IGS

OPENING SESSION

Welcome and Official Opening of the Workshop

John M. Dow
Chair, IGS Governing Board

Distinguished Guests, Colleagues of the IGS,

It is with particular pleasure that we return to Bern for an IGS Workshop 11 years after the seminal meeting of March 1993 in which the initial Terms of Reference of the Service were drafted and later proposed for adoption to the International Association of Geodesy in August of that year. The 4th Meeting of the "IGS Oversight Committee" held in Bern around the workshop set the stage for the establishment of the IGS as an IAG service.

From the beginning, workshops have been one of the central keys to the success of the IGS. They are the occasions when all active elements of the IGS have the opportunity to present the latest developments, highlight problems and formulate recommendations to the various coordinators, to the Central Bureau and to the Governing Board. The Proceedings of the IGS Workshops represent an essential and invaluable record of our organisation as it develops from year to year, and a resource which many colleagues outside of the IGS take advantage of in their own work. While some IGS Workshops have concentrated on specific aspects, this one falls in the tradition of those which aim to cover (if only partially) the broad spectrum of IGS activities. The 1993 Bern Workshop was the first in this line. (It was rapidly followed by an Analysis Centre Workshop in Ottawa and a Network Operations Workshop at Silver Spring, Maryland, in consecutive weeks in October of that year.)

Yesterday in the Faculty Room of the University of Bern we held the 24th Meeting of the IGS Governing Board. Among the topics discussed was an update of the IGS Terms of Reference (the last update stems from 1999) to re-align them with the current structure and operations of the Service and with the Strategic Plan for the years to 2007. There have been many important developments in the IGS in recent years, including the gradual decrease in latency of the products – several weeks in the early days, towards real time products today; a growing interest in Low Earth Orbiter missions using Global Navigation Satellite Systems as their means of navigating in near-Earth space; and of course the continuing development of the GNSS infrastructures themselves, in particular the entry on to the scene of a major new European system, viz. Galileo. The IGS aims to provide a world standard service in support of these and other developments and applications, and I believe that we have largely succeeded in creating and maintaining an organisation which does exactly that. We can all be proud to be associated with the IGS. This does not mean that our task is complete. The challenges associated with operating, improving and making use of Global Navigation Satellite Systems do not diminish with time, simply because of the ever-increasing applications of the systems, which (apart from almost unlimited scientific applications) permeate many aspects of everyday life and make GPS a term which everyone recognises.

The organisers of the Workshop, including in particular the Bernese Local Organising Committee, under the chairmanship of Werner Gurtner, the IGS Central Bureau and the session chairs, have done a remarkable job in setting up a very impressive programme and the necessary infrastructure to support it. This Workshop promises to be an occasion to remember, as it deserves to be after 10 years of IGS as an official service of the IAG. All of the major areas of concern of the IGS today are on the programme, but in the course of 5 days of intensive discussion among such a gathering of world class experts, who knows what new ones may crystallise?

Thank you all for participating in this 10th Anniversary Workshop (and Symposium). I wish everyone a very fruitful and enjoyable week.

Welcome from the University of Berne

Urs Würgler, Vice-rector

Ladies and gentlemen,

The opening of symposia or workshops at the University of Berne is one of the more enjoyable duties of the university's directorate. Such events indicate that the research work performed by the university's entities is relevant and meets international standards. As a side remark I should perhaps mention that it would have been difficult for me to decline the request by Gerhard Beutler, because we were in essence studying at about the same topics simultaneously and at the same place (with different emphasis, however).

According to our understanding, the Astronomical Institute deals with fundamental astronomy in research. This is undoubtedly one of the oldest branches of astronomy, one might even get the impression that attributes like old fashioned or even outdated could be appropriate. This workshop proves the contrary: Research in fundamental astronomy is performed with the most advanced tools, namely Global Navigation Satellite Systems, high-performance satellite receivers, and very advanced software tools. The results are very broad in nature and they are truly remarkable. Results inc1ude the monitoring of the continental drift so-to-speak in real time, the determination of the Earth's rotation axis and of the length of day.

Research of this kind obviously must be internationally coordinated. We understand that the coordination in this field of science is performed by the International GPS Service (lGS), the tenth birthday of which is celebrated by this workshop and by the symposium on Wednesday. The number and the importance of the institutions working together in this service and represented here is most impressive.

