| PRODUCT NAME: **OBS2v2.3 (H02)** | | |
|---|---|---|
| CASE STUDY PERIOD:<br>06 May 2012 | METEOROLOGICAL EVENT:<br>Complex system of fronts in western Europe | |
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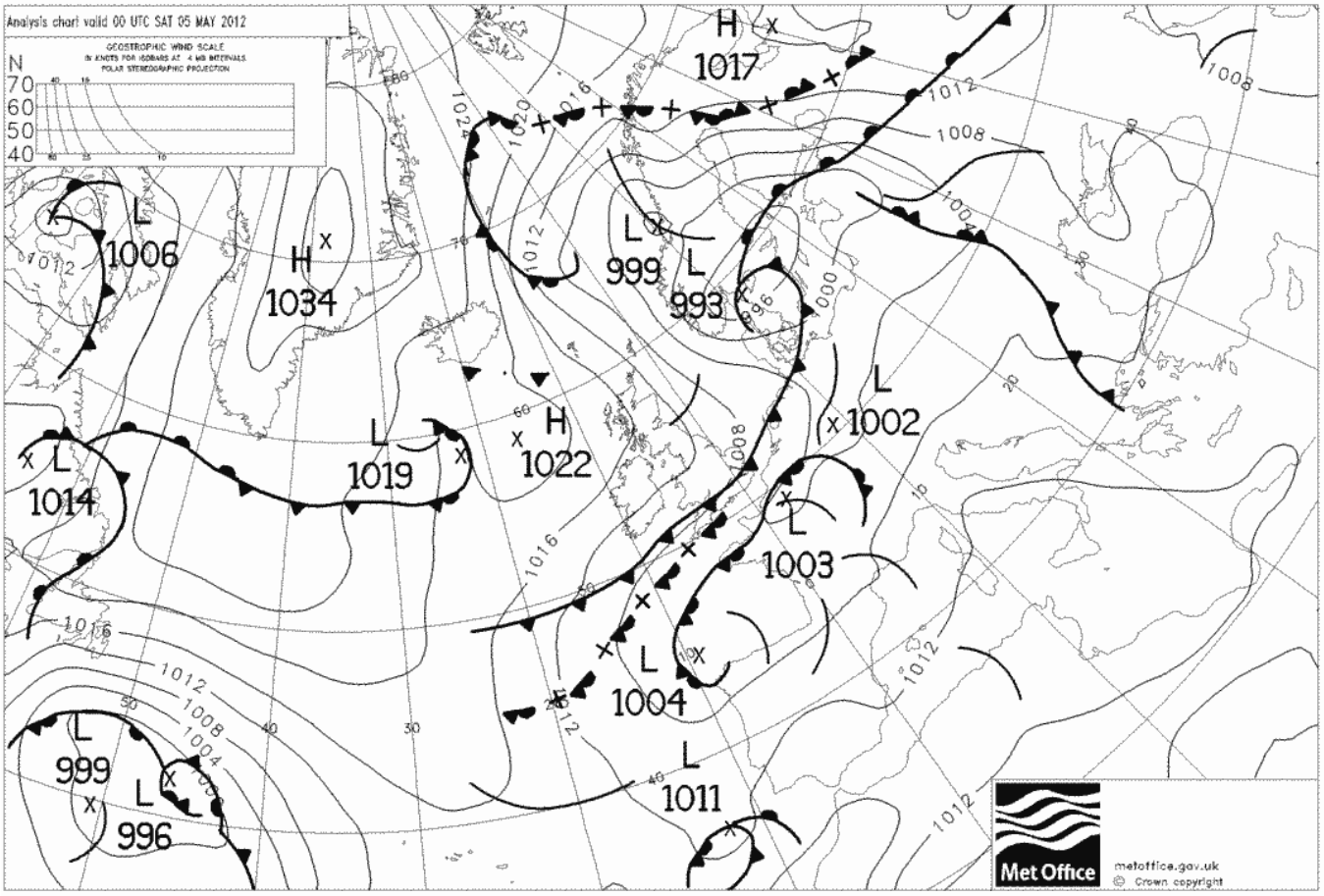
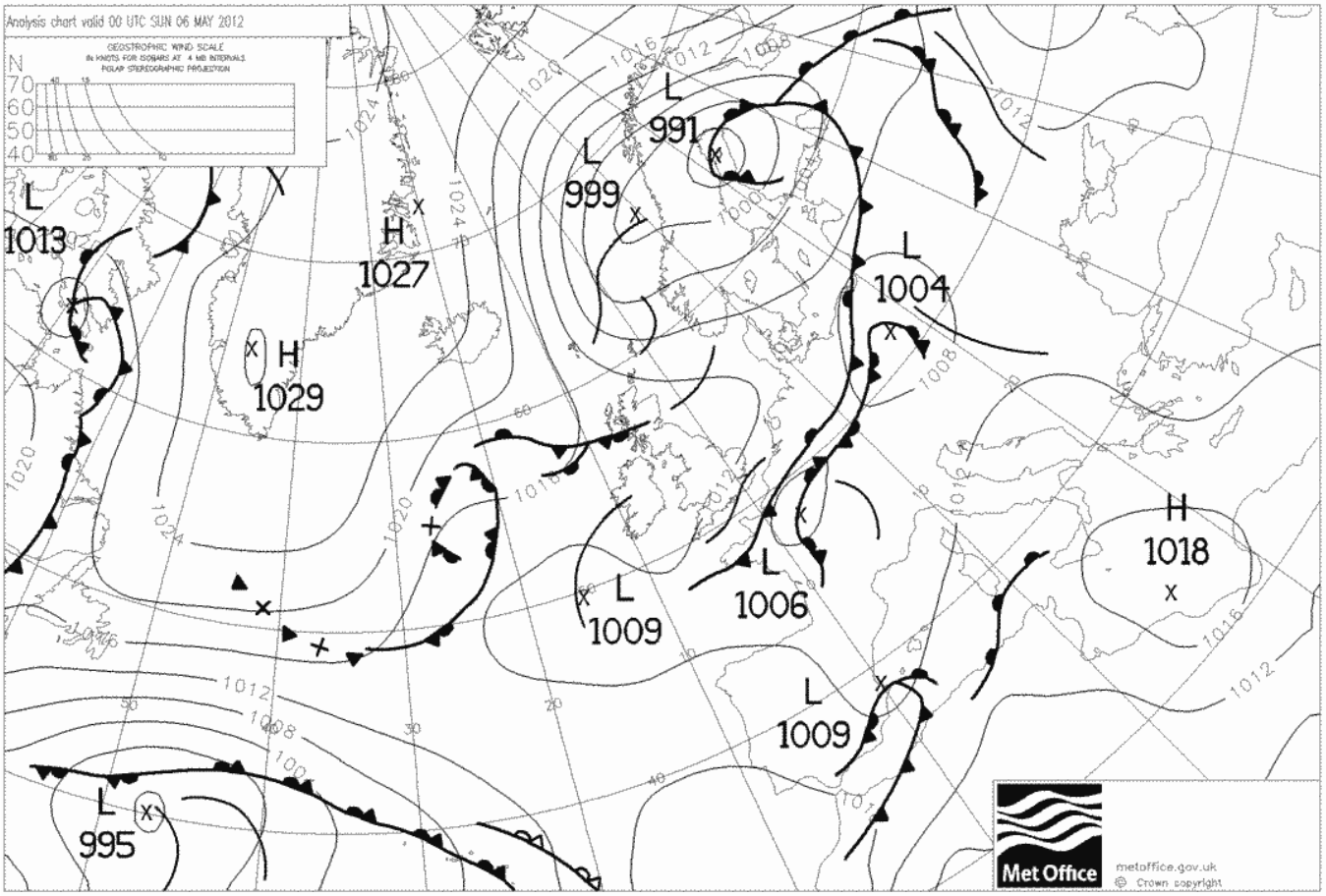
METEOROLOGICAL EVENT DESCRIPTION

