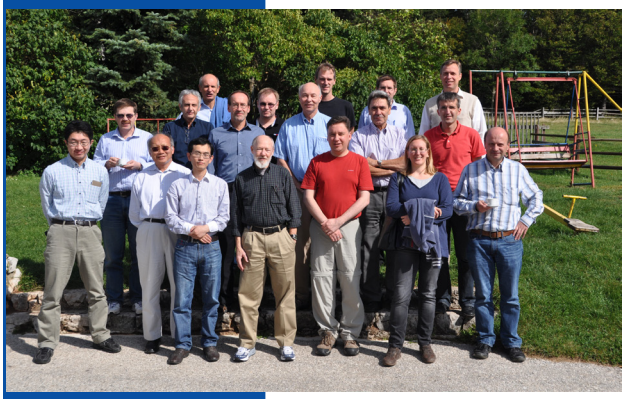
IVS Newsletter

Issue 31, December 2011

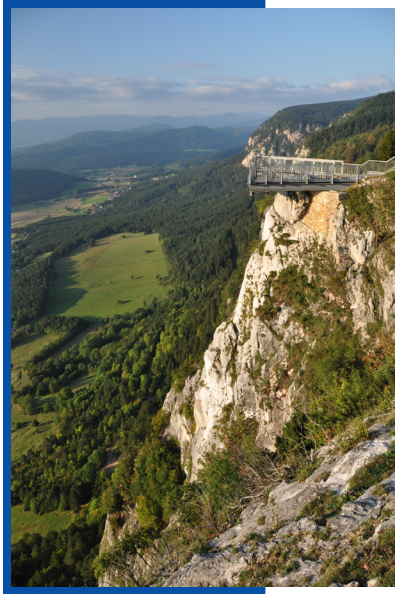
Hohe Wand and other Directing Board Affairs

Dirk Behrend, NVI Inc./GSFC



Participants of the IVS retreat (IVS Directing Board and invited guests).

At the end of September 2011, the IVS Directing Board retreated to Lower Austria to go up the high wall, well no, to Hohe Wand, a nature park in the Gutenstein Alps a good hour's drive southwest of Vienna. Directly following the Journées 2011 in Vienna, the Board made the trip out to the Alpengasthof Postl in order to be detached from the outside world for its planned two-day retreat and the 26th Board meeting. For the retreat the Board was augmented by invited guests, namely, Johannes Böhm, Thomas Hobiger, Jim Lovell, and Arthur Niell.



View of the skywalk and the high wall of Hohe Wand Nature Park.

The focus of the retreat was placed on a review and update of the IVS Terms of Reference (ToR). Periodic reviews of the IVS organization and its mandate, functions, and components are actually a requirement according to the ToR. The Board went through the existing ToR sentence by sentence discussing the continued validity of the contents. Without going into any further details, let me state that several formulations were simplified and minor additions and deletions were done, but none of the changes are critical or controversial in nature. At several positions the Global Geodetic Observing System (GGOS) was added in. Perhaps the only major update was the addition of a second Analysis Center representative on the Board.

The revised ToR were approved by the Board in the subsequent Board meeting and then sent to the International Association of Geodesy (IAG) Executive Committee (EC) for formal approval by the IAG. With the next get-together of the IAG-EC during the AGU week in San Francisco, we anticipate that the new ToR will become effective by mid-December. Beyond the revision of the ToR, another outcome of the retreat was the definition of focus areas for future IVS work and activities. The Board felt that emphasis should be put on improving quality control, internal and external outreach, VLBI2010 infrastructure, real-time observation and product creation (including automation), and expanding research and research fields.

