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VLBI scheduling options and implications on reference frames – a VLBI2010 perspective

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Simulations are performed for three possible VLBI2010 networks consisting of 16, 24, and 32 stations. With these we assess different types of scheduling options, like station- or source-based options and different cutoff elevation angles, for the estimation of the terrestrial (TRF) and celestial reference frames (CRF) and the Earth orientation parameters (EOP). In particular, we investigate the benefit of source-based schedules, i.e. uniform distribution of sources on the sky, for the determination of southern sources with a station network with the stations mostly in the northern hemisphere. Furthermore, we assess the impact of applying different time intervals for the estimation of tropospheric parameters. In addition to thermal measurement noise and clock errors, we simulate tropospheric turbulence based on realistic station-dependent turbulence parameters derived from GPS time series of zenith wet delays. We investigate the impact of all these options on baseline lengths, coordinates, and EOP repeatability, as well as on the CRF transformation parameters. For all these studies we use the Vienna VLBI Software VieVS.