

GSNL & EarthScope

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Geodetic Imaging Program Manager
CEOS WG Disasters 11/30/2025



**GAGE
SAGE**

 **EarthScope**
Consortium
Operated by

What We Do

The EarthScope Consortium supports transformative global geophysical research and education.

We give scientists the tools to examine the Earth with extreme precision and to better understand natural hazards and our changing planet.

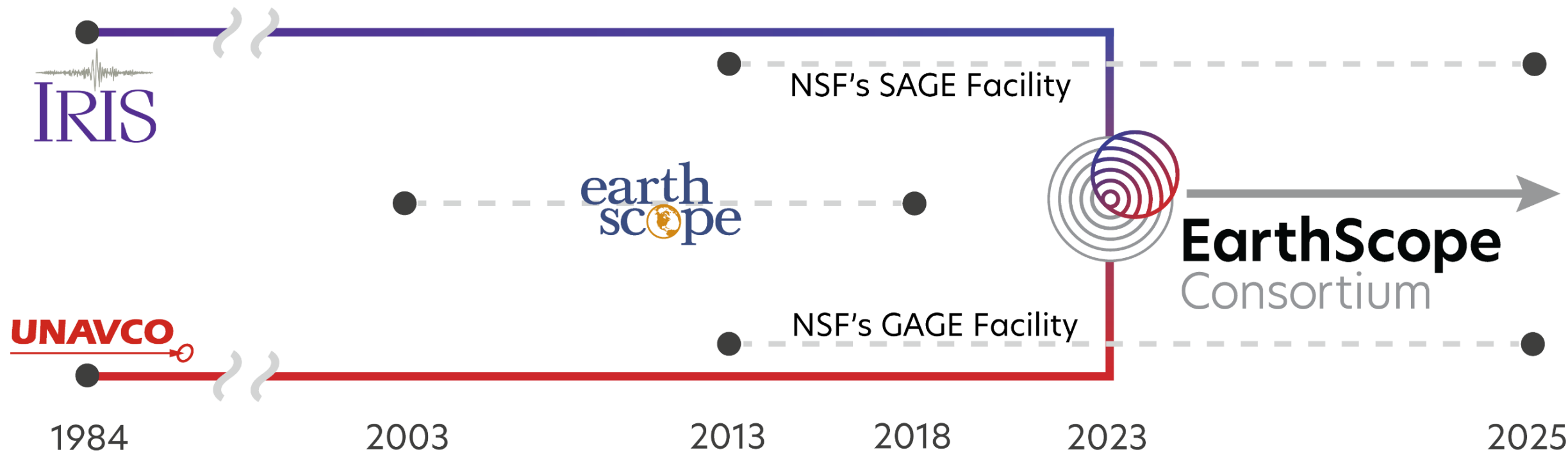
History



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EarthScope Consortium awarded National Geophysical Facility

17 SEPTEMBER 2025



**NATIONAL
GEOPHYSICAL
FACILITY**

Dear EarthScope Community,

In June 2024, EarthScope Consortium submitted a proposal to the National Science Foundation to operate the National Geophysical Facility (NGF). We are thrilled to announce that EarthScope has been selected as the operator of NSF NGF.

Joydip Kundu, the Directorate Head for the NSF Directorate for Geosciences, sends this note: "NSF has long supported infrastructure driving transformative advances in the geophysical sciences. The new facility will continue that legacy while expanding to novel approaches."