A more serious discussion was caused by the notification by Harald Schuh who was recently elected as IAG Vice-President that the IAG Bylaws require him to step down from chairman positions of either of the IAG Services or Commissions. In other words, Harald will not be able to conclude the full four years of the second term of his IVS chairmanship. However, since the Hohe Wand meeting a compromise could be negotiated with the IAG Bureau, allowing Harald to officially continue as acting IVS chair until after the next regular IVS Directing Board elections. The next elections are scheduled for December 2012 to January 2013. Then the new Directing Board will have to elect a new chair, probably in the March/April 2013 time frame.

(above) Alpengasthof Postl was the venue of the Hohe Wand meetings from 21–23 September 2011. (left) Harald Schuh (standing) and the retreat attendees discuss the IVS Terms of Reference.

Feature

Laboratoire d'Astrophysique de Bordeaux

The Laboratoire d'Astrophysique de Bordeaux (LAB), formerly known as Bordeaux Observatory, is a founding member of the IVS. As an Analysis Center, LAB has focused on work related to the celestial reference frame and source structure, but it has also brought us the real-time service of IVS-Live. Newsletter editor Hayo Hase interviewed Patrick Charlot via e-mail to obtain a more thorough picture of the activities going on in Bordeaux.

VLBI group of the Laboratoire d'Astrophysique de Bordeaux (from left): Arnaud Collioud, Géraldine Bourda, Patrick Charlot, and Antoine Bellanger.

Patrick, the Bordeaux region is a famous wine-growing area in France. Do you see any correlation between good wine and important discoveries made at your observatory? What are the major achievements made at Bordeaux Observatory?

Yes, of course! Thierry Jacq, one of the researchers of the observatory, in collaboration with German colleagues, got inspired by the emanations of the surroundings and was the first to detect methanol outside of our galaxy in the 1980s. Personally, I also tend to think that good wine favors creativity—which is essential for research. That being said, the correlation probably stops here.

Aerial view of LAB.

Historically, Bordeaux Observatory has been known for its contribution to optical astrometry and its meridian circle. Most notably, it was one of the 18 observatories around the world to participate in the observations for the "Carte du Ciel" during the first quarter of the 20th century, a vast project aimed at measuring the positions of 3 million stars. In the 1980s, the meridian circle brought a large input to the Hipparcos mission (launched in 1989) of the European Space Agency (ESA) by measuring thousands of a priori stellar positions which were required beforehand. Starting in the 1970s, radio astronomy developed with a focus on the millimeter domain. Instrumentation built on site (including a small interferometer working at 8.6 mm) was used to train a generation of students who were later involved in the creation of the IRAM (Institut de Radio Astronomie Millimétrique), a French-German-Spanish institute at the forefront of millimeter astronomy. In the past decade, the observatory played a prominent role in two major international projects: ESA's Herschel satellite and the Atacama Large Millimeter Array (ALMA) for which we delivered part of the electronics.

What are currently the main working areas at your observatory? Do you still carry out observations?

Bordeaux Observatory, now renamed "Laboratoire d'Astrophysique de Bordeaux" (LAB), is involved in extragalactic, galactic, stellar, and planetary science. The main areas of research include: reference systems and astrometry, active galactic nuclei, kinematics of stars in the Milky Way, interstellar medium, high-mass star formation, circumstellar discs and migration process, self-gravitating structures, Solar System dynamics, planetary surfaces and atmospheres, exoplanets as well as studies about the origin of life on Earth and in the Universe. In addition, LAB has strong experience in building electronics equipment for both space-based and ground-based instrumentation. Technical expertise includes IF/RF signal conditioning, fast digitization of broad bandwidths and digital filtering. Two optical telescopes still operate on site: a 60-cm telescope and the aforementioned 130-year-old meridian circle, which was rejuvenated many times and is nowadays automated and equipped with a CCD-camera. Observations of planets and satellites, stars, and QSOs are conducted on a regular basis; but these do not form the bulk of the research carried out at the observatory anymore.

When did VLBI work start at Bordeaux? Who are the group members and what are they doing?

