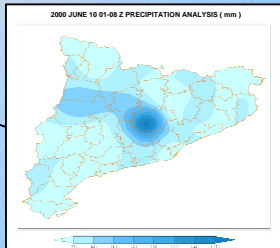
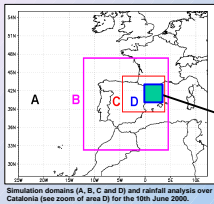


# Numerical mesoscale forecast of a heavy rainfall event over Catalonia (NE Spain)

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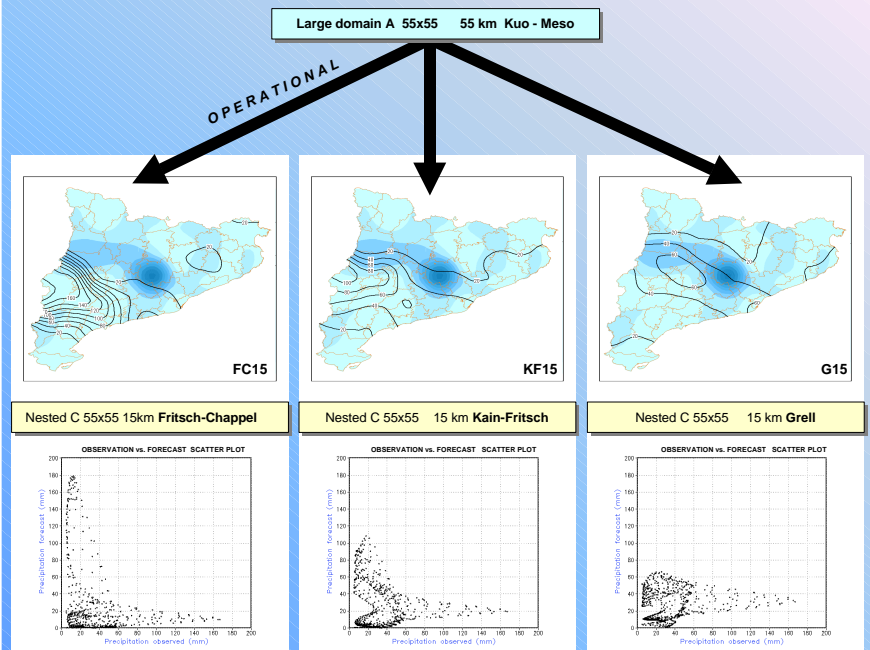
## THE 10th OF JUNE 2000 TORRENTIAL RAINFALL EVENT OVER CATALONIA



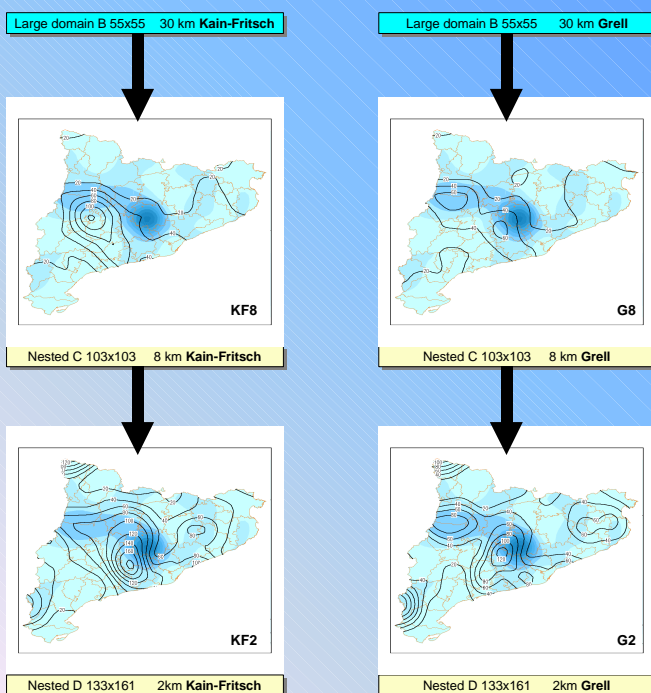
The 10th of June 2000 a heavy rainfall event produced 5 fatal victims and dramatic flash floods in the center of Catalonia (NE Spain). More than 160 mm fell in 3 h and total daily rainfall was over 200 mm. The precipitation maximum fell between 01 and 08 Z (see analysis).

This event was studied comparing the operational hydrostatic nested version of the MASS model with a horizontal resolution of 15 km and a moist convection parameterization scheme of *Fritsch-Chappel* (FC15) with model runs using *Kain-Fritsch* (KF15) and *Grell* (G15) schemes. Results are shown for the maximum period: all schemes locate reasonably well the maximum though the *Grell* scheme produces best results as can be observed in the scatter plot of forecast vs. observation grid boxes.

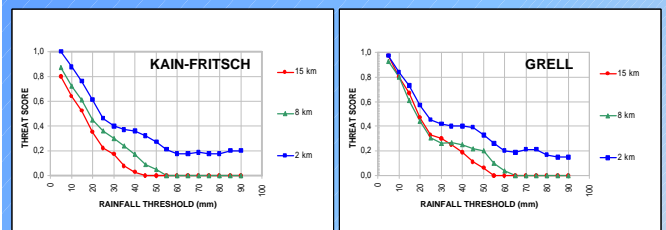
## COMPARISON OF 3 SCHEMES AT OPERATIONAL RESOLUTION



## HIGHER RESOLUTION SIMULATIONS (8 and 2 Km)



## RESULTS AND DISCUSSION



Higher resolution simulations at 8 and 2 km using *Grell* and *Kain-Fritsch* schemes (KF8, KF2, G8, G2) were calculated seeking improvements in the rainfall forecast. It can be seen that:

- KF maximum location is improved as resolution increases.
- G8 shows a secondary maximum which becomes a better forecast for the real primary maximum in G2.
- G15 and G8 underestimate rainfall above the 50 mm threshold while KF15 and KF8 overestimate slightly.
- Both G2 and KF2 overestimate rainfall very much.
- As shown by the Threat Score index G15 and G8 locate better the maximum and G2 and KF2 rainfall forecasts are very similar.

More events should be analyzed to obtain general conclusions useful to understand the performance of each convection scheme and to determine the most appropriate parameterization for the next operational version of the MASS model.