

GSSG
Geospatial Information – Geographic Information
Web Data Developments
Sunday March 5, 2005
Cohibar Room
Pier 5 Hotel, Baltimore MD

At the “Geospatial Solutions for Antarctic Research” Workshop an informal meeting of people actively involved in the development of geospatial web services for Antarctic research applications took place. The current status and future requirements for geospatial web service implementations were discussed. The meeting was hosted by USGS.

Attendants:

A. Paul R Cooper (BAS, UK), Cheryl Hallam (USGS, US), Michelle Finnemore (Gateway Antarctica, New Zealand), Peter Pulsifer (Carleton University, Canada), Douglas Tallman (USGS), Steffen Vogt (Universität Freiburg, Germany)

Status of the next EG GIGI meeting in South America

The status and date of the next meeting of the GSSG EG Geospatial Information – Geographic Information proposed to be in Chile in October 2005 has to be clarified.

(Steffen to clarify and confirm, due: April 2005)

Status of EPSG code development

Paul Cooper has been in contact with Roger Lott (EPSG Geodesy Working Group). RL would submit a large number of proposals provided by Paul. But the EPSG database structure does not provide the ability to specify central meridians as a parameter, so Paul will send specifications based on [Sievers, J. & Bennat, H. (1989): Reference systems of maps and geographic information systems of Antarctica. Antarctic Science 1 (4): 351-362] which will at least serve to support geospatial web services. Other members of the working group to submit specific requirements to Paul.

*(Paul to submit the proposal, due: asap
everybody to push vendors to implement codes once these are in the EPSG database)*

Status of online discussion forum

The group strongly feels the need for an online discussion forum (wiki / blog) for a variety of topics related to geospatial web services for Antarctic applications. In order to avoid cluttering of the forum it should be password protected, but there shouldn't be any access limitations (i.e. everyone interested can easily register). The forum should be hosted by a governmental unit and not by a university in order to provide long term functionality.

Potential topics for the forum include symbology / styles based on SLD, technology discussions, where and how we use / might use ISO TC211 standards, registers/catalogues for data and services, geospatial web services and intellectual

property rights, geospatial web services and reliability, and geospatial web services and liability.

(Steffen to investigate status of blog at AADC, due April 2005, if forum can not be hosted at AADC then Cheryl to evaluate USGS possibilities)

Status of services:

- **BAS – SCAR ADD:**
 - WFS and WMS to serve ADD will be running on a dedicated server, implementation based on PostGIS / Geoserver
 - there will be an 'as is' version available as soon as possible,
 - the next step will be to change ADD to the FC structure as soon as possible
 - Coastal Change data will go into the ADD as the next major enhancement
 - Registration is an important means to record usage (for funding agencies), how can that be handled with a service?
- **Canada – Cybercartographic Atlas of Antarctica services:**
 - Thesis ongoing on how to serve Geographic Hypermedia (e.g. photos, videos),
 - Styles for the Atlas are specified in SLD, the SCAR Symbology draft will be a starting point, the SLDs then should be published in the wiki for use and amendments
 - WMS and WCS implementation based on UMN 4.4 (complex configuration, possibly switch to degree?)
 - WFS implementation based on PostGIS / Geoserver
 - The question on potential data stewardships and how to establish reliable servers was raised
- **KGIS – data services**
 - WMS is running based on PostGIS/ UMN Mapserver 4.4,
 - WFS implementation based on PostGIS/Geoserver
 - next step will be a WFS gazetteer service for King George Island based on the CGA and the new place name positions presented at SCAR XXVIII Bremen, the hierarchical structure of Paul's CGA application is considered to be very useful for that purpose
- **New Zealand – data services**
 - Paul Barr is the technical contact person for the NZ Antarctic GIS, the WMS is built on ESRI's ARCIMS.
 - the NZ Antarctic GIS provides a wide range of data layers for Ross Sea area including flight lines and high resolution aerial photography, soils, moss/lichen coverage, ASPAs and ASMAs etc.
 - human impact (tourism and 'debris') will be added based on the detailed IAATO and Antarctica NZ recordings.
 - marine site sensitivity mapping (oil spill) may be completed in 2005
- **USGS – web services**
 - since last fall an OGC viewer has been developed,
 - the WMS is built on ESRI's ArcIMS, WFS is built on Geoserver
 - there have been issues with coordinate systems

- most data is in polar stereographic (EPSG:3031)
- it was noted that WCS would be great for serving scientific data
- a great deal of experience can be drawn from the National Map development

It was noted that reliability (including long term and 24/7 availability of services) can only be ensured by governmental institutions which can guarantee long term funding.

There was a debate on how the SCAR Composite Gazetteer of Antarctica (CGA) might be used in web service applications. Issues related to the accuracy and precision of the positions were discussed. It was noted that the CGA as it is cannot be used in a straightforward way as a gazetteer service for medium to large scale applications. It was noted that the gazetteer application developed by Paul Cooper has the potential to derive more accurate positions automatically (by averaging existing positions) but as well by user interaction (by specifying new positions). Yet it remains unclear how such positions can be quality controlled and how such positions might be formally related to the CGA. There are wider issues associated with gazetteer/place name information.

