



GROUP ON
EARTH OBSERVATIONS

Geohazard Supersites
& Natural Laboratories

Status of the GSNL initiative

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The GSNL initiative

A voluntary international partnership aiming to *improve, through an Open Science approach, geophysical scientific research and geohazard/risk assessment in support of Disaster Risk Reduction.*

The partnership

- The scientific community
- The in situ data providers
- The satellite data providers



The end users

Decision-makers, Civil Protection agencies, governments, regional aviation authorities, etc.

Active Supersites

1. **Hawaiian volcanoes** – USGS
2. **Icelandic volcanoes** – Univ. of Iceland & IMO
3. **Etna volcano** – INGV - Catania
4. **Campi Flegrei volcano** – INGV - Naples
5. **Western North Anatolian Fault** – KOERI - Istanbul
6. **Taupo Volcano** – GNS Science - Lower Hutt
7. **Tungurahua and Cotopaxi volcanoes** – IGEPN - Quito

Supersites to be formalized at the CEOS Plenary

1. **Greek Supersite** – Positively reviewed by SAC and accepted as a Candidate Supersite. DCT members have provided decisions on support.
2. **San Andreas Fault Natural Laboratory** - Proposal and SAC review circulated to Brenda and Stéphane. Now DCT members should decide on support.

Status of EO data access

- Image SAR data are routinely acquired and provided to all Permanent Supersites.
- Further development of data distribution infrastructures ([SSARA/UNAVCO](#), [SS-Portal/DLR](#), [Data Gateway/ASI](#), [GEP&VA/ESA](#)) is providing better accessibility to these data by the scientific community, however interoperability of platforms is still lagging.

Issues on EO data access

- The larger scientific community is still not fully aware of how to access these data (some do not even know that they exist !).
- The procedures to access EO data should be improved and made smoother to involve more scientists. Some minor technical and administrative solutions could make a big difference, e.g. online acceptance of data licences, mass data download, web services to retrieve metadata (and data) on GIS platforms, etc.

Status of in situ data access

- Most of the older Supersites have now a data sharing infrastructure: [Hawaii](#), [Iceland](#), [Etna and Campi Flegrei](#).
- Seismic and geodetic data can easily be discovered, and are mostly accessed online with little or no limitations, however for some Supersites personal requests to the Coordinator are still necessary.
- Other data types (e.g. gravity, geochemical data) can be accessed only on request and there are no web interfaces, even for data discovery.



Issues on in situ data access

- Full awareness of the existence of open data for a Supersite is lacking. Better outreach and dissemination is needed.
- Supersite data infrastructures need funding to be developed. GSNL governance should be lobbying to facilitate national funding.
- Licensing and attribution problems are sometimes major obstacles towards data sharing. A common approach would be recommended, it is currently being sought by the EVER-EST project..

Status of processing services

- GSNL is presently supported by the ESA GEP, both in terms of data distribution and processing resources for part of the community.
- Other services (GPS Plug & Play) can be obtained from UNAVCO and Un. of Nevada.
- Possible contribution from JPL ARIA project?
- The Virtual Research Environment being developed in the EC EVER-EST project will provide also processing capacities to the three European volcano Supersites at least.

Status of scientific product sharing

- Sharing of scientific results in digital format is needed to improve collaborative science and its use.
- GSNL 2.0 now requires scientists to share their scientific results in digital format ([Supersite review procedures](#)).
- A Data Policy draft has been prepared and needs to be finalized. It will need to be formally accepted by the Supersite Coordinators.
- Attribution and licensing methods are being studied in the EVER-EST project.
- Agreement on common product metadata structures is needed to facilitate re-use by scientists and users.

The GSNL Implementation Plan 2017-2019

New GEO Programme Board wanted to review all initiatives and asked an Implementation Plan for the 2017-2019 activities.

We prepared it, the PB reviewed it and asked some amendments.

Then it was approved at the end of August.

It is a challenging plan, trying to stimulate a networking approach of the initiative, and put more responsibilities on Supersite Coordinators.

Main tasks of GSNL 2.0 IP

For the network governance:

- improve internal coordination to transfer knowledge and capacities across Supersites
- improve coordination with different organizations/initiatives
- promote adoption of common methods for data discovery/access to make this easier for the communities
- improve outreach

For the Supersite coordinators and communities:

- experiment at the various Supersites innovative approaches to ensure that scientific products are generated to support local end-users. E.g. the international scientific community shares the burden of data analyses to help the local institutes.

