

IVS Analysis Working Group for Geophysical Models in VLBI Software: Splinter Meeting

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Abstract

The IVS Analysis Working Group for Geophysical Models in VLBI Software arranged a splinter meeting during the Second General Meeting at Tsukuba. A detailed memorandum and list of participants is available at <http://www.oso.chalmers.se/~hgs/IVS-WGGM/pm-tsukuba.html>

1. Short Summary of the Meeting

The IVS Analysis Working Group for Geophysical Models in VLBI Software (WGGM) was created at the First General Meeting in Kötzing 2000 as a component under the IVS Analysis Coordinator. At Tsukuba the WGGM held its second meeting.

1.1. Terms of Reference

The group approved its Terms of Reference, see Appendix. The group will issue Notes of attention, Suggestions, and Recommendations. Its main purpose is the continuing development of VLBI software. The scope covered by geophysical models includes effects due to atmosphere, ocean, solid earth, core, and tidal forces on estimated positions, earth orientation parameters, troposphere, and estimatable fundamental parameters

1.2. Regular Session

The following items were discussed:

Nutation model The eventual future need of a variable NDFW-frequency was discussed.

Atmosphere. The influence of estimating troposphere gradients on earth orientation parameters and source positions was discussed. The adoption of a standard gradient model for each site and the dissemination of atmosphere parameters to serve in the Niell mapping functions was discussed.

Loading. A strategy for atmospheric loading implementation was recommended, in particular emphasizing that reference loading displacements are to be applied such that position estimates are not affected in ITRF2000 (subtract the mean of the loading series). Future ITRFs will probably include a pressure loading model. Then, a long-term pressure loading reference field has to be maintained. This is a task for the future Sub-Bureau for Loading of the Geophysical Fluid Center.

We further discussed tides computed from harmonic development, the postglacial rebound model in the IERS Conventions, and whether the group would endorse ionosphere measurements to support single-frequency VLBI. .

1.3. The Determinations of the WGGM in Summary

- **Recommendation:** Nota Bene: Estimation of source position and Earth orientation parameters require that atmospheric gradients are taken into account (e.g. estimated simultaneously).
- **Recommendation:** The IERS WG on TRF is to be contacted to initiate and supervise jointly with the GFC-SBL the definitions of a reference field of atmospheric loading effects as a component of the International Terrestrial Reference System.
- **Suggestion:** Experimenters should drop the idea of single-frequency VLBI observations! or else augment the missing ionosphere information by local GPS measurements. No concerted effort is suggested.

A complete memorandum of the meeting is available at <http://www.oso.chalmers.se/~hgs-IVS-WGGM/pm-tsukuba.html>.

2. Contact Points

A home page is planned at <http://www.oso.chalmers.se/~hgs/IVS-WGGM/index.html>.

The mail exploder ivs-awgmodel@ivscc.gsfc.nasa.gov includes currently the addresses of 30 colleagues.

The chairmanship is shared by Hans-Georg Scherneck and Rüdiger Haas, both at Chalmers, Onsala Space Observatory. Electronic mail addresses hgs@oso.chalmers.se and haas@oso.chalmers.se.

Appendix

Terms of Reference

Working group for Geophysical Models in VLBI Software

IVS-WGGMVS TERMS OF REFERENCE

Thematic scope

The working group considers:

- * The representation and implementation, the coding and the parameterization of geophysical effects in software packages that process geodetic VLBI data.
- * Effects due to atmosphere, ocean, solid earth, core, and tidal forces on estimated positions, earth orientation parameters, troposphere, and estimatable fundamental parameters.
- * Systematic comparison of software.

- * Assessment of ancillary parameters.
- * The working group's taboo is The permanent tide.

Members

- * Regular members are scientists and engineers who are involved in the development of the VLBI software packages.
- * Guests are welcome with contributions that point out shortcomings in the representation of geophysical effects in the VLBI analysis stream. 1)

Temporal scope

- * To be determined.

Delivers

- * Software.
- * Documents with Notes of attention, Suggestions, and Recommendations on the basis of practical experience with the performance of the software (in the form of e.g. written abstracts to be posted on a web area).
- * Contributions to the development of IERS Conventions.
- * Reports of their activities, plans of their studies and a summary of results to the IVS Analysis Coordinator, the IVS Directing Board and all IVS associate members, and to the IERS Analysis Coordinator.

Needs

- * The collaboration of modelers, e.g. when documentation of geophysical effects is scarce or contradictory.
- * Cooperation with analysis and combination groups and centers.

Meetings

- * Annual working group meetings

1) By this membership definition the present chairperson is not a regular member---the group accepted a chairmanship with assistance of a regular member (Scherneck and Haas)