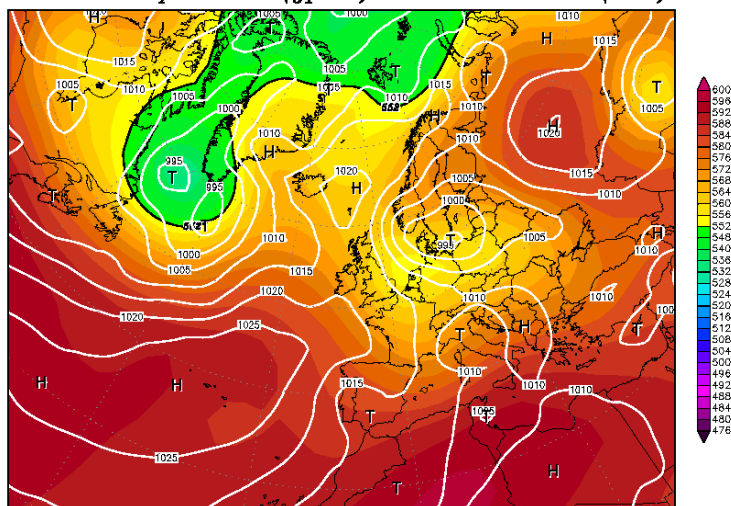


|   |   |   |
|---|---|---|
| <b>PRODUCT NAME: PR-OBS-05v1.4</b>                    |   |   |
| <b>CASE STUDY PERIOD:</b><br>23-24 Jul 2011           | <b>METEOROLOGICAL EVENT:</b><br>Thunderstorms and widespread precipitation over Italy |   |
| <b>VALIDATION INSTITUTE:</b><br>University of Ferrara | <b>Responsible:</b><br>Porcù F.   | <b>Contact point:</b><br><a href="mailto:porcu@fe.infn.it">porcu@fe.infn.it</a>         |
| <b>PRODUCT DEVELOPER INSTITUTE:</b><br>CNR- ISAC      | <b>Developers:</b><br>Mugnai A., Sanò P.  | <b>Contact point:</b><br><a href="mailto:a.mugnai@isac.cnr.it">a.mugnai@isac.cnr.it</a> |
| <b>OPERATIONAL CHAIN INSTITUTE:</b><br>CNMCA          | <b>Responsables:</b><br>Zauli F., Melfi D.  | <b>Contact point:</b><br><a href="mailto:zauli@meteoam.it">zauli@meteoam.it</a>         |

### METEOROLOGICAL EVENT DESCRIPTION

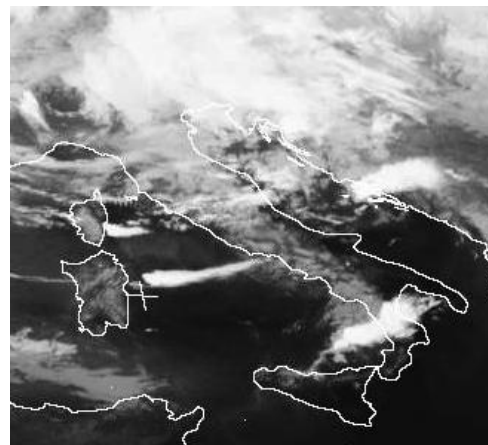
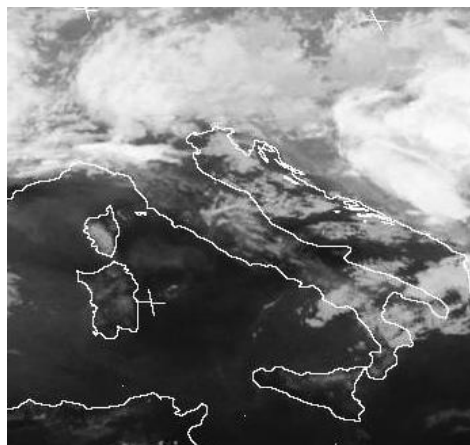
23JUL2011 00Z  
500 hPa Geopotential (gpm) und Bodendruck (hPa)



Daten: Reanalysis des NCEP  
(C) Wetterzentrale  
[www.wetterzentrale.de](http://www.wetterzentrale.de)

On July the 23<sup>rd</sup> 2011 at 00:00UTC a weak and shallow depression is present over the Po Valley in northern Italy, advecting warm and moist air from SW (left image). The synoptic scale circulation drives the warm and moist air from SW. This setting, lasting also on 24<sup>th</sup> July, generates instability all over Italy, making the whole region prone to the development of local thunderstorms, with potential for meso-scale organization and orographic enhancement of the precipitation intensity.

