Geophysical Research Abstracts
Vol. 14, EGU2012-5587, 2012
EGU General Assembly 2012

A Radar and Gauge hourly precipitation database for calibration and statistical purposes over Lombardy Region – Italy

P. Marcacci (1), P. Bonelli (1), M. Lacavalla (1), L. Vaghi (2), M. Molari (2), A.E. Musolino (2), L. La Rocca (2), and E. Bertolotti (2)

(1) RSE S.p.A., Environment and Sustainable Development Department, Milano, Italy (pbonelli@rse-web.it), (2) Regione Lombardia

The Lombardy territory is partly characterized by the Alps Chain and by flat terrain, belonging to the Po river basin. Precipitation amount is a crucial meteorological variable, needed in hydrology, agriculture and energy evaluations. On this territory different rain-gauge networks have been run in the last ten years with different degree of reliability and areal distribution. At the same time the Swiss C-band radar of Mount Lema (1624 m.), near the city of Locarno, managed by Meteo Swiss, has produced rainfall amount data with an high level of continuity and quality on almost the whole Lombardy territory. Although it is widely recognized that radar precipitation estimates are affected by errors in mountainous areas, mostly due to the shield effects, this source of data remains of great value for its high resolution property and real-time availability. Any effort to explain differences between radar and gauges estimations needs a tool able to manage a sufficient large data-set. In order to get such a tool on the Lombardy region, a data-base of ten years (2000-2009) of hourly precipitation amount from the Monte Lema radar and from the various gauge networks has been carried out. A radar-gauges calibration method has been tested and applied to the whole data-set. The calibration method is based on the relation between precipitation estimate error and the radar visibility.
A subset of gauges have been selected in order to set up the method, a different subset has been used to test it. Hourly precipitation radar estimate has been re-computed taking into account the corrections obtained.
The data-base, developed in a open source MySQL environment, contains both the original radar precipitation estimates and the corrected data, grid and gauges coordinates are also provided. Some query-procedures allow to compute areal precipitation amounts, statistical distribution, scatter plot diagram and correlation coefficients between gauge measurements and radar estimates. Examples of application of this data-set are planned.