The End-users of the active Supersites

Permanent Supersite	End-user
<i>Hawaiian volcanoes, USA</i>	Hawai'i County Civil Defense, Hawai'i Volcanoes National Park
<i>Icelandic volcanoes</i>	Icelandic Police - Dep.t of Civil Protection and Emergency Management, Environmental Agency of Iceland, Directorate of Health
<i>Mt.Etna volcano, Italy</i>	National Department of Civil Protection, Regional Civil Defense
<i>Campi Flegrei & Vesuvius volcano, Italy</i>	National Department of Civil Protection, Regional Civil Defense
<i>Marmara Fault, Turkey</i>	Istanbul municipality
<i>Ecuadorian volcanoes</i>	Secretariat for Risk Management, Regional governments, Municipalities
<i>Taupo volcanic zone, New Zealand</i>	Ministry of Civil Defence and Emergency Management, Department of Conservation, Regional councils, MetService

Estimate of GSNL resources for 2017-2019

Task	Source	Amount/year
1.1 Management	In-kind: INGV, ETH, UNAVCO, IRIS, Univ. of Miami, Univ. Bologna, IPGP	Total in-kind ~105 K€
1.2 Networking activities	In-kind: INGV, ETH, UNAVCO, IRIS, ESA, USGS, NASA	Total in-kind ~80 K€
1.3 Data provision	In-kind for in-situ data: INGV, ETH, UNAVCO, IRIS, USGS, EPOS, ESA In-kind for commercial satellite data: ASI, DLR, CSA	Total in-kind ~200 K€ Total in-kind: 4400K€
1.4 Dissemination & Outreach	Cash: EVER-EST project In-kind: INGV, UNAVCO, ESA, USGS	Total cash ~40 K€ Total in-kind ~95 K€
2.1 Supersite management	In-kind: INGV, USGS, Univ. of Iceland, IMO, KOERI, GNS Science, IGEPN	Total in-kind ~215 K€
2.2 Supersite community building	In-kind: INGV, USGS, Univ. of Iceland, IMO, KOERI, GNS Science, IGEPN	Total in-kind ~35 K€
2.3 Supersite infrastructure maintenance & development	Cash: EVER-EST project In-kind: UNAVCO, INGV, USGS, Univ. of Iceland, IMO, KOERI, GNS Science, IGEPN, ESA-GEP	Total cash ~175 K€ Total in-kind ~385 K€
2.4 Supersite dissemination & outreach	Cash: EVER-EST project In-kind: INGV, USGS, Univ. of Iceland, IMO, KOERI, GNS Science, IGEPN	Total cash ~50 K€ Total in-kind ~30 K€



Biennial report for Mt. Etna Supersite

We need to assess the report and **decide whether to move the Supersite from Candidate to Permanent.**

From the report:

PROs

Reorganization of in situ data, provision of web based platform to access data, provision of web services for remote access. Good relationship with end-users.

CONs:

Only in situ data up to 2011 are shared. End of funding project may impact infrastructure maintenance.



Biennial report for Vesuvius/C. Flegrei Supersite

We need to assess the report and **decide whether to move the Supersite from Candidate to Permanent.**

From the report:

PROs

Reorganization of in situ data, provision of web based platform to access data, provision of web services for remote access. Good relationship with end-users.

CONs:

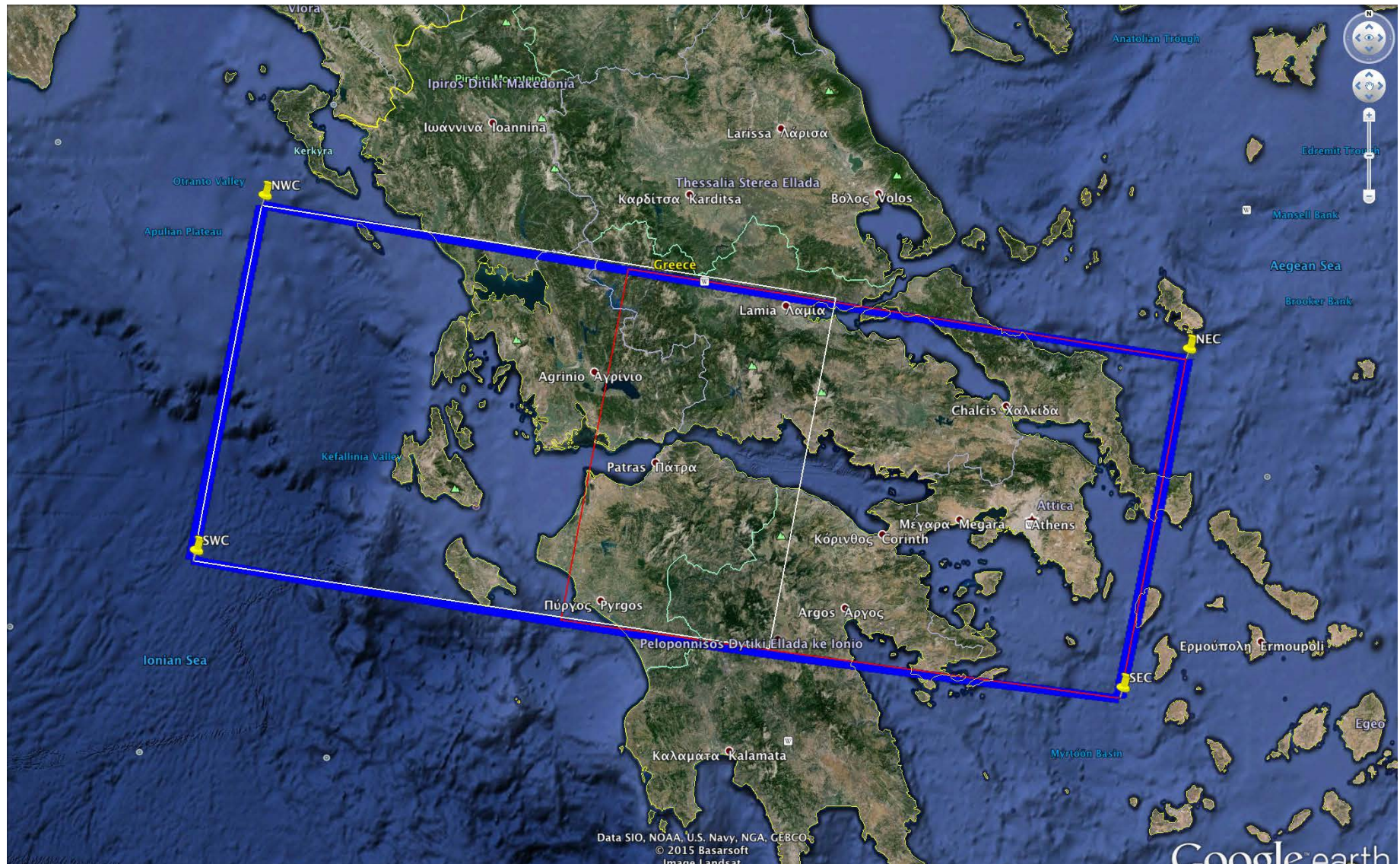
Only in situ data up to 2011 are shared. Scientific community too limited.



Status of the South East Asia Natural Laboratory

- The revised proposal should be jointly coordinated by the Institute of Technology of Bandung (ITB, a University), and the Centre for Volcanology and GeoHazard Monitoring (CVGHM).
- Unfortunately none of them has yet submitted the proposal.