VLBI was first done in Bordeaux by Alain Baudry in the 1980s. His initial work was focused on studies of OH maser emissions in star forming regions. He also got involved in space VLBI, contributing to the projects QUASAT and IVS (International VLBI Satellite!). Although these did not pass the ESA selection process, they were essential in structuring the European VLBI community, eventually leading to the building of the EVN correlator and the creation of JIVE (Joint Institute for VLBI in Europe).

VLBI activities in Bordeaux developed further when I moved there in 1998, bringing an additional focus on reference systems and active galactic nuclei. The VLBI group grew steadily with the recruitment of Antoine Bellanger in 2001, Arnaud Collioud in 2006, and Géraldine Bourda in 2010. Antoine's role is to analyze the R1 and R4 sessions on a regular basis, preparing us to join as an operational analysis center in the future. Arnaud's primary task consists in imaging the RDV sessions and in making those VLBI images publicly available. Géraldine develops the VLBI part of the CNES multi-technique software package GINS. She is also heavily involved in observations and analyses for the alignment of the VLBI frame with the future Gaia optical frame. Major achievements of the group during the past few years include

participation in the realization of the ICRF2, development of the Bordeaux VLBI Image Database, and construction of the IVS-Live dynamic Web site allowing everyone to follow IVS sessions in real-time.

What about your personal history? When did you start to work in the VLBI field?

Preparing a degree in topographical surveying and geodetic engineering, I was originally set to work in private industry. However, I got interested in space geodesy and had a chance to spend six months at CERGA in Grasse for my final semester project in 1983, the topic of which was to analyze SLR data to estimate the geodetic position of the Grasse SLR station. I enjoyed so much the type of work I did there that I decided to continue in that area. In 1985, I engaged in a PhD at the IGN in Paris. Due to the interest of the IGN, I was tasked to work on VLBI. Eventually, I studied the celestial segment of the technique (the position and morphology of the extragalactic sources) and ended up as the first one to produce VLBI maps from geodetic sessions. Ever since then, my interest in all three fields—geodesy, astrometry, and astrophysics—has remained.

As geodesist you have heard about the Global Geodetic Observing System (GGOS). One of the goals is to densify the global VLBI network. What comes to your mind in that regard?

Simulations for the next generation VLBI system use networks of 16 or more core stations optimized for geographic distribution. Among the potential future sites, there are two located on French territories: Kerguelen Islands (South Indian Ocean) and Tahiti (South Pacific). Building a VLBI station on the Kerguelen Islands does not appear very realistic as these islands are very remote with only limited access and no permanent inhabitants. A Tahiti site, on the other hand, looks a lot more promising. It is easily accessible and now has a high-speed fiber link to Hawaii in place. Additionally, there is already an SLR station and infrastructure there. The French geodetic community through the GRGS (Groupe de Recherches de Géodésie Spatiale) has a plan to develop this site further—including construction of a VLBI station. This potential future antenna would be essential in filling the large South Pacific gap that exists in the present IVS network. The most difficult part, however, will be to obtain funding for this project.

You have made a lot of source structure studies of radio sources. Can you explain briefly why source structure is important for reaching the "1-mm goal" of GGOS in global geodetic networks?

Standard geodetic and astrometric VLBI modeling assumes that the radio sources are perfectly point-like on VLBI scales. In practice, this is often not the case and a lot of sources show a distinctive core-jet morphology with radio emission that extends over a few milliarcseconds. Such extended structures create an additional VLBI delay which depends on the extent of the source on the sky and the VLBI baseline geometry relative to the source structure. Calculations based on actual VLBI maps show that this delay ranges from 1 ps or less for compact sources (4 ps equals about 1 mm) to several tens of ps for extended sources. Modeling these effects is difficult as it requires source structure maps at the same epochs as the geodetic data since the VLBI sources usually vary with time. The Radio Reference Frame Image Database (RRFID) and the Bordeaux VLBI Image Database (BVID) are a first step towards this goal. The next generation VLBI system with its capability to image the sources on a daily basis should help tackle the problem and model such effects more routinely.

