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Forecasting the weather
- ensemble techniques
in probabilistic weather prediction

A fully automatic procedure of technical quality control for LI7500 based H20-flux measurements - Derivation, Test and Application

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Quality control is one of the most important issues when performing meteorological measurements. Usually, quality control (QC) consists of different operations at different logical levels, organized in a reasonable sequence. Increasing QC-levels integrate more and more external information and become more and more complex.
Contrary to that, automation of QC-procedures is a basic necessity, especially in case of measurements carried out operationally.
To reduce this conflict, attention should be directed at the lowest QC-level – the original sensor (device) based information.
Nowadays sensors often become more or less intelligent measurement devices. They usually provide a lot of information in addition to the physical measurement signal. Primarily provided for technical purposes, most of these information does in fact include a QC-relevant content.
The extensive investigation of this information with respect to its QC-relevance may reduce the effort of following QC-activities considerably and hereby it may increase the degree of automation.

With respect to the LI7500 open path infrared gas analyzer and its application for water vapour flux measurements, the authors describe the process of analysing all the technical parameters and information coming directly from the sensor, the identification of their QC-relevance and, based on this, the implementation of a fully automatic procedure of technical quality control.
All these investigations, tests and applications are based on long-term measurements performed at the 99m-tower of the Meteorological Observatory Lindenberg – Richard-Aßmann-Observatory - (DWD).