GROUP ON EARTH OBSERVATIONS

Geohazard Supersites & Natural Laboratories

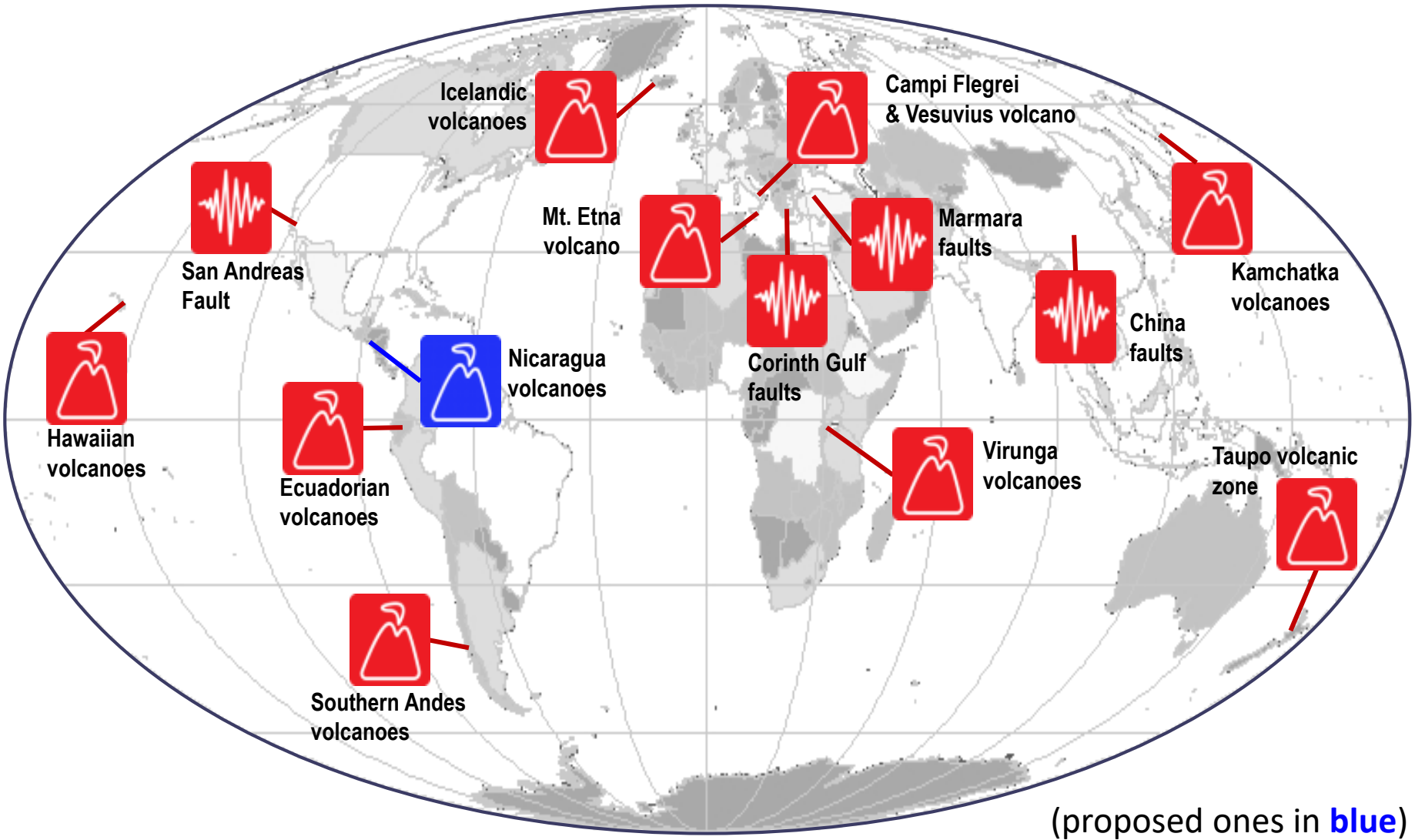
Report on the GEO-GSNL initiative

Stefano Salvi

Chair of the GSNL Scientific Advisory Committee

CEOS WG Disasters meeting #15

The Supersite network in March 2021



(proposed ones in **blue**)

Geohazard Supersites & Natural Laboratories

	Supersite	Next Biennial report	Use of CEOS data in 2019
1	**Hawaiian volcanoes**	**24-Oct-22(5th)**	Good use of CEOS data
2	Icelandic volcanoes	5-Nov-21 (4th)	Good use of CEOS data
3	Etna volcano	8-Apr-22 (3rd)	Limited use of CEOS data
4	Campi Flegrei/Vesuvius volcano	8-Apr-22 (3rd)	Good use of CEOS data
5	Marmara Fault	8-Apr-22 (3rd)	Good use of CEOS data
6	**Taupo volcano**	**15-Apr-21 (4th)**	Good use of CEOS data
7	Ecuador volcanoes	15-Apr-21 (4th)	Good use of CEOS data
8	**Corinth Gulf/Ionian Islands**	**7-Nov-22 (2nd)**	No use of CEOS data since 2017
9	**San Andreas Fault NL**	**27-Apr-21 (2nd)**	Limited use of CEOS data
10	Southern Andes volcanoes	14-Nov-21 (2nd)	Limited use of CEOS data
11	Virunga volcanoes	14-Nov-21 (2nd)	Good use of CEOS data
12	Kamchatka_Kuriles volcanoes	4-June-2022 (1st)	Ordering has started for Pléiades

