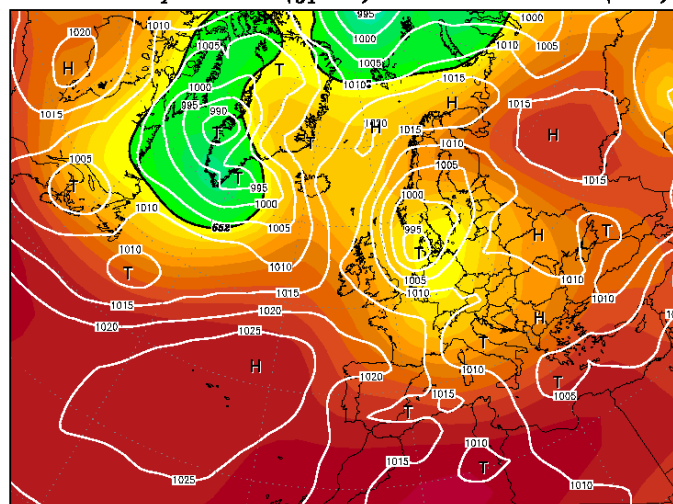


<b>PRODUCT NAME: PR-OBS-02v2.3</b>		
<b>CASE STUDY PERIOD:</b> 24 July 2011	<b>METEOROLOGICAL EVENT:</b> Mesoscale organized thunderstorms over northern Italy	
<b>VALIDATION INSTITUTE:</b> University of Ferrara	<b>Responsible:</b> F. Porcù	<b>Contact point:</b> porcu@fe.infn.it
<b>PRODUCT DEVELOPER INSTITUTE:</b> CNR- ISAC	<b>Developers:</b> Dietrich S., Di Paola F	<b>Contact point:</b> s.dietrich@isac.cnr.it, francesco.dipaola@artov.isac.cnr.it
<b>OPERATIONAL CHAIN INSTITUTE:</b> CNMCA	<b>Responsible:</b> Zauli F.	<b>Contact point:</b> zauli@meteoam.it

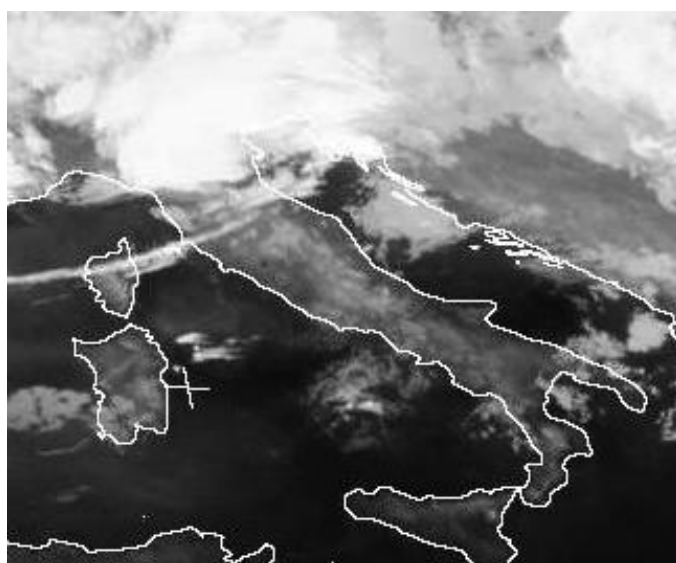
### METEOROLOGICAL EVENT DESCRIPTION

24JUL2011 00Z  
500 hPa Geopotential (gpm) und Bodendruck (hPa)



Daten: Reanalysis des NCEP  
(C) Wetterzentrale  
www.wetterzentrale.de

On July the 24<sup>th</sup> 2011 at 00:00 UTC (left image) a weak and shallow depression is present over central Italy, while an upper level depression (cut-off low) is centered over Denmark. The synoptic scale circulation drives the warm and moist air from SW. This setting generates instability all over Italy, making the whole region prone to the development of local thunderstorms, with potential for mesoscale organization and orographic enhancement of the precipitation intensity.



The SEVIRI IR image at 00:00 UTC on July the 24<sup>th</sup> (on the left) shows well developed mesoscale convective cluster over northern Po Valley and central Alpine region, very similar to the one developed the day before, and presented as h01 case study. The system lasted for several hours, producing intense rainfall and hailfall and moved to the east during the day. No cloudiness is reported on the rest of Italy.

