

# GEO GSNL Breakouts at AGU Fall Meeting

9 and 12 December 2013

Minutes summarized by Falk Amelung and Francesco Gaetani

## Attendees 9 Dec:

SAC: Susanna Zerbini, Chuck Meertens, Falk Amelung,  
SAC-friends: J. Hoffmann, E. Fielding, Linda Rowan  
POCs, POC-friends: Yosuke Aoki, Nico Fournier, Nicolas Villeneuve, Mike Poland, Ken Hudnut,  
Giuseppe Puglisi,  
Freystein Sigmundsson, Semih Ergintav, Nurcan Meral Ozel  
GEO: F. Gaetani,  
Others: Craig Dobson, Ugur Dogan, Aybique Akinci, Sara Bruni

## Attendees 11 Dec:

SAC: Susanna Zerbini, Chuck Meertens, Falk Amelung, Yan Klinger  
SAC-friends: Linda Rowan  
POCs, POC-friends: Yosuke Aoki, Nicolas Villeneuve, Ken Hudnut, Giuseppe Puglisi,  
GEO: F. Gaetani,

[ ]: notes added after meeting.

*(action: name\_italics): Action item given in absences or after meeting. Please confirm receiving to FA and FG.*

**Summary:** The next steps for the SAC are finalizing the data plan document and the evaluation procedure documents [deadline January 15]. The main discussion item was to get input for the data plan, which Chuck agreed to lead (**Action: Chuck Meertens**).

The next opportunity to submit new proposals to the SAC is January 31. Interest was expressed for a Yellowstone Supersite, Dead Sea Fault Supersite, Tanzanian volcanoes and Japan Natural Laboratory.

**Next in-person meeting opportunity:** The next meetings where a break-out session could be organized is the Unavco Science workshop Mar 4-6 2014 near Boulder, Co, followed by the EGU. Please inform us if you feel there is a need for another meeting, what should be discussed, and which ones you will attend (FA will be at the Unavco meeting and FG can attend the EGU).

## Meeting on December 9th

### A. SAR:

1. CEOS has not yet completed the evaluation of the proposals. All POCs will hear shortly from Joern regarding their data requests (or have heard already). This will include information on archived data. For example Fournaise has lots of CSK, TSX and RSAT-2 and it is not clear whether these data can be shared with the Supersites or whether CEOS will provide a new data set. The goal of the Supersites is ALL archived data for a site.
2. On the Supersite website there is currently no information about which data CEOS is providing, also not for Hawaii, I believe. All POCs, once you have this information, please send to Unavco (e.g. simple coverage screenshot to [supersites@unavco.org](mailto:supersites@unavco.org)). (**Action: POCs**).
3. ESA: The ERS, Envisat data are not yet complete for all Supersites on the VA4 server (e.g. there is no data for Fournaise, Turkey is missing some). It should be ESA's responsibility to make these data available but W Lengert has informed Falk that ESA currently does not have staff to do this. Unavco was volunteered to help out. Susanna at Unavco will use polygons, check for missing data and fill the VA4. Unavco will inform the SAC when this task is completed (**Action: Chuck**).

4. DLR's SAR data server will be ready at the end of the year, and be visible by SSARA. All data products will go straight on this server. There will be a self-registration process to comply with license requirements. There is no need for a copy of the data at Unavco. If PoCs want to keep a copy of the data at Unavco, DLR has no objection, provided the terms of the license are respected.
5. The other CEOS agencies have agreed to provide similar servers but there is no timeline. There are no objections to using UNAVCO services in making data available, provided the license terms for individual data are respected. At the moment, one convenience of using Unavco is that scripts can automatically download and ingest data into Unavco's archive without much effort for the PoC. [Unavco can also assume to task of ordering data if a PoC desires this]. We first will demonstrate the concept using Hawaii. All CSK and RSAT-2 data will be ingested following the TSX example. Unavco will then inform the PoCs that the system is ready and will work with the PoCs to ingest their data (**Action: Chuck**).
6. Piton de la Fournaise has a SAR receiving antenna, which is available for Supersites.

## **B. GPS**

GSAC-WS is the technology of choice. All PoCs present agreed to install it. At some sites installation is in progress. New-Zealand is already using WS, so this will be easy. There is no need to have a copy of the data at Unavco, although this can be done if a PoC desires this (**Action: PoCs**).

## **C. Seismic**

Data & data services following FDSN standards.

## **D. Tilt/Strain/Gas/Video streams**

There are no standards for these types of data. The data plan document should contain 1-2 paragraphs, summarizing which are the types of data, what infrastructure is available, which are the issues that need to be solved. WOVO may have some guidance material. The volcano Supersites (Freysteinn, Nico Fournier, Giuseppe Puglisi, Mike Poland, Nicolas Villeneuve and Patty Mothes) will coordinate and provide text, led by Freysteinn (**Action: Freysteinn**).

For some data products (e.g. strain meter) there are "commonly used formats", but not standards. These should be listed in the data plan (with templates) (**Action: Linda Rowan**).

## **E. Optical Remote Sensing/Lidar**

Very useful for earthquake studies (Pakistan quake example). Need 1-2 paragraphs describing existing infrastructure (Ken Hudnut will coordinate with Rin Lamb (USGS), Yan Klinger and Steve Hosford (CNES) (**Action: Ken Hudnut**).

