

General discussion: Session 1

Chairman: Dr G A Wilkins

The chairman invited the Symposium to consider whether the IAU ought to take action to improve the effectiveness of work on time and the rotation of the Earth; was there a need for formal adoption of standard reference systems, or for changes in the time systems in use? There appeared to be a need to improve arrangements for coordination in the use of new techniques, and consideration should be given to the procedures for the reduction, analysis and publication of the results obtained. A draft resolution concerning possible amalgamation of Commission 19 and 31 had been submitted by J.D. Mulholland; it would be displayed, and discussed at the final session.

The chairman then called B. Guinot, who summarized arguments, presented in his invited paper, in favour of the adoption of a new system of reference coordinates in which universal time would be directly proportional to "stellar angle".

During the following discussions it was emphasized that the implications of such a change for different classes of user would need careful study; if firm proposals could be produced before the General Assembly then decisions might be taken there, but it would not be appropriate to hold detailed discussions immediately. Adopted concepts ought to be readily comprehensible to workers in other fields, and reference points should be observable, at least in principle.

Time scales for the description of Earth rotation were discussed next. B. Guinot noted that the adoption of FK5 would introduce a step in UT1, and suggested that it might be desirable to introduce a variant of universal time (UT3 ?) from which the effects of zonal tides had been removed. This would reduce problems of interpolation from the 5-day means; at present some short-period terms had amplitudes comparable with the residual scatter. Publication of UT2, on the other hand, appeared to be unnecessary; the conventional terms used in its formation do not represent well the variable effects that are observed, and there is a danger that users will employ UT2 when they need UT1.

In the discussion it was recognised that although UT2 is useful for work within the time services, this does not require formal publication of tabulated values of UT2.

Views expressed during discussions on international coordination were:-

- New facilities ought not to be planned in isolation, but there are at present no formal arrangements for international coordination.

- The IAU could and should influence the development of new systems; it should not, as too often in the past, restrict its efforts to the integration of systems already in operation.

- The new techniques operate on a global scale, some requiring observations from only a few stations working as a single system. It is not obvious that IAU involvement would be helpful within such a system, but the IAU might usefully aim to coordinate periods of intense effort by several independent systems using various techniques.

- International campaigns of this kind could perhaps add weight to applications for observing time on some equipment for which Earth rotation studies would normally have low priority, but the campaigns might seem merely irrelevant or irritating to operators of other systems already dedicated to time-critical observations, sometimes scheduled years in advance.

- It is difficult to use observations which are made only intermittently or are interrupted. There is a need for continuity, and for concurrent daily operation of independent systems over periods whose durations should not be limited in advance, but should be determined only after intercomparison of the results obtained.

- Analysis of observations ought not to be undertaken by isolated groups using independently developed methods, but there could be dangers in too much formal organisation of effort; it is important that observations should be processed and the results published quickly. Comparison should normally be with the results of the BIH or IPMS, and the results of retrospective analyses should also be made available to these bodies.