

201808 - Rainfall - Calabria

Status: Ongoing analysis Material from: Linus



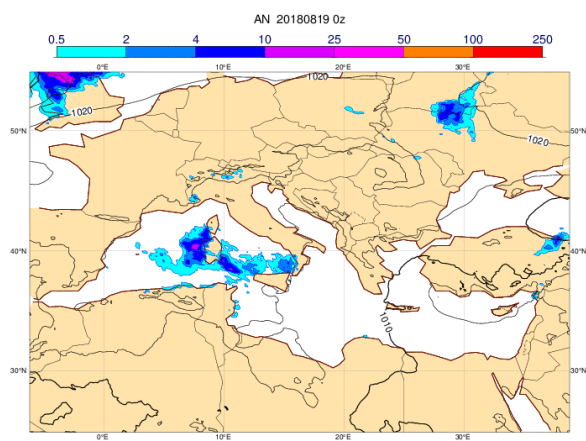
1. Impact

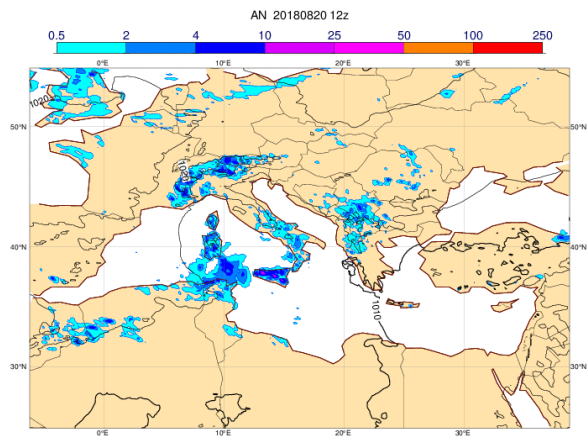
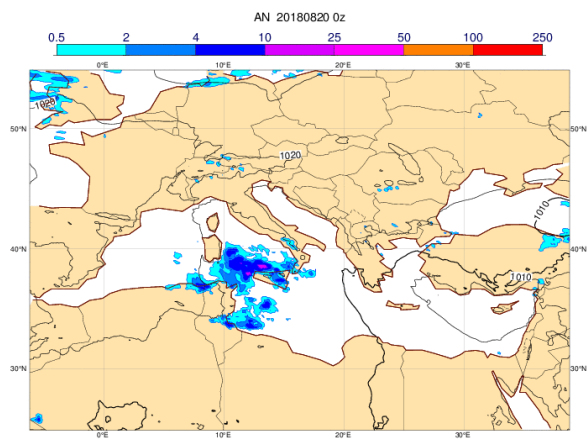
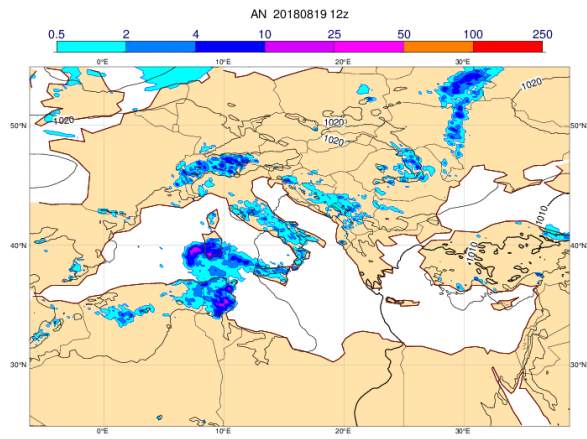
On 20 August 2018 a severe flash flood killed a number of tourists hiking in the gorge under Ponte de Deviole in Calabria, Italy.

The event is described in <http://www.cfd.calabria.it/DatiVari/Pubblicazioni/rapporto%20evento%2020%20agosto%202018.pdf> (in Italian)

