The Cutting Edge of Temperature Measurement in Earth Sciences

Principles, Applications, Operational Factors, and Demonstrations of Distributed Temperature Sensing for Environmental Sensing

Saturday December 3, 2011

Stanford University

Summary

The temperature of standard fiber optic cables can be read as finely as every 0.13m, 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 Stanford University 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 the NSF funded center which has made five complete DTS systems available to the community though the CTEMPs DTS center. Participation in the Workshop is a great way to gain access to these tools and support staff.

Instructors

John Selker – Oregon State University (John.Selker@OregonState.edu)
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Sponsors

CTEMPs, via The National Science Foundation EAR Instrumentation and Facilities Program
The Consortium of Universities for the Advancement of Hydrologic Sciences (CUAHSI, HMF);
Oregon State University; University of Nevada Reno, USGS

Participation: (Limited to 30 participants; by order of registration)
Registration: To reserve a space, contact Jennifer Eaton (541-737-2041 or Jennifer.Eaton@oregonstate.edu): Registration is not binding until payment is received.

Cost: $100 USD in advance plus a $10 on-site cash payment for lunch (receipt given). The lunch will include bread, cheeses, Pinot Noir and other delicacies from Oregon, and tastes from Switzerland, France, and Massachusetts. Students $50 in advance and $10 at the door. Please make your checks payable to "Oregon State University" and send them to the attention of Jennifer Eaton at Biological & Ecological Engineering, 116 Gilmore Hall, Corvallis, OR 97331. **We do not accept credit card payments**.

Program:

The Cutting Edge of DTS for Earth Sciences

7:00 - 8:15	Registration
8:15-8:30	Introduction to the Workshop.
8:30-9:00	Introduction to fiber-optic sensing - Part 1: The Physics.
9:00-9:30	Introduction to fiber optic sensing – Part 2: Instrumentation.
9:30-10:15	Installations to date.
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.
12:00-1:00	Lunch
1:00-1:30	Introduction to fiber optic sensing – Part 4: installation and power
1:30-2:00	Repairing fiber: fusion splicing and making junctions in the field.
2:00-3:00	The cutting edge of DTS sensing: news from the manufactures
3:00-5:30	Demonstrations and hands-on practice: fiber installation, fusion splicing, DTS setup, data collection.

Location

Stanford University
Room 220 (second floor)
Bldg. 320 (Braun Bldg.)
Geology Corner
450 Serra Mall
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