1996 IERS Workshop - Recommendations to the Directing Board

Topic 1 - Missions

Recommendation 1: Each Coordinating Center (CC) should strengthen overall control of observations, quality control, and data processing for products of interest to the IERS (coordinates, EOP series, etc) in accordance with the IERS Terms of Reference. Combinations of individual solutions into technique specific products are strongly encouraged.

Recommendation 2: Coordinating Centers should be formed to promote the collection of other types of information relevant to EOPs such as atmospheric excitation functions, information on ocean circulation, global water level changes, etc.

Recommendation 3: Combination of products from the various CCs shall be performed by at least two IERS components such as Sub-Bureaus, specialized Analysis Centers, Central Bureau Sections. The Central Bureau should disseminate the state-of-the-art combined solutions and provide the official IERS products. The criteria for the selection or production of this official solution will be determined by the IERS Directing Board.

Recommendation 4: It is desirable to form a Network Coordination Group to consider issues of Network Design, Colocation, local ties, Site Quality, etc. as previously recognized and accepted by the IERS Directing Board.

Recommendation 5: Members of the Directing Board should include representatives of CCs, Sub-Bureaus, sections of the Central Bureau, selected combination centers (see Rec. 3), the Director of the Central Bureau, and representatives of IAU, IAG/IUGG, and FAGS.

Recommendation 6: The IERS Conventions should be updated periodically at reasonable intervals. They should reflect the state-of-the-art at the time of publication. In all cases, they should be consistent with the IAU and IUGG resolutions on reference systems (at present, the resolutions adopted in 1991). The IERS Conventions should be considered one of the IERS products for the use of the internal and external researchers. An IERS unit such a Sub-Bureau shall be formed to maintain the IERS Conventions.

Recommendation 7: The IERS Central Bureau should continue its excellent work necessary to develop and make available information on the ITRF, the ICRF and the transformation parameters between them. The Central Bureau should poll its distribution list to identify the various types of users and their specific requirements.

Recommendation 8: The above Recommendations are intended to further enhance and improve the widely acknowledged excellent work performed by the IERS.

Topic 2 - Astronomical reference frames

Executive summary of recommendations

IERS tasks

To monitor the evolution in time of the instantaneous positions and motions of the equinox and ecliptic and, in particular, to provide for planetary ephemerides, the mean ecliptic and equinox in the ICRS system.

a - To provide the maintenance of ICRF; this includes promoting and coordinating observations, monitoring source structures and updating the catalogue.

b - To assess the accuracy with which the main astrometric catalogues in various wavelengths represent ICRS and monitor the evolution of the links. This task is primarily to be performed on the Hipparcos Catalogue as the primary optical reference frame.

c - To monitor the evolution in time of the instantaneous positions and motions of the equinox and ecliptic and, in particular, to provide for planetary ephemerides, the mean ecliptic and equinox in the ICRS system.

d - To assist in the collection and distribution of observations of millisecond pulsars.

e - For these tasks, IERS will be assisted by a Consultative Group appointed by the IAU.

In addition, Topic 2 supports recommendation 6 of Topic 1 stating that the IERS Conventions should be consistent with the IAU resolutions on reference systems (at present, the IAU and IUGG resolutions adopted in 1991).

Topic 3 - Vertical References

Recommendation 1: Considering the critical contribution of IERS for vertical reference issues by defining and realizing primarly the International Terrestrial Reference System (ITRS), we recommend IERS

- to propose IAG to establish a joint working group between its Commission X (networks) and its Commission XII (geoid) on the consistent utilization of space geodetic heights, geoid models and leveling to obtain a unified vertical datum;

- to appoint an IERS representative in this WG;

- to suggest IAG to invite also a IAPSO representative for tide gauge issues.

