Application and verification of ECMWF products

INM-STAP

2.1   Post-processing of model output

2.1.3   Derived fields

Post-processing of EPS output includes the generation of probability products for different parameters and thresholds. Some examples are shown in Figure 1.
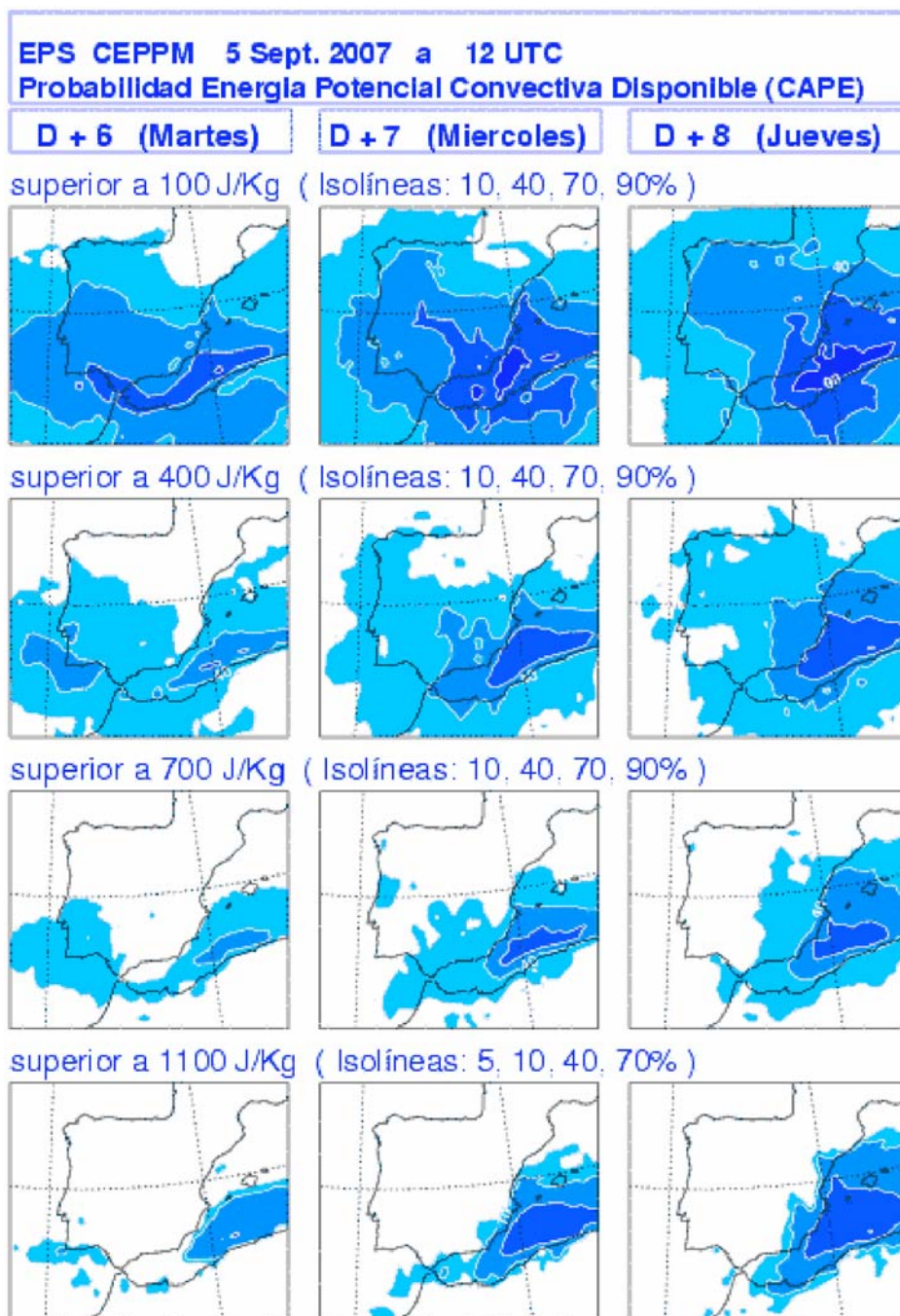