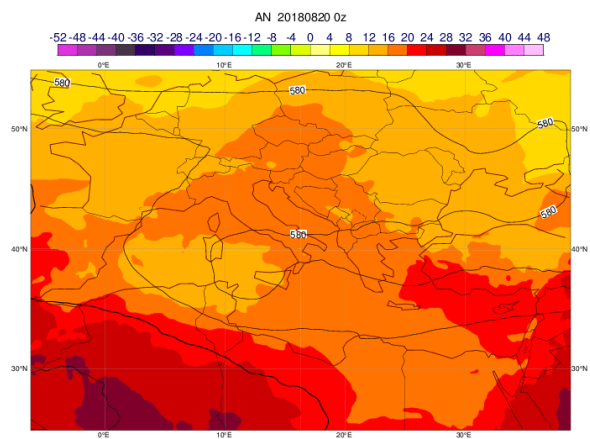
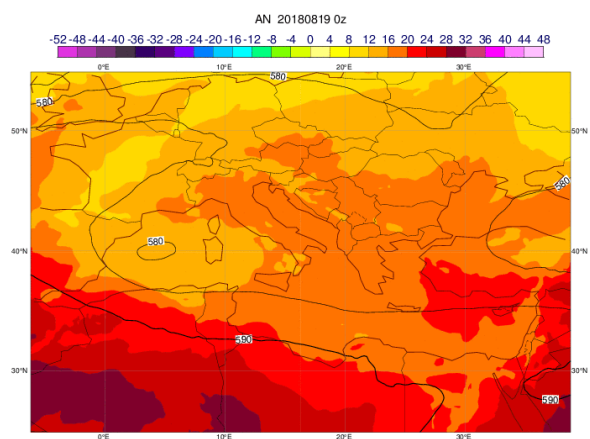
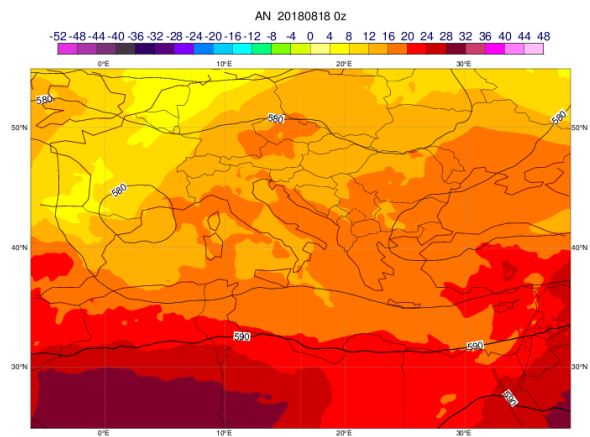
2. Description of the event

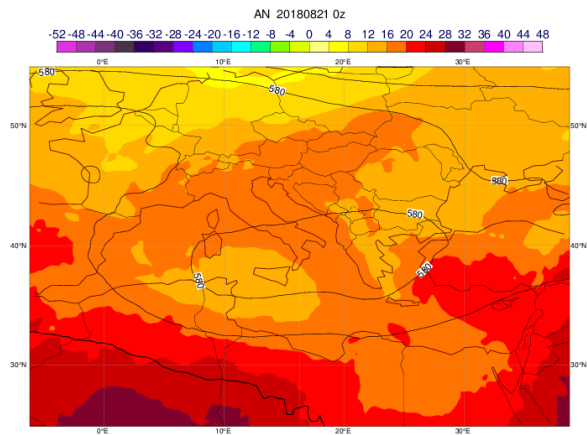
The plots below show analyses of MSLP and 6-hour precipitation forecasts every 12h hour between 19 and 20 August.





The plots below show analyses of z500 and t850 every 24 hour between 18 and 21 August. A shallow trough moved eastward over the central Mediterranean during the period.



