

The GSAC Newsletter, Number 2

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GSAC Status Today

As of the first of December, GSAC has a very complete set of web services, adapted to the needs of geodesy and geophysics, with complete and comprehensive documents, and a complete web site (<http://facility.unavco.org/data/gsacws/gsacws.html>). During the past 15 months UNAVCO staff have moved GSAC from a powerful but undocumented software package, requiring Java programming to adapt it to any particular data center, to an easy-to-install package for data discovery with site information in geodesy formats, and downloading data files.

The six GSAC operators in Europe will soon receive an email about how to update their GSAC code to have all the latest improvements. No new major additions are planned, until we have more discussions with GSAC operators.

New GSAC Installations

Six institutions in Europe installed GSAC during 2013:

Geoazur, France, (for the RENAG and other networks; <https://geoazur.oca.eu>);

The Icelandic Meteorological Office (IMO) / Veðurstofa Íslands, Reykjavik (for the Is-CGPS network; <http://strokkur.raunvis.hi.is/gps/>).

The Istituto Nazionale di Geofisica e Vulcanologia, Italy (for the Rete Integrata Nazionale GPS or RING; <http://ring.gm.ingv.it/>);

The National Observatory of Athens (NOA) (for the NOANET GPS Project; <http://www.noa.gr/index.php?lang=en>; www.gein.noa.gr/; <http://194.177.194.238:8080/gsacnoanet/gsacapi/>);

The Royal Observatory of Belgium (for the European Permanent Network, EPN; <http://www.epncb.oma.be/>);

The University of Beira Interior (UBI) and Institute Geophysical Infante D. Luíz (IDL), Covilhã PT (for the SEGAL network; <http://segal.ubi.pt/>)

The NOANET GSAC service is online at <http://194.177.194.238:8080/gsacnoanet/gsacapi/>.

GSAC at AGU 2013

UNAVCO staff Fran Boler and Stuart Wier, and GSAC operators N. D'Agostino, R.M. Fernandes, A. Ganas, and C. Bruyninx prepared a poster about GSAC for the AGU Fall Meeting, San Francisco California, December 2013. Fran Boler presented the poster. All the new European GSAC installations are described. Another AGU poster from UNAVCO containing, in part, a description of GSAC in the context of the Geohazards Supersites and Natural Laboratories initiatives, was prepared by UNAVCO staff Linda Rowan, Scott Baker, and others. Linda Rowan presented the poster. Copies of both posters can be found on the UNAVCO GSAC web site's documents page (<http://facility.unavco.org/data/gsacws/documents.html>).

The New Prototype GSAC Database

To simplify GSAC installation in some cases, UNAVCO has created a prototype database design or schema, and made new related Java code in the GSAC package, the Java classes `PrototypeSiteManager` and `PrototypeFileManager`, which should allow installation of a working GSAC using your database in a few a hours, once your new database is completely populated and correct. This approach to installing GSAC means you no longer have to write extensive Java code in the GSAC package. You need to populate an empty GSAC-prototype database with complete information about your data centers data files and stations and instruments. Database management help is easier and more commonly available than advanced Java programmers.

Complete details about the prototype database are in the UNAVCO GSAC web site, on the installation page (<http://facility.unavco.org/data/gsacws/gsac-install.html>).

Improved GSAC Web Site and Documents

Since September 2013 UNAVCO has a created a complete web site about GSAC, at <http://facility.unavco.org/data/gsacws/gsacws.html>. There you can find the GSAC introduction PDF brochure, *UNAVCO GSAC WS: Web Services for Geodesy Data Repositories*, and the PDF brochure guide for GSAC services, *UNAVCO GSAC WS: User Guide for GSAC Data Repositories*. There is an installation page, a list of all GSAC-enabled repositories, a page of all GSAC documents and presentations, and examples of GSAC site query results' formats.

Thoughts on Site Metadata File Formats

Geodesy site or station information file formats show a chronological history of formatting such information, from the precisely-defined and column-aligned formats in SINEX and GAMIT station.info files, reminiscent of McCracken's book *Fortran IV* (1968), to the modern computer-centric formats "SOPAC XML site log" and the GSAC JSON format, to the simpler, free-form comma-separated-value (.csv) format in GSAC's "Full CSV" files. CSV is easy to read and write with simple computer scripts (for example, written in Python), and is readable by humans as well. Not being column oriented, it is less error-prone than for example SINEX, or the complex and difficult to read and write IGS site log format. GSAC makes station/site/instrument queries results in all these formats, except the IGS site log format. GSAC users are free to use any they want. GSAC operators can add new formats if they choose, or even *not provide* some existing format if they don't want to provide it.