Fig. 1a   Example of forecast probability maps of CAPE at the Iberian Peninsula area, 5 September 2007 EPS-12 UTC: D+6, D+7, D+8 with different thresholds.
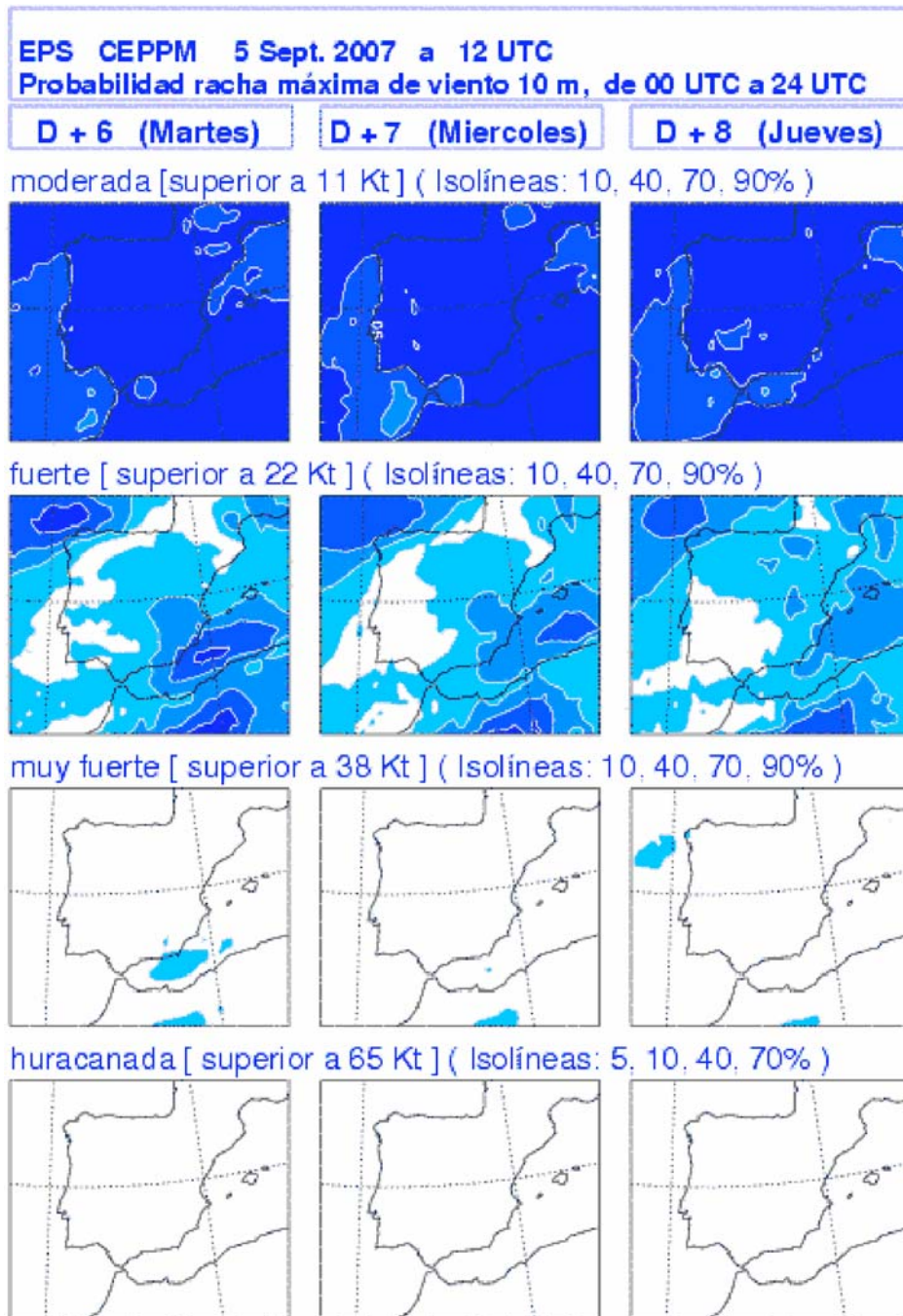
Fig. 1b   Example of forecast probability maps of 10 m wind gust at the Iberian Peninsula area, 5 September 2007
EPS-12 UTC: D+6, D+7, D+8 with different thresholds.

