

3.15 IMPLEMENTATION AND OPERATIONAL USE OF A HETEROGENEOUS RADAR NETWORK IN THE COMPLEX OROGRAPHY OF ABRUZZO REGION

E. PICCIOTTI¹, S. DI FABIO¹, M. MONTOPOLI², S. BARBIERI¹, R. ZAURI³,
A. CIPOLLONE³, F.L. ROSSI³, F.S. MARZANO¹⁴

¹ CETEMPS, University of L'Aquila (Italy)

² CNR, Institute of Atmospheric Sciences and Climate of Rome (Italy)

³ CFA, Functional Centre of Abruzzo Region Civil Protection (Italy)

⁴ DIET, University of Rome (Italy)

errico.picciotti@aquila.infn.it

This work shows recent advancements in terms of structure, processing and mosaicking methods specifically implemented for the local radar network covering the Abruzzo region, in central Italy. The Abruzzo radar network (ARAD) design was driven by the needs of the Functional Centre of Abruzzo Region (CFA) for the detection and warning of severe weather and related hydrological risks, which requires high redundancy, availability and accuracy of radar data.

The hydrological risks are further enhanced by the complex topography of Abruzzo region, which is characterized by high mountainous, relatively small catchments, river basins and Adriatic sea side. Complex orographic environment introduces additional difficulties in the matching of observations of the same phenomenon from different radars during the mosaicking.

The ARAD is constituted by two single-polarization radars at C- and X-band, respectively and by two dual-polarization X-band radars jointly operated by the CFA and CETEMPS, respectively. Moreover in the south part of Abruzzo region, a dual-polarization C-band radar managed by the Italian Department of Civil Protection, is operative.

As known, any fruitful usage of network radar data either for quantitative precipitation estimation or just for operational monitoring, must deal with a careful check of data quality. This aspect is particularly critical for networks with heterogeneity radar having different system features. In this respect, a dedicated algorithmic chain, able to process raw data, enhance their quality, extract from them accurate and useful hydro-meteorological products have been developed and customized for the different installations.

Acknowledgements

This work is partly supported by EU co-financing and the Interreg Italy-Croatia CBC Programme through the AdriaMORE project.
