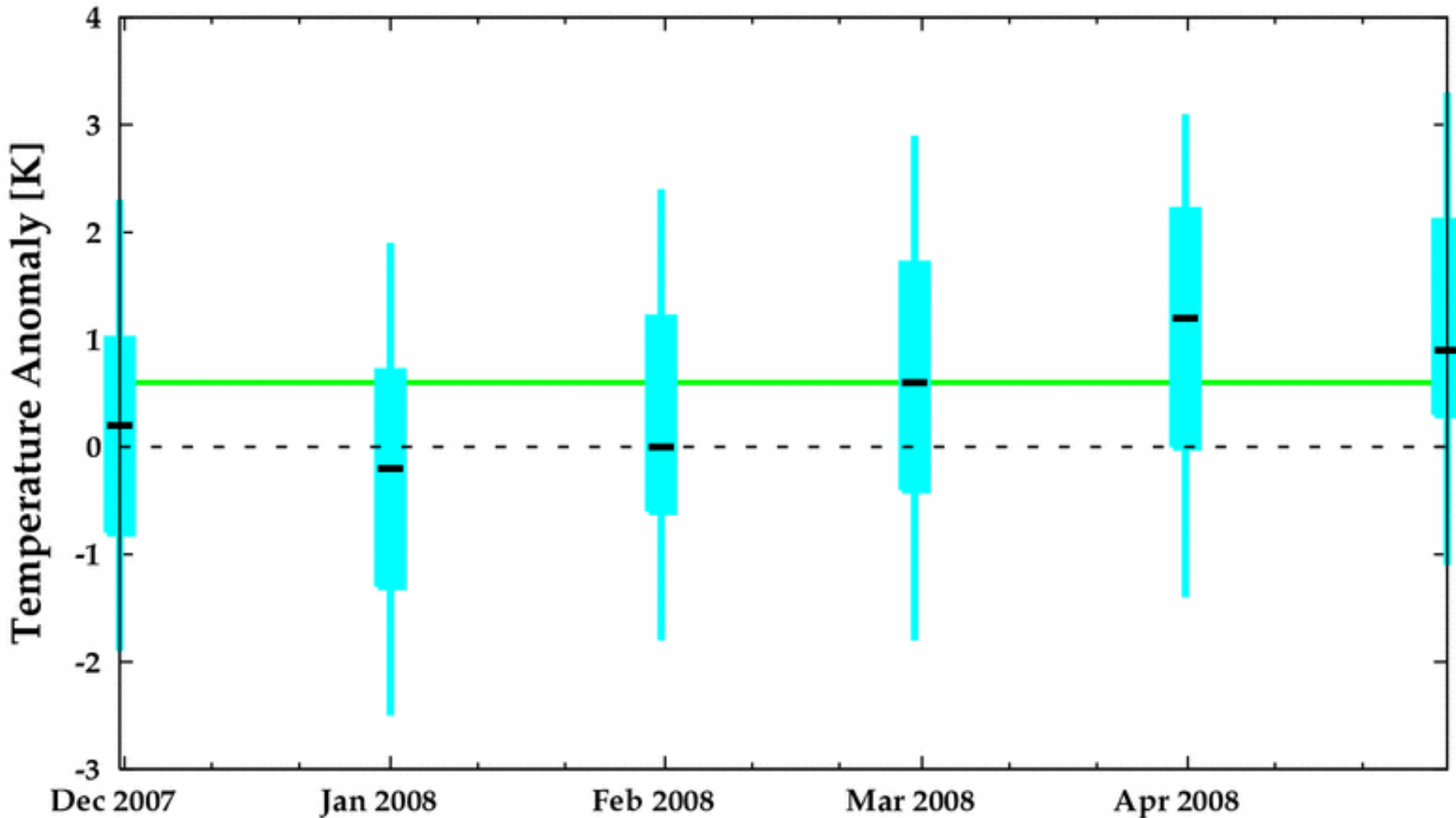
# Verification for 03/2008: Monthly Mean Temperature Anomalies Station 11035



