Optimal multivariate autoregressive predictions of the Earth rotation based on atmospheric angular momentum data

M. Kalarus

Space Research Centre, Polish Academy of Sciences, Poland

The Earth rotation variations are excited by different geophysical phenomena including global atmospheric circulation. Cross-correlation analysis shows significant correlations between Earth Rotation Parameters ERP (expressed by x, y pole coordinates and UT1-UTC) and Atmospheric Angular Momentum (AAM) data. Thus, the Multivariate Autoregressive (MAR) technique was applied to predict ERP data using AAM data. All the parameters in the MAR algorithm were optimized using the criterion based on the autocovariance estimations of the EOP data and numerical minimization of the mean prediction errors. This presentation shows how much the ERP predictions are influenced by using additional AAM data set in the MAR algorithm. The general problems related to described technique and mean prediction errors of the x, y, LOD and UT1-UTC are also given.