

P-14: REFERENCE RAINFALL MEASUREMENTS AT THE WMO LEAD CENTRE “B. CASTELLI” IN VIGNA DI VALLE (ITALY)

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The Lead Centre (LC) “Benedetto Castelli” on Precipitation Intensity was designated by the WMO/CIMO in September 2010 with the aim of providing specific guidance about instrument calibration and their achievable accuracy, performing laboratory and field tests, and developing research/technical activities about the measurement of precipitation intensity and the related data analysis and interpretation. In July 2022, the LC was confirmed as a WMO Measurement Lead Centre (MLC), as a centre of excellence that will capture the results and provide high-level expertise in the testing of surface-based remote sensing and in situ instruments, and in the standardization of instrument performance.

The MLC is a joint initiative of the Italian Air Force and the University of Genova (Italy) and operates in three different sites: the Field Test site in Vigna di Valle (Rome – I), the Precipitation Laboratory at the University of Genova (Genoa – I), the Mountain site at the top of Mt. Cimone (Modena– I).

The MLC established a reference system for rainfall intensity (RI) observations. This is composed by a set of working reference gauges (WRG) employing a selection of measuring principles tested during the previous WMO Laboratory and Field Intercomparisons of Rainfall Intensity Gauges (in 2004-2005 and 2007-2009, respectively). According to the WMO Guide to Meteorological Instruments and Methods of Observations, the main feature of reference gauge design is to minimize or control the effect of wind on the catch, which is the most serious environmental factor for gauges at low intensity rates. This is achieved by installing the gauges into a pit according to EN 13798:2010.

Four gauges initially composed the working reference group: an OTT Pluvio2 weighing type gauge, a CAE tipping-bucket gauge, a Geonor T200B vibrating wires gauge and a drop counter developed by the Chilbolton Group of RAL Space (UK). Specific data processing protocols have been developed to combine the multiple readings and to provide the best possible estimation of reference RI in the field.

This work describes the instruments nowadays composing the WRG and the accuracy assessment of their performance according to the recently published European norm EN 17277:2019 on the calibration of catching-type gauges. Data are also presented about the comparison of instruments positioned outside the pit with the reference precipitation, including measurements from non-catching instruments.