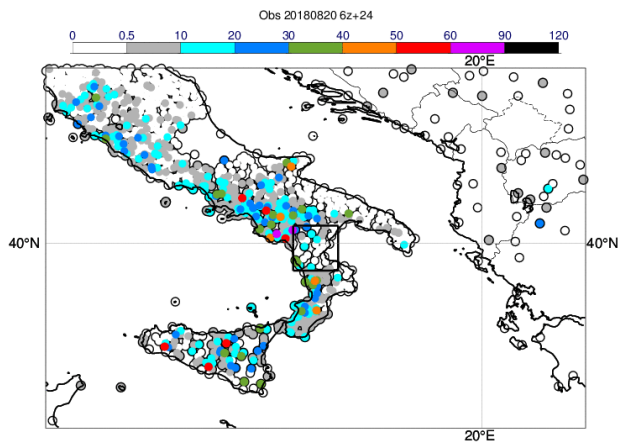


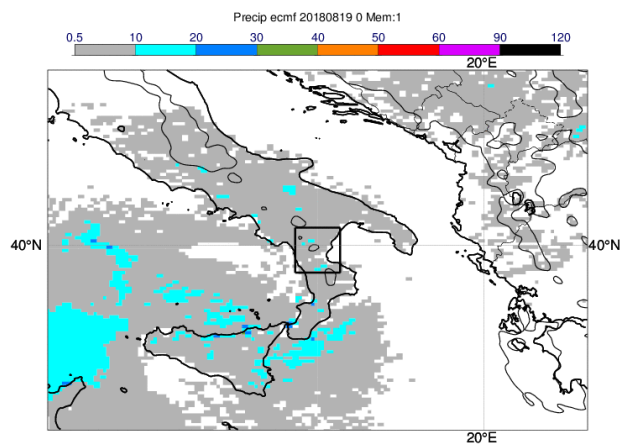
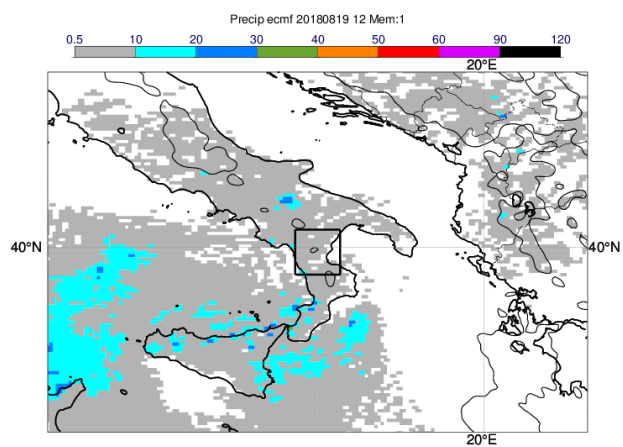
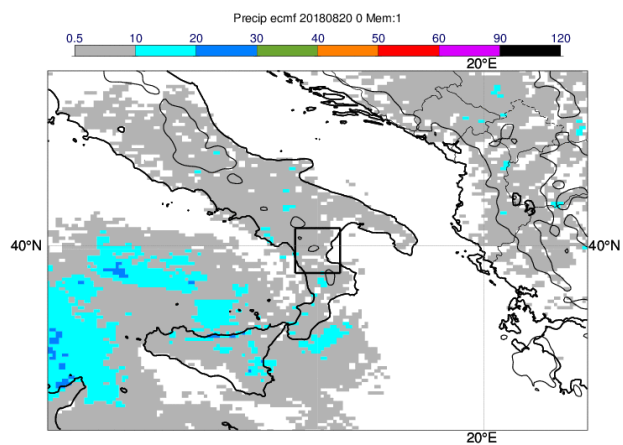
3. Predictability

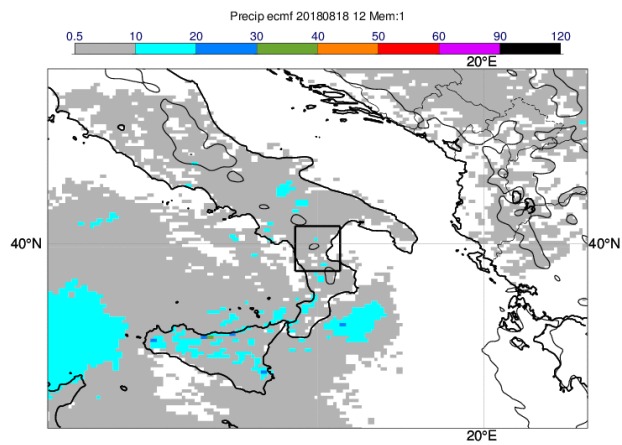
3.1 Data assimilation

3.2 HRES

The plots below show observations and HRES forecasts of 24-hour precipitation valid from 20 August 06UTC to 21 August 06UTC. On extreme observations of extreme precipitation was present in the outlined box centred on the affected region. It tells about the local nature of the convective system. In other parts of southern Italy some extreme precipitation was measured that day.

