

Practical: Model calibration and data assimilation

The numerical geophysical model for the Earth rotation (first practical) should be improved by observations.

Model calibration

Calibrate the model parameters against the observed earth rotation vector by means of an iterative least squares adjustment. The calibration parameter could be

1. the initial state vector $\omega(t_0)$,
2. both parts of the Love numbers k^{Re} and k^{Im} ,
3. factors for the components of relative angular momentums (AAM, OAM, HAM),
4. the trace of the inertia tensor.

Use at least two years of data for calibration and an additional year for the model validation.

Data assimilation (optional)

Assimilate observation data into the model by means of an Ensemble Kalman filter. The observed earth rotation vector should be decimated to one data set per week. The observation accuracy can assumed to be 0.03 arc seconds for the polar motion $x_p(t)$, $y_p(t)$ and 0.002 seconds for the Length of Day (LOD). Generate the ensembles by adding variations (normal distributed random numbers) to the relative angular momentums and maybe to the potential coefficients. To validate the results compare the assimilated model with unused observation data (between the weekly data set).

Submission

The presentation of the results is Monday, 22th Janaury 2017, 14:15.