3.   Verification of products

3.1.3 Post-processed products

a. – Temperature verification

Extensive verification of the objective local deterministic forecasts of daily maximum and minimum temperature up to ten days in advance, obtained by filtering of the 2m-temperature ensemble mean values has continued during 2006. The global results of this systematic verification for a set of 50 selected synoptic stations over the Spanish territory are included in a monthly summary report for internal use, in the same way that was produced in previous years. Some of the verification results obtained for the period January -December 2006 are depicted in figures 2 to 5.

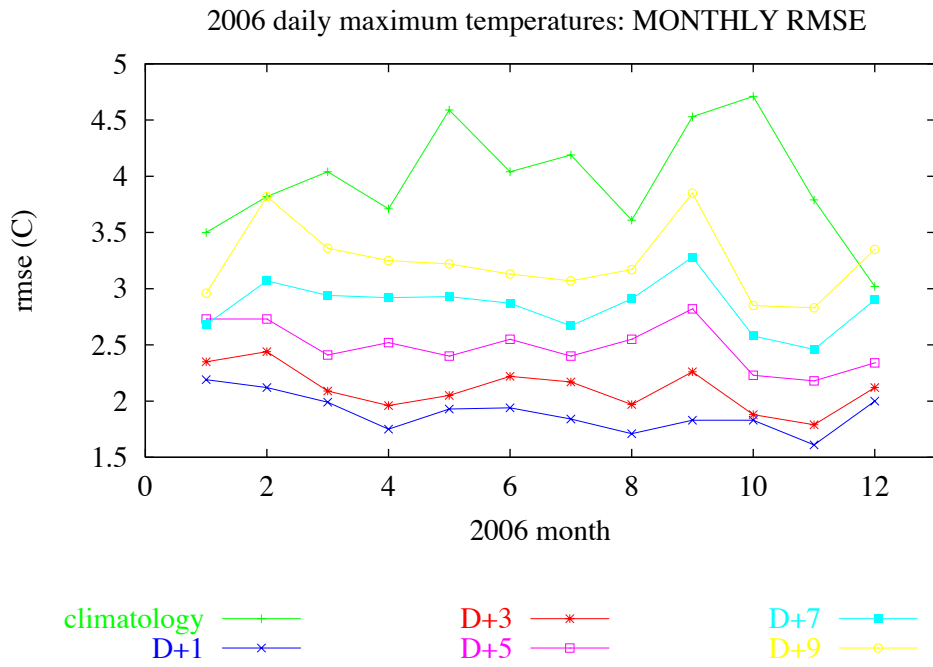2006 daily maximum temperatures: MONTHLY RMSE

Fig. 2   Time series of monthly mean values of RMSE for objective maximum temperature forecasts for different prediction ranges during 2006. Local forecasts are obtained from the filtering of the 2m-Temp EPS mean. The verification sample is composed by the forecasts for a set of 50 Spanish synoptic stations.
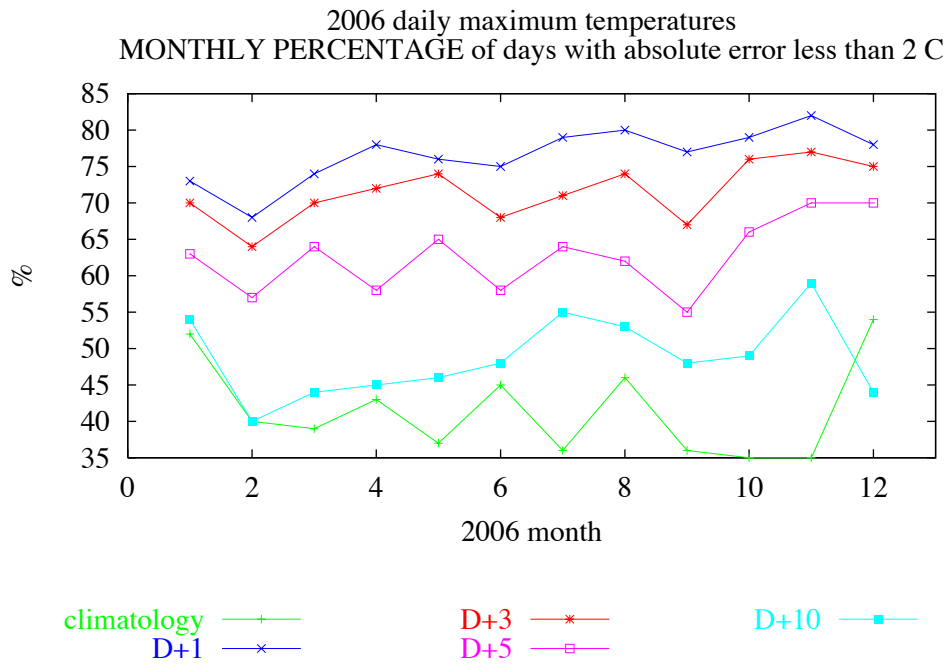
2006 daily maximum temperatures
MONTHLY PERCENTAGE of days with absolute error less than 2 C

