UNAVCO WInSAR Report

December 7, 2011

Contact us: winsar@unavco.org

WInSAR Funding Sources

NSF/NASA WInSAR Grant

$50K from each, total $100K per year
2008-2011; startup 6/08

USGS WInSAR Cooperative Agreement

$50K per year (FY2009 –FY2013; startup 11/08)
Ordering data and tasking, mainly for volcano targets
funding suspended in 2011 due to budget priorities and data policy change

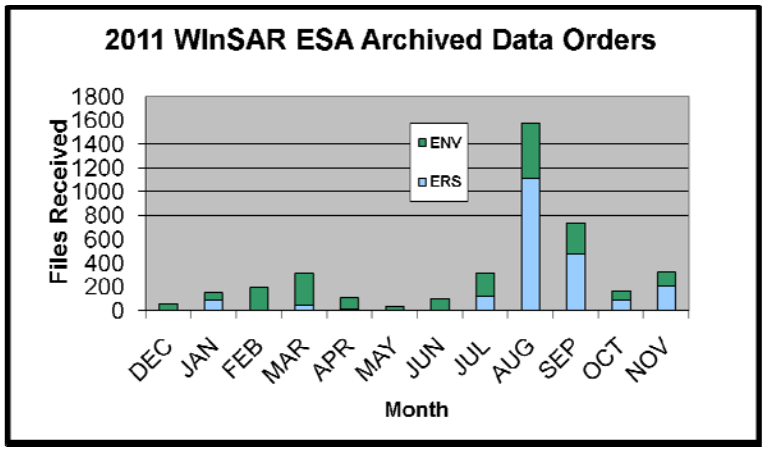
NSF/NASA/USGS funding -Comprehensive EarthScope SAR Archive

$370,545
2010-2011; startup 8/10
Work Plan, budget was realigned during 2011
No-cost extension requested

WInSAR Holdings Summary

UNAVCO WInSAR/EarthScope/Supersites Searchable Catalog

- 2.8 Tb WInSAR
- ERS: 9,662 frames
  - increase of 2131 from December 2010
- Envisat: 5,634 files/frames
  - increase of 1,956 from December 2010



EarthScope SAR Holdings Summary

- 17 Tb
- ERS: 15,447 frames, 24,091 scenes (sources: ESA and ASF)
- Envisat: 4384 scenes (source: ESA)
- Radarsat-1: 10,930 scenes (source: ASF)

WInSAR/EarthScope Holdings Summary

***UNAVCO WInSAR/EarthScope/Supersites Searchable Catalog

***ftp track/frame structure accessible with WInSAR credentials

- 4.1 Tb
- ERS: 15,447 frames
- Envisat: 8,878 frames (6225 from swaths)

Supersites Holdings Summary

***UNAVCO WInSAR/EarthScope/Supersites Searchable Catalog
(partial catalog for Supersites)
***Requires Supersites credentials from ESA

Data are “in the cloud” on two ESA-supported systems

- 21 Tb
- ERS: 24,807 files
- Envisat: 21,145 files
- Radarsat: 582 files
- ALOS: 91 files
- TerraSAR-X: 22 files

65% added this year

2011 Operational Tasks

- Orders submitted/received for requested ESA scenes
  - 4,087 ERS/Envisat scenes ordered, received, ingested
- Tasking orders submitted
  - 1,654 Envisat scenes tasked in 10 orders
- EarthScope Envisat that were ordered as swaths cut into frames
  - Envisat: 6,225 frames from swaths
- EarthScope ESA data added to ftp structure
- Ordering and data management for Supersites
- Database merge allows simultaneous search of WInSAR/EarthScope/Supersites holdings
- ISCE licenses and preparation for software distribution
- TerraSAR-X tasking

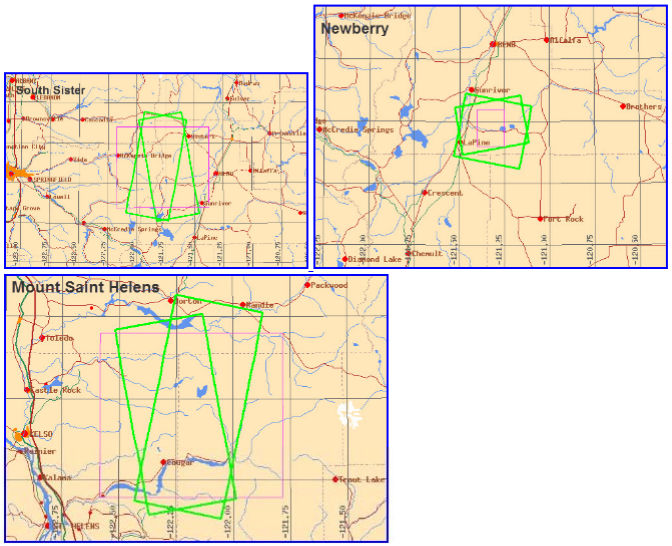
TerraSAR-X Tasking

Tasking orders placed beginning mid-July 2011

See summary page:

http://winsar.unavco.org/terrasarx.php

Washington and Oregon



Winter tasking:

