

2023 STV Community Meeting

November 14-15, 2023

Pasadena, CA

Overview

The purpose of this meeting is to provide the Surface Topography and Vegetation (STV) community background on STV and inform the community on the status of STV progress toward an observing system. This meeting provides an opportunity for the broader community to inform an eventual STV observing system. The STV team will be seeking input to refine the science questions and compelling applications for STV, establish observing priorities, identify measurement gaps, and discuss technology maturation. This meeting provides an opportunity for the STV team to draw on the diversity of expertise, experience, and backgrounds from the broader community.

Resources

2018 Earth Science Decadal Survey:

<https://nap.nationalacademies.org/catalog/24938/thriving-on-our-changing-planet-a-decadal-strategy-for-earth>

2021 STV Study Report: https://smd-cms.nasa.gov/wp-content/uploads/2023/06/STV_Study_Report_20210622.pdf

STV Web Page: <https://science.nasa.gov/earth-science/decadal-surveys/decadal-stv/>

There will be STV sessions at 2023 Fall AGU and 2024 IGARSS. We are planning an AGU Earth and Space Sciences Journal Special Topical Collection, which will be announced when established.

Meeting Information

Hotel Dena, 303 Cordova St, Pasadena, CA 91101.

Webex information will be sent out to all participants prior to the meeting.

STV Leads

Lead: Andrea Donnellan, NASA/JPL/Caltech	Technology Co-Lead: Craig Glennie, U Houston	Solid Earth: Paul Lundgren, NASA/JPL/Caltech
Vegetation Structure: Sassan Saatchi, NASA/JPL/Caltech	Cryosphere: Brooke Medley, NASA/GSFC	Hydrology: Marc Simard, NASA/JPL/Caltech
Coastal Geomorphology: Lori Magruder, UT. Austin	Applications: Pietro Millilo, U. Houston	Radar: Yunling Lou, NASA/JPL/Caltech
Lidar: Ben Smith, U. Wash.	Stereoimaging: Mel Rodgers, U. South Florida (backup Curtis Padgett, NASA/JPL/Caltech)	OSSEs: Marco Lavallo, NASA/JPL/Caltech
Platforms: Matt Fladeland, NASA Ames	Architecture: Joe Green, NASA/JPL/Caltech	Architecture: Mark Stephen, NASA/GSFC

Agenda

Tuesday, November 14, 2023

Morning

- 8:00 *Registration*
- 8:30 Introduction, and charge to workshop Andrea Donnellan/Craig Glennie
- 8:50 HQ Comments Ben Phillips
- 9:00 ESD senior leadership Mike Seablom
- 9:15 National Academies DS perspective Bill Dietrich
- 9:40 Toward an observing system architecture Joe Green/Mark Stephen
- 10:00 *Break*
- 10:20 STV science questions Science and Applications Leads
- 11:00 Applications Panel: User and agency perspectives Pietro Milillo/David Shean
- Cryosphere (Snow, Glaciers) Elias Deeb, CRREL
 - Earth Science (Solid Earth, Landslides) Stephen Delong, USGS
 - Coastal Processes (Topo, bathy) Monica Palaseanu-Lovejoy, USGS
 - Wildfires Titha Banerjee, UC-Irvine
 - Tandem-X DEM Irena Hajnsek Change, DLR
- 12:00 *Lunch*

Afternoon

- 1:15 Observing System Simulation Experiments Marco Lavallo
- 1:30 Science Breakouts
(Solid Earth, Cryosphere, Vegetation Structure, Hydrology, Coastal Geomorphology)
- Vet and refine science questions and goals
 - Identify science gaps: needed modeling/simulations/investigations
 - Measurement needs (resolution, coverage, revisit, latency, platform, technology)
 - Technology combinations and data fusion to achieve measurement needs
 - Airborne campaigns, targets, data sets (existing and proposed)

3:00 *Break*

3:20 Reports from breakouts

4:35 Discussion

5:00 *Adjourn*

Wednesday, November 15, 2023

Morning

8:30	Measurement needs	Craig Glennie
9:00	Radar	Yunling Lou
9:20	Lidar	Ben Smith
9:40	Stereoimaging	Curtis Padgett

10:00 *Break*

10:20	Platforms	Matt Fladeland
10:40	Panel: Separating Vegetation from Ground	Joe Green/Mark Stephen

Lori Magruder, UT Austin; David Shean, UW; Keith Krause, Batelle;
Robert Treuhaft, JPL; Sassan Saatchi, JPL

- Strengths and challenges of each technology
- Leveraging observations to produce separable DTM and vegetation structure products
- Architecting an observing system
- Discussion

11:45 *Lunch*

Afternoon

1:00 Technology Breakouts
(Radar, Lidar, Stereoimaging, Platforms, Architecture)

- Current (TRL6¹ airborne and spaceborne)
- Emerging capabilities (TRL6 by 2028)
- Associating capabilities with measurement needs
- Technology advances for achieving measurement needs
- Strengths and weaknesses of technology
- Synergy with other measurement technologies
- Advancements needed to achieve STV

2:30 *Break*

3:00 Breakout summary reports

4:15 Discussion

4:45 Wrap-up

5:00 *Adjourn*

¹ TRL6 Definition: System/Subsystem model or prototype demonstration in a relevant environment