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Overview and highlights of the EMRP project ATMOZ "Traceability for atmospheric total column ozone"

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The European Metrology Research Project "Traceability for atmospheric total column ozone" is a collaboration between National Metrology Institutes (NMI), partners from Industry, the research community in Europe and national or international agencies. The aim of the project is to significantly enhance the reliability of total ozone column determination at the earth surface by characterizing Dobson and Brewer reference instruments, developing new techniques and devices in order to provide traceable ozone column measurements.

The consortium presents an overview of the project and focuses on scientific highlights and first results after 2 years duration of the joint research project. Namely, the characterization with tuneable laser facilities of Dobson reference instrument and different characterizations of the RBCC-E reference Brewer spectrophotometer are shown and discussed. Furthermore, newly developed prototype devices for field characterization are presented:

1. Wavelength ruler for wavelength assignment
2. UV-LED for tracking stability of the instruments
3. Portable tuneable radiation source for bandwidth characterization

The project further aims to produce a comprehensive uncertainty budget for ground-based total column ozone retrieval from Dobson, Brewer and array spectroradiometer. The uncertainties of total column ozone retrievals originate from two main parts: a) UV measurement uncertainties, and b) retrieval model uncertainties. The effects of uncertainties either from the measurements or the retrieval method on the overall uncertainty are studied and a sensitivity analysis taking into account the major parameters affecting the ozone determination is presented.

Finally, the dissemination activities of the total column ozone traceability are explained. The dissemination includes, presentations, publications and several workshops and will occur in a large field intercomparison in September 2016 at the Izaña Atmospheric Research Center of the Spanish Meteorological Agency, Tenerife, Spain.