

UNAVCO TLS Support Resources:

- What support does UNAVCO provide?
- How do I request support?
- Priorities and scheduling?
- Cost?
- Other resources to be aware of
- Online data access?
- Future trends & technology

Technical Support

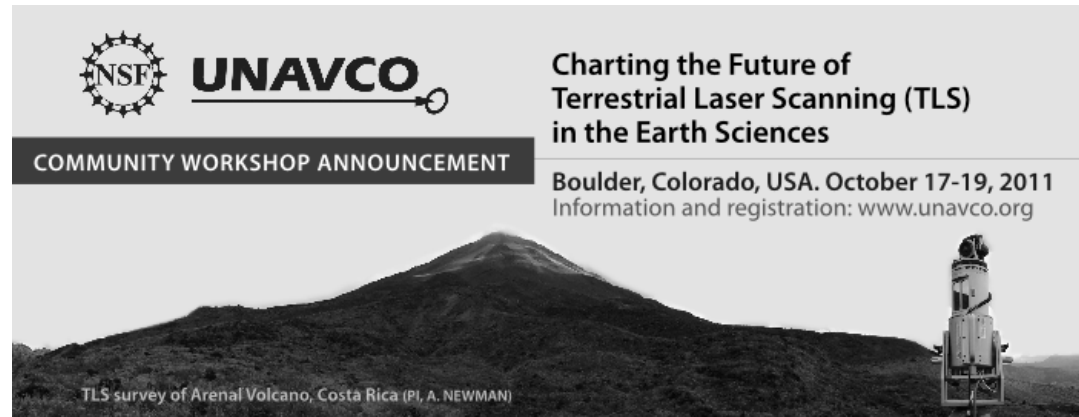
- Instrumentation (5+ scanners)
- Field engineering
- Basic data processing
- Data archiving

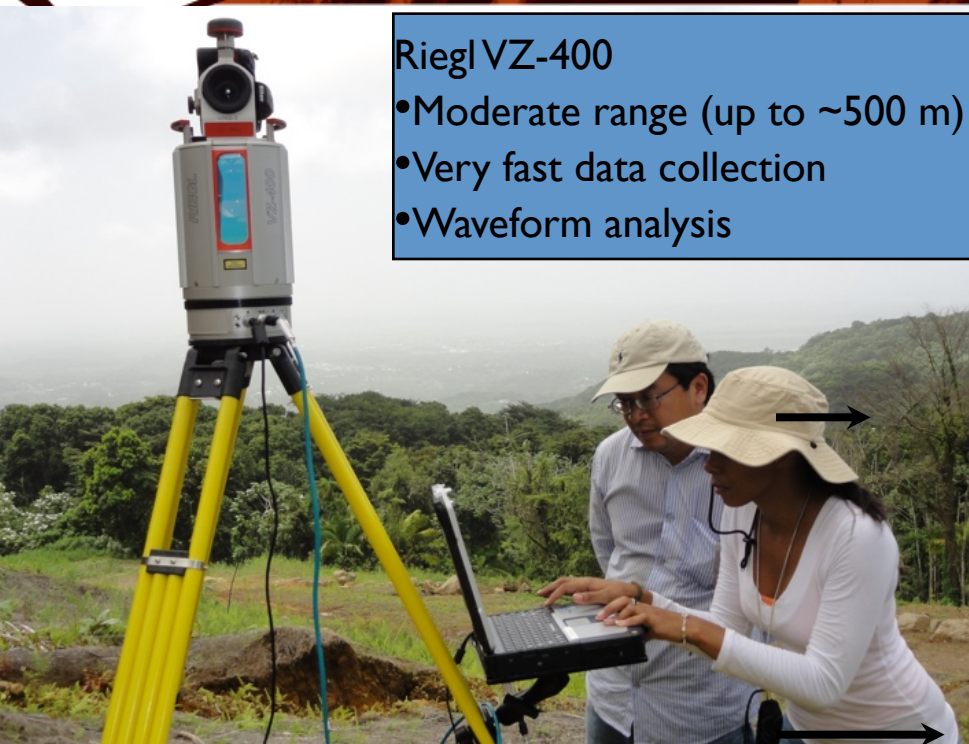
Community Building

- Community workshops
- INTERFACE consortium
- Community partnerships
- Inter-Agency collaborations