Supersite reports

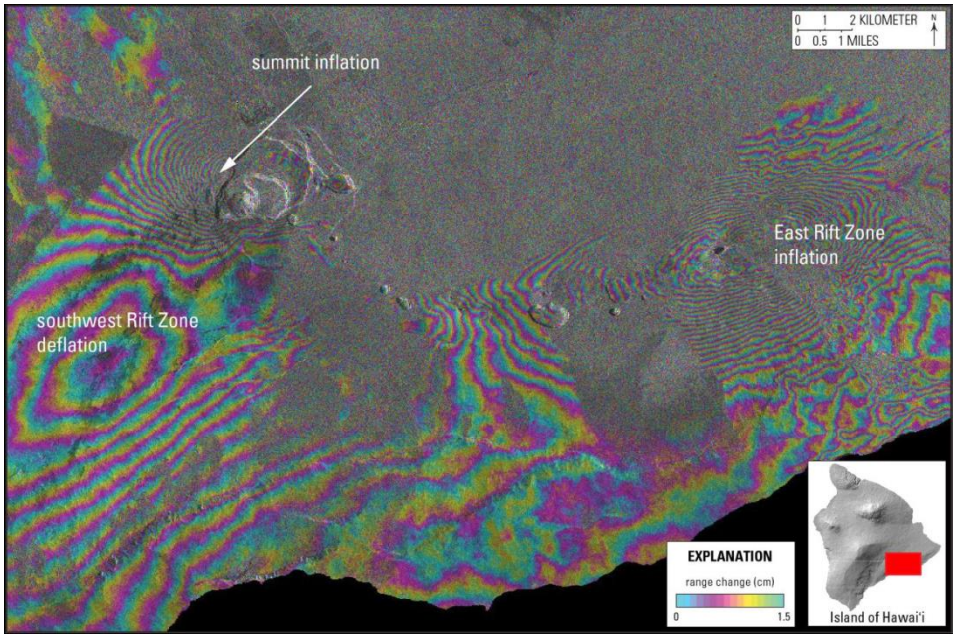
Submitted on December 9:

- Hawaii Supersite
- Enceladus (Greek) Supersite

Hawaii Supersite report

Highlights:

- Following the 2018 Kilauea eruption and caldera collapse, there has been an increased interest in the CEOS Supersite data, with several published papers using SAR and optical data for topographic changes, deformation, geomorphological analyses, volcano-tectonic analyses, etc.
- Very good use of the data to support local users



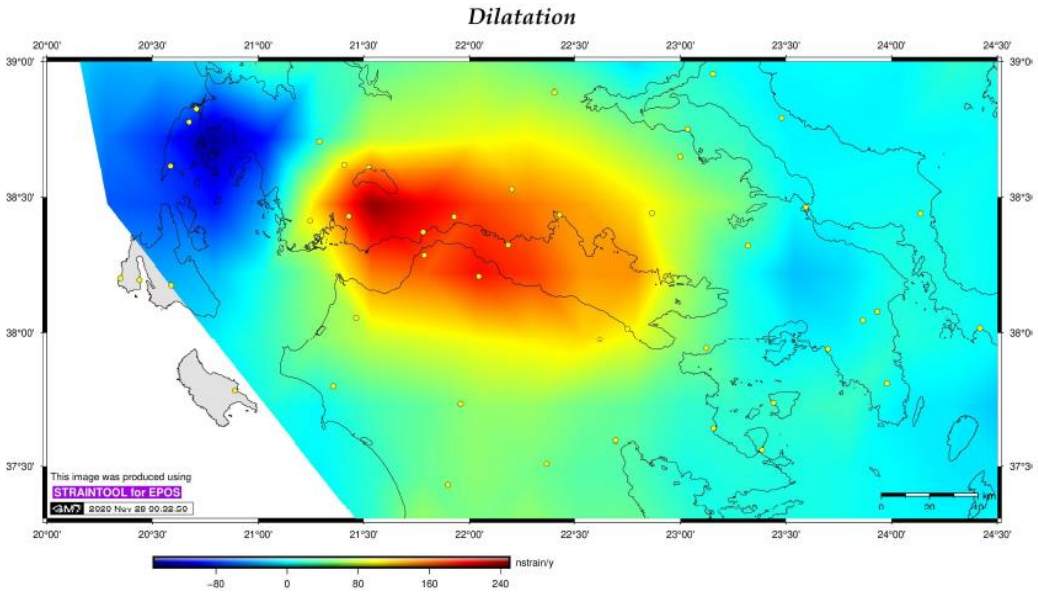
CSK ascending interferogram 2018- 2020.

It documents a number of processes acting since the end of the 2018 eruption, including:

- re-inflation of the East Rift Zone,
- re-inflation of the summit,
- subsidence of the Southwest Rift Zone.