Patrick Charlot, Harald Schuh, Wolfgang Schlüter, and Jan Vondrak raise their glasses in a toast on the occasion of the 10th Anniversary of the IVS which was celebrated in Bordeaux.

In the IVS Directing Board you are serving as the IAU Representative. What significance does the IAU give the IVS?

The definition and maintenance of celestial reference systems and frames are under the IAU responsibility. In this respect, VLBI became important in 1991, when the IAU decided that its celestial reference system would be realized based on coordinates of extragalactic sources. Accordingly, the IAU appointed a working group whose task was to build the relevant frame from the existing VLBI data. This led to the realization of the ICRF and further to its adoption as the IAU fundamental frame in 1997. When the IVS was founded in 1999, the maintenance and improvement of the ICRF were naturally regarded as one of the IVS tasks and dedicated IVS observing sessions were scheduled to this end. Accumulated VLBI observations in the following decade, most of which coordinated by IVS, led in 2009 to the second realization of the ICRF, this time generated by an IVS working group. The IVS has thus been an essential partner for the IAU since its creation.

Seen from an IAU perspective, how important is the modernization of the global VLBI infrastructure based on VLBI2010 technology? What are the big challenges for VLBI in the future?

A big challenge for VLBI in the future is to connect all stations to high-speed networks and to make e-VLBI the standard mode of operation. This will not only reduce considerably the lag between observations and results (which is essential for EOP monitoring), but it will also improve reliability. Another big challenge, in the IVS framework, is to reach the 1-mm level, as stated in the GGOS goals. Using simulations, the VLBI2010 Committee demonstrated that this is feasible and designed the next generation VLBI system accordingly. The issue for IVS is to make this new network a reality.

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Going beyond Earth science, VLBI will also need to find its place in the era of large space-based and ground-based projects such as Gaia and SKA. The Gaia space astrometric mission (to be launched in 2013) is expected to measure optical positions for half a million quasars with 10−200 microarcsecond accuracies, which will revolutionize the extragalactic reference system. While VLBI will not be able to keep up with Gaia in terms of source density, it may still be competitive in terms of accuracy considering the ongoing improvements of the technique. In addition, monitoring Earth rotation will remain a niche for VLBI since Gaia will not do it.

On the 2020+ horizon, SKA with its nanoJy sensitivity and 3000-km-long baselines is likely to revolutionize the radio astronomy world. It will be pretty much a VLBI-like instrument which may well be able to build the radio counterpart of the Gaia optical frame (depending on the actual baseline lengths and observing frequencies) even though it will not cover the entire sky. For this reason, the IVS community should benefit strongly from close interaction with SKA and perhaps should consider developing joint projects when the time comes.

Finally, going beyond work, what are your favorite leisure activities?

My favorite leisure activity is to travel around the world, including hiking, for leisure purposes. However, I cannot do it as often as I used to before becoming LAB Director, because now I have more constraints and less time available. I also enjoy watching soccer.

IVS on Its Way into the ICSU WDS

– Dirk Behrend, NVI Inc./GSFC

Participants at the First ISCU World Data System conference in Kyoto, Japan.

Following the dylanesque lemma that the times they are a-changin', it may actually be said that it's for the better. While a few years back, I had the honor to go to FAGS meetings, now it has changed to WDS conferences. But what the heck does this shorthand lingo mean? FAGS, ICSU, WDS, anything else? Yes, there is also CODATA, WDC, and IPO. Add a bit of WDS-SC and NICT to the mix, and you end up in Kyoto. But let's unravel this mystery step by step.

Clock Tower Centennial Hall of the University of Kyoto was the venue of conference.

