Geophysical Research Abstracts
Vol. 16, EGU2014-4970, 2014
EGU General Assembly 2014

An assessment of the multi-baseline Intensive VLBI sessions

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The IVS Intensive sessions are one-hour VLBI sessions performed almost every day with the purpose of determining UT1-UTC. These sessions are mostly observed with just two stations on a long East-West baseline. However, one or two sessions per week are observed with three stations, and occasionally even four stations are used. In this work we investigate how much and in what respect the inclusion of more than two stations in an Intensive session affects the accuracy of the resulting UT1-UTC. This is done by comparing the accuracy of UT1-UTC obtained by the Intensive sessions observed by three and four stations with the accuracy obtained from the single-baseline ones. We test different analysis strategies for the multi-baseline Intensives, like estimating also polar motion. We also evaluate the multi-baseline Intensives through Monte-Carlo simulations. Different scheduling strategies are investigated in order to find the optimum one for obtaining the most accurate UT1-UTC estimates. Furthermore, we test different network geometries in the simulations to find out the optimum geographical distribution of the observing stations. Finally, we look into the future and investigate what accuracy can be achieved with Intensives observed with networks featuring fast slewing VLBI2010 telescopes.