Fig. 3   Time series of percentage of correct maximum temperature forecasts (error less than 2ºC) for different prediction ranges. The verification sample is composed by the forecasts made in 2006 for a set of 50 Spanish synoptic stations.
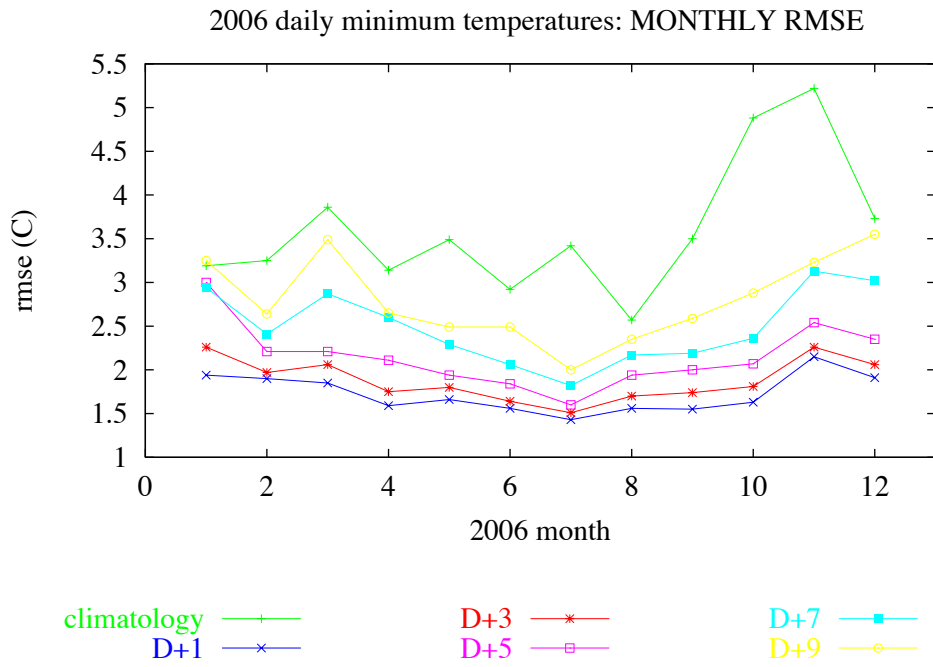
3

