

Imaging and analyzing Southern California's active faults with GeoEarthsope and B4 LiDAR data: A joint SCEC/GEON/USGS/UNAVCO research and education workshop

Southern California Earthquake Center Research Summary 2009

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Summary

Thank you to SCEC for your support of our workshop. It was held Dec. 3-4, 2009 @ San Diego Supercomputer Center, UCSD. The primary sponsor was SCEC, but OpenTopography and UNAVCO also contributed funds and Ken Hudnut from the USGS was an instructor. More than 50 students applied for the workshop which was originally intended to only have about 30 students. We increased the number admitted to 40.

The workshop was a success and we had lots of great discussion, training, and demonstration with a diverse group of participants. We received numerous compliments on the content, organization, and execution. The participants included 19 graduate students, 2 post docs, and numerous professional geoscientists including some from state agencies (Department of Water Resources, California Geological Survey), the USGS, Malin Space Systems, consultants, and European scientists (see list of attendees below).

We produced a web site for the course (http://www.opentopography.org/index.php/resources/short_courses/09SCEC_course/) which includes a group picture (see below). More importantly, it also is a repository for the numerous tutorials, lectures, and sample datasets for the community.

LECTURES:

- Science motivations for LiDAR (high resolution topography) (Arrowsmith)
- Introduction to Lidar Technology and Data Collection (Crosby)
- LiDAR sensor and system capabilities and issues (Hudnut)
- Creating DEMs From LiDAR Point Cloud Data (Crosby/Arrowsmith)
- Online LiDAR Data Sources & OT Intro (Crosby)
- Terrestrial Laser Scanning - Moving to true 3D and higher resolution (Arrowsmith)

EXERCISES:

Exercise 1: Introduction to LiDAR Point Cloud Data using the Fusion Software Package

Exercise 2: Basic visualization of LiDAR Digital Elevation Models using ArcGIS

Exercise 3: Global Mapper and Basic Visualization of LiDAR DEMs

Exercise 4: Extracting Information from DEMs in ArcMap

Exercise 5: Downloading, processing, and exploring GeoEarthScope data from OpenTopography

Exercise 6: Using free and/or open source tools to build workflows to manipulate and process LiDAR data:

Exercise 6a: LAS Tools

Exercise 6b: Points2Grid

Exercise 6c: GDAL

Exercise 7:LaDiCaoz Tutorial

Exercise 8: Simple landscape morphometry and stream network delineation



Group picture for SCEC workshop on high resolution topography.

Workshop attendees, their affiliations, and classifications

Name	Affiliation	Classification
John Baldwin	WLA	consultant
Brian Olson	Helenschmidt Geotechnical	consultant (CEG)
Frank Jordan	John R. Byerly, Inc.	consultant (CEG)
Maxwell Wilkinson	Durham	grad student
Zach Lifton	Georgia Inst Tech	grad student
Joel Scheingross	Caltech	grad student
Peter Nelson	UCB	grad student
Jayne Bormann	UNR - Center Neotectonic studies	grad student
Andrew Becker	Texas A&M	grad student
Ken Ferrier	UCB	grad student
Lee McAuliffe	USC	grad student
Ajay Linmaye	Caltech	grad student
Natalia Deligne	UofO	grad student
Andy Shriver	Fresno State Tectonics Group	grad student
Barrett Salisbury	SDSU	grad student
shahid ramzan	CSU Northridge	grad student
Stephanie Watts	UNR	grad student
Alexander Handwerger	UofO	grad student
Ashley Streig	UofO	grad student
Karen Luttrell	SIO	grad student
Nate Onderdonk	CSU Long Beach	grad student
Paul McBurnett	CSU Northridge	grad student
Colin Amos	UCB	postdoc
Ryan Gold	USGS	postdoc
David Lynch	USGS/CalTech	Volunteer
Jerry Treiman	CGS	Earth Science Professional
Jim Baker	Santa Clara County geologist	Earth Science Professional
Heather Green	NV Mines and Geo	Earth Science Professional
Don F. Hoirup	CDWR	Earth Science Professional

Nick Hightower	CDWR	Earth Science Professional
Chris Menges	USGS	Earth Science Professional
Charles R. Real	CGS	Earth Science Professional
Gordon Seitz		Earth Science Professional
Rob Mellors	SDSU	Earth Science Professional
Bob Degroot	SCEC	Earth Science Professional
Eulalia Masana	U Barcelona (at SDSU this year)	Professor
Glenda M. Besana-Ostman	Physics Department, IST, Lisbon Portugal	postdoc
Bob Crippen	JPL	Earth Science Professional
Jacquelyn E. Hams	LA Valley College	Professor
Brian Nixon	Malin Space Science Systems	Earth Science Professional