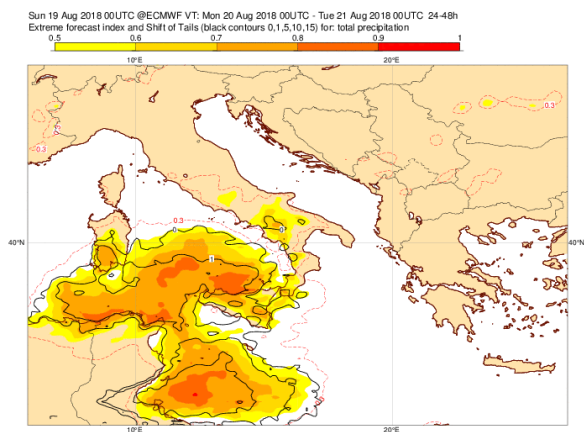
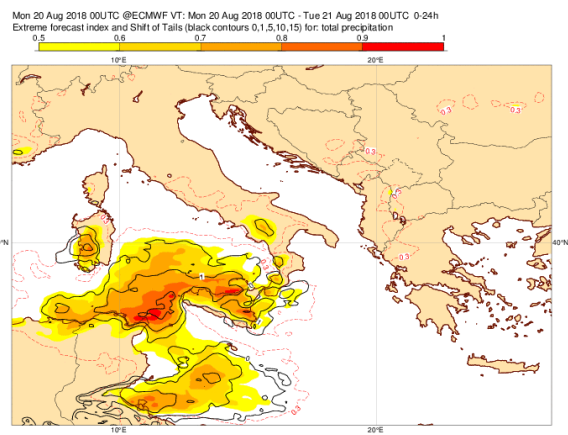




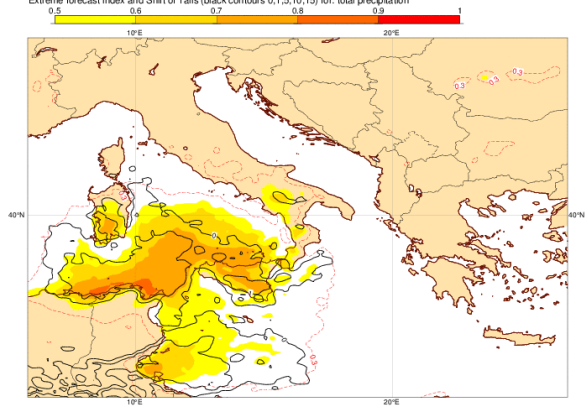


3.3 ENS

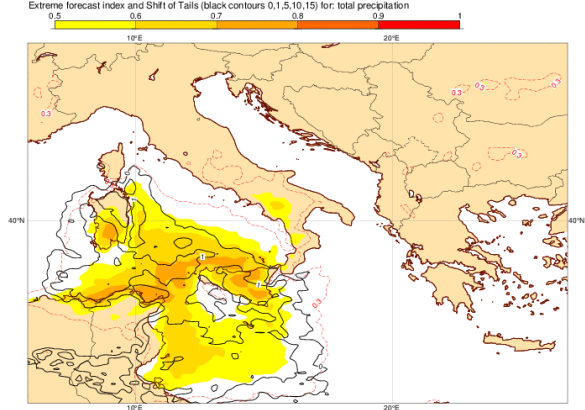
The plots below show EFI and SOT for total precipitation valid 20 August. The region of anomalous rainfall over central-southern Mediterranean was captured on some degree in all forecasts.



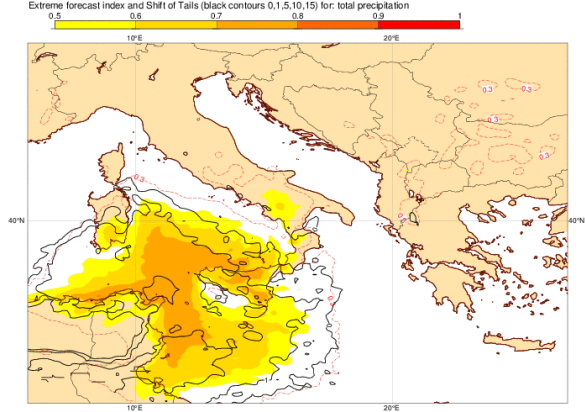
Sat 18 Aug 2018 00UTC @ECMWF VT: Mon 20 Aug 2018 00UTC - Tue 21 Aug 2018 00UTC 48-72h
Extreme forecast index and Shift of Tails (black contours 0,1,5,10,15) for: total precipitation