The SEVIRI IR images at 18:00 on July 23 (left) and on July 24 at 06:00 UTC (right) are shown below: convective development is present in different parts of Italy and this instability originates widespread precipitation over peninsular Italy, while more intense rainrates occurred over Po Valley and Alpine southern slopes.



## DATA/PRODUCTS USED

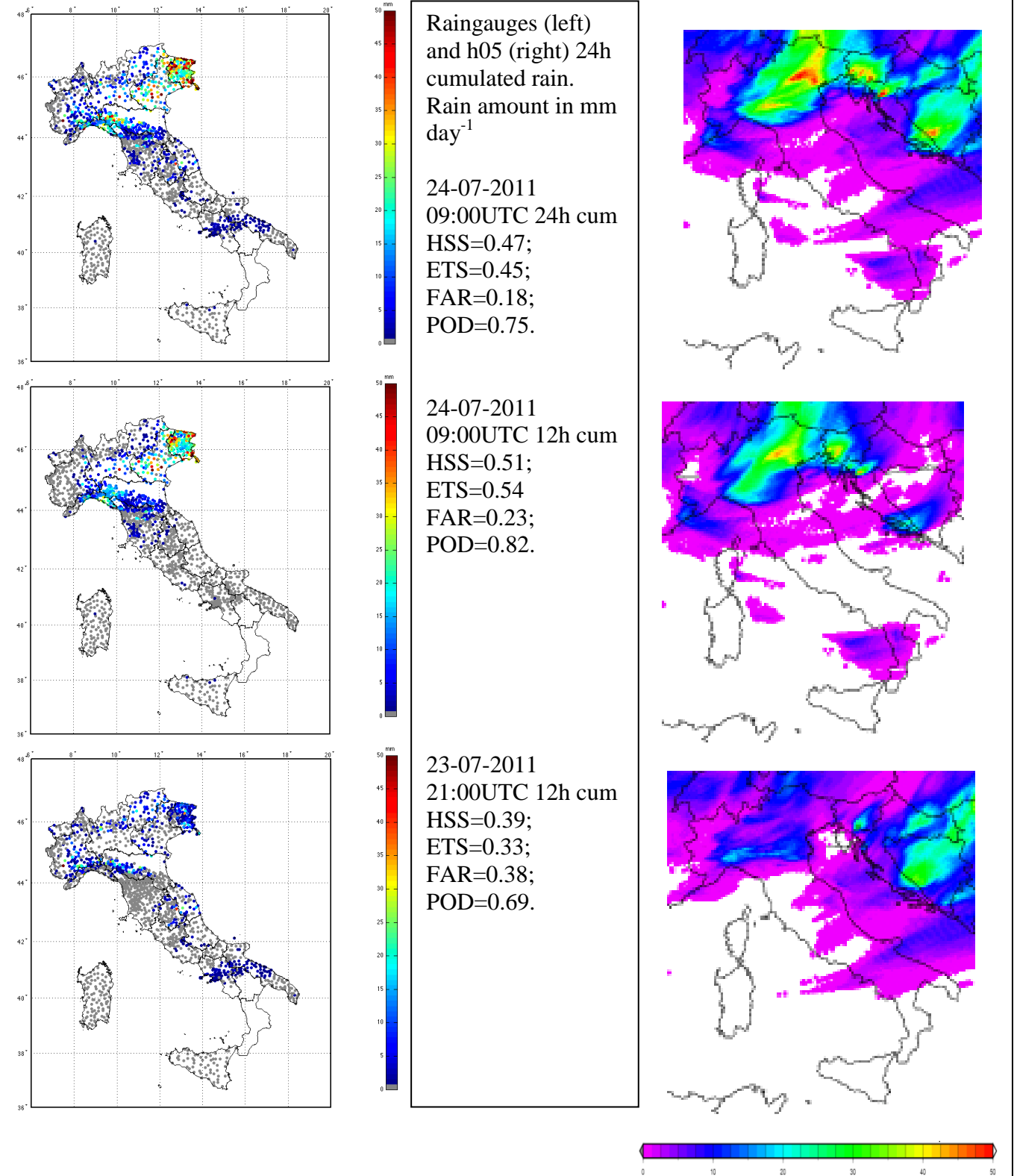
Reference data: Italian hourly raingauges network (provided by DPC)

