

NWDC Session Summary
C. Bruyninx, A. Moore, C. Noll

The Network and Data Centers session presented papers on network developments within the IGS as well as various topics on data center developments. The following papers were presented in the session:

- IGS Networks and Data Centers Position Paper (A. Moore, C. Bruyninx, C. Noll, M. Scharber)
- Web-Based Services: combined and Validated GPS Data Products and Data Browsing tools (F. Webb, Y. Bock, D. Dong, B. Newport, P. Jamason, M. Scharber, S. Kedar, S. Owen, L. Prawirodirdjo, P. Fang, R. Chang, G. Wadsworth, K. Stark, R. Granat, D. Argus)
- IGS Network Issues- Update since Berne Workshop 2004? (B. Twilley, A. Moore)
- The AFREF Project? (R. Wonnacott)
- Crustal Movement Observation Network of China and its Phase II Project (W. Gan, J. Sun, H. Sun)
- ESA/ESOC IGS network operations. Present and Future (C. Garcia)
- NOAA-NGS CORS Network Guidelines for New and Existing Sites and its relation to IGS (G. Sella, M. Chin, M. Cline, D. Haw, W. Kass, R. Snay, T. Soler)

Angie Moore opened the session with a review of the position paper for this session. The paper provided a rationale for formalizing the way data are transmitted from station to IGS data centers. By implementing new rules for data flow, stations and data centers can verify that files are consistent among data centers and can ensure data are available despite single data center outages. The paper recommended all IGS data should be pushed to data centers and that all stations/operations centers identify a single primary and secondary data center to push their data to. Angie outlined the methodology for this new philosophy by discussing several examples. Possible scenarios for notifying users of data file replacements were also shown. The Data Center Working Group will review and refine this proposal.

Susan Owen (JPL) gave the next presentation on web-based services under development in the SCIGN-REASoN project for generating GPS products. The main goals of the project are to generate higher-level products from SCIGN (Southern California Integrated GPS Network) data and apply modern IT methodology to archive, disseminate, and validate these data products. The activity includes portal development for metadata search and product delivery. More information about the project can be found at <http://reason.scign.org>.

Bob Twilley (Geoscience Australia) reviewed updates on network issues and recommendations discussed at the 2004 IGS workshop in Berne. Following notification by Network Coordinator, ACs must now request that proposed stations are included in the IGS network; this guideline has resulted in the IGS accepting a lower number of proposed sites. Furthermore, review of current analysis center strategies show that many

newly accepted IGS sites are not regularly analyzed thus implying that priority lists for ACs may be in order. IGS site guidelines have been updated as per recommendations from Berne. Progress has also been made in adding former IGS sites to the SINEX template. Site classification (dormant vs. active) has been completed and is reflected on the IGS Web site. New information from the Reference Frame Coordinator on station discontinuity has been prototyped and can be incorporated into the IGS station pages. Bob closed his presentation with a review of the Australian Regional CORS network (total of 38 GNSS stations) and the typical task load and staffing levels at GA, a major contributor to the IGS as network operator and regional data center.

Ruth Neilan (JPL) presented an overview of the AFREF (African Reference Framework) Project on behalf of Richard Wonnacott (Surveys and Mapping South Africa). The main objectives of the AFREF initiative are to coordinate implementation of an Africa-wide reference system based on the ITRF, realize a unified vertical datum in support of efforts to establish a precise African geoid, and to establish a continuous GNSS base station network whose data is freely available to all nations. AFREF will be organized on a regional basis but will be designed, managed, and executed from within Africa; technical expertise will be sought from the international geodetic community, particularly from the IAG and IGS. Currently, activities are underway in 14 African nations to install permanent GNSS receivers. An AFREF Steering Committee has been established and a Call for Participation has been distributed; responses have been received. A Web site hosted by the UNECA (United Nations Economic Commission for Africa) has been established at <http://geoinfo.uneca.org/afref>.

Weiyan Gan (National Earthquake Infrastructure Service, China Earthquake Administration) discussed the Crustal Movement Observation Network of China (CMONOC). The network currently consists of 27 CORS stations (6 of which are part of the IGS network), 55 basic/campaign stations that observe on a yearly basis, and approximately 1000 regional stations that observe every 1-3 years. Phase II of the network development will increase the number of CORS stations to 260 (including stations in neighboring countries) and campaign stations by another 1000. After Phase II development, there will be 100 absolute (campaign) and 30 relative (permanent) gravity stations in CMONOC that are operated on a continuous basis. Over 260 of the permanent GPS stations will have co-located relative gravity campaign measurements. CMONOC also operates a national data center for GNSS data. Gan concluded his presentation with a discussion on monumentation issues in their networks and their planned transition to PBO-style installations.

Carlos Garcia (ESA/ESOC) presented ESA/ESOC network operations evolution and future plans. Currently, ESA provides data (hourly, daily, and some high-rate) from 12 globally distributed GNSS receivers to the IGS. In addition, ESA serves as one of the IGS analysis centers, contributing to most of the IGS products. Their network has been completely upgraded over the last two years, connecting several of the stations to hydrogen masers from the ESA deep space network. A new navigation facility has been developed at ESOC to support the Galileo mission as well as ESA's IGS and other GNSS related activities. GIOVE experimental sensor stations will be installed at 5 ESA stations

by September 2006 on monuments co-located with existing IGS sites. Two new GPS+GLONASS stations will be deployed to Tahiti and Malindi in the near future. Furthermore, data from the complete ESA GNSS network will be available in real-time.

Giovanni Sella (NGS) gave the last talk in the session on the NOAA/NGS CORS network and their guidelines for stations. A future goal for NGS CORS is to upgrade data quality and the accuracy of associated metadata. The current NGS CORS network is composed of GNSS sites every 100 km (continental U.S.). Improvements are driven by the success of NGS' Online Positioning User Service (OPUS) and the users' desire for improved accuracy. This network is a 98% volunteer (i.e., non-NGS) effort; therefore site guidelines must accommodate a diverse group of operators and users and ensure that all sites are treated equally. These site guidelines focus on site selection (environment, monumentation), equipment (antenna, receiver), metadata (site log, photographs), and data quality checking. Finally, future plans for CORS were shown which include 4 new stations in the Caribbean, 3-4 stations in Ethiopia, and possible stations in the Dominican Republic, Afghanistan, and Benin.

A brief discussion period concluded the Networks and Data Center session.