

## **Weather radar precipitation estimates vs lightning flash rates: overview of HyMeX SOP1 cases**

Ibai Campo

University of Barcelona, Dep. Astronomy and Meteorology, Barcelona, Spain

Anna Domingo-Dalmau (University of Barcelona, Dep. Astronomy and Meteorology, Barcelona, Spain)

Joan Bech (University of Barcelona, Dep. Astronomy and Meteorology, Barcelona, Spain)

Nicolau Pineda (Meteorological Service of Catalonia, Barcelona, Spain)

Tomeu Rigo (Meteorological Service of Catalonia, Barcelona, Spain)

*E-mail: joan.bech@ub.edu*

The objective of this study is to present an overview of the first Special Observing Period (SOP 1) of the Hydrological cycle in Mediterranean Experiment (HyMeX) international programme over Catalonia. SOP 1 took place in autumn 2012 in the Western Mediterranean basin and the region we study was one of the target areas of the field campaign to study precipitation events. Results are presented regarding weather radar precipitation estimates and raingauge observations and concurrent lightning flash rates as well as radiosonde-derived variables.

Five different Intensive Observation Periods are considered to examine total lightning data (cloud-to-ground CG and intra-cloud IC flashes) vs weather radar and raingauge precipitation observations. Radar estimates were derived from corrected observations obtained with a C-band Doppler radar network of the Meteorological Service of Catalonia. A general underestimation of the radar precipitation estimates compared to rain gauges was found, similar to previous analysis (Trapero et al, 2009). Low correlations were observed between total lightning and precipitation accumulations. The average hourly Rainfall–Lightning Ratio (RLR) was  $69 \cdot 10^3$  m<sup>3</sup>/CG flash, within the range of values found for individual thunderstorms reported previously in the literature (Kempf and Krider 2003, Pineda et al. 2007). Average radiosonde data over the SOP1 indicated values of total precipitable water above those of the previous ten year period (0.5–2.2 standard deviations).

### References

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Trapero L., J. Bech, T. Rigo, N. Pineda, D. Forcadell, 2009: Uncertainty of precipitation estimates in convective events by the Meteorological Service of Catalonia radar network. *Atmospheric Research*, 93 (1–3): 408–418.