Geophysical Research Abstracts
Vol. 20, EGU2018-4954, 2018
EGU General Assembly 2018
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VLBI goes satellite - benefits and restrictions

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With recent efforts of VLBI tracking of LEO and MEO satellites questions concerning the implications of such novel observational concepts emerge. While the use of satellites as artificial radio transmitters for VLBI is very appealing due to their signal strength, it is still unclear how geodetic analysis can take benefit from such new observables without degrading the classical parameters that are usually determined by VLBI. In order to answer this crucial question, we carry out extensive Monte Carlo simulations, which include either LEO or MEO satellites and we show that VLBI-only orbit determination is feasible. Moreover, we discuss which other parameters, which are out of the scope of VLBI analysis so far, can also be estimated by such an approach. In addition, the implications of adding satellite observations to VLBI observing schedules and their impact on EOPs and station coordinate estimates will be revealed. An outlook on the potential and limitations of VLBI spacecraft tracking will conclude the presentation.