Recommendation 2: Considering the various problems related to the realization of a proper geodetic fixing of tide gauges and the necessity to fully exploit the improving quality of the vertical component of the ITRF and its densifications, such as the IGS one, we recommend

- that the IAPSO/IAG Working group on Geodetic fixing of tide gauges be asked to prepare technical specifications on these issues;

- that this WG would ensure that these specifications be prepared with the contribution of several geodetic experts in this field.

Recommendation 3: We recommend that an IAG CSTG group deal with various topics with potential impact on IERS in a near future. We have specifically identified two subjects of this kind:

a) the use of ground based atomic clocks as sensors of the geopotential and consequently ask the FRCN group to include a representative of this community;

b) the definition and realization of a pilot experiment to detect some geophysical signals from a specific subnetwork of ITRF stations. IERS should draft such a proposal and submit it to the group. This experiment should include:

- a global design of this subnet taking into account the individual quality of sites and the structure of expected signals,

- a small group of scientifically interested persons who would take part to this design and to the analysis of results (we can mention postglacial rebound, tidal effects...),

- a procedure to guarantee that the participating stations will accept to apply the established specifications, in particular concerning some monitoring issues to be defined in more details (local surveys, evaluation of the stability of the instruments and monuments...).

Recommendation 4: Considering the present day capability of several IERS techniques to monitor the motion of the geocenter, we recommend

a) to support strongly the proposal to launch a pilot experiment on this issue as announced by the WG on ITRF datum;

b) to obtain as soon as possible geophysical estimated of this motion for the following contributions:

- atmosphere,
- tides,
- oceanic circulation.

The existing or new relevant IERS Sub-bureaux should take this action

Topic 4 - Crustal Deformations

Recommendation 1: The IERS should make a strong effort to promote the collocation of observations, accurate local survey and continued (re)observations at the TRF sites in order to strengthen the ITRF.

Recommendation 2: The IERS should encourage the analysis centres to provide time series of ITRF site positions and make this information available through the IERS Web site.

Recommendation 3: The IERS should encourage the Analysis Centers to report deviating behavior of ITRF sites at the 5 sigma level or above, and to attempt to identify the cause of such behavior. IERS should make such information available on the IERS Web site.

Topic 5 - Unification of national datums

Recommendation 1: Provide a consistent global reference frame, and transformations between ITRF solutions, based on a homogeneously distributed network of stations at the highest possible level of accuracy.

Recommendation 2 : Maintain the coordinates and velocities of a homogeneously distributed global network of accurate permanent stations, and parameters, so that any agency can undertake a national ITRF based datum.

Recommendation 2 : Encourage national agencies to establish their precise national datums within ITRF so that these datums can be linked into regional or continental solutions.

Topic 6 - Global geophysical fluids

Recommendation 1 : We recommend that the IERS DB strengthen the present Sub-bureau for AAM. The IERS should be aware that this Sub-bureau could be enlarged sometime in the future.

Recommendation 2 : We recommend that the IERS DB start the procedure for creating a WG to evaluate the existing ocean tide models, working towards recommending an IERS standard which includes parameters related to Earth orientation, gravity, geocenter motion, and other parameters of interest to IERS.

Recommendation 3 : We recommend that the IERS DB request that the IAG SSG5.173 investigate the status of global ocean models related to Earth orientation, gravity, geocenter motion, and other parameters of interest to IERS. We recommend that the IERS DB asks this SSG to investigate the possibility to introduce a specific algorithm within the existing ocean models to compute EOP, gravity and geocenter motion.

Recommendation 4 : We recommend that the IERS DB encourages the CC for space geodesy techniques to archive and make available water vapour estimates.

Recommendation 5: The IERS DB should expect that, in the long term, the global hydrological cycles will be part of the global climate models.

Recommendation 6: We recommend that the IERS DB encourages the establish-ment of contact with the SEDI community for getting core parameters relevant to Earth's rotation.

Recommendation 7: After the IERS DB accepts these recommendations, they should be publicized in the litterature such as a paper in EOS.