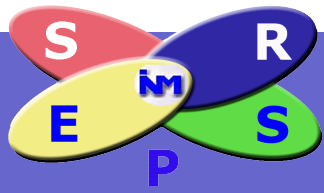


Status of SREPS at AEMET

José A. Garcia-Moya, A. Callado, P. Escriba, C. Santos, D. Santo-Muñoz, J. Simarro

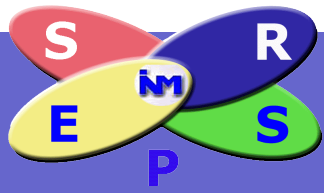
Predictability Group. AEMET

Hirlam-Aladin All Staff Meeting. Utrecht. May 2009



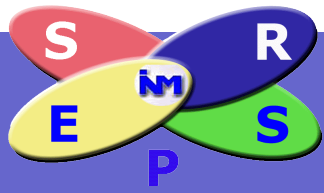
Status: May 2009

- Daily runs at 00 and 12 UTC.
- Forecast length: 72 hours.
- Members 25:
 - Global models: ECWMF, DWD, UKMO, NCEP & CMC (**Canada, new!**).
 - LAMs: Hirlam, MM5, HRM, COSMO & UM.
- Resolution: 25 Km y 40 vertical levels.



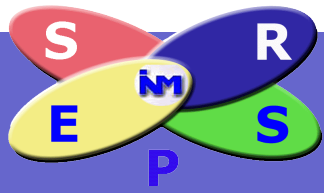
Status II: Mayo 2009

- Computational resources: 24 MSPs at CrayX1e.
- When are the pdf's ready?:
 - Run at 00 UTC: 07:30 UTC
 - Run at 12 UTC: 19:30 UTC



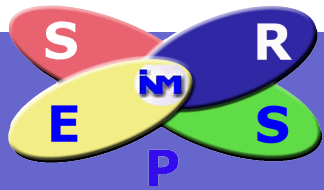
Postprocess

- Monitoring using an intranet web server.
- Storing all the members and pdf's from April 2006.
- Special GRIB tables developed to plot products with metview.



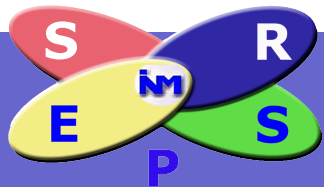
Postprocess II

- SREPS project through Europe:
 - **COSMO members of SREPS** (4) with 25 Km horizontal resolution:
 - **COSMO-SREPS (ARPA-SIM Bolonia)**: 16 members at 10 Km resolution (perturbations in some parameters of the model physics and using SREPS as BCs).
 - **DWD-DE-SREPS** 16 members a 2.8 Km resolution and 24 hours forecast (using COSMO-SREPS as BCs y perturbations in the physics).



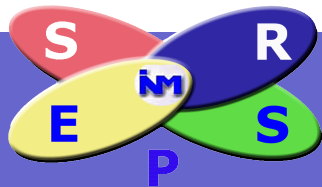
Verification

- Daily deterministic verification of every member.
- Daily verification of pdf's using synoptic obs as reference.
- Yearly verification using precipitation obs from European climate network upscaled by ECMWF up to 0.25 deg latlon. Comparison with ECMWF EPS (51 members).