The IVS was one of the thirteen member services of the Federation of Astronomical and Geophysical Data Analysis Services (FAGS), an inter-disciplinary body of the International Council for Science (ICSU). This federation was dissolved at the end of 2008 and ICSU mandated that a new body be created as a merger of the former FAGS services and the members of the World Data Center (WDC) system, the latter being another inter-disciplinary body of ICSU with about fifty centers in the world. WDCs are funded and maintained by their host countries on behalf of the international science community. All data held in WDCs are available for the cost of copying and sending the requested information.

Under the auspices of a Transition Team, both entities, FAGS and WDCs, were merged under a new umbrella, called the ICSU World Data System (WDS). The WDS concept aims at a transition from existing stand-alone WDCs and individual Services to a common globally interoperable distributed data system, which incorporates emerging technologies and new scientific data activities. The WDS thus consists of Data Centers and Services. More information about this new beast is available at http://www.icsu-wds.org/.

The IVS applied for WDS membership in spring of 2011 and it has been accepted for membership by late August pending a signed agreement with ICSU. In order to reach acceptance level, we had to go through an accreditation process. With the approval from ICSU, we can claim to have the scientific stamp of approval. WDS strives to become a worldwide 'community of excellence' for scien-

tific data ensuring long-term stewardship and provision of quality-assessed data and data services to the international science community. It is closely linked and cooperates with the ICSU Committee on Data for Science and Technology (CODATA).

With the WDS taking shape, the First ICSU World Data System conference "Global Data for Global Science" was organized and held in Kyoto, Japan from September 3–6, 2011. The choice of the venue is mostly due to the host organization of the central bureau of the WDS, which is called the International Programme Office (IPO) and is hosted by the National Institute of Information and Communications Technology of Japan (NICT). The governing body of the WDS is the Scientific Committee (WDS-SC).

Following hurricane Irene, which just had dissipated over the northeastern U.S., I managed to fly out from Washington to Kyoto (or rather Osaka) just in time to come in before the arrival of typhoon Talas in Japan. In fact, the passage of typhoon Talas forced the organizers to cancel events planned for September 3 and to re-structure the conference agenda. Nonetheless, I was able to present the activities of the IVS at the conference at the Kyoto University, which was attended by 155 participants from over 22 countries. The participants included representatives from Data Centers and Services covering a wide range of scientific disciplines, data scientists and engineers working in a variety of fields such as natural sciences, social sciences and information technologies, as well as data publishers. It is planned to publish the conference proceedings in a special issue of the CODATA Data Science Journal (http://www.codata.org/dsj/index.html).

And what's next? It is foreseen that general assemblies of the WDS will take place every two years. An important topic also for the IVS is data citation and citability. Data facilities frequently find that their data are used in scientific papers without any citation or acknowledgement of the source. WDS data publishing services may provide us with an avenue to implement data citation capability for VLBI.

Maiko (apprentice geisha) dance performance during the conference banquet.

View of Kinkaku-ji (Temple of the Golden Pavilion), a World Heritage Site in Kyoto.

The IVS Newsletter is published three times annually, in April, Decust, and December. Contributed articles, pictures, cartoons, and feedback are welcome at any time.

Please send contributions to
ivs-news@ivscc.gsfc.nasa.gov.
The editors reserve the right to edit contributions. The deadline for contributions is one month before the publication date.

Editors:
Dirk Behrend, General Editor Dirk.Behrend@nasa.gov
Hayo Hase, Feature Editor hayo.hase@bkg.bund.de
Heidi Johnson, Layout Editor hjohnson@haystack.mit.edu

The newsletter is published in color with live links on the IVS web site at

http://ivscc.gsfc.nasa.gov/.

Upcoming Meetings...

Pathways to SKA Science in Australasia Auckland, New Zealand February 14-16, 2012	AOGS-AGU (WPGM) Joint Assembly, Singapore August 13-17, 2012
Workshop on VLBI2010 Specs Wettzell, Germany March 1-2, 2012	XXVIII IAU General Assembly Beijing, China August 20-31, 2012
7th IVS General Meeting Madrid, Spain March 4-9, 2012	11th EVN Symposium Bordeaux, France October 9-12, 2012
EGU General Assembly 2012 Vienna, Austria April 22-27, 2012	AGU Fall Meeting, San Francisco, CA December 6-10, 2012

http://ivscc.gsfc.nasa.gov/meetings

OBITUARY...

