**GSA 2019 Short Course: 501. High Resolution Topography and 3D Imaging I: Introduction to Terrestrial Laser Scanning**

**Abstract**
This one-day course will provide faculty, students, and professionals with an introduction to terrestrial laser scanning (TLS a.k.a., ground-based lidar) for research and education. TLS provides high-resolution three-dimensional images of geologic features and is a powerful tool for applications ranging from outcrop mapping to analysis of earth-surface processes. The course will focus on TLS technology, data collection, processing and analysis, and examples of science and educational applications. A combination of lectures and hands-on demonstrations of TLS equipment and data processing will be used.

**Agenda**

**8:00 AM** Welcome & Course Introduction, About UNAVCO

**8:30 AM** Intro to laser scanning, Applications Examples (Crosby)

**9:30 AM** Break

**9:50 AM** Overview of Data Acquisition Concepts & TLS Workflow (Williams)

**11:00 AM** Hands on demos w/ scanner (1/2 group, 2x scanners - outside)
   - Overview of Data Processing and Analysis (1/2 group - classroom)

**12:30 PM** LUNCH

**1:30 PM** Hands on demos w/ scanner (1/2 group, 2x scanners)
   - Overview of Data Processing and Analysis (1/2 group - classroom)

**3:00 PM** Future trends, community support resources, educational resources. Afternoon session Q&A and concluding thoughts.
   - Analyzing High Resolution Topography with TLS and SFM (SERC-hosted resources and curriculum for field education with TLS & SFM)
   - UNAVCO Geodesy Field Education resources (links to UNAVCO support resources for field education, including TLS and SFM).

**3:45 PM** Review scan data

**4:20 PM** Participants fill out GSA course evaluations

**4:30 PM** Adjourn

**Additional resources:**
- hh_tls_14_14022014_allreturns_upper.laz (Rim Fire Yosemite, NP TLS sample dataset from S. DeLong, USGS)
- 2017 Big East LAS
- 2018 Big East rockfall LAS
- 2018 Big East rock block LAS
- 2018 Big East all data LAS