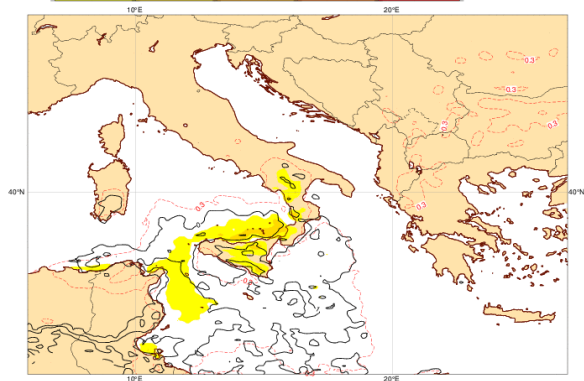
Fri 17 Aug 2018 00UTC @ECMWF VT: Mon 20 Aug 2018 00UTC - Tue 21 Aug 2018 00UTC 72-96h
Extreme forecast index and Shift of Tails (black contours 0,1,5,10,15) for: total precipitation



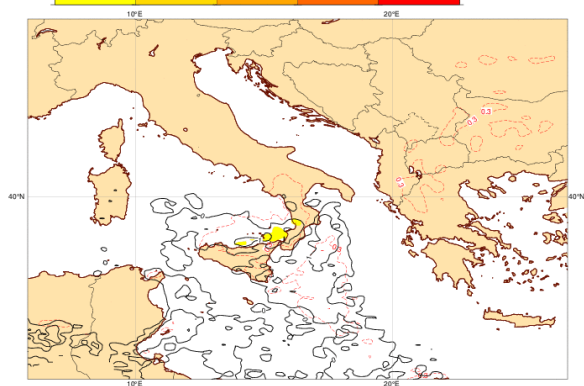
Thu 16 Aug 2018 00UTC @ECMWF VT: Mon 20 Aug 2018 00UTC - Tue 21 Aug 2018 00UTC 96-120h
Extreme forecast index and Shift of Tails (black contours 0,1,5,10,15) for: total precipitation



Wed 15 Aug 2018 00UTC @ECMWF VT: Mon 20 Aug 2018 00UTC - Tue 21 Aug 2018 00UTC 120-144h
 Extreme forecast index and Shift of Tails (black contours 0,1,5,10,15) for: total precipitation

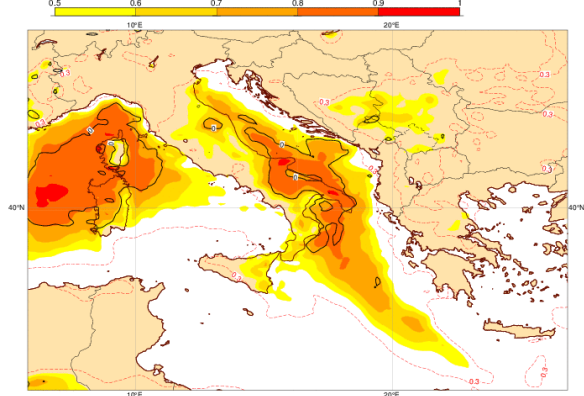


Tue 14 Aug 2018 00UTC @ECMWF VT: Mon 20 Aug 2018 00UTC - Tue 21 Aug 2018 00UTC 144-168h
 Extreme forecast index and Shift of Tails (black contours 0,1,5,10,15) for: total precipitation

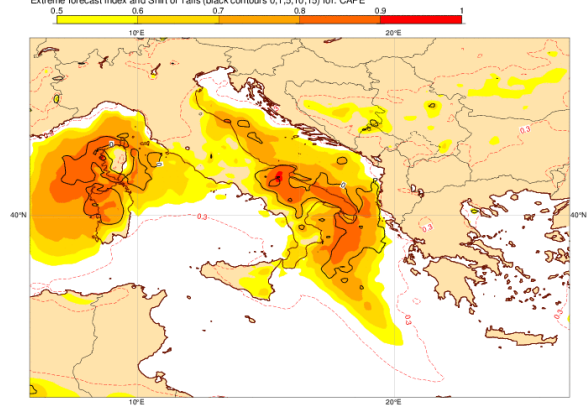


The plots below show EFI and SOT for CAPE valid 20 August. The region of anomalous CAPE over eastern Italy was captured on all time ranges.