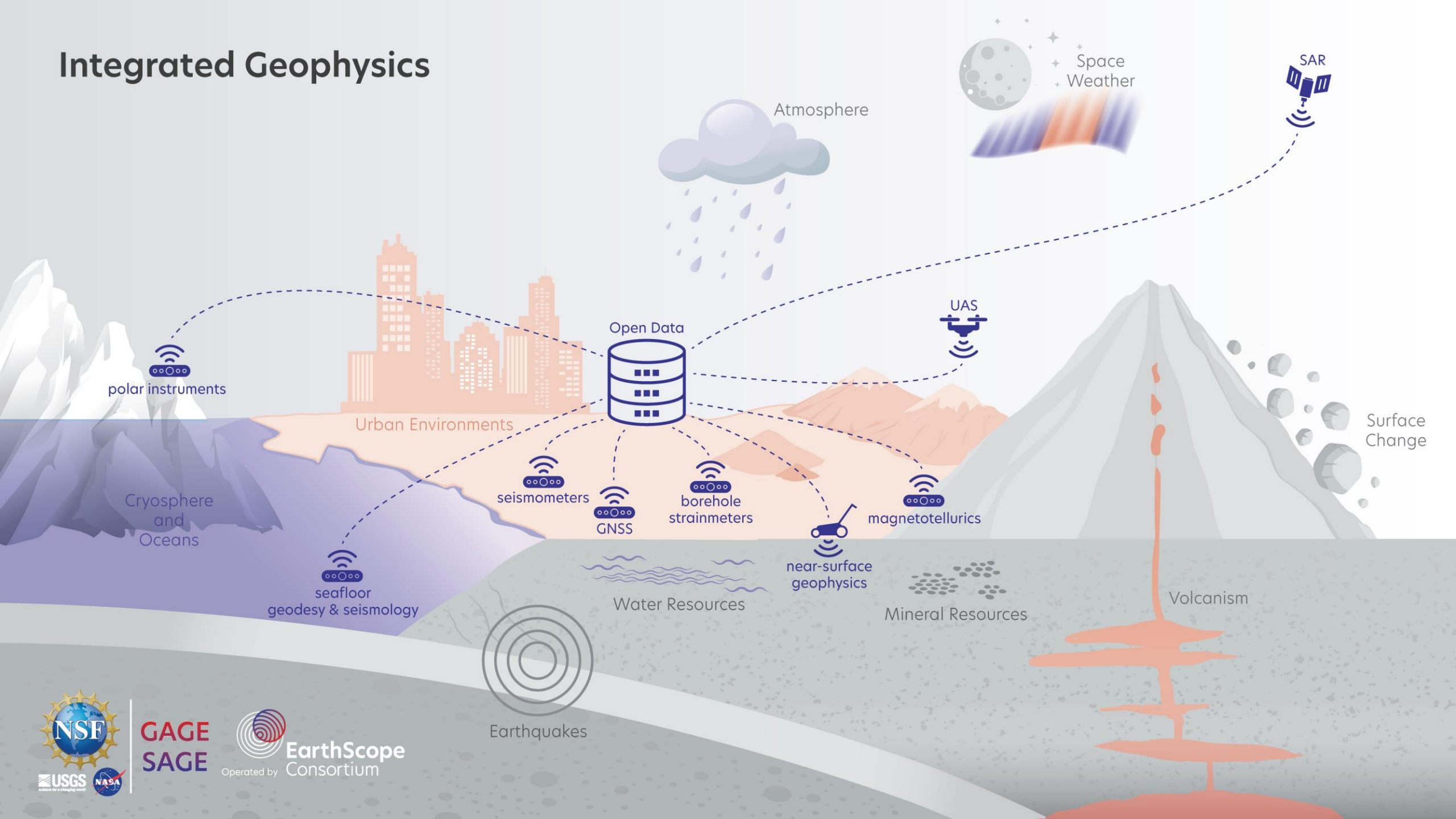
Many of you provided input and ideas leading up to the development of the proposal, and we are grateful to the community for their vision for the future of geophysics. We're committed to a smooth transition from the NSF SAGE and NSF GAGE facilities to the new NSF NGF, so you should see foundational capabilities continue even as new activities grow.