Andrey M. Finkelstein (1942–2011)

The Institute of Applied Astronomy of the Russian Academy of Sciences has suffered a grievous loss: Institute Director, Honored Scientist of the Russian Federation, professor, RAS Corresponding Member ANDREY M. FINKELSTEIN passed away on September 18, 2011 at the age of 69.

Andrey Finkelstein was widely known in Russia and abroad as one of the leading specialists in the fields of relativistic celestial mechanics, radio astrometry, space geodesy, and very long baseline interferometry. He is one of the founders of a new scientific field—the fundamental positioning, navigation and timing support— which arose in the early 1980s at the junction of astrometry, geodynamics, celestial mechanics, astronomy, and radio engineering.

Andrey Finkelstein's scientific activities began in 1968. After graduating from the Leningrad State University as a specialist in "Theoretical Physics", he joined the Academy of Sciences of the USSR, where he rose from Laboratory Assistant to Director of an academic institution.

In 1986, according to a decree of the USSR Presidium of the Academy of Sciences, Andrey was appointed head of the "Quasar" project and, from 1988, Director of the newly established Institute of Applied Astronomy of the Academy of Sciences of the USSR (now Russian Academy of Sciences).

Andrey Finkelstein was a prominent scholar with a wide profile. His research interests ranged from theoretical aspects of relativistic physics and astrometry, to space geodesy and celestial mechanics, to methodological and instrumental problems of very long baseline interferometry. He is the author of 268 scientific papers, five monographs, and fifteen patents.

The main scientific achievements of Andrey Finkelstein are:

- validation of relativistic theories with high-precision measurements;
- relativistic theory for the reduction of VLBI observations; a new method of construction of the celestial coordinate system;
- theory of the influence of the turbulent troposphere on VLBI measurements;
- establishing the "Quasar" VLBI Network at the core of the Russian positioning, navigation, and timing system, providing in excess of 12% of the global amount of radio astrometry and space geodesy data;
- setting up a system for high-precision determination of universal time providing data to various users including GLONASS;
- co-locating the "Quasar" VLBI observatories with various other high-precision space geodetic instruments such as satellite laser ranging (SLR), GNSS systems (GLONASS, GPS, GALILEO), and DORIS;
- pioneering research on the refinement of the international terrestrial and celestial coordinate systems, the determination of the Earth's rotation parameters, the study of the effects of global tectonics, the study of radio propagation, and mapping of the geodetic radio sources.

For his work on the creation of the "Quasar" network, Andrey Finkelstein was given an award for science and technology by the Government of the Russian Federation. In 1999 he was awarded the honorary title "Honored Scientist of the Russian Federation".

In 2003 Andrey Finkelstein was elected as a Corresponding Member of RAS in the specialty "Astronomy". He was a foreign member of the Royal Swedish Academy of Engineering Science, a member of the Observing Program Committee of the IVS, a member of the Directing Board of the European VLBI Network (EVN), a member of the Directing Board of the European Astronomical Society (EAS), and a member the International Astronomical Union (IAU) as well as other international scientific organizations.

Andrey Finkelstein was a member of the editorial boards of domestic and foreign publications, Deputy Chairman of the Scientific Council of RAS on "Positioning Timing, and Navigation Support", Chairman of Section No. 9 "Astrometry, Celestial Mechanics and Applied Astronomy" of the RAS Scientific Council on Astronomy, and a member of the Presidium of the St. Petersburg Scientific Center of RAS.

Andrey Finkelstein was a member of the Chief Designers Board of the GLONASS system and chief designer of the GLONASS fundamental support area.