Fig. 4   Time series of monthly mean values of RMSE for objective minimum temperature forecasts for different prediction ranges during 2006. Local forecasts are obtained from the filtering of the 2m-Temp EPS mean. The verification sample is composed by the forecasts for a set of 50 Spanish synoptic stations.
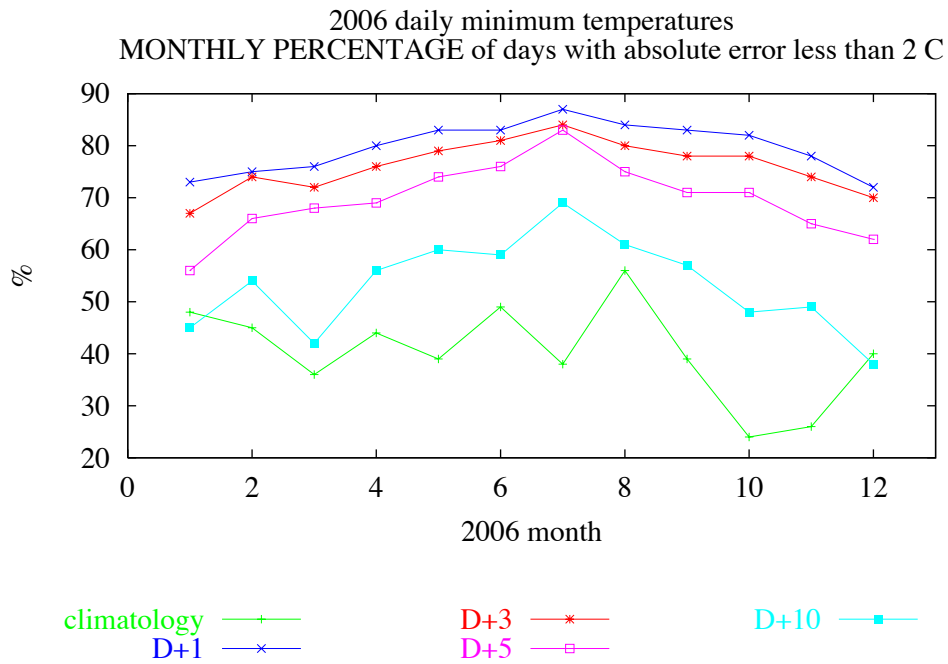

Fig. 5   Time series of percentage of correct minimum temperature forecasts (error less than 2ºC) for different prediction ranges. The verification sample is composed by the forecasts made in 2006 for a set of 50 Spanish synoptic stations.

b. – Local probabilistic quantitative precipitation

The verification of the local probabilistic quantitative precipitation forecasts for D+1 and D+2 against SYNOP observations has also continued during 2007. No information is available for 2006. The global results of this verification activity are available for the period (March 1-August 31). The verification parameters used are the following: reliability diagram, Brier skill score versus climatology, area under Relative Operating Characteristics curve and Cost Loss / ratio. The Cost Loss / ratio represents the economical value of the forecasts. These results of the objective verification of these quantitative probabilistic precipitation forecasts (10 mm threshold) for this period of 2007 are showed in figures 6 to 8.
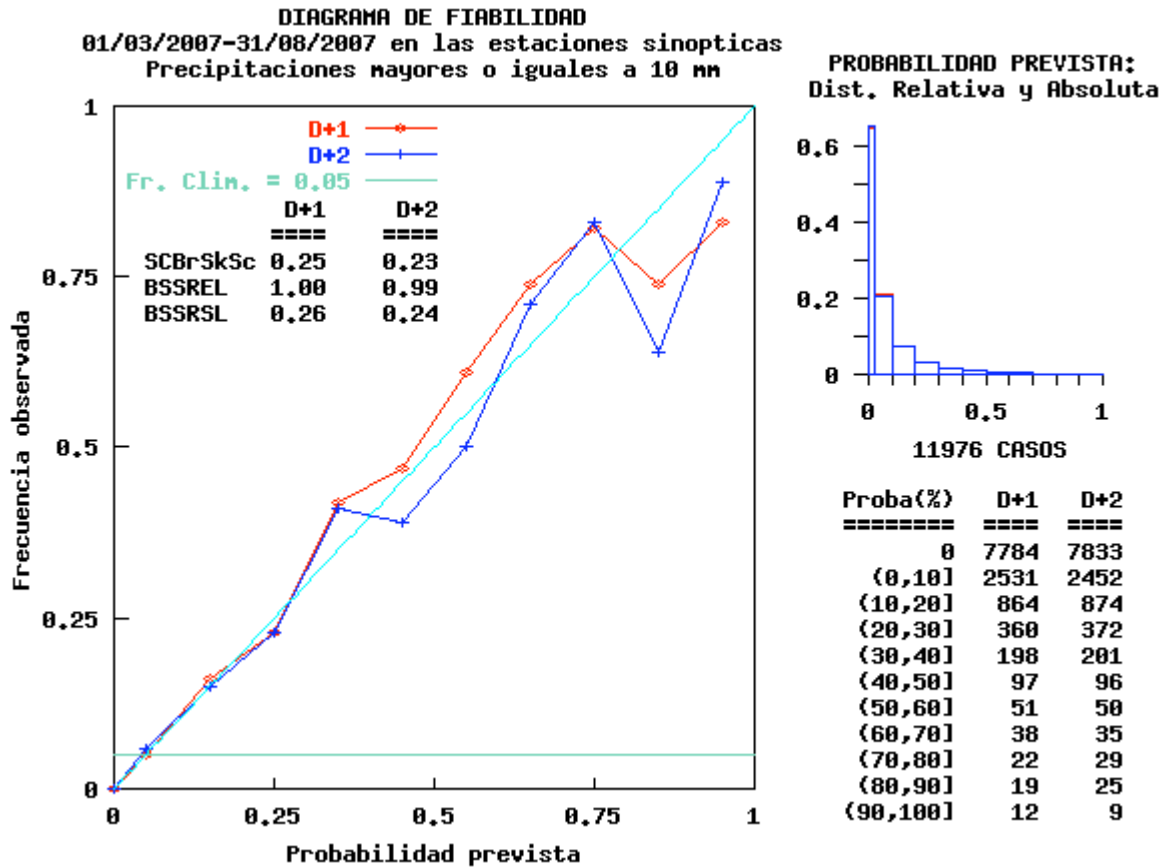