Announced September 17th, 2025

5 years of support starting
October 1st, 2025

[***https://ngf.earthscope.org/***](https://ngf.earthscope.org/)

Integrated Geophysics



GAGE
SAGE



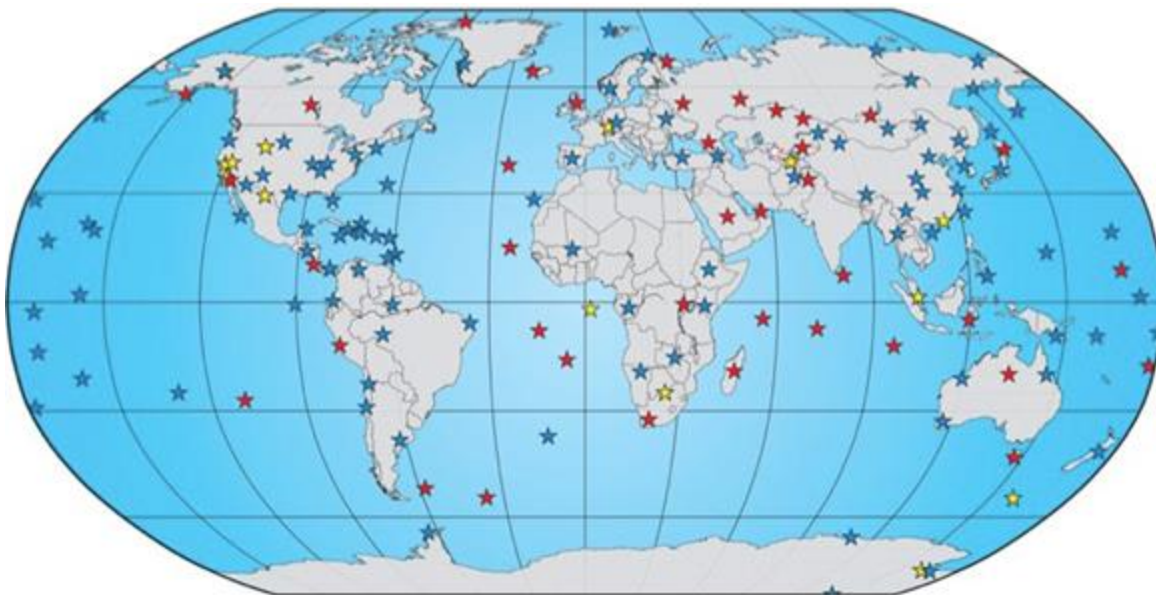
Seismology support



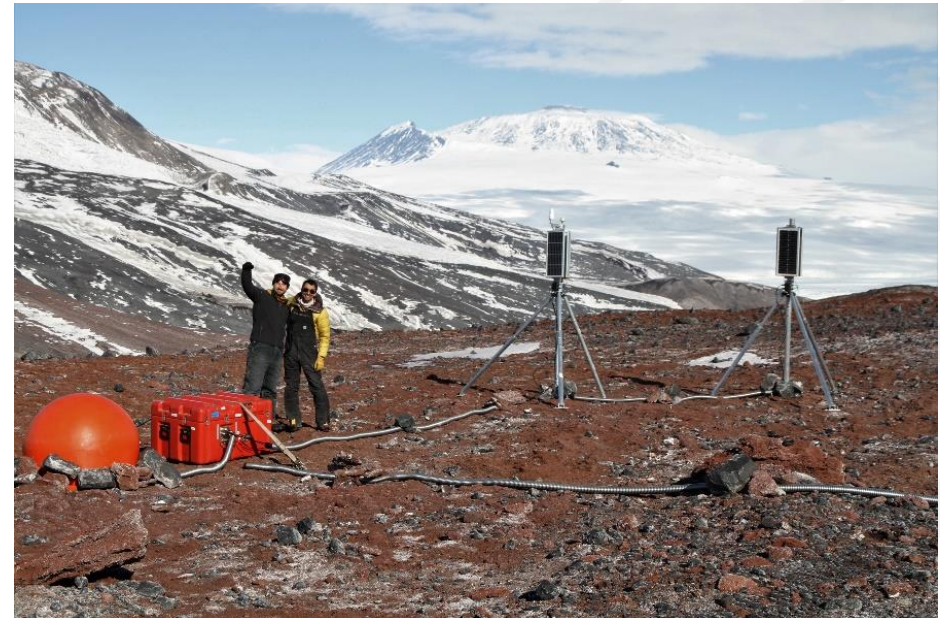
Data archiving: raw seismic and derived products

Global Seismographic Network operation (with USGS)

Portable instrumentation services: seismometers, active-source support, magnetotelluric, ground penetrating radar



