

DTS down to Earth: Principles, Applications, Operational factors, and Demonstrations for Environmental Sensing

December 12, 2009
575 McCone Hall
UC Berkeley Campus



Summary

The temperature of standard fiber optic cables can be read as finely as every 0.25m, and lengths up to 30 km as frequently as every second with resolution of up to 0.01 deg C using Distributed Temperature Sensing (DTS). Sounds great? It is, but you can't get all of these specs at the same time! So what are the opportunities and limitation of this technology? This workshop presents an overview of the technique, including discussion of applications to date, fiber and instrument selection, fiber placement, fiber repair, data acquisition, and data analysis. The workshop will be held at the University of California Berkeley campus. In addition to lectures, the participants will handle the equipment, and observe demonstrations of all the operations required to employ this technique. The goal of the workshop is to provide enough information for participants to accurately identify the potential role of this method in their research. This workshop is part of a new NSF funded center which has made five complete DTS systems available to the community through the SENSE DTS center led by Drs. Tyler and Selker.

Instructors:

[John Selker](#) – Oregon State University (selkerj@enr.orst.edu)

[Scott Tyler](#) – University of Nevada, Reno

[Nick van de Giesen](#) – Technical University of Delft

Sponsors:

The National Science Foundation EAR Instrumentation and Facilities Program

The Consortium of Universities for the Advancement of Hydrologic Science, Inc. ([CUAHSI](#))

Hydrologic Measurement Facility ([HMF](#));

[Oregon State University](#)

[University of Nevada Reno](#)

Participation: (Limited to 100 participants; by order of registration)

Registration: To reserve a space, contact Susan Atkisson at Susan.Atkisson@oregonstate.edu:

Registration is not binding until payment is received.

Cost: \$150 USD per person includes snacks, lunch, dinner, and materials. A \$75 discount for first 50 current students. Please make your checks payable to "Oregon State University" and send them to the attention of Susan Atkisson at Biological & Ecological Engineering, 116 Gilmore Hall, Corvallis, OR 97331. We do not accept credit card payments.

Program:

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- 7:00 - 8:15** Registration
- 8:15-8:30** Introduction to the Workshop (Selker)
- 8:30-9:00** Introduction to fiber-optic sensing - Part 1: The Physics (Tyler)
- 9:00-9:30** Introduction to fiber optic sensing – Part 2: Instrumentation (Selker)
- 9:30-10:15** Installations to date (Selker, Tyler, van de Giesen)
- 10:15-10:45** Coffee break and first chance to see equipment
- 10:45-12:00** Introduction to fiber optic sensing – Part 3: fiber selection and calibration.
(Selker, Tyler, van de Giesen)
- 12:00-1:00** Lunch
- 1:00-1:30** Introduction to fiber optic sensing – Part 4: installation and power (Selker, Tyler)
- 1:30-2:00** Repairing fiber: fusion splicing and making junctions in the field (Selker, Tyler)
- 2:00 -3:00** Industrial and Academic panel discussion of DTS opportunities and challenges
- 3:00 -3:30** Coffee break
- 3:30-5:30** Demonstrations of: fiber installation, fusion splicing, DTS setup, data collection, data analysis.
- 5:30 -7:30** Casual Dinner and no-host bar with opportunity to work with instruments and talk to vendors