

A TEST OF WVR-BASED TROPOSPHERE DELAY
CALIBRATION USING VLBI OBSERVATIONS ON
A 20 KM BASELINE

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Six sessions of S/X band Very Long Baseline Interferometry (VLBI) observations on a 20 km baseline at Goldstone, CA were conducted in April and May 1993, using 26m and 34m Deep Space Network (DSN) antennas. A number of troposphere calibration instruments were employed during these observations, including a Water Vapor Radiometer (WVR) within 50 m of each radio antenna, a Microwave Temperature Profiler at one site, radiosonde launches approximately every 6 hours at both sites, and surface meteorology at both sites.

This experiment was designed to test the error budget for WVR-based troposphere delay calibration, and to test possible refinements in path delay retrieval algorithms. A preliminary analysis of the data has shown a significant reduction in the scan-to-scan rms residual VLBI delay scatter using standard statistical retrieval algorithms for WVR line-of-sight delay estimates. Results will also be presented for model-based retrieval algorithms.

Suggested URSI commissions: Commission J, Commission F