★ IRIS/IDA Stations ★ IRIS/USGS Stations ★ Affiliate Stations ★ Planned Stations



Geodesy support

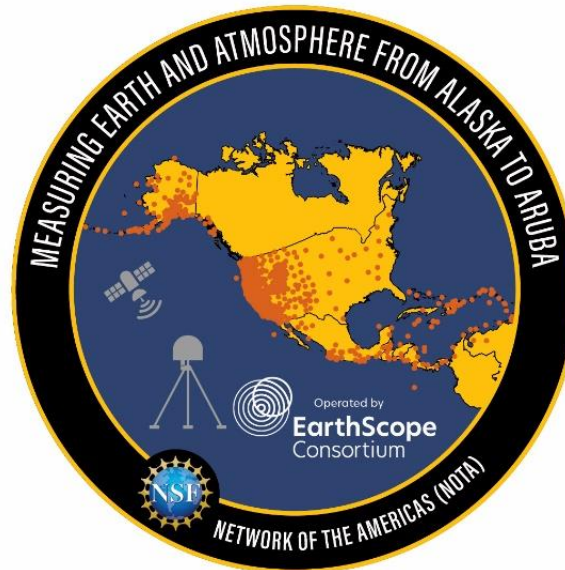


Data archiving: GNSS, borehole strain, SAR

Network of the Americas operation (GNSS and borehole)

NASA Global GNSS Network support

Portable instrumentation services: GNSS, terrestrial laser scanning, UAS structure from motion



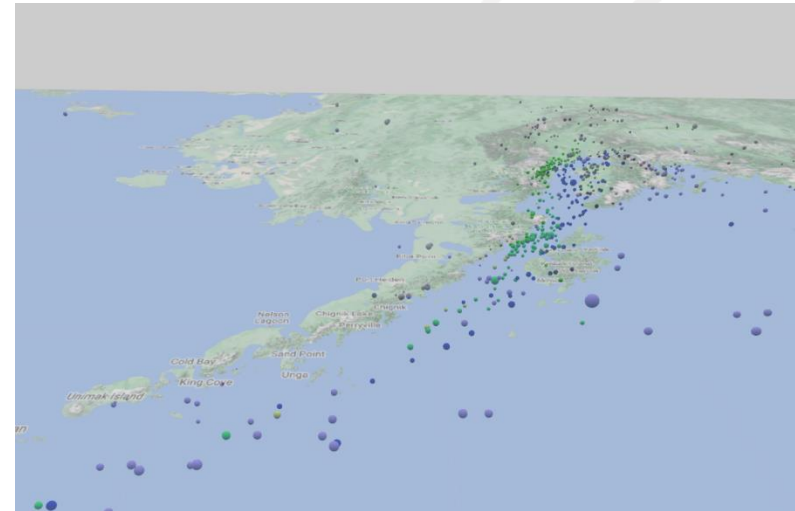
Education & workforce



Education support: modules, activities, data tools, instrumentation access

Student and early career skill-building: technical short courses, workshops (e.g., ISCE and GMTSAR InSAR software training)

Internships: research and career internship programs





Founded in 1999

Operated by UNAVCO since 2006

Open access to SAR data for
Earth science research,
education.

As part of the formation of EarthScope & streamlining of governance, WInSAR has been dissolved as a consortium within the consortium.

Recommendations:

- Make WInSAR an integral part of EarthScope, rather than a separate consortium.
- Expand vision to include “geodetic imaging” more generally.
- Enable archiving & DOIs for time series and other derived products
- Enhance SSARA for federated search.
- Advocate for open data, talk to SAR operators about expanding access to data.