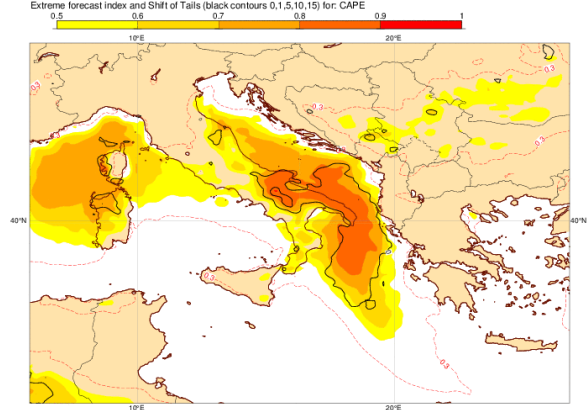
Mon 20 Aug 2018 00UTC @ECMWF VT: Mon 20 Aug 2018 00UTC - Tue 21 Aug 2018 00UTC 0-24h
 Extreme forecast index and Shift of Tails (black contours 0,1,5,10,15) for: CAPE



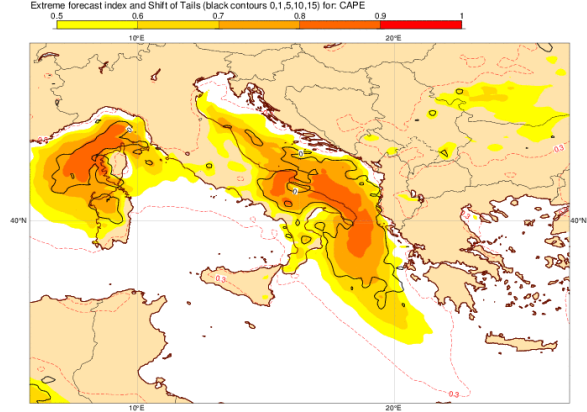
Sun 19 Aug 2018 00UTC @ECMWF VT: Mon 20 Aug 2018 00UTC - Tue 21 Aug 2018 00UTC 24-48h
Extreme forecast index and Shift of Tails (black contours 0,1,5,10,15) for: CAPE



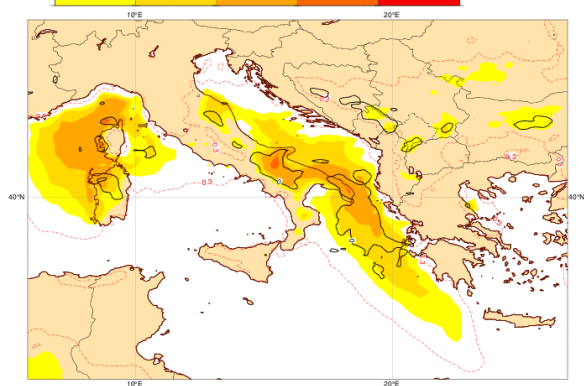
Sat 18 Aug 2018 00UTC @ECMWF VT: Mon 20 Aug 2018 00UTC - Tue 21 Aug 2018 00UTC 48-72h
Extreme forecast index and Shift of Tails (black contours 0,1,5,10,15) for: CAPE



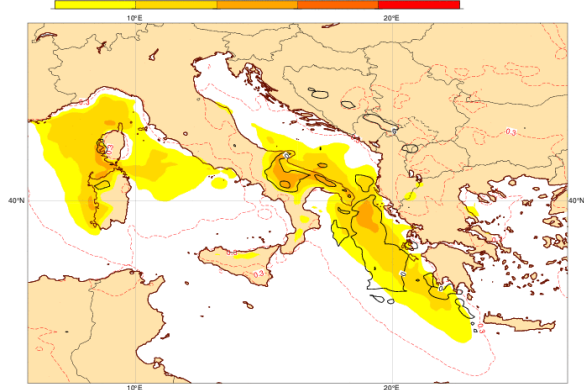
Fri 17 Aug 2018 00UTC @ECMWF VT: Mon 20 Aug 2018 00UTC - Tue 21 Aug 2018 00UTC 72-96h
Extreme forecast index and Shift of Tails (black contours 0,1,5,10,15) for: CAPE