Education and Outreach

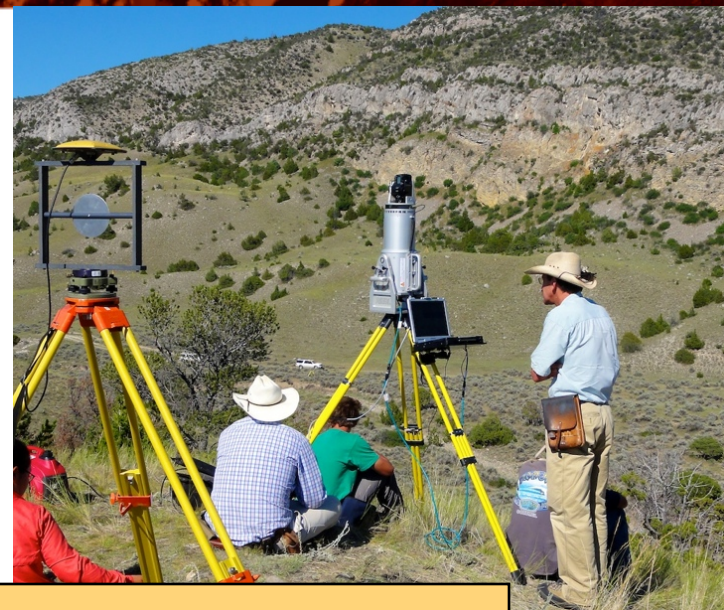
- Training courses
- Field camp
- RESESS





Riegl VZ-400

- Moderate range (up to ~500 m)
- Very fast data collection
- Waveform analysis



Riegl LMS-Z620

- Long range (up to ~2000 m)
- Fast data collection
- Very robust



Leica ScanStation C10

- Short range (up to ~120 m)
- Very fast data collection
- Green laser, small spot size

- Project Planning
 - Survey logistics & instrument selection
- Instrument validation
- Field Data collection
 - UNAVCO field engineer oversees data collection
- Initial data processing = Merged, aligned, georeferenced pt cloud
- Archiving
 - Inc. raw lidar and gps, field photos, metadata
- Software – remote license access and processing machines
- Guidance on data processing and analysis, software selection

Education and Community Engagement:

- Short courses and workshops
 - *Partners wanted*
- Growing online knowledgebase of TLS tutorials, documentation, best practices.
- Incorporation of TLS into teaching – K-12, undergraduate
 - Geology field camps have momentum



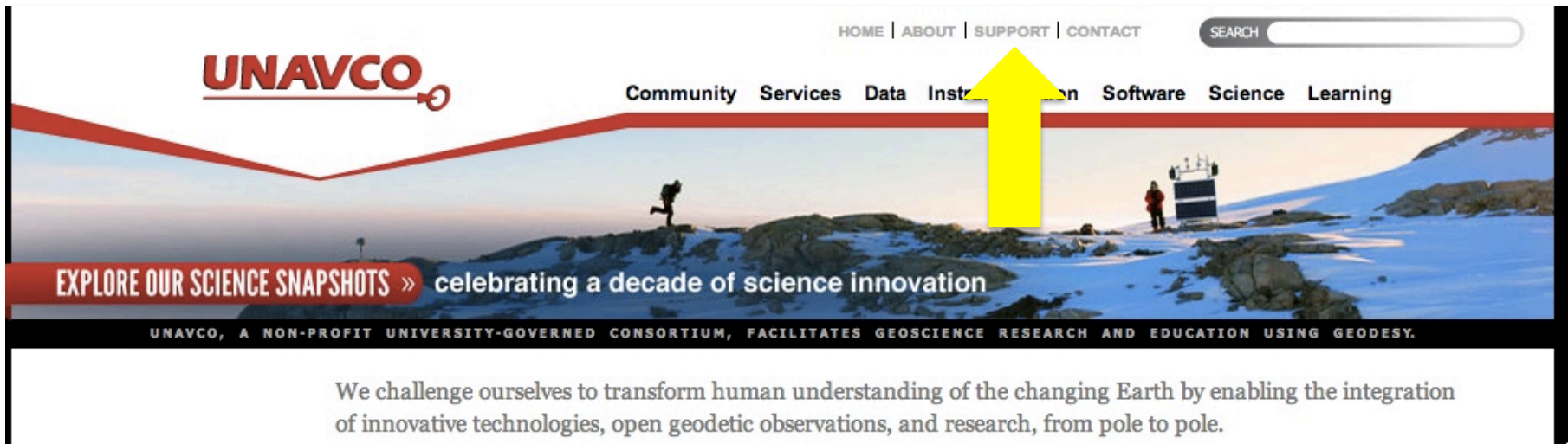
UNAVCO TLS Support Costs:

- For NSF-supported projects, PI pays field engineer travel and equipment transportation/logistics.
 - Engineer salary, TLS and GPS equipment all covered by UNAVCO's NSF funding.
- For non-NSF supported work, full cost recovery must be provided by project PI.

Project Prioritization:

- UNAVCO supported by NSF-EAR and NSF-OPP and thus projects supported by these programs receive highest priority.
- NSF-other, non-NSF, etc projects supported as resources allow. Schedule flexibility and UNAVCO consortium membership help.

All support requests must be formally logged through UNAVCO support request system.



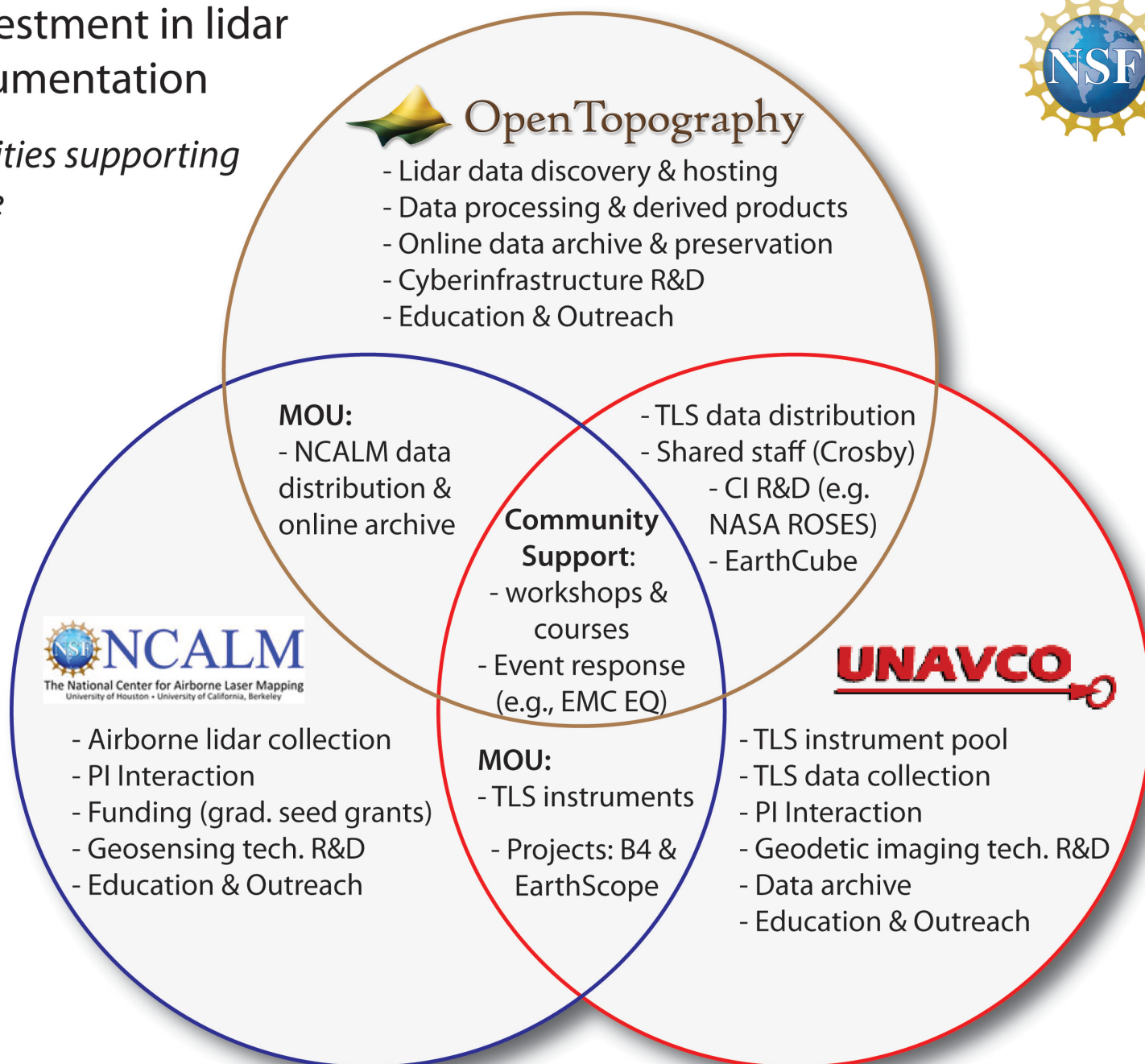
<http://achaia.unavco.org/public/newproject/supportform.aspx>