Fig. 6   Reliability diagram.

CURVA ROC
01/03/2007–31/08/2007 en las estaciones sinopticas
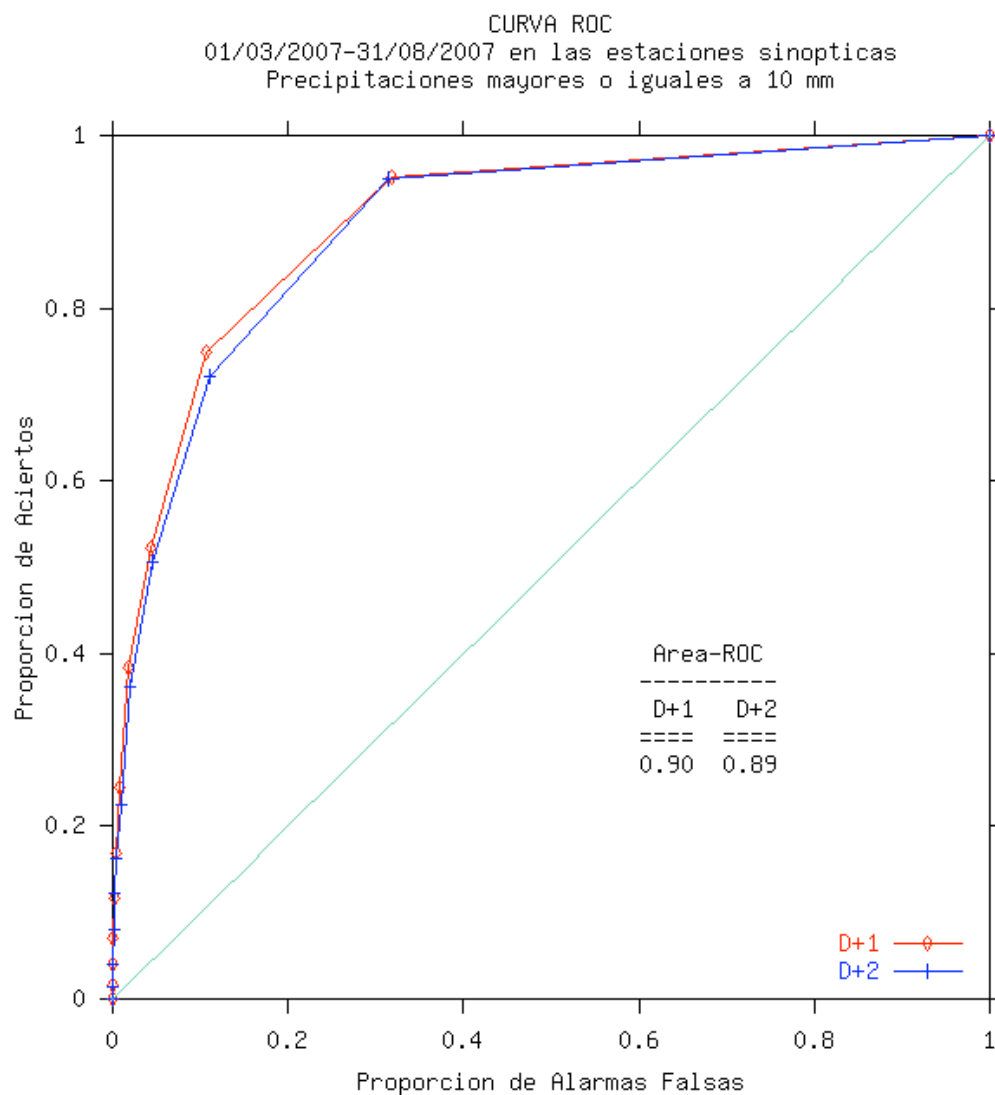