From our perspective it is amazing that not only so-called “big” research institutions, but also small academic entities are able to contribute to such a big international, even global, research effort. We are of course particularly proud that the Astronomical Institute is a respected partner in this enterprise. Its involvement in the IGS as a “full-blown” Analysis Center, as chair of the IGS Governing Board over a time interval of about seven years, and as IGS Analysis Coordination Center, were seemingly viewed positively by the international community.

When preparing this speech I made two observations, which may be of some interest at least for the directorate of the University:
The Astronomical Institute’s CODE (Center for Orbit Determination in Europe) Analysis Center was producing satellite orbits, station coordinates, Earth rotation parameters, etc., for every single day since June 21, 1992. It looks like holidays and such things are unknown at this entity and – even more interesting – it seems people working there are very happy with this system. The transportability of this model to all the other university units will of course be studied in the near future. I learned at school that the days, as defined by the Earth's rotation, should get longer due to tidal friction. This is what Gerhard and I learned at our university about forty years ago. I was of course counting on this effect when planning my working days at the university. But now I see that – at least since the IGS became active in 1992 – the opposite is true: The days become considerably (about two milliseconds) shorter since the creation of the IGS. We hope that this development is not caused, but only monitored by the IGS. Otherwise the University of Berne's involvement in the IGS would have to be reconsidered.

Let me stop here. I wish you all a very fruitful week of scientific discussions and most enjoyable days at our university and in the beautiful city of Berne. The University of Berne is proud to host an IGS Workshop for the second time. It is up to you all to make this workshop a success. I hope that my successor in 2014 will be able to look back at the IGS achievements in a similarly positive way.

Welcome from the IAG

Gerhard Beutler
President of the International Association of Geodesy (IAG)

The creation of the International Association of Geodesy (IAG) goes back to an initiative by the Prussian General Johann Jacob Baeyer (1794-1885), who wrote a memorandum to the king of Prussia in 1861. In this memorandum he argues that international collaboration to perform arc measurements is required for scientific reasons. He stated in particular: *If Central Europe is therefore willing to unite and use its resources for the solution of this task, it will call into being an important and magnificent work.*

A similar statement in 1989, this time by Prof. Ivan I. Mueller (not a general, but IAG President at that time), led to the creation of the International GPS Service: *The primary motivation in planning the IGS was the recognition in 1989 that the most demanding users of the GPS satellites, the geophysical community, were purchasing receivers in exceedingly large numbers and using them as more or less black boxes, using software packages which they did not completely understand, mainly for relative positioning.*

From the IAG perspective the creation and realization of the IGS really was an important and magnificent task. The same attributes are appropriate for the current performance of the IGS.

The IGS was not the first IAG service. The idea of establishing a service whenever an important permanent task has to be solved, is well established in IAG. The creation of the International Latitude Service (ILS) in 1899 is the first example for this policy. The International Earth Rotation and Reference Systems Service (IERS), created in 1987, may be viewed as the successor of the ILS. This long-term perspective is important in geodesy and in IAG. The tasks of the ILS and the IERS are very closely related, the tools, on the other hand, could probably not be more different. Astrometry was used in the ILS, the space geodesy in the IERS.

The IGS has no predecessor within IAG. The long-term perspective is, however, of greatest importance in the IGS. Today's generation of Global Navigation Satellite Systems (GNSS), namely the GPS, the Russian GLONASS, and the upcoming European Galileo system will be the dominating tools for precise positioning and navigation at least in the next two decades. This implies that many noble scientific tasks like the realization of a unique terrestrial reference system and the monitoring of Earth will, to a great extent, be based on the IGS. When the service was created in 1994, IGS stood for International GPS Service for geodynamics. Today, the same acronym stands just for International GPS Service – based on the insight that the IGS products are of much broader use than "just for geodynamics". We predict that well before the 20th IGS anniversary the same acronym will stand for International GNSS Service.

In this first week of March 2004 we are celebrating ten years of IGS as an official IAG service. The IGS community was in Bern already once, in 1993. At that time the 1992 IGS Test Campaign was reviewed and the IGS Terms of Reference were written – in the meeting room of the Faculty of Natural Sciences of the University of Bern. We are thus back to the roots of the IGS in this week. It is worthwhile to compare the proceedings of the 1993 Bern workshop with the program of the 2004 IGS events. Both documents are impressive and stand for the innovative spirit within the IGS. The comparison also proves that the progress achieved between 1994 and 2004 is breath taking. Nobody would have predicted such a performance of the IGS in 1993.

On behalf of IAG I wish us all a very fruitful and interesting week in Bern. Let us use this time to lay the technical and administrative foundations for the second decade of IGS services to a steadily growing user community.