## DATA/PRODUCTS USED

Reference data: Italian hourly raingauges network (provided by DPC)  
Ancillary data (used for case analysis):  
SEVIRI images (courtesy of University of Dundee – NEODAAS)  
Weather charts (courtesy of Wetterzentrale)

## RESULTS OF COMPARISON

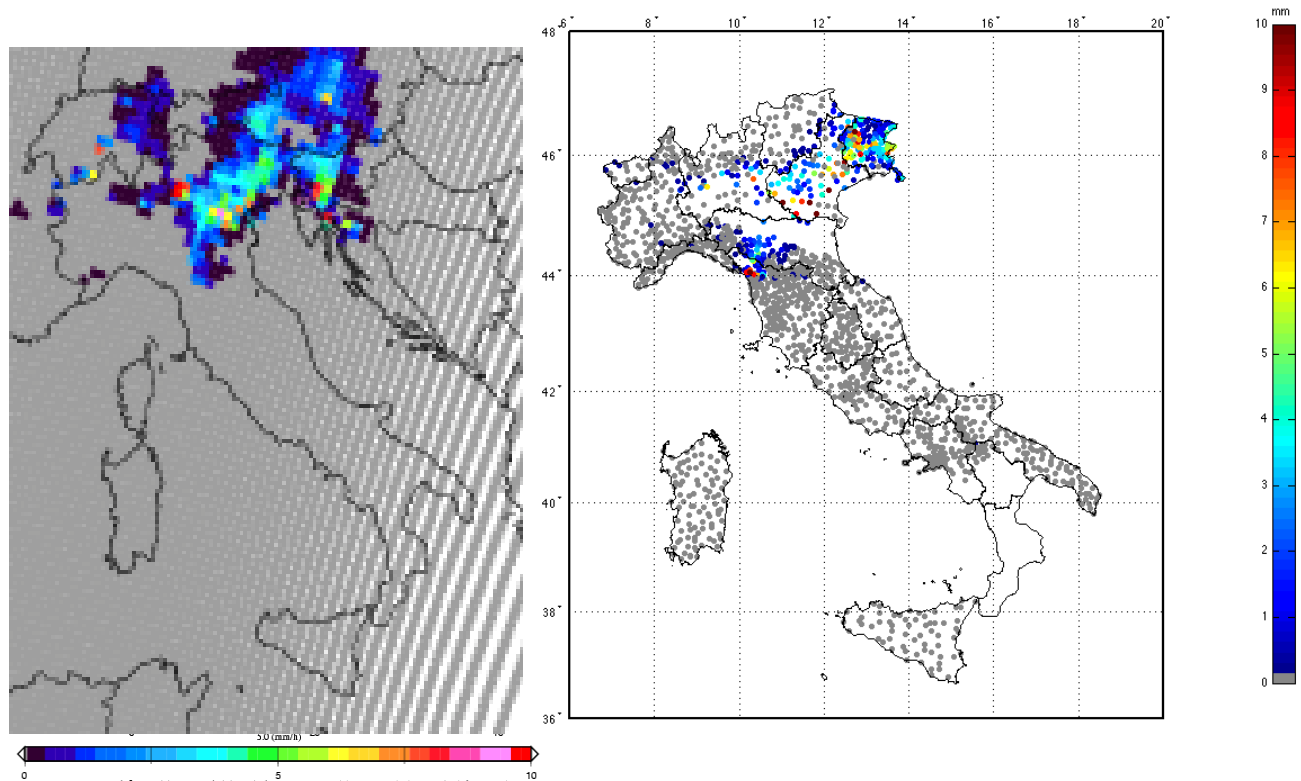


Figure. H02 precipitation map at 01:23 UTC (left) and raingauges hourly precipitation cumulated at 02:00 UTC (right) on July the 24<sup>th</sup> 2011.

Intense precipitation was recorded by the Italian rain gauge network at 02:00 UTC (top right panel), with highest peaks exceeding  $20 \text{ mm h}^{-1}$ . The h02 rain rate map (top left image), shows remarkable skill in detecting rain areas, missing only a very high spot on the Tyrrhenian coast (around 44N, 10E). Statistical indicators confirm the maps visual comparison: rather high POD (0.86) and low FAR (0.26) results in a very high ETS (0.59), while HSS=0.59 indicates that the rain rate classification is reasonably well performed.

## COMMENTS

This intense, large scale, episode is very well described by h02. Probably few spurious wet pixels are found across the Italian-Swiss and Italian-French borders, but the large majority of wet pixels are correctly detected, and also the rain intensity acceptably classified. The missing of a very high rain rate point could be due to a very small scale (sub-IFOV) and short living shower.

## Indications to Developers

The h02 performs very well in this case: probably the developers should look closer to the above mentioned spurious wet pixels over the Alps.