



COMPARISON OF COLUMN WATER VAPOR RETRIEVED FROM GOES AND GROUND BASED LED SUN PHOTOMETER DEVELOPED FOR GIFTS EDUCATION AND PUBLIC OUTREACH PROGRAM AND GLOBE

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Measurement of atmospheric water vapor using a hand-held sun photometer as a Special Protocol of the Global Learning and Observations to Benefit the Environment (GLOBE) Program was proposed as a key component of the Education and Public Outreach program designed for Geosynchronous Imaging Fourier Transform Spectrometer (GIFTS), the EO-3 mission selected under NASA's New Millennium program. The GIFTS-GLOBE photometer design is based on the work of Forrest Mims III (1992, Applied Optics, Vol. 31, 6965-7), who pioneered the use of LEDs as narrow-band radiation detectors, and on the GLOBE haze photometer (Mims, 1999, BAMS 80, 1421-31).

A reference unit was calibrated by comparison against the Microwave Radiometer (MWR) at the ARM site, and the calibration has been transferred to other units that are now being used in participating schools. The data collected from the ground based photometers correlates well with the GOES derived atmospheric water vapor amounts at approximately the same time over the ground site. The data collected to date indicates that the photometer is capable of meeting its dual purpose of science observations for validation of space based data, and the use of inquiry based approach to

science education in schools.