Planned Improvements

As it is today, GSAC is fully ready to provide complete web services for a data center with data from a network of instrumented sites on the Earth. New features requested by the new data centers installing GSAC in 2013 were added as recently as December 1, 2013.

As data centers work with GSAC, and as users use GSAC services, new features and other improvements will be discovered and requested, and reasonable features will be added to GSAC. At the moment there are only a few significant known outstanding needs: making Java code handle non-Latin characters (as in French and Icelandic); replacing the Yahoo maps with the latest Google Maps; and some code improvements which will not be visible to users.

UNAVCO also plans to improve GSAC use in the setting of data centers, for example, developing and supporting the GSAC prototype database schema, suggesting ways to sync a GSAC-prototype-style database with an existing master database of a different schema, and adding user authentication or user tracking to an FTP file download server. While these are not part of the GSAC package itself, providing good ways to support GSAC installation and operations will be a big help to GSAC operators.

The GSAC Development Strategy

There is no GSAC plan. A plan specifies, at the beginning, all the steps to create a single, decisive, end product, all of whose features are known at the beginning. Since GSAC is in a state of refinement, with new and unknown features to be discovered by actual use, the plan approach is not practical.

There is a GSAC goal:

GSAC provides complete modern web services for existing geodesy and geophysics data repositories for discovery, sharing, and access to data. GSAC web services enable remote users to discover site (station) and instrument information, and download instrument data files and files of processed results from a data repository. GSAC supports queries for information about network stations and instruments, supplies results in ways users want and understand, and supplies access to instrumental data files.

The GSAC goal does not change. How we achieve the goal, and the details of GSAC, will change and evolve with time, as GSAC operators and users discover through use what they really need. That is the GSAC strategy.

GSAC Meeting Planned at UBI/IDL, Covilhã, Portugal, Spring 2104

Rui Fernandes is organizing a combined workshop between EPOS-WG4 and UNAVCO focused on GSAC services, which will be also supported by COOPEUS, in March or April 2013, at UBI/IDL, Covilhã, Portugal. Email Rui at rmanuel@di.ubi.pt.

UNAVCO GSAC Funding Status.

UNAVCO's present grant funding GSAC ends on 31 December. The pace of GSAC development at UNAVCO may diminish thereafter, but support of GSAC will continue. UNAVCO hopes to find more funding for GSAC work.

How to Learn more about GSAC

Simply Google "UNAVCO GSAC" and go to the UNAVCO GSAC website.

About the GSAC Newsletter

The GSAC Newsletter has recent news about GSAC installation, services, and activities, for persons interested in GSAC. GSAC newsletters are sent by email to the UNAVCO GSAC email list gsac@unavco.org at irregular intervals depending on the need, perhaps one newsletter every four months. A copy of each GSAC Newsletter is on the UNAVCO GSAC web site, Documents page. The GSAC Newsletter is not an official UNAVCO publication. You are welcome to contribute material for future GSAC Newsletters.

You received this Newsletter because you have corresponded with UNAVCO staff about GSAC. If you do not wish to receive GSAC news, please send an email to wier@unavco.org.

Stuart Wier, UNAVCO
December 18, 2013

UNAVCO GSAC Resources and Contacts

UNAVCO GSAC Support Email, and the GSAC Email Discussion Group

To request support for GSAC from UNAVCO staff, send an email to gsac-ws@unavco.org.

There is a new UNAVCO email discussion group, about GSAC, using email address gsac@postal.unavco.org. Sending an email to this address will reach all persons subscribed to the email discussion group. To receive emails sent to this list, subscribe at the page <http://postal.unavco.org/mailman/listinfo/gsac>.

GSAC Online

UNAVCO GSAC home page: <http://facility.unavco.org/data/gsacws>

Remember, to find the GSAC web site and all the information about GSAC, just Google UNAVCO GSAC.

Selected GSAC Repositories

UNAVCO GSAC Repository: <http://facility.unavco.org/gsacws>

CDDIS GSAC Repository: <http://cddis.gsfc.nasa.gov/gsacws>

SOPAC GSAC Repository: <http://geogsac.ucsd.edu:8080/gsacws>

Federated GSAC Repository at UNAVCO: <http://facility.unavco.org/gsacfederated/>

Links to all GSAC-enabled data centers online are on the UNAVCO GSAC web site.

UNAVCO GSAC Personnel (2013 funding)

Fran Boler, PhD, Geophysics. GSAC Principle Investigator boler@unavco.org

Stuart Wier, PhD, Geophysics. Science Software Engineer wier@unavco.org

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