Name	Track or Strip No.	Orbit							
Okmok	5	17	10/17/2011	10/28/2011	11/8/2011	11/19/2011	11/30/2011	12/11/2011	12/22/2011
	5	116	10/23/2011 (3)	11/3/2011 (3)	11/14/2011	11/25/2011	12/6/2011	12/17/2011	12/28/2011
	10	93	10/22/2011 (3)	11/2/2011	11/13/2011	11/24/2011	12/5/2011	12/16/2011	12/27/2011
	12	40	10/18/2011	10/29/2011	11/9/2011	11/20/2011	12/1/2011	12/12/2011	12/23/2011
San Francisco	3	38	10/18/2011 (3)	10/29/2011 (3)	11/9/2011	11/20/2011	12/1/2011	12/12/2011	12/23/2011
	8	76	10/21/2011	11/1/2011 (4)	11/12/2011	11/23/2011	12/4/2011	12/15/2011	12/26/2011
	11	129	10/24/2011 (3)	11/4/2011	11/15/2011	11/26/2011	12/7/2011	12/18/2011	12/29/2011
Slumgullion	4	7	10/27/2011	11/7/2011	11/18/2011	11/29/2011	12/10/2011	12/21/2011	1/1/2012
Unimak	3	40	10/18/2011	10/29/2011	11/9/2011	11/20/2011	12/1/2011	12/12/2011	12/23/2011
	3	123	10/24/2011 (4)	11/4/2011	11/15/2011	11/26/2011	12/7/2011	12/18/2011	12/29/2011
	6	32	10/18/2011	10/29/2011	11/9/2011	11/20/2011	12/1/2011	12/12/2011	12/23/2011
	7	131	10/24/2011	11/4/2011	11/15/2011	11/26/2011	12/7/2011	12/18/2011	12/29/2011
	12	55	10/19/2011	10/30/2011	11/10/2011	11/21/2011	12/2/2011	12/13/2011	12/24/2011
	12	108	10/23/2011	11/3/2011	11/14/2011	11/25/2011	12/6/2011	12/17/2011	12/28/2011
Vincent	7	15	10/28/2011 (3)	11/8/2011	11/19/2011	11/30/2011	12/11/2011	12/22/2011	1/2/2012

Work Plan Changes Infrastructure Upgrade

Due to changed ESA Policy (data and tasking at no charge), a realignment of the budget/work plan was made through planning with the EC and NSF

Tasks:

•Upgrade storage systems at UNAVCO (**completed** available storage doubled to ~96 Tb). This allowed the GeoEarthScope ftp pickup copies.

•Upgrade web server, database server and ingest processing servers (**completed**)

•Schema redesign (**completed**, but migration is in progress)

•Build application programming interface (**API alpha version available** using test database)

•Web pages redesign and migration to new database (**in progress**)

(Contributions to this effort from Lou Estey, Scott Baker, Andy Gorman, Susanna Gross, Stuart Wier, Stu Duncan, Jim Riley, Jon Davis)

Ongoing work funded until FY14

•Continue data ordering, tasking and general WInSAR support

•With NASA portion of funds, continue Supersites support

Parameterized URL API

http://unavco.org/insarArchive/ArchivedScene*?parameter1=value& parameter2=value*

- **intersectsWith** - accepts a list of well-know text (WKT) polygons.
  intersectsWith=POLYGON ((-119.543 37.925, -118.443 37.7421, -118.682 36.8525, -119.77 37.0352, -119.543 37.925))
- **satellite** - accepts a list of comma-separated values.
  satellite=ERS1,ERS2,ENV1
- **beamSwath** - accepts a list of comma-separated values.
  beamSwath=S1,S2,S3
- **beamMode** - accepts a list of comma-separated values.
  beamMode=HS,IM,ScanSAR
- **track** - accepts a list of comma-separated values and/or ranges.
  track=0,1,3-5
- **frame** - accepts a list of comma-separated values and/or ranges.
  frame=300,310-350
- **start** / **end** - accepts an ISO 8601 formatted date (YYYY-MM-DD) that represents valid range for the date of acquisition.
  start=2010-10-30&end=2011-10-30

Examples

- Example: satellite=ENV1&intersectsWith=POLYGON ((-119.543 37.925, -118.443 37.7421, -118.682 36.8525, -119.77 37.0352, -119.543 37.925))&beamSwath=S2,S3&track=0-300,429&firstResult=0&maxResults=2
- JSON - JavaScript Object Notation, is a lightweight text-based open standard designed for human-readable data interchange.