Andrey Finkelstein paid much attention to training students as head of the Department of Radio Astronomy of Saint Petersburg State Electro-Technical University and as head of the Branch of the Radio Physics Department of Saint Petersburg State Polytechnic University. From his students, twelve—four of which were foreigners—obtained Doktor Nauk (Dr. Hab.) or Kandidat Nauk (PhD) degrees.

The staff members of the Institute of Applied Astronomy RAS express their deepest sympathy to the family and friends of Andrey Finkelstein. His name will live forever in the hearts of his colleagues, students, staff members of the Institute, and all who had contact with this bright, extraordinary, and talented man.

– A. V. Ipatov (Deputy Director), S. G. Smolentsev (Deputy Director), and N. V. Shuygina (Scientific Secretary) of IAA RAS

Celebrating 20 Years of GARS O'Higgins

– Roopesh Ojha, NASA GSFC

The author amidst major part of the BKG delegation (from left): Thomas Klügel, Roopesh Ojha, Christian Plötz, and Ulrich Schreiber.

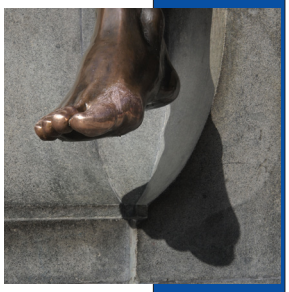
From 12−15 November 2011, some 80 scientists from nine countries gathered for a symposium in Punta Arenas, Chile to celebrate 20 years of the German Antarctic Receiving Station (GARS) O'Higgins. Astronomers in general and VLBIers in particular are no strangers to remote, hauntingly beautiful locales, but Punta Arenas stands out. Clinging to the bottom of the Americas with the large flat landmass of Tierra del Fuego lying like a slumbering monster just across the Strait of Magellan, this windy Chilean city of 120 thousand people in their brightly colored houses (no chromophobia in this town) oozes romance and appeals to the adventurer in all of us.

O'Higgins is a joint project of the German Aerospace Center (DLR) and the Federal Agency for Cartography and Geodesy (BKG). Essential logistical support is provided by the Chilean Antarctic Institute (INACH) as well as the Chilean Army, Navy, and Air Force. It is located near the Chilean military base of Bernardo O'Higgins on Isabel Riquelme Island at the northern tip of the Antarctic Peninsula. The suite of instruments includes the 9-m radio telescope that many of you are familiar with and which is used for satellite tracking as well as VLBI and is equipped with S and X-band receivers. Given this diverse background, the symposium brought together not only astronomers and geodesists, but scientists from other fields, representatives of the DLR, BKG, INACH, the Chilean armed forces, and the German Embassy.

The symposium kicked off on the evening of November 12 with a welcome reception and icebreaker at INACH. Then the action moved to the Hotel Dreams where talks, posters, and discussions were held from November 13 through 15. The hotel is located right on the Magellan Strait, adjacent to the Antarctic terminal. Topics included Earth observation, space geodesy, vegetation and geology of the Antarctic Peninsula, glaciology, microbiology, climate change besides overviews of logistical issues and talks by administrators, diplomats, and officials from the German and Chilean governments.

On the very first morning there was a strong VLBI session with talks by H. Schuh, D. Behrend, U. Schreiber, and H. Hase who between them covered geodetic VLBI, the next generation VLBI system, and the importance of the O'Higgins and TIGO Concepción antennas to current global VLBI networks and their future role. Further VLBI talks were delivered on the final day of the meeting by R. Ojha and C. Plötz. While Plötz gave a comprehensive description of the VLBI operations at O'Higgins, Ojha underscored the unique and irreplaceable role played by this 9-m telescope as well as the 6-m TIGO Concepción telescope in studying the astrophysics of southern hemisphere sources. Many of the most interesting astrophysical sources happen to be located in the southern hemisphere and the TANAMI (Tracking Active galactic Nuclei with Austral Milliarcsecond Interferometry) program has been using these two telescopes to make what are typically the best images of such objects as demonstrated by their recent images of Centaurus A. Such images are key to multi-frequency studies of AGN using space and ground based facilities that span the electromagnetic spectrum.

