**A Fundamental Climate Data Record for Microwave Humidity Sounder Radiances**

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Microwave humidity sounding measurements have been shown to have significant impact in NWP models by improving the representation of the tropospheric water vapour distribution in the models. The aim of this project is to provide a fundamental climate data record (FCDR) of such measurements so that they can also be used to create climate quality datasets of tropospheric humidity for monitoring humidity variability and changes, compare with climate model simulations and assimilate in atmospheric reanalyses.

In this project, as part of the EUMETSAT's Climate Monitoring Satellite Application Facility (CMSAF), an FCDR of microwave radiances covering the period 1993—2014 has been created and analysed. The main issue when creating these data was how to combine data from the different satellites. The individual satellite data records have been quality assessed and corrections calculated for users to remove instrumental biases. The inter-satellite biases have been calculated, using NOAA 18 as the reference for the others to be compared against. This provided a means of correcting the differences between satellites allowing us to combine records from different satellites and create a longer consistent time-series of radiances. Also a quality assessment was performed prior to the bias correction and any erroneous values that were discovered have been flagged.

In summary, the CMSAF project has created a log of missing or bad data for input to a dataset of quality flags which can be applied to remove observations considered to be suspicious. Analysis of the individual satellites has shown differences between the records of the individual satellites and highlighted particular periods of data that should be used with caution. The presentation will present the analyses of 20+ years of radiances which reveals variability and changes in tropospheric water vapour for the last 20 years.