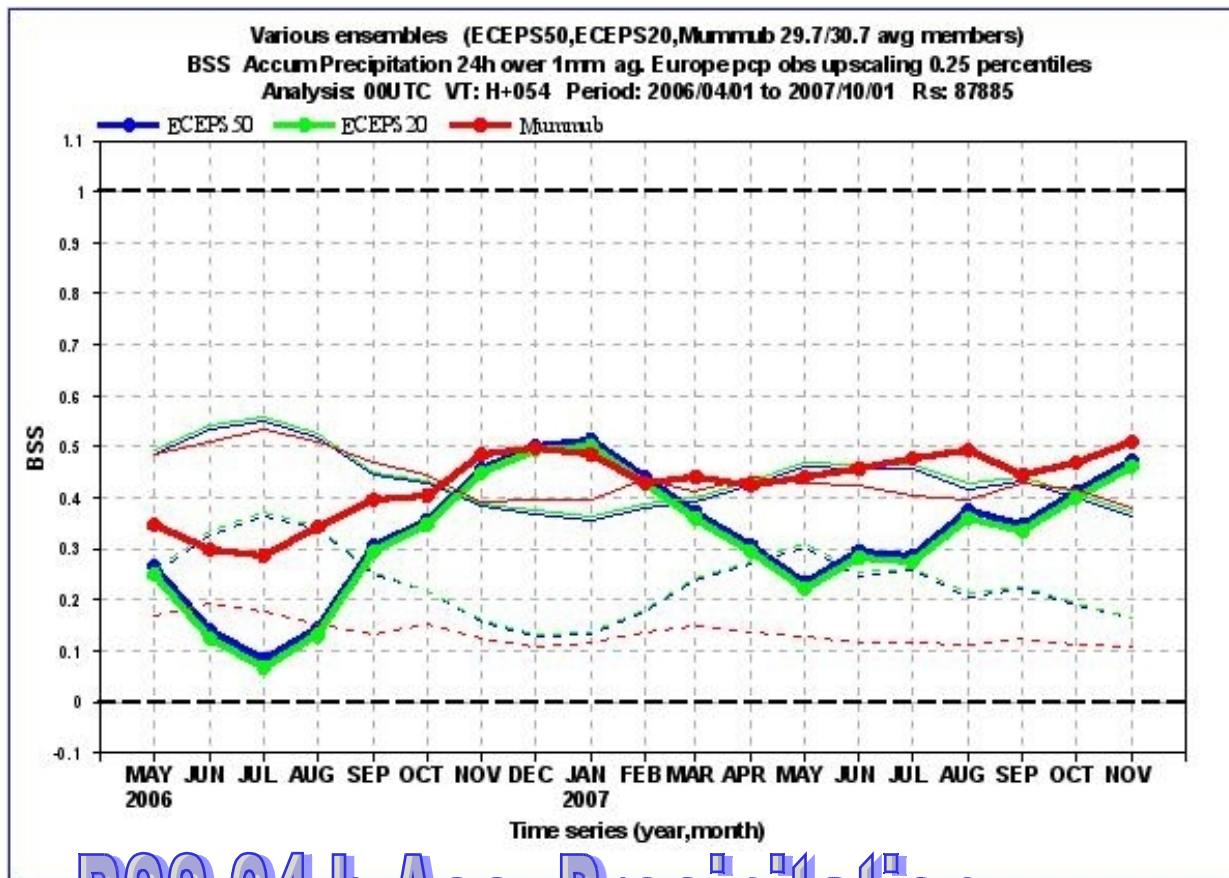


Results including obs error

- **Candille & Talagrand QJRMS 2008**
- **BS (and BSS) decomposition is extended, allowing observations to take not only value $\{0,1\}$ but any value within $[0,1]$.**
- **Some general consequences of this:**
 - Spread of observations is enhanced.
 - Uncertainty term in BS is smaller (the base rate tends to be smaller as well).
 - Reliability term (in BS and BSS) is larger (degraded).
 - Resolution term (in BS and BSS) is smaller.
 - Resultant BSS is larger (enhanced), mainly due to the smaller uncertainty BS term.
 - ROC is degraded.



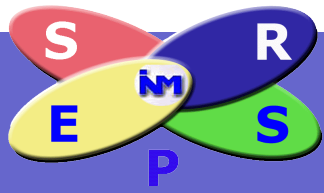
Climate obs from Europe



— SREPS

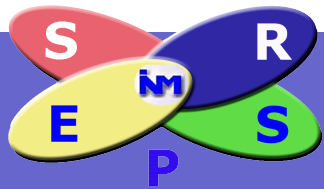
— ECHWF 21

BSS 24 h Acc. Precipitation
 upscaled to 0.25 degs. latxlon



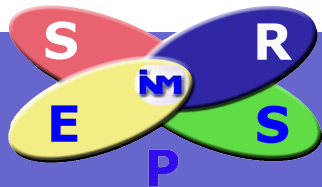
Results

- Better performance than ECMWF EPS (51 members).
- Very good spread-skill relationship for all parameters (worse for 10m wind speed).
- Talagrand histograms quite flat.
- ROC areas greater than 0.8 even for precipitation.
- BSS positives.

