



Use of loading effect models and GPS station position time series for SLR data processing.

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Most of the weekly SLR station position time series exhibit periodic signals, especially in the height component. Moreover, the translations between these weekly terrestrial frames and any secular terrestrial reference frame also exhibit periodic signals. All these signals should correspond to the physical phenomena which are not modelled during the data processing, namely the loading effects caused primarily by variations in the atmosphere and the continental water storage.

In this work, we first test the use of a model for the loading effects directly at the observation level. The chosen loading model has been built using surface fluid load data and the Green's function approach and accounts for atmosphere, continental water, non tidal ocean, and ice sheet effects. We aim to study the impact of the use of this model on the weekly station position time series and hope that this will reduce the amplitude of the periodic signals.

The GPS data processing provide very accurate station position time series which also exhibit periodic signals. Thus, instead of using geodynamical models, we finally propose to test the direct use of such GPS position time series as a priori models for station positions for SLR data processing. This computation is obviously only possible for the SLR stations which are co-located with a GPS receiver.