VLBI (Very Long Baseline Interferometry) observations of GNSS (Global Navigation Satellite System) satellites represent an important challenge to obtain a direct link (a sky-link) between VLBI and GNSS reference frames. To combine observations from two or more space geodetic techniques at co-located sites, local-tie vectors are used today. These are very important for inter-technique combinations, however some discrepancies are still present in the data. An independent link (a sky-link) could help to discriminate between different possible error sources.

Several tests to observe signals transmitted by GLONASS (GLObal NAvigation Satellite System) satellites have been carried out using the geodetic VLBI technique. The radio telescopes involved in these experiments were two European radio telescopes that are equipped with L-band receivers, Medicina (Italy) and Onsala (Sweden); in one experiment also Jodrell Bank participated in the observations as a third station. The goals of the observations were to develop and test the scheduling, signal acquisition and processing routines to verify the full tracking pipeline, foreseeing the cross-correlation of the recorded data on the available baselines. Natural radio sources were used as calibrators immediately before the satellite observations. The correlation of the calibrator signal was performed using the DIFX software correlator, while the satellite signals were processed using the narrow band approach with the Metsähovi software and analysed with a near-field delay model.

Different delay models are under development, consistent for both far- and near-field sources including the tropospheric and ionospheric corrections, to verify if also a broad correlation of the satellite signals is possible.