



Assessment of the performance of ozone sondes and the need for standardization of operating procedures

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The use of balloon borne ozonesondes is a conventional technique used in the Global Atmosphere Watch (GAW) program of the World Meteorological Organization (WMO) to detect long term changes of ozone and to validate satellite measurements up to 35 km altitude. Further, ozone sondes are widely used in strategically designed networks such as SHADOZ in the tropics, IONS in mid-latitudes and MATCH in the polar regions to study atmospheric processes. As part of the quality assurance plan of WMO/GAW the environmental simulation facility (<http://www.fz-juelich.de/icg/icg-2/esf/>) at the Forschungszentrum Juelich is established as World Calibration Centre for Ozone Sondes to guarantee consistency in sonde data.

In the scope of this QA-plan since 1996 several JOSIE (Juelich Ozone Sonde Intercomparison Experiment: <http://www.fz-juelich.de/icg/icg-2/josie>) sonde simulation experiments to investigate and evaluate the performance of different ozone sonde types have been conducted at the sonde simulation facility at Jülich. In addition, in April 2004 the WMO/BESOS (Balloon Experiment on Standards for Ozone Sondes) field campaign at the University of Wyoming at Laramie, USA, was held to test the representativity of JOSIE-results in the real atmosphere. The results of JOSIE and BESOS clearly demonstrate that with regard to the sonde performance and hence the interpretation of ozone trends caution has to be exercised in making instrumental changes or in preparing/operating procedures. Under the auspices of WMO/GAW the Assessment of Standard Operating Procedures for Ozone Sondes (ASOPOS) has been initiated.

In the perspective of this assessment we will present an overview of the results obtained from JOSIE and BESOS. The results will be discussed with regard to the in-

fluence of instrumental factors and their uncertainties on the data quality of ozone soundings. Special attention will be paid to the influence of operating procedures on the performance of sondes and the need for standardization to assure ozone sounding data of sufficient quality and consistency for their use in atmospheric research.