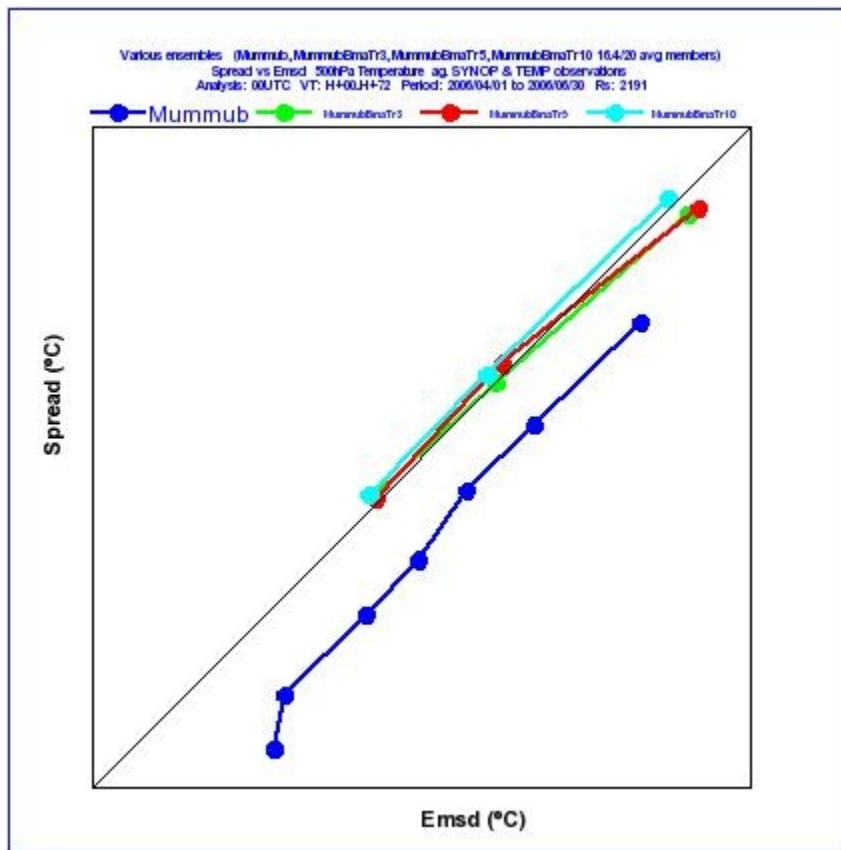


Calibration - BMA

- BMA applied to gaussian-like variables (Z550, T850, MSLP, 10m wind speed).
- Better performance (spread-skill relationship) for 10m wind speed.
- Training periods of 3, 5, 10 & 25 days.
- Computer time increases exponentially with the length of the training period.
- Preliminary tests for precipitation.

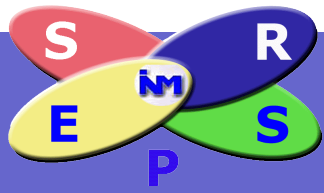


Calibration - BMA

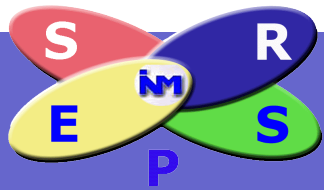


BMA 3 days
 BMA 5 days

Spread - skill T500

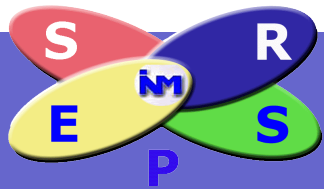


- WRF:
 - Validation tests to switch MM5.
 - DTC (Developmental Testbed Center)
Visitor Projects:
 - Validation of WRF cores in different environments..
 - Supported by NOAA.
 - Computer resources at DTC (Bluefire).

