



New (Fundamental) Climate Data Records From Microwave Sounders With FIDUCEO

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FIDUCEO (FIDelity and Uncertainty in Climate data records from Earth Observations) is a project within the EU Framework Program for Research and Innovation. It creates new climate datasets from Earth observations with defensible uncertainty and stability information. An estimate of the uncertainties is largely missing in existing FCDRs (Fundamental Climate Data Records) and is obtained by means of a thorough metrological analysis for each instrument and a harmonization procedure that brings all instruments in agreement with a common reference.

The FCDRs will cover a period of more than twenty years, i.e. long enough to make them relevant for studies of climate change. They form the basis for the generation of the further processed CDRs. These products can be used for direct comparison with models of the Earth's atmosphere and will illustrate the particular benefits and capabilities of the new data records. The Meteorological Institute of the Universität Hamburg contributes in particular to the generation of the microwave humidity sounder FCDRs and the corresponding highly processed geophysical datasets, i. e. CDRs of the upper tropospheric humidity. We have identified 16 distinct physical effects that influence the brightness temperatures measured with microwave sounders. Starting with the measurement equation, which yields the calibrated radiances from counts and calibration parameters, we have determined the magnitude and correlation structures of those effects.

All data, software tools, and methods will be freely and openly accessible for general users.