EarthScope SAR Support



GAGE (and soon NGF) will provide support for the following previously WInSAR-branded activities:

1. Data download, storage, and sharing of PI restricted datasets from ALOS-2, TSX, CSK, PAZ, etc.
2. Seamless SAR Archive tools (SSARA) for federated search and access to SAR data
3. InSAR Product Archive for publication of InSAR pairwise and time series products
4. InSAR short courses (e.g., the InSAR Processing and Theory with GMTSAR, and the InSAR Processing and Analysis (ISCE+) short courses)

SAR Data Download & Sharing



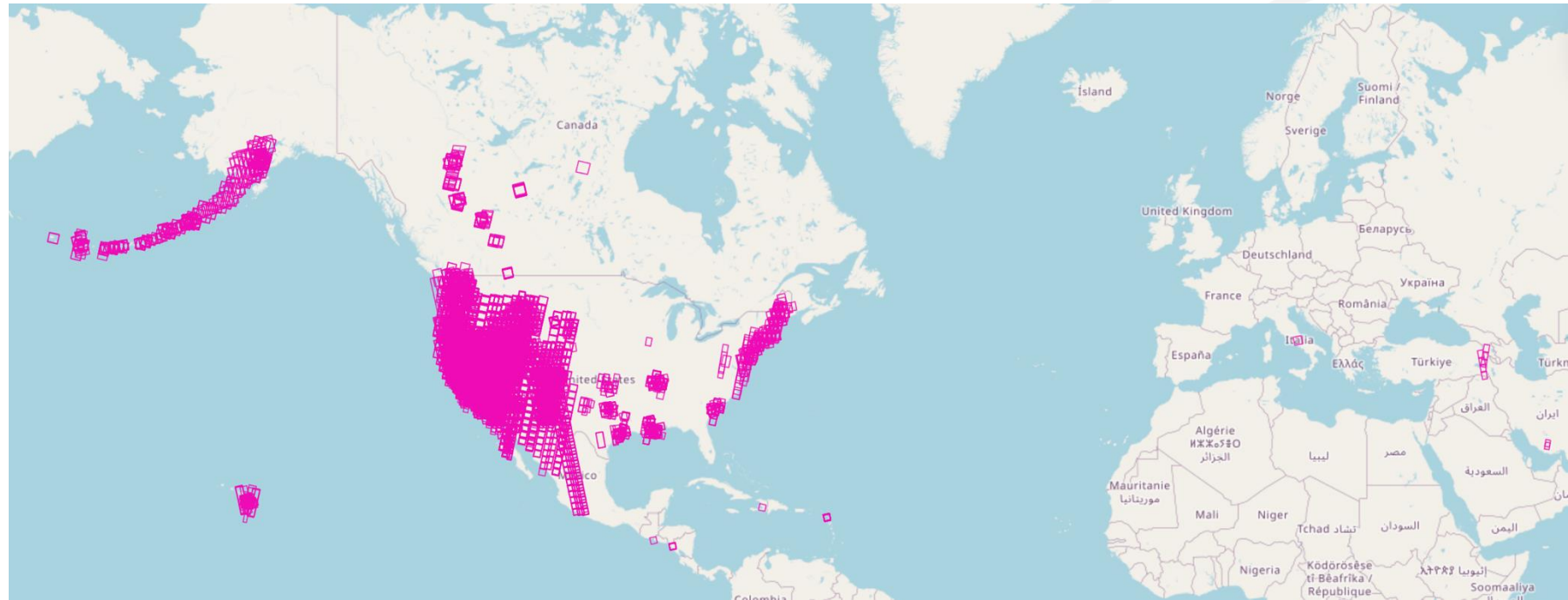
Data download, storage, and sharing of datasets with role-based authentication and access.

~107k scenes (~190 TB) total available

~90k = ENVISAT, ERS-1 & ERS-2, RADARSAT-1

Remainder = new PI restricted ALOS-2, TSX, CSK, PAZ datasets

Centralized data
storage and access
streamlines research
between
collaborators, saves
time and money



SSARA

Seamless SAR Archive tools (SSARA) for federated search and access to SAR data.

Presently searches EarthScope and Alaska Satellite Facility (NASA SAR DAAC).

Developed with NASA support.

