

Diagnosis and verification of LAMI QPF

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The quantitative precipitation forecast (QPF), provided by LAMI(Local Area Model Italy), a non hydrostatic limited area model, is operationally assessed with two methodology aiming at different purposes.

The first technique allows a comparison with other models at a lower resolution, like the global model of the European Centre for Medium Range Weather Forecast (ECMWF). Over an area covering Northern Italy the precipitation is aggregated in boxes of $0.4^{\circ} \times 0.4^{\circ}$ and confronted with the mean value obtained from observations inside the boxes. The results, in terms of some standard statistical verification indices, are presented for several precipitation thresholds and accumulation periods.

The second method is designed to provide information, mainly to forecasters and modellers, of systematic errors of QPF in relation with weather patterns and flow directions. This method is restricted to Emilia-Romagna, a region in the southern part of the Po-valley. The region has been divided in eight climatologically homogeneous sub-areas in which the correlation between errors during large precipitation events (area average precipitation greater than 20mm/24h) and direction of the flow at the top of the boundary layer has been assessed. We find out that precipitation biases are strongly dependent on mean wind direction and intensity and presence of convection. In particular when the mean daily wind is greater than 10 m/s, QPF is generally underestimated when the prevailing winds blow from south-west and overestimated with north-easterly winds