



Unified Analysis Workshop 2009

Position Paper for Session 2

Modelling Deficiencies and Modelling Based on External Data (Atmosphere, Ocean ...)

Johannes Boehm and Tonie van Dam

Introduction

The unprecedented accuracy of geodetic observations demands that more and more corrections and physical models must be based on data from disciplines outside the normal realm of geodesy (e.g., ocean and atmosphere loading, troposphere delays).

Strategies must be developed that ensure the highest consistency and accuracy.

→ **T. van Dam: GGFC**

General Tasks

- Improve the accuracy and consistency of the geodetic/geophysical models.
- Assess the benefits of correction models based on large external data sets.
- Discuss the implications of the paradigm change (from corrections based on “simple” mathematical formulas to corrections based on large amounts of external data).

Troposphere Delay Modelling

State of the art:

VMF1/ECMWF and GMF/GPT as analytical backup.

Tasks:

- Development of an analytical gradient model.
- Definition of the functional form to be used for gradients.
- Application of tidal S1/S2 terms for a priori hydrostatic zenith delays and mapping functions.

Troposphere Delay Modelling II

Raytracing:

→ **T. Hobiger: Ray-tracing**

Tasks:

- Check the consistency of ray-tracing over the techniques (optical and micro-waves).
- Check the consistency of ray-tracing with the VMF1.

Atmosphere Loading Corrections

Requirements for the reference pressure (not only ALC).

→ **H. Schuh: Reference pressure**

Observation-level vs. a posteriori mean corrections.

→ **R. Dach: ALC in GNSS analysis**

Datasets.

→ **R. König: Atm./ocean dealiasing and loading products**

→ **Erricos Pavlis and Tonie van Dam**

Atmosphere Loading Corrections II

Tasks:

- Compare and check the ALC models which are presently available in terms of latency, resolution, etc. (→ GGFC task).
- Compare the tidal S1/S2 models of the providers.

Ocean Loading Corrections

Which ocean tide loading model should be used?

Task:

➤ Identify the most appropriate model for all techniques.

Non-tidal ocean loading models

Task:

➤ Compile a list of non-tidal ocean loading models (GGFC task) .

→ **T. van Dam: Non-tidal ocean loading models**

Earth Rotation

Task:

➤ There is a need for a better model for high-frequency Earth rotation parameters.

→ **R. Gross: Improving models to estimate EOPs**

Further Presentations

- E. Pavlis: SLR Data Analysis Standards
- P. Sarti: VLBI antenna gravity deformation
- C. Luceri: Measurement bias
- G. Appleby: CoM for Geodetic SLR targets

What else?