<https://web-services.unavco.org/brokered/ssara/>



Welcome to the Seamless SAR Archive (SSARA) Federated Web Service

Service	URL Endpoint	Description
Data Search and Access GUI	<code>/brokered/ssara/gui</code>	GUI map interface to construct federated data queries
SSARA SAR Service	<code>/brokered/ssara/api/sar/search</code>	Delivers SAR granule metadata meeting user specified criteria
SSARA InSAR Service	<code>/brokered/ssara/api/insar/search</code>	Delivers InSAR product granule metadata based on user specified criteria and QC parameters
Select Pairs Service	<code>/brokered/ssara/api/insar/selectpairs</code>	Provides every combination of interferometric pairs for a single InSAR stack base on query input

Please note that some SAR data in the EarthScope Geodetic Imaging archive were acquired through PI's proposals with various space agencies. To access these datasets, you will need to contact the relevant PI for authorization. Login with your EarthScope SAR account to view the complete list of [SAR data collections](#).

Please visit the [SSARA repository on Gitlab](#) for an overview of the project, [API details](#), and command line utilities and clients. For questions or assistance, please contact geodeticimaging@earthscope.org.



EarthScope Consortium

SSARA - Seamless SAR Archive

Classic SSARA

Basic Parameters

Platform (Multi-select)
ALOS-2

Collection
Collection name

Track/Path (Relative Orbit)
Track number

Frame
Frame number

Start Date
mm/dd/yyyy

End Date
mm/dd/yyyy

Box

Polygon

Coords

SAR Search Results Found 2299 scenes

Export CSVExport KMLEXport SSARA Script

Source	Collection	Platform	Abs. Orbit	Rel. Orbit	Start Time	Stop Time	Frame	Beam Mode	Beam Swath	Flight Dir	Look Dir	Polarization	Level	DOI	Download
SF	N/A	ALOS-2	58621	170	3/31/2025 2:19:20 PM	3/31/2025 2:20:12 PM	2850	WBS	N/A	D	N/A	HH	SLC	N/A	Download
ASF	N/A	ALOS-2	58621	170	3/31/2025 2:18:39 PM	3/31/2025 2:19:31 PM	2800	WBS	N/A	D	N/A	HH	SLC	N/A	Download
ASF	N/A	ALOS-2	58591	164	3/29/2025 1:38:57 PM	3/29/2025 1:39:49 PM	2950	WBS	N/A	D	N/A	HH	SLC	N/A	Download
ASF	N/A	ALOS-2	58547	169	3/26/2025 2:12:23 PM	3/26/2025 2:13:15 PM	2850	WBD	N/A	D	N/A	HH,HV	SLC	N/A	Download
ASF	N/A	ALOS-2	58547	169	3/26/2025 2:11:43 PM	3/26/2025 2:12:35 PM	2800	WBD	N/A	D	N/A	HH,HV	SLC	N/A	Download
ASF	N/A	ALOS-2	58451	67	3/20/2025 1:55:08 AM	3/20/2025 1:56:00 AM	800	WBS	N/A	A	N/A	HH	SLC	N/A	Download
ASF	N/A	ALOS-2	58451	67	3/20/2025 1:54:28 AM	3/20/2025 1:55:20 AM	750	WBS	N/A	A	N/A	HH	SLC	N/A	Download

Enabling discovery and access of GSNL data via the SSARA system requires two primary technical elements:

1) Metadata cataloging

a) SSARA GSNL search would require ASI, DLR, CONAE, etc. to provide an index/catalog/API adjacent to their data holdings.

b) EarthScope caches GSNL data into our storage archive to index the data and enable downloads.

2) License management

Use a similar approach as that used for the GEP. Access would be restricted only to users authorized by the respective agencies.

InSAR Product Archive



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InSAR Product Archive for publication of InSAR pairwise and time series products. *FAIR publication of InSAR science products.*