UNAVCO staff will follow up coordinate specifics.

Get in touch at proposal development stage – UNAVCO can provide a budget, letters of support, planning advice

NSF EAR IF investment in lidar data and instrumentation

Cooperative facilities supporting NSF earth science



- UNAVCO (<http://www.unavco.org/tls>)
- OpenTopography (<http://www.opentopography.org>)
- University of Texas - Dallas <http://www.utdallas.edu/research/interface/Resources.html>
- NCALM (<http://www.ncalm.org>)
- Manufacturers, e.g.,
 - Riegl (<http://www.riegl.com>)
 - Optech (<http://www.optech.ca>)
 - Leica (<http://hds.leica-geosystems.com>)
- British Geological Survey (<http://www.bgs.ac.uk/landslides/surveyingTechniques.html>)

Coming Soon: UNAVCO Online TLS Archive

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Unavco Repository
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Data Cart
Help

Unavco Repository

Field Project Archive

File | Connect | View

Field Project Archive

This is an example repository space for Unavco's Terrestrial LiDAR Scanning (TLS) field projects. This facility supports:

- Ingest and [mapping](#) of raw GPS files
- [Convert](#) raw GPS to RINEX
- View GPS [metadata](#) and [QC](#) information
- [Submit](#) RINEX to OPUS
- [Ingest](#) of OPUS results
- [Generate](#) control point files from OPUS
- [Spatial and temporal metadata](#) from photos
- [Ingest](#) of TLS point clouds
- [LiDAR subsetting and product generation](#)

Antarctica

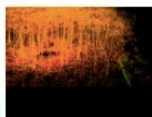
Barrow (Various Projects)