The event of interest here is precipitation during the night from May 05 to May 06 2012, arising from a complex system of fronts and depressions over western Europe. The precipitation lasted for many hours and was related to the presence of occluded fronts in the south of or over Belgium.

The synoptic weather situation at 00:00 UTC May 05 and 06, 2012, is shown in the following maps.

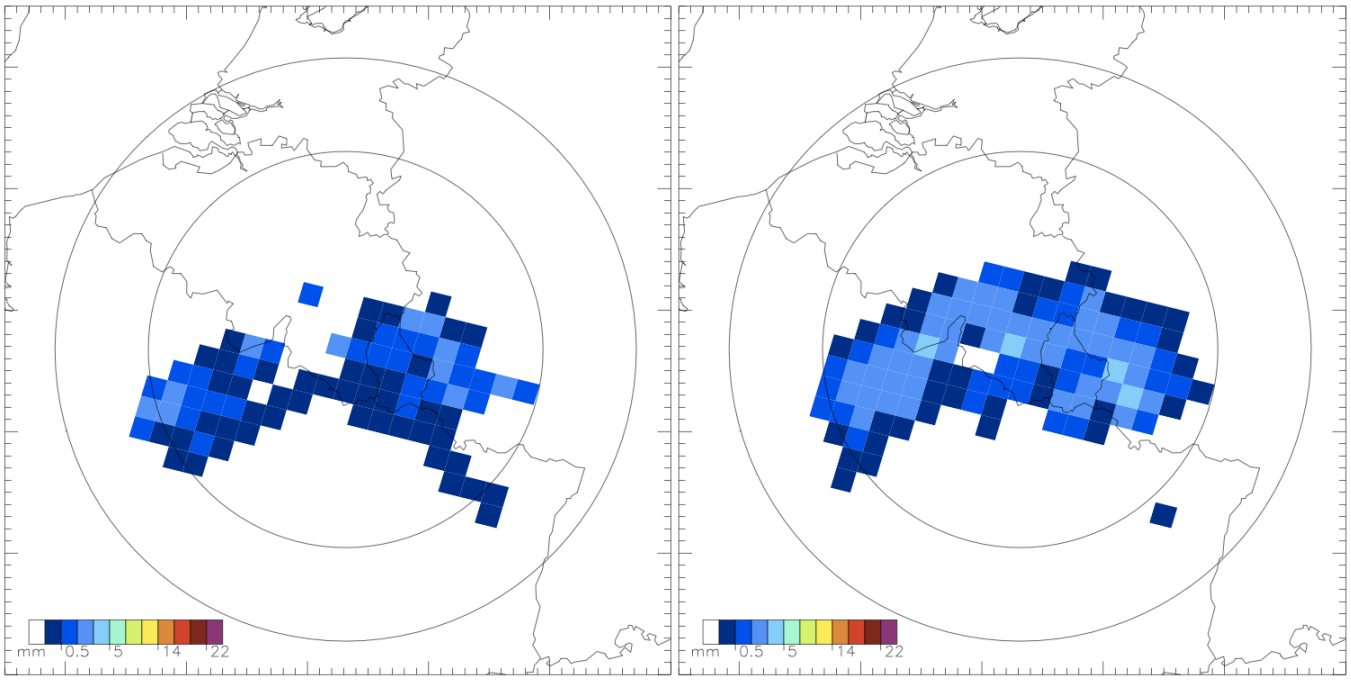





We see indeed a complex system of fronts and depressions covering most part of central and western Europe and of the British Islands as well, extending up to Scandinavia. At the same time, cold air was pushed south from the anticyclones in the area of Island-Greenland.

## DATA/PRODUCTS USED

We compare here the rain rate from OBS2v2.3 (H02) to the radar-observed rain rate.




*Satellite (OBS2v2.3 on the left, at 03:00 UTC) and radar (on the right, at 03:00 UTC) on May 06, 2012.*

The radar image on the right is the result of the up-scaling of the Wideumont radar data in the H02 grid. In this case the satellite produced a fairly accurate picture of the precipitation pattern according to what the radar detection provides. There is however a small area that the satellite missed while its rain rates are generally lower than the radar rain rates.

## RESULTS OF COMPARISON

In order to compare quantitatively the two images, satellite and radar presented previously, we calculate a series of statistical measures. These are, for both radar and satellite observation: (1) percentages of pixels inside the radar range with precipitation rate equal or greater than 1.0 mm/h (P1Rad, P1Sat), 2.0 mm/h (P2Rad, P2Sat) and 5.0 mm/h (P5Rad, P5Sat); (2) maximum precipitation rate value (in mm/h) inside the radar range (MaxRad, MaxSat). Also, mean error (ME) and root mean square error (RMSE) are calculated.

| **Product** | **Time** | **P1Rad** | **P2Rad** | **P5Rad** | **P1Sat** | **P2Sat** | **P5Sat** |
|---|---|---|---|---|---|---|---|
| OBS2v2.3 | 03:00 | 15.36% | 5.23% | 0.00% | 3.59% | 0.00% | 0.00% |

| **Product** | **Time** | **MaxRad** | **MaxSat** | **ME** | **RMSE** |
|---|---|---|---|---|---|
| OBS2v2.3 | 03:00 | 4.30 | 1.80 | -0.24 | 0.59 |

The precipitation underestimation in the satellite detection is summarized by the negative mean error. Moreover, for every precipitation class, the satellite detects much less percentage of “rainy” pixels than the radar, but this is of course related also to the lower rain rates recorded by the satellite.

| COMMENTS |
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| In the present case the product OBS2v2.3 provides a satisfactory picture of the actual precipitation pattern but fails to accurately represent the rain rate. |
| Indications to Developers |