ALOS2 InSAR Product 88

Mission Details

Mission: ALOS2
Track: 92
Swath: StripmapFine
Processing Level: INTERFEROGRAM

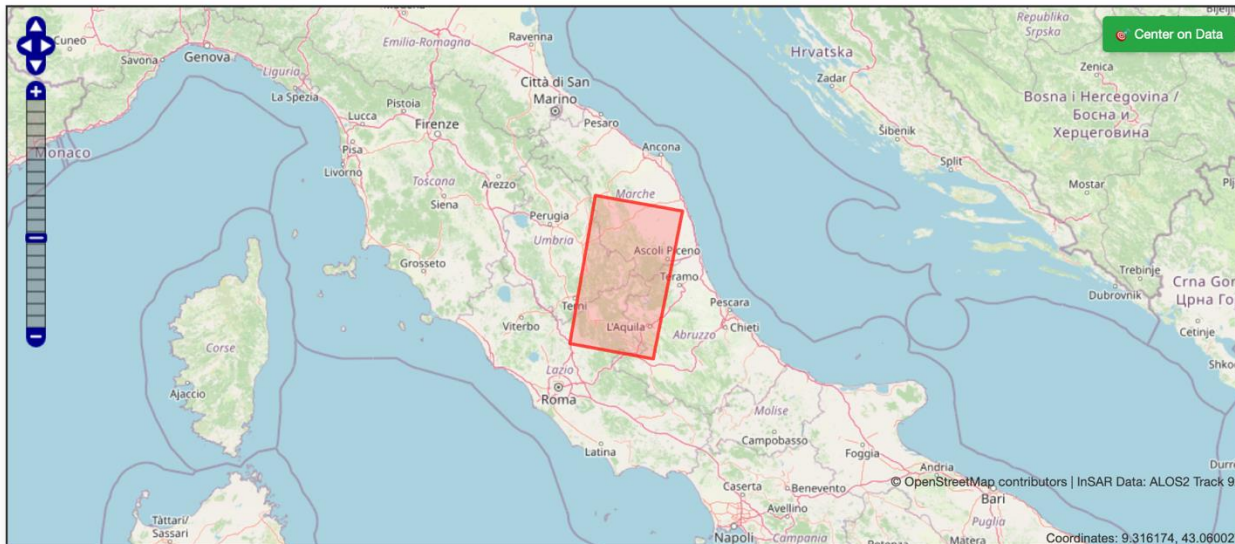
Temporal Information

Start Date: May 25, 2016
End Date: Aug. 31, 2016
Archived: July 12, 2021

File Information

File Size: 0 bytes
Format: HDF5

[Download Data](#)



Technical Metadata

Prf:
East: 13.73138888888889
West: 12.58888888888889
Frame: 0
North: 43.31583333333333
South: 42.09916666666666
Width: 4113
Xstep: 0.000277777777777778
Ystep: -0.000277777777777778
Length: 4380
History: H5 file created: 2016-10-04 00:17:41.781804
Mission: ALOS2
Beam_Mode: StripmapFine
Ellipsoid: WGS84
Last_Date: 20160831
Beam_Swath: StripmapFine
First_Date: 20160525
Wavelength: 0.2424525
Polarization: HH
Baseline Perp: 90.16172327888364
Look_Direction: R
Processing_Dem: SRTMGL1
Producer_Names: CRL-EJF
Relative_Orbit: 92
Slave_Platform: ALOS2
Incidence_Angle: 36.295
Master_Platform: ALOS2
Processing_Type: INTERFEROGRAM
Scene_Footprint: POLYGON((13.43444444444445 42.101388888888884,12.5925 42.21583333333333,12.850277777777777 43.314166666666665,13.730277777777777 43.19916666666666,13.43444444444445 42.101388888888884))
Flight_Direction: descending
Temporal_Baseline: 98
Slave_Sensing_Stop: 2016-08-31 11:15:59.970553
Master_Sensing_Stop: 2016-05-25 11:15:59.856791
Processing_Facility: JPL/Caltech ARIA
Processing_Software: ISCE
Slave_Sensing_Start: 2016-08-31 11:15:41.868287
Master_Sensing_Start: 2016-05-25 11:15:41.753978
Slave_Absolute_Orbit: 12277
Master_Absolute_Orbit: 10828
Processing_Software_Version: 2.0.0+alpha

Conclusion



EarthScope has infrastructure in place to support SAR (and potentially other EO) data access for GSNL. Opportunity to leverage existing systems and NSF support to fill gap left by end of the Geohazard Exploitation Platform (GEP).

GSNL community has expressed interest in leveraging EarthScope tools to streamline data discovery and access.

Capacity building collaborations?



earthscope.org