A particularly positive aspect of the meeting was the interaction between very different groups of people who normally do not spend a lot of time talking to each other. It was very nice to see diplomats and military people taking so much interest and asking trenchant questions about the scientific work they support so well. It was equally nice to see many scientists taking care to make their presentations accessible to a wider audience. In the end, following local legend, a lot of us touched the big toe of the Ona Indian (see photo). Thus, we expect to be back to celebrate future successes of this uniquely efficacious facility. Hasta la próxima!

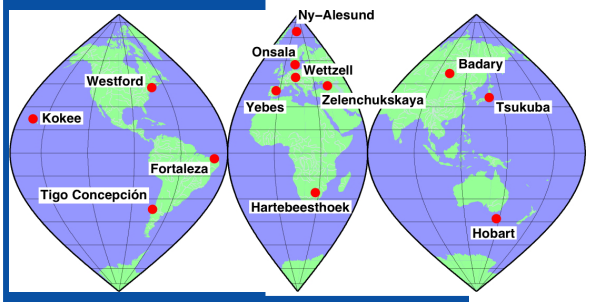


The monument commemorating the 400th anniversary of Magellan's voyage at Punta Arenas' main square. Local lore has it that in order to ensure a safe return from Antarctica, expedition participants need to rub the big toe of the Ona Indian. Another version of the story holds that touching (or kissing) the big toe makes sure that you will return to Punta Arenas one day.

CONT11 Observed Successfully

– Dirk Behrend, NVI Inc./GSFC

We almost take it for granted that measurement campaigns and also individual sessions are observed successfully. But is this really so? It probably is... but it is not so without a reason. It is mostly due to the hard work and commitment of the people involved. CONT11 is another example of this great teamwork effort. So, a big thank-you to all who made CONT11 a successful continuous VLBI campaign!



The observing network of the thirteen stations of the CONT11 campaign (Courtesy of Rüdiger Haas).

CONT11 was observed in UT days from September 15 to September 29 taking continuous VLBI data for fifteen consecutive days at thirteen stations. Prior to the actual observing of the campaign Ed Himwich and Brian Corey worked with the participating stations to ensure that they would perform at their best. At Goddard, Dirk Behrend, Cynthia Thomas, and also John Gipson prepared an optimal set of observing schedules that would result in a continuous series of VLBI data, i.e., with no interruptions during the fifteen days, but allowing the individual stations to perform system checks during the run of the campaign. The Washington Correlator at USNO took on the burden of correlating the entire campaign. They submitted initial versions of the rapid-turnaround equivalents (IVS-R1 and IVS-R4 equivalents) which indicate that we can expect a high-quality data set for the full campaign. All fifteen days are currently in final correlation processing at USNO, which is anticipated to be accomplished by mid-to-end December.

As a campaign goody, an ultra-rapid dUT1 determination demonstration was performed on the baseline Onsala–Tsukuba. For this dedicated fiber lines were set up in order to e-transfer the data to the Tsukuba correlator. Near real-time correlation and analysis was performed using a six-hour sliding window in the analysis. dUT1 estimates were obtained with very low latency during the ongoing CONT11 campaign and displayed in a dedicated Web page (http://sgdns.spacegeodesy.go.jp/vlbi/dUT1/cont11/). More information about the CONT11 campaign is available at the IVS Web site under http://ivscc.gsfc.nasa.gov/program/cont11/.

http://ivscc.gsfc.nasa.gov
ivscc@ivscc.gsfc.nasa.gov
phone: 301-614-5939
fax: 301-614-6522

IVS Coordinating Center
NASA GSFC
Code 698.2
Greenbelt, MD 20771