Optical imagery is very useful for landslides. Kandilli will write a paragraph on this (**Action: Semih Ergintav**).

## **F. Data products:**

One aim of GSNL is the web display (and access) of data products by the PoCs (if Supersites elect to make them open access). There was a discussion on whether the GSNL website should disseminate everybody's data products (option 1) or only data products provided by certain sources (other than PoCs) (option 2). Option 2 would need (i) a procedure for quality control, (ii) a procedure for the selection of organizations providing data services (call for proposals), and (iii) resources. Historically, option 1 was followed which proved very successful for event Supersites. The SAC will discuss and provide guidance (**Action: Falk**) [after data plan and evaluation procedure documents are completed].

## **Meeting on December 12th**

### **A. Data products:**

All attendees agreed that it is desirable to share data products. Nico Fournier and F Sigmundsson (I believe) expressed earlier in the day that this is a good idea. Apart from broadening the community, this

has the potential for significant visibility within GEO in the event of a crisis. Integrated data products are an essential part of the European Supersite projects which could provide example for the others.

The general concept is that data products will be made available via web services. They will be displayed on the data portal using existing disciplinary viewers. The European Supersites have local focus and don't seem to have the resources to develop this for the broader Supersite community (the Supersites data portal). Unavco has 1 year of NASA funding which can be used to develop this.

## **B. GPS products**

1. Format. The de-facto standard (SINEX files) is not very convenient. Unavco will consult with EPOS and make a suggestion (to be included into the data plan document) (**Action: Chuck**).
2. Positions and velocities can be shared via web services (GSAC-WS includes this capability) (**Action: POCs**).
3. The Hawaii positions are currently not available (Hawaii does not use GSAC). Hawaii will work with Unavco to find a means for sharing the solutions (**Action: Mike Poland**).
4. The GPS data viewer of the PANGA network (GPS cockpit, developed by T. Melbourne's group) could be of use.

## **C. Seismic products**

1. Format: There are standards defined by FDSN. Sharing via web services.
2. Each Supersite will share the epicenters (final, relocated ones). Most Supersites (e.g. Etna and Fournaise) have their automated solutions which are designated final solutions after review. The San Andreas fault Supersite does not go beyond the automated locations. They are done by individual groups and published in form of scientific papers with digital supplements. PoC will provide the information on relevant papers on the website (**Action: Ken Hudnut**). The data viewer need to have the option to choose between standard and precise locations.
3. The three European Supersites will be represented by one seismic representative. Giuseppe will find out who could do this (**Action: Giuseppe Puglisi**).
4. Write-up for data plan document. The seismic SAC members will write this and coordinate with the seismic experts of the Supersites to make sure that everybody is on the same page (Mario Ruiz for Ecuador, Costanza Pardo and Nicolai Shapiro for Fournaise, ?? for New Zealand). (**Action: Florian Hasslinger, Tim Ahern**).
5. Seismic tomography results. It will be nice to have them but this should happen at a later stage. It was suggested that there could be an IRIS initiative to define standards. If this is the case this should be summarized in the data plan as a "future opportunity". (**Action: Florian Hasslinger, Tim Ahern**).

## **D. InSAR products**

1. It is desirable to have for each site InSAR time-series and the latest interferograms online available (for display and download. As there are still differences between time-series produced by different groups there should be an option to choose between products provided by different groups.
2. The format of choice is HDF5. The GIANT time-series viewer could be a start. It was not discussed whether providers should make data products available via Web Services or upload to Unavco (*Chuck, any insights?*). The SSARA project (which will provide interferograms) can provide guidance. Eric Fielding agreed prior to the meeting to write this section. It should be coordinated with the groups that have expressed interest to provide data products, which are IREA (Sansosti and Lanari), Leeds (T Wight and Hooper), Biggs (Bristol), the ARIA project (JPL), Cornell (Lohmann) and Miami (Amelung). (**Action: Eric Fielding**).

## **E. Data products for event Supersites**

There was a discussion on whether the data portal should host products such as ground displacements obtained from the cross-correlation of optical images in the case of an earthquake. It was felt that it is better to only post images because of issues on data quality. If some organization is funded to generate earthquake data products on a routine basis (e.g. Salvi's group at INGV) the Supersites will be happy to

host them.

### **F. 3D and 4D data visualization**

This will be addressed at a later stage. There are many very powerful software packages available. The experience suggests that several community members will generate beautiful products once the data products are readily available via web services.

### **G. Supersite webpage**

1. Needs to be updated according to new Supersites (**Action: Linda Rowan**).
2. Generally, the content should be provided by PoCs whereas the format will be suggested by Unavco (same look and feel for all Supersites). All PoCs are advised to send the project websites to Unavco ([supersites@unavco.org](mailto:supersites@unavco.org)).
3. Each Supersite will have a display for seismic, GPS and InSAR data products once the products are available via web services (and other products once available).
4. Publication list. PoCs will provide references for papers published using Supersite data. There are already some papers for the Hawaii Supersite (**Action: Mike Poland**).
5. There should be a news sections for each Supersite (comparable to the Highlights on the Unavco site, e.g. displaying the main diagram from a new paper, or a photo from an event. We can start with Hawaii as an example [**Action: Linda Rowan**]