

**PRODUCT NAME: OBS5v1.2 (H05)**

**CASE STUDY PERIOD:**  
01-02 January 2012

**METEOROLOGICAL EVENT:**  
Long lasting precipitation due to frontal activity

**VALIDATION INSTITUTE:**  
RMI

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**OPERATIONAL CHAIN INSTITUTE:**  
CNMCA

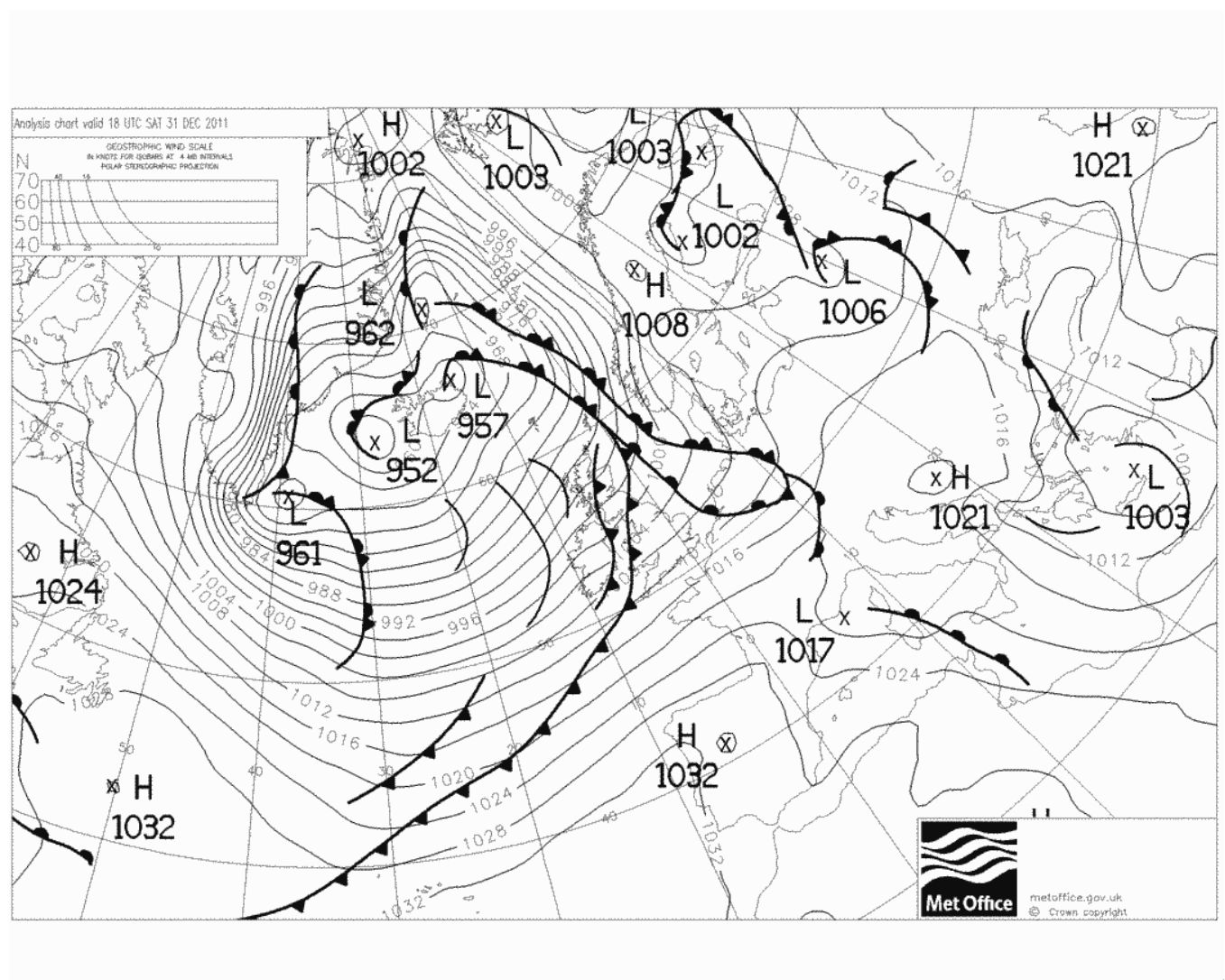
**Responsible:**  
Zauli F

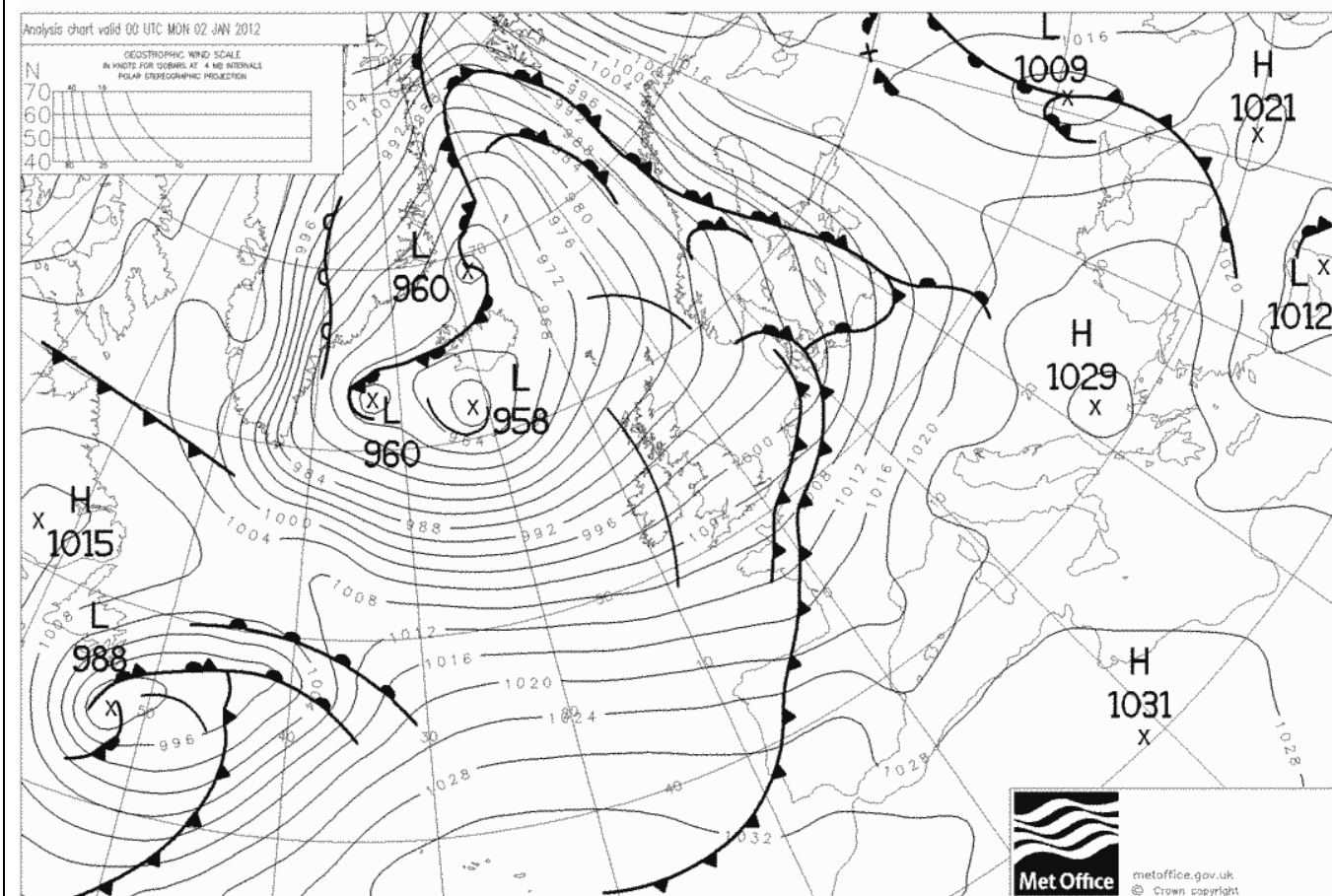
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### METEOROLOGICAL EVENT DESCRIPTION

The precipitation event we consider here is related to very extended frontal activity over the northern Atlantic, affecting many areas of western Europe.

The synoptic weather situation at 18:00 UTC December 31 2011 and at 00:00 UTC January 02, 2012, is shown in the following maps.