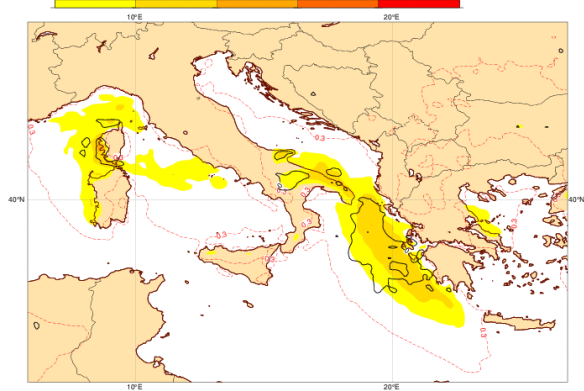
Thu 16 Aug 2018 00UTC @ECMWF VT: Mon 20 Aug 2018 00UTC - Tue 21 Aug 2018 00UTC 96-120h
 Extreme forecast index and Shift of Tails (black contours 0,1,5,10,15) for: CAPE



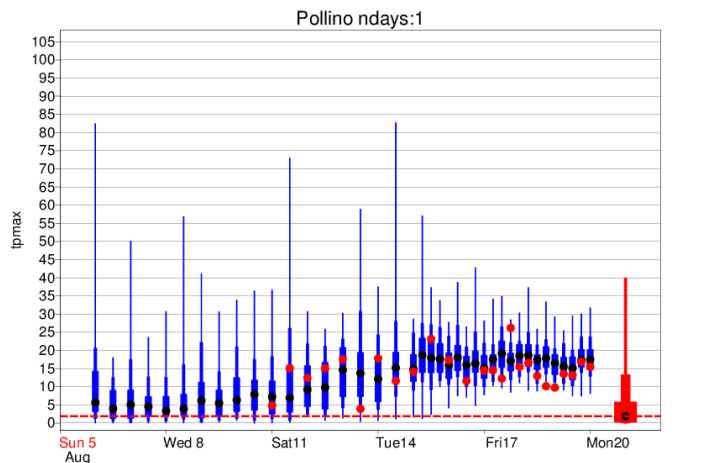
Wed 15 Aug 2018 00UTC @ECMWF VT: Mon 20 Aug 2018 00UTC - Tue 21 Aug 2018 00UTC 120-144h
 Extreme forecast index and Shift of Tails (black contours 0,1,5,10,15) for: CAPE



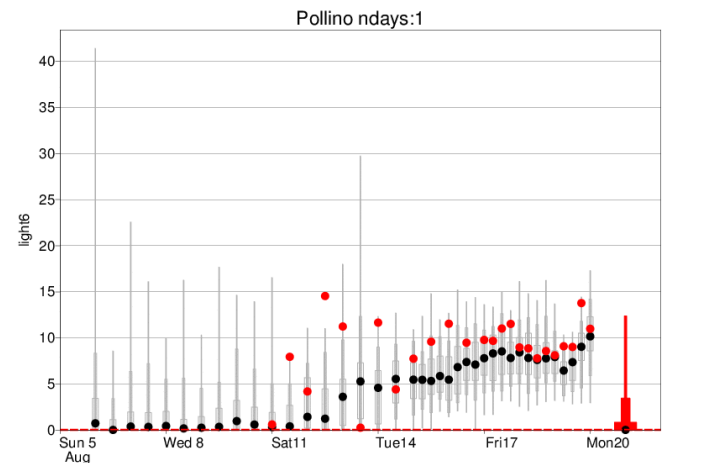
Tue 14 Aug 2018 00UTC @ECMWF VT: Mon 20 Aug 2018 00UTC - Tue 21 Aug 2018 00UTC 144-168h
 Extreme forecast index and Shift of Tails (black contours 0,1,5,10,15) for: CAPE



The plot below shows the evolution of forecast for the grid point with maximum 24-hour precipitation valid 20 August for the 1x1 degree box outlined in the HRES plots above. The plot includes ensemble (blue box-and-whisker), HRES (red dot) and model climate (red box-and-whisker). There was an elevated risk for rainfall in the forecasts, but nothing extreme on the grid-box scale.



The plot below shows the same as above but for a lightning index averaged on 20 August. Also in this diagnostic an elevated risk was present from about a week before the event.



3.4 Monthly forecasts

3.5 Comparison with other centres

4. Experience from general performance/other cases

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

- No signal of extreme rainfall in the forecasts, including the short-range
- Early signal for the surrounding anomalies

6. Additional material