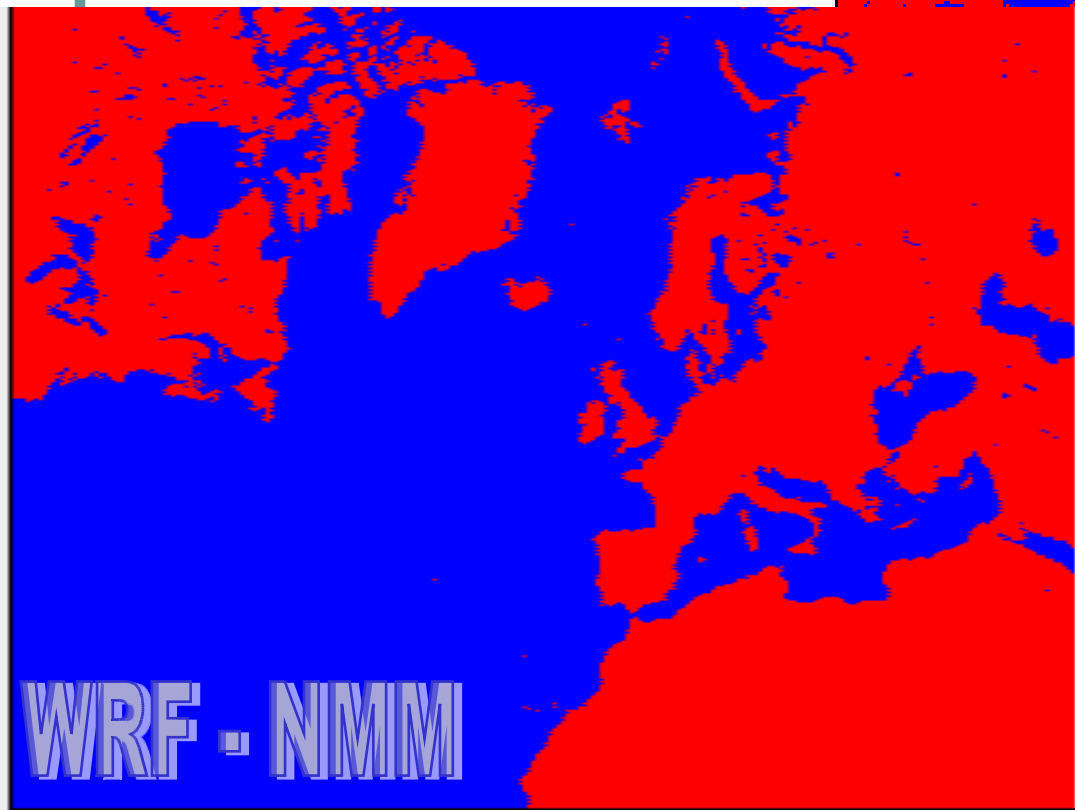
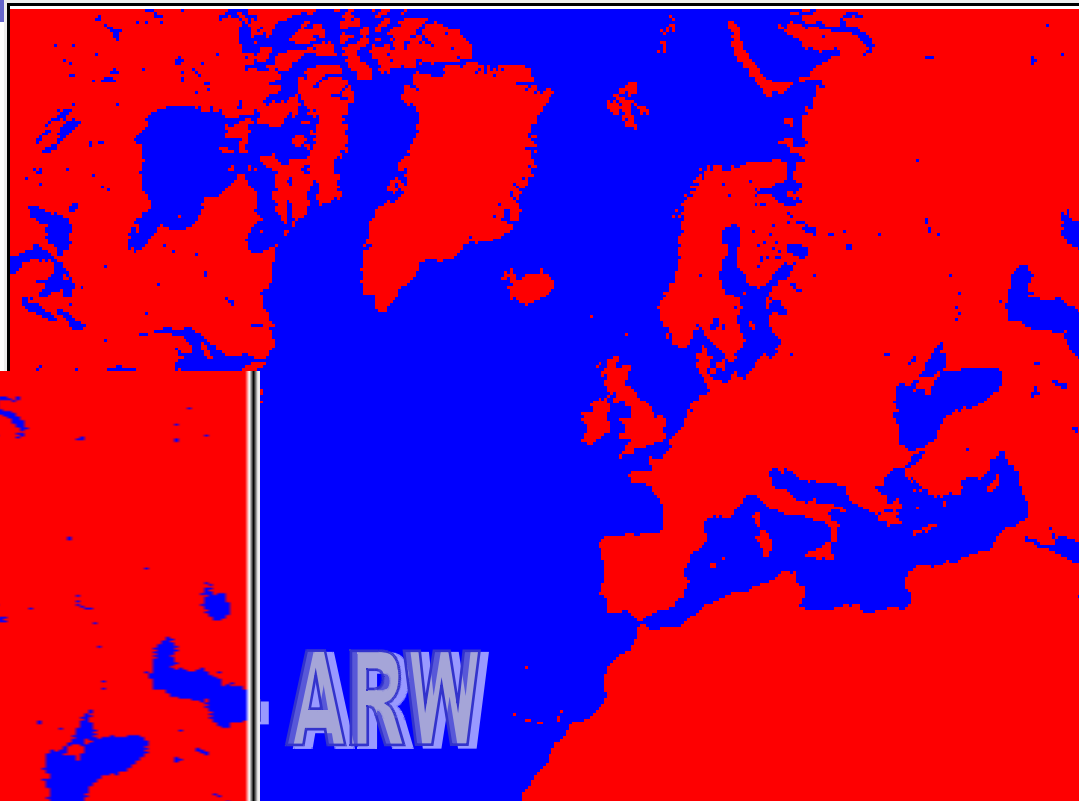


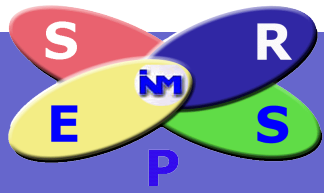
WRF – Our project

- Validation of WRF using BCs from SREPS.
- Deterministic performance compared with MM5.
- Using two cores of WRF: el ARW y el NMM.
- Same integration area and resolution than others SREPS members. Rotated latlon grid.
- Results delayed due to several bugs discovered in the two cores when running large areas in rotated coordinates.



WRF – Our project





Future II

- Validation using case studies.
- BMA for precipitation.
- Increasing horizontal resolution to 10 Km.
- Tests at ECMWF new cluster.
- Using BC's from JMA global model.