

# The quality assurance challenge of a modest weather radar network in a complex territory

\*Patricia Altube<sup>1</sup>, Tomeu Rigo<sup>1</sup>, Nicolau Pineda<sup>1</sup>, Helen San Segundo<sup>1</sup>

1. Meteorological Service of Catalonia, Barcelona

Catalonia is a small region of about 32000km<sup>2</sup> in the Northeast corner of the Iberian peninsula. It is delimited in the North by the Pyrenees mountain range, with peaks reaching heights beyond 3000m. The East boundary is the warm and shallow Mediterranean sea. This is a territory of complex topography and dense population, mostly settled in the coastal region. Moreover, the weather in Catalonia presents a high spatial and seasonal variability. In fact, the manifold meteorological conditions include snow, heavy rainfall and hail, warm rain, strong winds, down-bursts, waterspouts and tornadoes.

The XRAD is the weather radar network providing coverage for the region, operated by the Meteorological Service of Catalonia (SMC). The XRAD consists of four C-band, single-pol radars, which may nowadays be considered legacy technology. Under this framework and with a limited economic budget, the members of the remote sensing team at the SMC, undersigning this abstract, are responsible for ensuring the continuous and adequate operation of the radars. It is also our duty the supervision of in-situ radar system maintenance tasks and the development and implementation of remote performance monitoring tools. The quality control process also concerns radar data and downstream products relevant for issuing Civilian Defence warnings.

In the current poster we describe the quality control chain at the XRAD, starting from the radar system and specifying ad-hoc methodologies designed for real-time data quality assessment and correction: system performance and stability monitoring, antenna pointing and receiver calibration evaluation, pedestal leveling, characterization of external interferences, QPE bias estimation, etc. We exemplify in each case the improvement in data quality brought out by the applied quality control methodology.

Keywords: Quality assurance, Radar network, Operative