

Table 3.2-1. Geodetic Data Products for GAGE.

INSTRUMENT	LEVEL	PRODUCT	FORMAT	PRODUCT GENERATION FREQUENCY	PRODUCER/DISTRIBUTOR		
Global Positioning System (GPS) Receiver	0	Standard-Rate (15-sec) raw data	T00	Hourly, sub-daily or daily	UNAVCO/ UNAVCO		
		High-Rate (1-sps, 5-sps) raw data	T00	Hourly (upon request)	UNAVCO/ UNAVCO		
		Real-Time raw data	BINEX, RTCM	Real-time	UNAVCO/ UNAVCO		
		Community continuous raw data	Varies	Hourly, sub-daily or daily	Community PI's/UNAVCO		
		Survey-mode raw data	Varies	Varies	UNAVCO, Community PI's/UNAVCO		
		Metadata	Database	Varies	UNAVCO		
	1	Standard-Rate quality checked data	RINEX	Daily	UNAVCO/UNAVCO		
		High-Rate quality checked data	RINEX	Varies	UNAVCO/UNAVCO		
		Real-Time quality checked data	RINEX	Daily, varies	UNAVCO/UNAVCO		
		Community continuous quality checked data	RINEX	Daily, varies	UNAVCO/UNAVCO		
	2	Survey-mode (campaign) quality checked data	RINEX	Daily, varies	UNAVCO/UNAVCO		
		Station position solutions	SINEX	Daily, 15-days, 3-months	MIT*, CWU*, NMT*/UNAVCO		
		Station position time series	ASCII	Daily, 15-days, 3-months	MIT*, CWU*, NMT*/UNAVCO		
		Station position velocity estimates	ASCII	Varies	MIT*, CWU*, NMT*/UNAVCO		
Station position offsets for significant events (e.g. coseismic)		ASCII	Varies	MIT*, CWU*, NMT*/UNAVCO			
Station position quality assurance parameters		ASCII	Varies	UNR (Blewitt)/UNAVCO			
Borehole Strainmeter (BSM)	0	20-sps, 1-sps, 10-min raw strain series	Bottle, SEED	Hourly, daily	UNAVCO/DMC*, NCEDC*		
		30 min, 1 hour instrument health series	Bottle, SEED	Hourly, daily	UNAVCO/DMC*, NCEDC*		
		1-sps, 30-min environmental series	Bottle, SEED	Hourly, daily	UNAVCO/DMC*, NCEDC*		
		Borehole geophysical logs, samples	Varies	During installation	UNAVCO/UNAVCO		
		Station metadata	Database	Varies	UNAVCO		
	2	2a Corrected and scaled strain and environmental series	XML, ASCII	Daily, bi-weekly	UNAVCO/DMC*, NCEDC*, UNAVCO		
		2b Corrected and scaled strain and environmental series	XML, ASCII	4-months	UNAVCO/DMC*, NCEDC*, UNAVCO		
		Station notebooks	PDF	Varies	UNAVCO		
		Laser Strainmeter (LSM)	0	1-sps raw strain, instrument health, and environmental series	Ice-9, SEED	Daily	UCSD*/DMC*, NCEDC*
				Station metadata	Database	Varies	Subawardee (UCSD)
2	Corrected and scaled strain and environmental series		XML, ASCII	Bi-weekly, 4-months	UCSD*/DMC*, NCEDC*, UNAVCO		
Station notebooks			ASCII	Varies	Subawardee (UCSD)		
	Borehole Seismometer	0	100-sps raw data	SEED	Streaming	UNAVCO/DMC*	
200-sps raw data			SEED	Streaming (some stations)	UNAVCO/DMC*		
Seismic Metadata			DATALESS SEED	Varies	UNAVCO		
Pore Pressure Meter	0	1 sps raw	SEED, ASCII	Streaming, Daily	UNAVCO/DMC*, UNAVCO		
	0	1-sps raw	ASCII	Streaming	UNAVCO/UNAVCO		
Tiltmeter	0	1-min raw	ASCII	Daily	UNAVCO/UNAVCO		
	0	Scanner data (raw, proprietary format)	Varies	Varies	UNAVCO/UNAVCO		
Terrestrial Laser Scanning (TLS)	2	Point cloud data (merged, aligned, georeferenced, unfiltered)	ASCII, LAS, other	Varies	UNAVCO/UNAVCO		
	Airborne Laser Scanning (ALS)	3	Point cloud data (unfiltered, filtered)	ASCII, LAS, other	Static	NCALM/OpenTopography	
3		Digital elevation model (unfiltered, filtered)	Varies	Static	NCALM/OpenTopography		
3		Hillshade image (unfiltered, filtered)	GeoTIFF	Static	NCALM/OpenTopography		
Satellite Synthetic Aperture Radar (SAR)	0	Raw SAR sensor data	CEOS, ENV1	Varies (orbit dependent)	ESA, NASA (ASF)/UNAVCO**		
	1	Slant range single look complex (SSC) data	COSAR	Varies (orbit dependent)	DLR/UNAVCO**		
Meteorologic Sensor	0	Temperature, humidity, barometric pressure, other	T00	Hourly/Daily	UNAVCO/UNAVCO		
	1	Temperature, humidity, barometric pressure, other	RINEX	Hourly/Daily	UNAVCO/UNAVCO		
	2	Soil moisture, snow depth, snow-water equivalent, NLDAS, SNOTEL, vegetation index, precipitation***	ASCII	Hourly/Daily	Community PI (Larson)/UNAVCO		
		2	Time series, maps, animations	Varies	Hourly/Daily	Community PI (Larson)/UNAVCO	

\* Supported by UNAVCO subaward. \*\* UNAVCO re-distributes data to authorized users.

\*\*\* Data products are generated from combination of GPS observations (multipath), meteorologic observations, direct soil and vegetation measurements, etc.

in Boulder, Level 0 data undergo automated quality checking (QC) and archiving, creating Level 1 GPS products in RINEX format. UNAVCO also receives, archives, checks, and distributes Level 0/1 data products from a large number of GPS stations and networks operated by principal investigators and around the world.

At the nexus of several GDS systems is the PBO Operational Database (POD). This database maintains information to

support station dataflow, station metadata, site logs, state-of-health data, GPS quality control data and station configuration information. It also stores level 2 strainmeter, pore pressure and temperature, tiltmeter and meteorological data that will subsequently become one part of the time series data made available by new CI tools currently under development; these include simple url-based web services and time series data presentation.