



INTERNATIONAL EARTH ROTATION SERVICE (IERS)
SERVICE INTERNATIONAL DE LA ROTATION TERRESTRE
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Report on IERS Directing Board Meeting No 21

24 April 1997, 15:30 - 19:30
Vienna (Austria)

Held in conjunction with the EGS 22nd General Assembly

Attendance: C. Reigber (Chairman), C. Boucher, M. Feissel, D. Gambis, B. Kolaczek, C. Ma, D. McCarthy, B. Melbourne, D. Salstein, P. Shelus, B. Schutz, P. Willis.

Invitee: G. Petit

ACTIONS SINCE LAST MEETING (DECEMBER 1996)

- The Call for participation in IERS Geocenter Motion Campaign was issued (IERS Gazette No 10, 2 January 1997). It met with great interest. Active discussions have started.

- IERS Technical Note No 22 with the conclusions of the 1996 IERS Workshop, was completed in January 1997 and distributed.

- The questionnaire for polling of the IERS users needs (IERS Gazette No 11, 21 January 1997) was sent to about 1000 addresses, and deposited on the IERS/CB World Wide Web site. The overall return rate of the questionnaires is about 20%. The detailed analysis of the origin of the received questionnaires shows that the sample of responses is biased towards the most demanding users and also towards those who make multiple uses of IERS results. These users are the most involved and those who require the best results. Continuing serving them at the required level of accuracy while they are making continuous progress is an exciting challenge for IERS. The analysis of the responses will be published in the Annual Report and distributed by the Gazette (No 17, 3 June 1997). The list of responders will be distributed to the Directing Board members.

- Letters were sent by the Chairman to NASA to express the vital importance to IERS of their support to VLBI, to SLR, and to LLR.

- Instructions for interpolating the IERS series of EOP with consideration of diurnal and semi-diurnal variations were distributed (IERS Gazette No 13, 30 January 1997).

- The Call for Proposals for Monitoring Global Geophysical Fluids in IERS was widely distributed (IERS Gazette No 14, 21 February 1997). The deadline for submissions is June 30.

TERRESTRIAL REFERENCE FRAME MATTERS

The series of annual ITRF series was stopped with ITRF94 in order to produce a new primary ITRF solution designed and validated with the help of the Working group on ITRF datum chaired by Jim Ray. This group raised a lot of interesting points so that it will take some time to get its conclusions and, consequently, to obtain an ITRF-C1 solution in agreement with them. Following the recommendation of the IERS Directing Board, it was decided to provide an interim solution to take advantage of improved positions and velocities in the recent GPS or DORIS solutions. Furthermore, a recent survey within the user community showed clearly that the details of the ITRF computations were not known by most users, and that these users wanted to get simple products from IERS concerning the TRF. In other words, the fact to obtain each year a new complete and improved ITRF solution is something to continue, considering that the broad user community is now aware of this product. In conclusion, the TRF Section of the Central Bureau will publish two new solutions (which keep the continuity):

- ITRF95 as combination of solutions submitted last year for ITRF-C1

- ITRF96 which should be available this summer and presented at the Rio meeting. This last solution will be the interim solution mentioned before and will supersede ITRF94. It will be based on a selection of large solutions from each technique among those received in the recent years.

The TRF Section welcomes parallel combinations by other analysis centres. ITRF96 will be screened by a validation group, prior to its public distribution.

The IGS is running a Pilot Campaign for the regional densification of ITRF by GPS results. C. Boucher is associated with this project. It aims at establishing a new standard IGS product starting in 1998, consisting of weekly sets of station coordinates tied to the ITRF.

The appropriateness to the users needs of two different handlings of terrestrial reference frame data, namely station positions and velocities or time series of coordinates, was discussed by the Directing Board. Clarification is needed about the relative merits of the two approaches. It is expected that the discussion of the Geocenter motion campaign, based on time series of terrestrial reference frames, will bring a better insight to this question.

The longstanding problem of local surveys in the ITRF sites requires more action from IERS. The TRF Section of the Central Bureau is requested to take the lead to improve the state of data. A review 'of problem' survey ties should be performed on the basis of the ITRF96 analysis. Plans for re-surveys could be proposed to the institutions in charge of these activities. Any action should be taken in consultation with the CSTG subcommission on Geodetic and Geophysical Sites (Chair: J. Bosworth).

ANALYSIS CAMPAIGN FOR TESTING EOP-ITRF RELATIONSHIP

C. Ma started discussion with several analysis groups and with the Central Bureau Sections to clarify the specifications of the Campaign. Several analysis groups were identified for each technique. It is proposed that the test be based on ITRF96 when it becomes available. Three different levels of strength of the tie to the ITRF would be used in the experiments. The length of the EOP series should be about 10 years whenever possible. As the computation load may be large in some cases, the experiment should be carefully devised. The Earth Orientation Section of the Central Bureau is fully prepared to perform analyses on a large number of series. The criteria for the selection of analysis centres needs further clarification.

COMBINATION CENTRE IDEAS

The recommendation to develop more combinations in the data analysis process was one of the most important one among the 1998 IERS Workshop conclusions. The Directing Board considers it must find ways to go more strongly in this direction.

D. McCarthy started an e-mail discussion on this topic with the Directing Board members by circulating a detailed description of tasks. The responses that he received were somewhat reserved in their enthusiasm. The responses noted that while the proposal may be a fine idea, given the current state of affairs, it is not realistic to expect that the proposal would meet with any success. In an effort to be more realistic and still do more than what is being done now, he suggests the following action.

'Create technique combination centres responsible for combining the products of all analysis centres within a technique. This combination process could act as a catalyst for possible improvement of analysis procedures within a technique since combinations should allow for careful comparisons of like data. These centres could provide "analysis coordinators" who could also be on the Directing Board'.

For lack of time the discussion was not conclusive. It should be continued until the Rio meeting. It is proposed to refer to combined solutions within one technique as "unified solutions".

IERS CONVENTIONS

The BIPM (Bureau International des Poids et Mesures, International bureau of weights and measures) is starting a specific activity on metrology in the framework of general relativity, under the leadership of Gérard Petit. This activity is planned to have some degree of association with the IAU and the IUGG. As it will to some extent parallel the IERS Conventions tasks, the BIPM wishes to establish a cooperation with IERS on these aspects.

MISCELLANEOUS

- Now that the new setting of the service after the 1996 Workshop has got clearer, the IERS flyer project should be restarted.

- The Central Bureau should revise the list of Corresponding Members, based on advice from the Directing Board members.

- B. Schutz will circulate a draft Call for Proposals for laser ranging participations in IERS. It should cover both SLR and LLR, as well as all functions: stations, data collection, analysis centres, Coordinating centre.

- J. Ray proposed a draft recommendation that would result in non ambiguous naming of UT-like arguments in the case of satellite geodetic results. This should be further discussed by e-mail.

- The IERS Conventions (1996) provide the definition of the International Celestial Reference System, ICRS, as well as procedures to be used to transform between the celestial and terrestrial reference frames. They also specify a nutation model and improved numerical values for the precession rate of the equator in longitude and in obliquity. These nutation model and rate corrections are referred to the mean pole at J2000.0. As the mean pole at J2000.0 is slightly offset from the ICRS pole, in order to refer the IERS nutation model to the ICRS pole, one must use additive constants in longitude and obliquity. This means that, after calculating the total displacement of the celestial pole using the corrected precession rate and the improved nutation model, a bias in both longitude and obliquity must be added in order to refer to the ICRS pole. The Central Bureau is requested to publish the value of these constants.