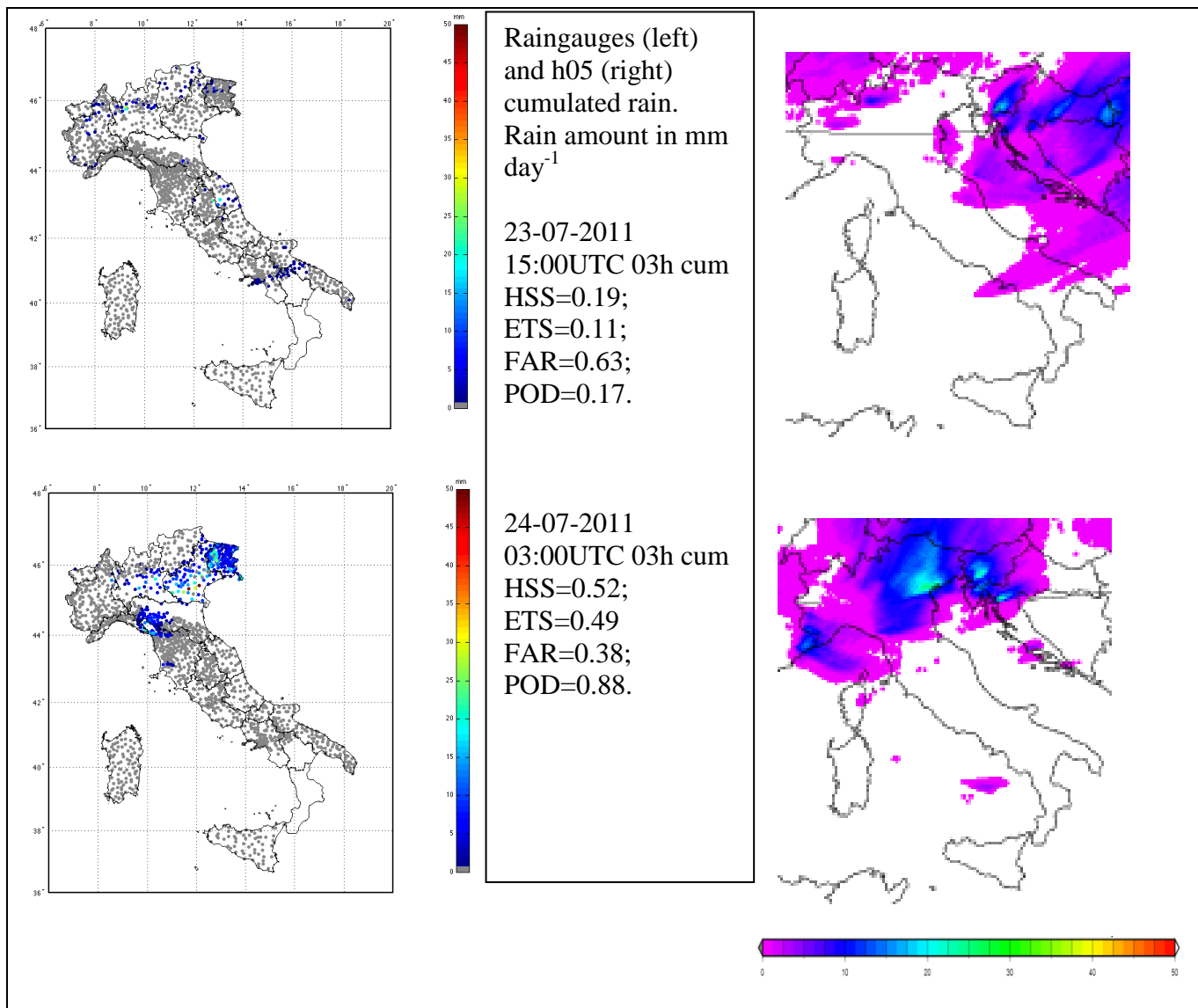
Ancillary data (used for case analysis):

SEVIRI images (courtesy of University of Dundee – NEODAAS)

Weather charts (courtesy of Deutsche Wetterdienst)

## RESULTS OF COMPARISON





## COMMENTS

The 24 hours cumulated h05 product shows relatively high skill scores: high rain amount is correctly detected on the Po Valley and eastern Alps (HSS=0.47), and moderate amount over central Italy, with satisfactory values for POD (0.75), FAR (0.18) and ETS (0.45). The corresponding 12 hours products show good skill for the night-time, severe, event over Po Valley, with good capability in correctly classifying rainrates and wet areas. In the diurnal part of the event moderate to light precipitation took place over different parts of Italy, and the performance of h03 got consequently worse: the FAR increased to 0.38 and POD decreased to 0.69. Going to finer details, the 3 hours estimates shows highly variable performances: HSS varies from 0.19 (in the worst case) to 0.52 in the best case, the first occurred during the day-time light precipitation episodes, and the second during the night-time severe event over northern Italy.

## Indications to Developers

Good performances are reached in case of heavy precipitation, while less skill is shown for moderate and light precipitation.