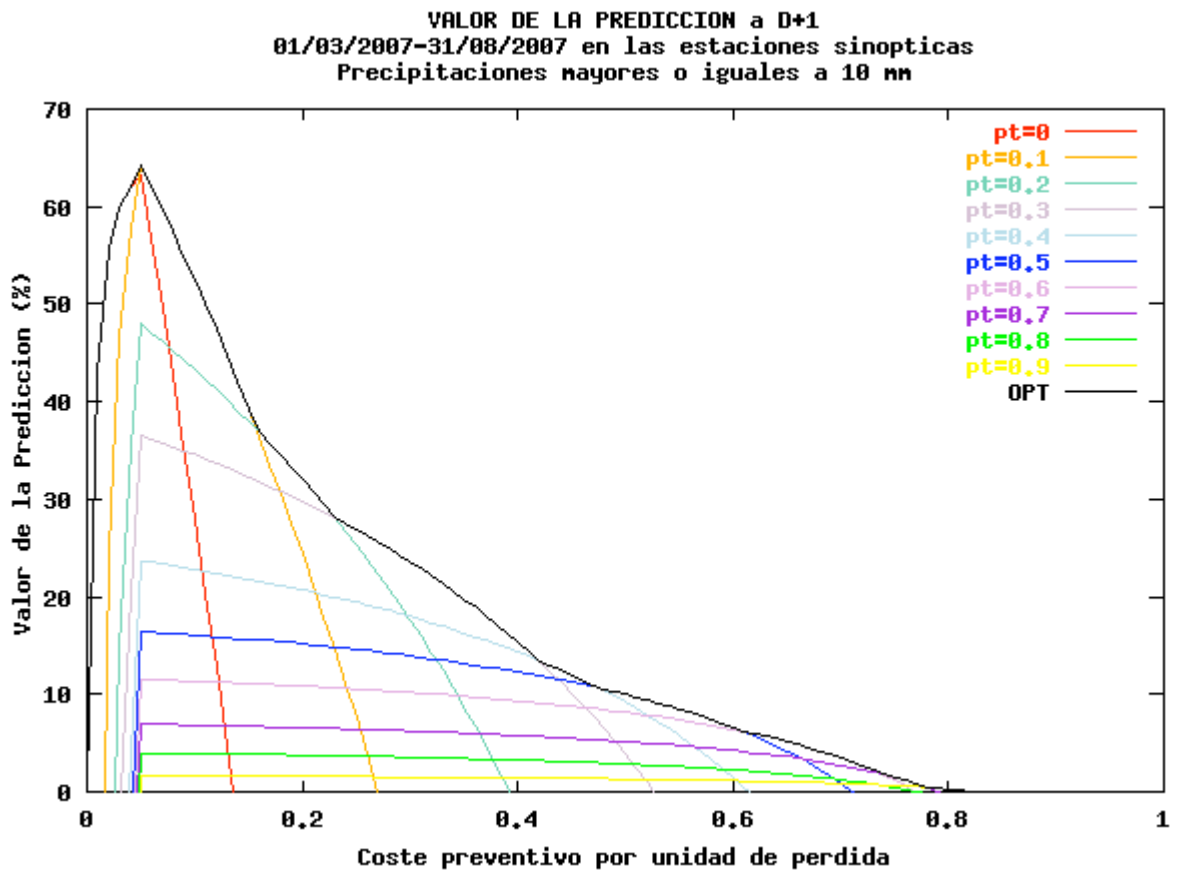Precipitaciones mayores o iguales a 10 mm

Fig. 7   ROC curve.

Fig. 8   Cost loss/ ratio.