

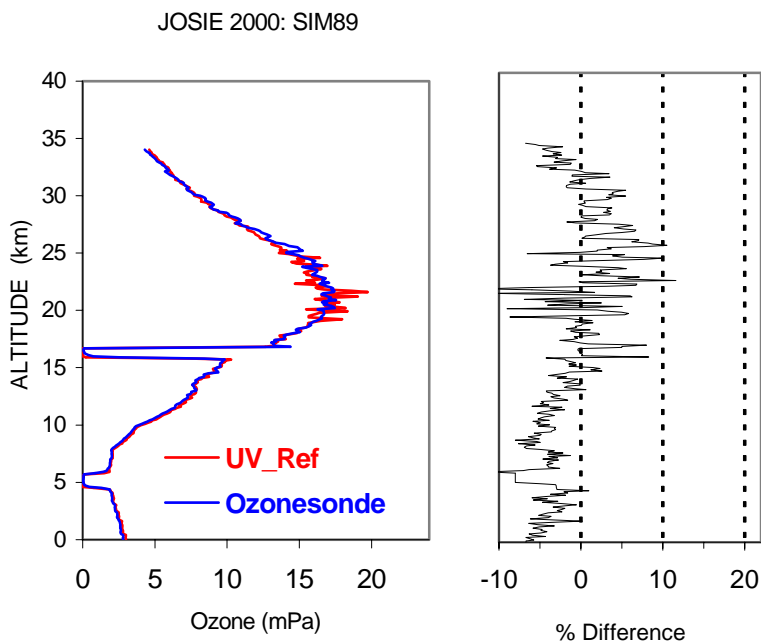
Ozonesonde Intercomparison Results from JOSIE 2000

B. J. Johnson and S. J. Oltmans

NOAA Climate Monitoring and Diagnostics Laboratory, 325 Broadway, Boulder, CO 80303:
303-497-6842, Fax: 303-497-5590, E-mail: bjohnson@cmdl.noaa.gov

Every 4 years, eight different ozonesonde groups convene at the Research Center GmbH in Jülich, Germany, for the WMO Jülich ozonesonde intercomparison experiments (JOSIE). The comparisons are made inside an environmental chamber that simulates typical temperature and ozone profiles up to 35 km. A UV-photometric instrument is used as the ozone reference measurement. The JOSIE 1996 campaign compared the accuracy and precision of the various types of ozonesondes, while JOSIE 2000 focused on three different iodide sensor solutions used by electrochemical concentration cell (ECC) type ozonesondes. One of the sensor solutions tested, an unbuffered solution of 2% potassium iodide, has been used by NOAA/CMDL ozonesonde sites since 1998. CMDL switched to this solution after the results from JOSIE 1996 and additional NOAA laboratory and field tests showed that the buffers, typically used to maintain a neutral pH in the sensor solutions, produced a slow side reaction that gradually increased the ozonesonde measurement by 5% to 20% after the stratospheric ozone peak. The results from the seven profile experiments in JOSIE 2000 showed that the CMDL ozonesondes compared much better, ranging from about 2% to 5% higher than the UV reference in the stratosphere. The sondes, however, still measured low by 2-8% in the troposphere. This low tropospheric comparison is not consistent with our laboratory and surface comparisons where the ECC sonde, using an unbuffered cathode solution, is nearly always within 2% of UV methods.

In addition to the JOSIE results, some results from the recent TOMS3-F campaign, comparing total ozone measurements at Fairbanks, Alaska, will be shown.



JOSIE 2000 simulation #89 showing a typical midlatitude profile comparison between NOAA/CMDL ozonesonde measurement and the UV-photometer.