Bijou Creek



Chimborazo, Ecuador



Everglades



Four Mile Fire

2012/08/17 18:25 UTC

2012/09/04 19:18 UTC

2012/02/28 00:00 UTC

2012/06/21 00:00 UTC

2012/02/28 16:38 UTC

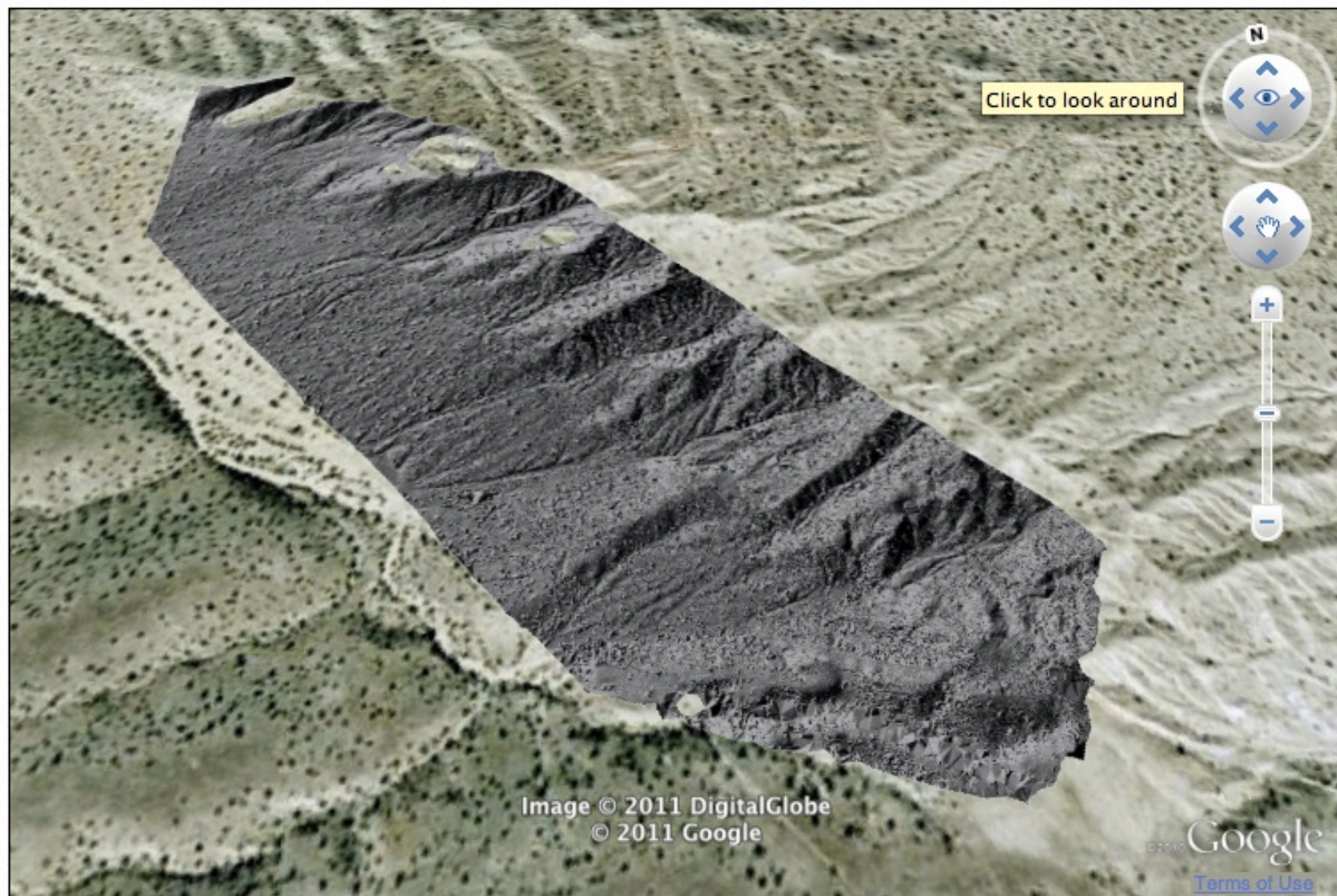
2012/02/28 16:38 UTC



Position: -5.105, -16.577



OpenTopography



- LIDAR returns:
~440 billion
- Area: 55,352 km²
- *And growing!*

MOUs & Partnerships

NSF: CZO, LTER, NCALM

Other: World Bank, Tahoe
Regional Planning Authority,
Teton Conservation District,
Oregon Lidar Consortium,
Idaho Lidar Consortium, NASA
LVIS and GLAS, ...

<http://www.opentopography.org/>



Future - User Requirements & Workshop Recs

- Access to TLS instruments and data acquisition workflows no longer “roadblocks” to NSF investigators. These are now “speed bumps”.
 - More instruments are available and are easier to use.
 - Workflows optimized for Earth science applications.
 - New instruments still desired for special capabilities (i.e. water penetration, full waveform, very long range, etc.) and to ensure meeting demand.
- TLS data handling, processing and analysis are the new roadblocks. We are working to turn them into speed bumps now too.
 - Need for post processing workflows and best practices.
 - Need for data (and metadata) formats and standards.
 - Need for data analysis training.

- Faster data collection rates.
- Longer ranges at faster rates.
- Full waveform on more systems.
- More streamlined workflows.
- Better analysis software.
- More work with error analysis.
- Continuous scanning deployments.
- Mobile laser scanning.
- Integration with other datasets (ALS, GPR, terrestrial radar/INSAR, etc.)

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Thanks!