# Verification for 04/2008: Monthly Mean Temperature Anomalies Station 11035



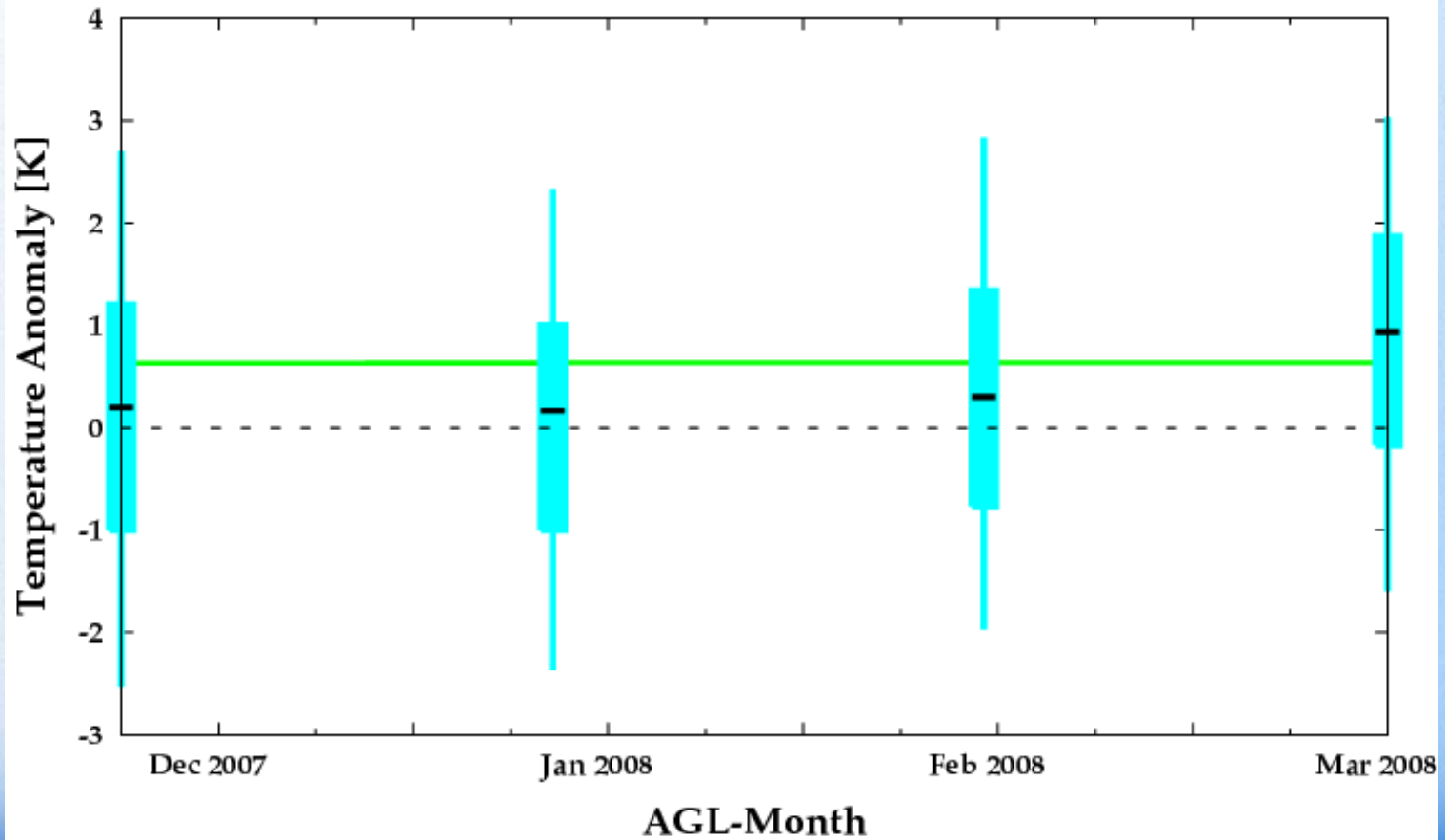
# Verification for 05/2008: Monthly Mean Temperature Anomalies Station 11035



- **Future concept in verification**

- **Verification  
of mean anomalies over 3 months**

### Verification for MAM/2008: Monthly Mean Temperature Anomalies Station Vienna



- **Is this an indication**
- **that the seasonal forecasting system**
  - **has a good skill on local scale?**

- **Thank you for your patience !**