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Earth orientation parameters determined from Very Long Baseline Array experiments conducted at K-band (24 GHz)

Hana Krasna (TU Wien), David Gordon (United States Naval Observatory), Aletha de Witt (South African Radio Astronomy Observatory) and Christopher S Jacobs (Jet Propulsion Laboratory, California Institute of Technology)

Abstract. The terrestrial and celestial reference frames are connected through rotational transformations including the Earth orientation parameters (EOP). The EOP are estimated from space geodetic observations. Very Long Baseline Interferometry (VLBI) is the only space geodetic technique which allows one to directly estimate all five EOP and the only technique providing the access to the celestial pole position. The officially published VLBI estimates of the EOP are based solely on observations from the S/X-band (2.3/8.4 GHz).

We present EOP determined from the Very Long Baseline Array experiments at K-band (24 GHz) which are independent from the traditional S/X frequency band. Our dataset starts in May 2002 and consists of more than 120 24h observing sessions. We calculate comparisons before and after each major change in data rate in order to quantify any change in EOP quality due to changes in the observing system. Furthermore, we assess the impact of the ionospheric delay of the VLBI signal at 24 GHz on the EOP estimates.