Status of the Greek Supersite proposal



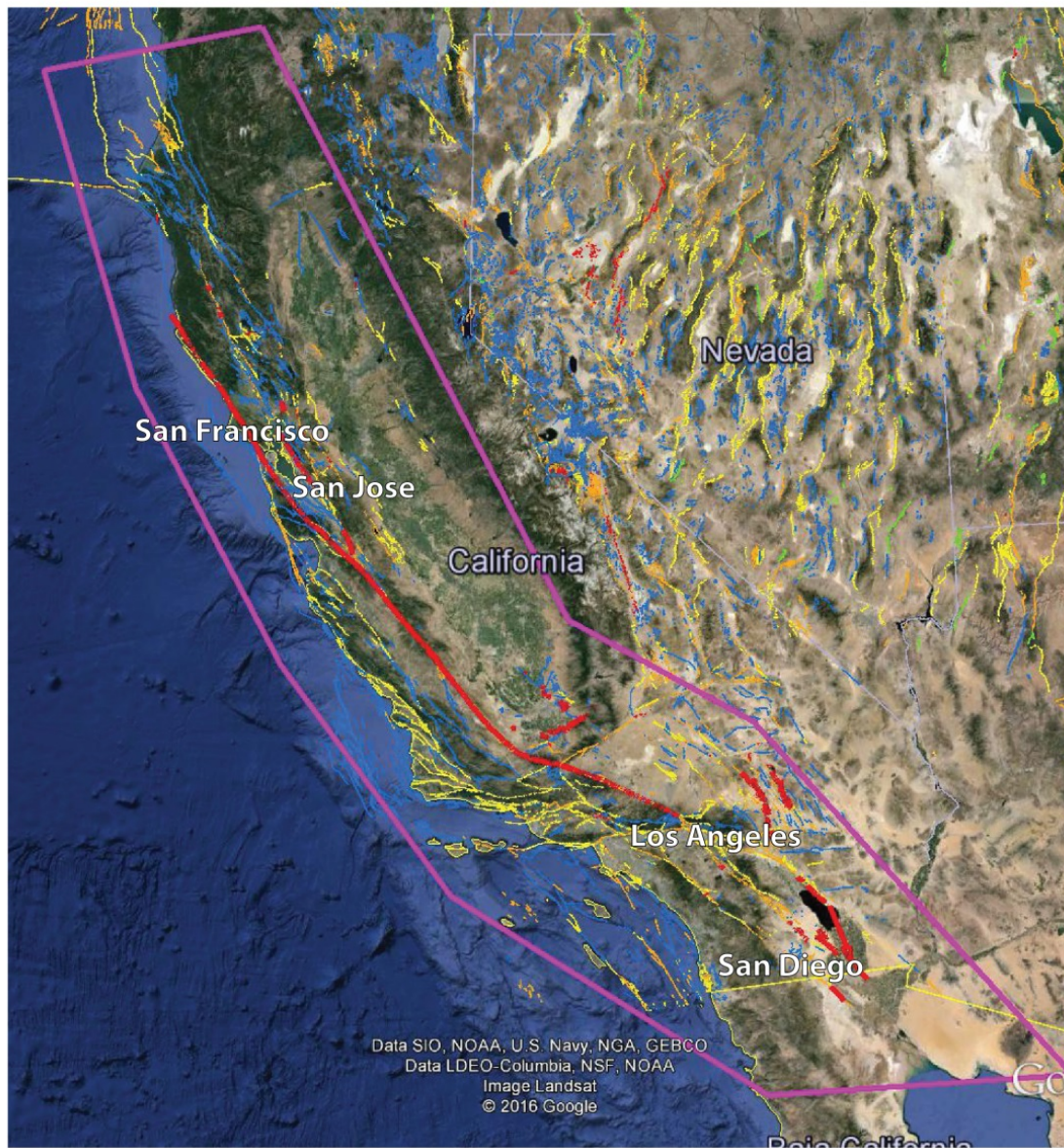
CEOS support to the Greek Supersite

CSA	YES, 2 years (requested 162)
CNES	YES, 20 standard 20x20km Pleiades scenes for the first year, reappraisal for any additional years
DLR	YES, 60 new scenes + a few archive images (requested 162)
ASI	YES, for a period of 2 years (requested 220)
NOAA	YES, no quota as the data is freely accessible
USGS	YES, no quota as the data is freely accessible
ESA	YES, no quota as the data is freely accessible
JAXA	tbd

Coordinator activities

- Contacts with data providers to anticipate satellite tasking.
- Organization of a kick off workshop.
- Preparation of a Supersite website with a data access infrastructure.

Status of the SAF Supersite proposal





Reviewed by two scientists and by the SAC

Obviously good scientific objectives and team, as well as potential benefits.

Only few amendments requested:

- More details on data dissemination (especially in situ data formats)
- Provide a single interface to access all data
- Develop a Data Management Plan, dealing also with research product sharing
- Detail how non-scientific stakeholders can be involved and how the Supersite can benefit their activities
- Provide a letter from USGS committing to support the Supersite Coordinator



DCT quota assignment is needed

Interseismic analysis

SAR Platform	Archive requests	Yearly acquisitions
TSX Stripmap	920	400 (continuous with archive)
CSK Stripmap (STR_HIMAGE)	3850	400 (continuous with archive)
ALOS-2 (SCANSAR)	200	180 (continuous with archive)
ALOS-2 (STRIPMAP)	1310	400 (in select areas)

Co-seismic analysis

SAR Platform	Archive requests	Yearly acquisitions
TSX Stripmap	20	?
CSK Stripmap (STR_HIMAGE)	40	?
ALOS-2 (SCANSAR+STRIPMAP)	34	?
RSAT-2	25	?

SAF Supersite proposal

- It is urgent that DCT decides on support, to be able to approve it at the Plenary
- Consider that the amount of data requested could increase during earthquakes.
- As the community scales up, new image requests could be submitted, better to plan for possible 30-40 % increment in the first 2 years.