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Tidal atmospheric loading and VLBI

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Content :

This presentation is dedicated to the influence of diurnal atmosphere-ocean dynamics on Earth rotation and loading effects as observed by Very Long Baseline Interferometry. The first part focuses on the rotational signals associated with atmospheric tides, comprising small but non-negligible oscillations in the order 5 Mas. Here, we compare tidally analysed VLBI observations against estimates from different providers of numerical weather models. We also discuss the complexity of the issue that must make allowance for indirect effects due to tidal pressure variations acting on the ocean. In the second part, we are investigating loading signals caused by atmospheric tides and the associated mass variations in the ocean. Different models of the effect are compared with respect to their performance in a VLBI analysis, and strategies how to apply consistent corrections for the atmosphere and the ocean are discussed. Moreover, we also show VLBI results for two gravitational ocean tide models, FES2004 and FES2012, where the latter benefits from a much finer horizontal resolution and an improved description of hydrodynamic processes.

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