Status of Standards

Paul Cooper gave an overview of the latest relevant TC211 developments:

19111 Coordinate Systems: Paul has put forward that parametric coordinate systems (pressure, depth, etc.) will be put in as a formal UK suggestion for revision, that would make the standard interesting for a wide range of scientific applications

19126 This standard has changed its scope from FACC data dictionary to “Geographic information - Profiles for feature data dictionary registers and feature catalogue registers.”

19136 will be finalized soon, it is based on GML 3.1

ISO DIS 19135 Registration of items of Geographic Information:

It was noted that the forthcoming 19135 provides a valuable guidance to formalize the feature catalogue management and accessibility. Institutional requirements would include the establishment of a control body for the Feature Catalogue. Such a group might be installed at the next formal Working group meeting.

(Steffen to inform AADC on ISO DIS 19135 and to propose usage of 19135 principles for Feature Catalogue management, due April 2005)

Status of Catalogues

It is expected that the number of Antarctica geospatial web services will increase in the near future. Both catalogues capable of advertising data resources as well as geoprocessing functionality provided by web services are required. The difference between discovery metadata and processing metadata was recognized.

Doug Tallman reported on the National Map experience with catalogue services. He noted that catalogue interfaces need extensions to support intelligent query. An example is the appropriate use of metadata on scale to integrate datasets. The North American Viewer implements a stripped down version of the OGC Stateless Catalog Discussion Paper with bounding boxes footprints for scale and extent lookups. Based on capabilities docs that are modified.

Paul Cooper pointed out that cartographic representation of spatial data sets is not enough. What scientist really need is horizontal integration of data sets. He pointed out activities at the British Atmospheric Data (www.badc.ac.uk) Centre targeted at moving from discovery services to delivery services, integrating data from many sources.

More comprehensive catalogue solutions that would allow cross discipline interoperable access to data and services are required. Further investigations are needed into what functionality is required from catalogue interfaces to fully leverage the power of geospatial web services. Peter Pulsifer has shown some interest of the CAAP group in the development of catalogue services.

Metadata at higher data granularity (at the “layer” level) would be needed for interoperable services.

Data steward plan to define who is providing what data and services, redundancy and mirroring. Move from an archival (“WDC type”) to a operational focus

For the time being it is recommended to publish services to the AMD / GCMD to make them at least discoverable by humans. Potential limits with respect to interoperability of the GCMD were noted. It would be interesting to learn about developments at GCMD towards interfaces such as z39.50 / z39.50 Geo / OGC Catalogue services for the Web with Z39.50 and/or http-protocol bindings.

Steffen Vogt mentioned the activities of the Global Spatial Data Infrastructure Association and their searchable portal to geospatial web services.

(Peter to ask JCADM to explore the possibilities and limits for using the AMD as a catalogue service and the linkage of AMD to the GSDI Gateway , due April 2005)

Data Grids

Paul Cooper pointed out the importance of observing activities within the GRID communities in relation to geospatial activities. The distinction between of processing grids and the data grid were noted. The latter might be closer to our interest.

An example of what potentially might be achieved using grid technologies would be collaborative mapping including authentication, quality control, etc. Simple web services alone do not provide all of the required functionality. In the abstract grid computing model such functionality is included.

(Paul to observe grid developments and report to next meeting)

Implications of an infrastructure based on geospatial web services

Geospatial web services have great potential to ease data access. Making data available through web services has a number of implications on copyright / intellectual property rights, liability and reliability. The difference to data download is that we don't have any user interaction. Some general questions have been identified and it was suggested to collect and provide some background material on these issues in the online discussion forum.

Ultimate goal could probably be a consistent disclaimer statement in the capabilities document of all Antarctic geospatial web services. Authentication and a disclaimer tied to that process could be another solution. OGC / ISO developments related to these issues should be observed.

a) Services and intellectual property rights

What are the generic principles to adhere to?

What happens with cascading services?

How might the usage of services be recorded technically

ANT obligations? Other international obligations-e.g. TRIPS ?

Creative commons, Science Creative commons (<http://creativecommons.org>,
<http://science.creativecommons.org>)

(Steffen to look at generic principles, draft a statement for capabilities)

b) Services and reliability

(Long term support for services, draft a statement for capabilities)

Communicate the current limitations

If there is a perceived long term requirement we should approach ATCM via information papers. To ensure reliability of services a formal statement related to long term financial commitment directed at appropriate bodies is needed. The idea is to draft such a statement before the next full meeting of the EG GIGI.

*(Peter to inform JCADM about intention, due June 2005,
Steffen to investigate existing relevant documents, due April 2005,
Michelle/ Steffen to draft the text based on the existing commitments but shaped to meet
the new IT context, due June 2005)*

b) Services and liability

It seems that liability depends largely on domestic laws?

(Paul to look at the generic principles)