Enceladus Supersite report

- Following the recent seismicity in the western area (Ionian islands), a number of studies have been carried out.
- A few projects have been started in the Supersite area.
- CEOS data quotas have not been used in the last two years. Only Sentinel 1 SAR data are used for ground deformation.

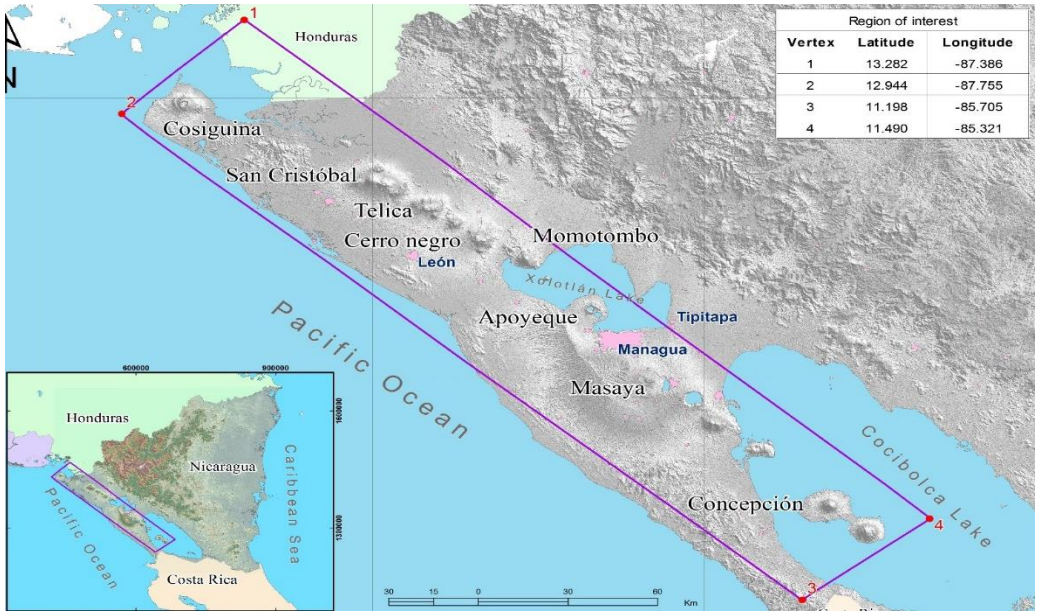


Dilatation across the Corinth Gulf calculated from GPS-derived strain rates (DSO-NTUA)

Supersite proposals

- The Nicaragua volcano Supersite
  (revised version submitted for approval)

Nicaragua Supersite proposal



Title: *Volcano-tectonic Geohazard Interaction within the Nicaraguan Depression*

Coodinator:

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International partners:

Pensilvania University

Observatoire du Physique du Globe

Universität Heidelberg

Universidad Nacional Autónoma de México

Nicaragua Supersite proposal objectives

- access satellite EO data to complement the ground networks;
- learn how to use them for volcano monitoring and surveillance;
- improve knowledge of key geological processes and assess volcanic hazard;
- establish wider international scientific collaboration;
- progress on ground data sharing on a global scale.

Nicaragua Supersite proposal revised

For the SAC reviews:

- The proposal now explains better how the use of the research results will support the National Disaster Prevention framework (Sistema Nacional para la Prevención, Mitigación y Atención de Desastres);
- The Open access to ground data has been more clearly stated, to facilitate data access the proposers will negotiate a data policy with GSNL.

For the Agency reviews:

- DLR - TanDEM X data request has been canceled; a clear data request is now made, with clear objectives;
- ASI – the objectives and priorities have been clearly stated.

Nicaragua Supersite EO data requests

EO data	Usage
CSK (200/year) + archive (ca. 500)	COSMO SkyMED is used mainly for monitoring with InSAR, the six volcanic centers with signs of unrest, or areas with increased seismicity or increased surface deformation recorded by GPS, or areas under obvious slope instability
TSX (132/year)	Constant coverage of Telica and Momotombo volcanoes with 11 day repeat pass, ascending and descending orbits, for deformation analysis, monitoring of dome growth.
Pléiades (4000 sq km/year monoscopic)	For the detection of morphological changes (e.g. variations of craters and lava lakes, failed slopes, etc.). Also for DEM generation to assess post-eruption changes in summit areas.

Nicaragua Supersite in situ data access

In situ data	Access
Seismic waveforms (32 seismic stations)	Open access to GSNL scientists upon request and authorization from INETER's Senior Directorate.
GPS-GNSS (14 stations)	Open access to GSNL scientists upon request and authorization from INETER's Senior Directorate.
Fixed DOAS (5 stations)	Open access to GSNL scientists upon request and authorization from INETER's Senior Directorate.
Multigas (1 station)	Open access to GSNL scientists upon request and authorization from INETER's Senior Directorate.
13 webcams	Open access to GSNL scientists upon request and authorization from INETER's Senior Directorate.

Decisions for GSNL at WGD meeting #15

1. Decision on acceptance of Nicaragua Supersite
2. Decisions on renewed support to Hawaii and Enceladus Supersites