



Metrology for climate observation

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As stated by GCOS “Long-term, high-quality and uninterrupted observations of the atmosphere, land and ocean are vital for all countries, as their economies and societies become increasingly affected by climate variability and change”. High-quality observation is possible only if based on a sustained traceability to SI and with documented uncertainties associated to the measured values.

Following the signature of the MRA by the WMO , in April 2010, the CCT of the CIPM , in its XXV meeting of May 2010 submitted a recommendation to CIPM. The document highlighted the need to encourage National Metrology Institutes (NMIs) [...] to face new perspectives, needs, projects and activities related to the traceability, quality assurance, calibration procedures and definitions for those quantities involved in climate studies and meteorological observations and to support a strong cooperation between NMIs and Meteorological Institutions at local, national and international levels.

In response to this call, several Joint Research Projects (JRPs) in metrology have been established. Their objective is to improve calibration procedures and measurement techniques for some Essential Climate Variables (ECVs), focussing especially on temperature, pressure and water vapour. Additional objectives have included investigations of sensor characteristics and the improvement of measurement devices and their use in the field. The impact effort is demonstrated also by the involvement of key international scientific Institutions such as GRUAN , ISTI , IAPWS , and prominent Manufacturers and Universities.

The overall aim is to make a further step towards establishing full data comparability, consistency and long-term continuity, through a comprehensive evaluation of the measurement uncertainties for the quantities involved in the global climate observations. The improvement of quality of ECVs records, through the inclusion of measurement uncertainty budgets, will also highlight possible strategies for the reduction of the uncertainty.

This contribution will report on JRPs advances, events and task group activities, with the vision to establish a permanent bridge between metrologists and climatologists, through which to strengthen and develop collaborations, joint activities/projects and results dissemination to the whole society.