



## **Multi-technique comparison of troposphere zenith delays and gradients during CONT08**

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CONT08 was a 15 days campaign of continuous VLBI (Very Long Baseline Interferometry) sessions during the second half of August 2008 carried out by the International VLBI Service for Geodesy and Astrometry (IVS) and intended to demonstrate the highest accuracy that state-of-the-art geodetic VLBI can reach. In this study, we compare VLBI estimates of troposphere zenith delays and north and east gradients with those observed by the Global Positioning System (GPS), Doppler Orbitography and Radio Positioning Integrated by Satellite (DORIS), and water vapour radiometers (WVR) co-located with the VLBI radio telescopes. The parameterizations for the least-squares adjustments, as well as the geophysical models used for the analysis of the space geodetic data were selected as similar as possible in order to ensure a rigorous comparison. In addition to the estimates from space geodetic techniques and WVRs, troposphere zenith delays, and north and east gradients were also derived from numerical weather models (NWMs). We used data from the European Centre for Medium-Range Weather Forecasts (ECMWF) for all sites, the Japan Meteorological Agency (JMA) as well as the Cloud Resolving Storm Simulator (CReSS) for the station Tsukuba, and the High Resolution Limited Area Model (HIRLAM) for the European sites. We provide biases, standard deviations, and correlation coefficients between the troposphere parameters derived with the various techniques at all eleven co-located sites. In this way we are able to assess the accuracies of the various techniques for the determination of tropospheric parameters.