[{"sceneId":65450,"orbit":36747,"track":120,"stopTime":1236750078000,"flightDirection":"A","startDoppler":null,"stopDoppler":null,"thumbnailUrl":null,"firstFrame":747,"finalFrame":747,"archivedDate":1236816000000,"rearchiveDate":null,"datafilesizeCompressedBytes":157070219,"datafilesizeUncompressedBytes":null,"downloadUrl":"http://winsar.unavco.org/data/ENV2/120/747/ENV1_2_120_0747_36747.baq","baselinePerpStart":-317,"baselinePerpEnd":null,"baselineParaStart":null,"baselineParaEnd":null,"prf":null,"stringFootprint":"POLYGON ((-119.266 37.992, -118.029 38.176, -117.882 37.288, -119.014 37.104, -119.266 37.992))","dataProviderId":2,"dataProvider":"ESA","collectionId":3,"collectionName":"WInSAR","polarizationId":0,"polarization":"TBD","missionConfigurationId":26,"sensor":"ASAR","configurationName":"Standard Beam 2","beamMode":"IM","beamSwath":"S2","lookAngle":22.949999999999999,"incidenceAngle":22.949999999999999,"insarGrouping":19,"satelliteId":3,"lookDirection":"R","frequency":5.3310000000000004,"missionName":"ENV1","startTime":1236750062000,"container":null},{"sceneId":65449,"orbit":36747,"track":120,"stopTime":1236750063000,"flightDirection":"A","startDoppler":null,"stopDoppler":null,"thumbnailUrl":null,"firstFrame":729,"finalFrame":729,"archivedDate":1236816000000,"rearchiveDate":null,"datafilesizeCompressedBytes":157070219,"datafilesizeUncompressedBytes":null,"downloadUrl":"http://winsar.unavco.org/data/ENV2/120/729/ENV1_2_120_0729_36747.baq","baselinePerpStart":-317,"baselinePerpEnd":null,"baselineParaStart":null,"baselineParaEnd":null,"prf":null,"stringFootprint":"POLYGON ((-119.036 37.102, -117.799 37.286, -117.652 36.398, -118.784 36.214, -119.036 37.102))","dataProviderId":2,"dataProvider":"ESA","collectionId":3,"collectionName":"WInSAR","polarizationId":0,"polarization":"TBD","missionConfigurationId":26,"sensor":"ASAR","configurationName":"Standard Beam 2","beamMode":"IM","beamSwath":"S2","lookAngle":22.949999999999999,"incidenceAngle":22.949999999999999,"insarGrouping":19,"satelliteId":3,"lookDirection":"R","frequency":5.3310000000000004,"missionName":"ENV1","startTime":1236750047000,"container":null}]

- Other formats to be supported
  - CSV
  - XML

Command Line Client

- Written in Python (needs 2.6+, tested on 2.6 and 2.7)
- Similar functionality to getSAR.pl
- Implements all the API features
- Option to output a KML and/or download results

Command Line Client

Usage: unavco_api_search.py [options]

Options:

-h, --help	show this help message and exit
--kml	create a KML of query
--download	download the data
--bbox=BBOX	search area bounding box WEST,SOUTH,EAST,NORTH
-p SEARCH_POLY, --poly=SEARCH_POLY	search area polygon in WKT format
-s START, --start=START	start date for acquisitions
-e END, --end=END	end date for acquisitions
-t TRACKLIST, --track=TRACKLIST	track(s) (list or range)
-f FRAMELIST, --frame=FRAMELIST	frame(s) (list or range)
--pass=FLIGHTDIRECTION	flight direction, can be "A" or "D”
--sat=SATELLITE	satellite list (ERS1, ERS2, ENV1, RSAT)
-b BEAMS, --beam=BEAMS	list of beams (S1, S2, F1, F4...
--beamMode=BEAMMODE	list of beam modes (IM, ScanSAR, STD...
--max=MAXRESULTS	maximum number of results to return

API Demos

UNAVCO Booth
Thursday
2:30-3:30