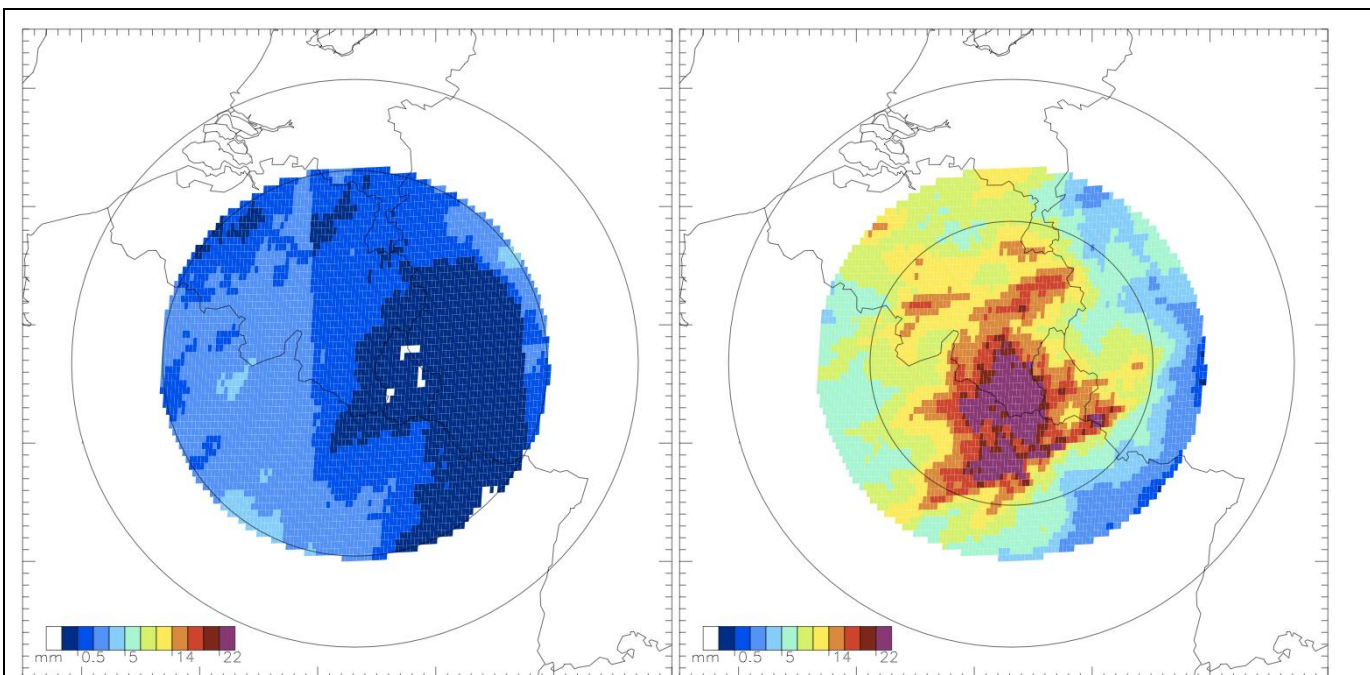




We observe that very deep depressions are present in high latitudes around Island. They are accompanied by very large frontal surfaces moving east-southeast and transporting colder air in north-western Europe. In Belgium in particular we had precipitation during the night of January 01 to 02 that lasted for many hours.

#### DATA/PRODUCTS USED

We compare here the 24-hour accumulated rain from OBS5v1.2 (H05) to the radar-observed accumulated rain for the same time period.



Satellite (OBS5v1.2 on the left) and radar (on the right) on January 02, 2012.

The radar images seen on the right are the result of the up-scaling of the Wideumont radar data in the H05 grid, using the common code for this purpose. We observe that although the H05 product records non-zero precipitation values in almost all the validation area, like in the radar image, the amount of accumulated precipitation and the pattern diverge completely from the radar data.

## RESULTS OF COMPARISON

In order to summarize the results of the comparison, we present some statistical measures describing the areal behaviour and the error of the satellite observation. These are: (1) percentages of pixels inside the radar range with accumulated precipitation equal or greater than 1 mm (P1Rad, P1Sat), 8 mm (P8Rad, P8Sat) and 32 mm (P32Rad, P32Sat); (2) maximum accumulated precipitation value (in mm) inside the radar range (MaxRad, MaxSat). Also, mean error (ME) and root mean square error (RMSE) are calculated.

Product: OBS5v1.2 (H05)						
Time (rad/sat)	P1Rad	P8Rad	P32Rad	P1Sat	P8Sat	P32Sat
02/01/2012	98.83%	61.58%	0.29%	36.22%	0.00%	0.00%

Product: OBS5v1.2 (H05)				
Time (rad/sat)	MaxRad	MaxSat	MD	RMSD
02/01/2012	34.68	4.39	-9.40	11.14

The precipitation in this event is much underestimated by the product H05. This is observed in both area receiving rain, at all precipitation classes, and maximum rain rate. The differences are quite large, especially concerning the highest observed values.

## COMMENTS

The product OBS5v1.2 much underestimated a precipitation event related to a typical cold front passage over Belgium, producing locally large accumulated precipitation values. The satellite missed completely the higher accumulated values and produced a much more restricted area with low precipitation (1 mm/24 hours).

[Indications to Developers](#)