Outreach: Highlights over this past year & Upcoming opportunities

Laurie Kovalenko & the TO team

A major initiative of the Tectonics Observatory (TO) is to develop an Education & Public Outreach (EPO) program

Goals
- Educate the public about TO discoveries
- Inspire kids to learn science
- Provide TO grad students & postdocs with opportunities for outreach in local schools

Approaches
- Partner with local schools
  - Karen Jakes, PUSD Science Coordinator
  - James Maloney, Caltech Classroom Connection and Summer Research at Caltech
- Partner with Caltech outreach programs
  - Science Saturday, REEL Science, Science@School, partners on field trips and workshops and gave presentations)
- Our Goal: For teachers to learn/experience current research; and in turn share this with their students

Public Lectures This Past Year
- Caltech Watson Lecture:
  - Jennifer Jackson (April 2011): “Footprints In the Earth”
- Caltech Science Saturday
  - (for middle school students and their families)
  - Grad Student Joel Schengrooss (October 2011): “Journey of a River from Mountain to Sea”
  - Grad Student Steve Kistler (April 2011): “How did the Grand Canyon get so Deep?”
  - Caltech REEL Science (for school groups in grades 5 – 12)
    - “Postcards from Mars” (February 2011): “Inside Planet Earth”
  - Caltech Alumni Day (for children of alumni)
  - Grad Student Michelle Sepasian (May 2011): “Earth Story: the Colossal Forces that Shaped our Planet”

Public lecture at the White Mountain Research Station in Bishop, CA:
- Professor Joan Saylor (October 2011): “Epicenters translate to mantle lobes in the southern Sierra Nevada region”
  - Jason also led a field trip for the Teton Ranch Conservancy in Fraker Park, CA, “Geology of the northern Mojave Desert and Tallest Peaks in the West”

Presentations in Nepal at US embassy:
- Karen Heaton giving a presentation on the Japan 2011 earthquake

New Outreach Resources

Video of a sandbox demonstration: Formation of the Grand Canyon’s layers
Created by Steve Kidder
Edited and music by Tim Pyle (IPAC)

Video of 6th grade teacher workshop: How plate tectonics shaped southern California
Leader: Joan Stock

Outreach in Local Schools this Past Year

- Tours of the TO
  - Scientists led over 350 sixth-grade students on tours of the TO this past year
  - Visiting schools:
    - San Marino Unified School District
    - American Martyrs Catholic School
    - Pausaena Unified School District’s Robotics Club
  - Topics included:
    - How earthquakes and landslides shape the landscape
    - What is the asthenosphere like?
    - Subducted plate dynamics
    - Origin of earthquakes and tsunamis in Sumatra
    - Minerals in everyday life & how to get water from rock
  - Sylvia Barber, Erin Burkett, Jamshid Hassanzadeh, James Holzworth, Yihe Huang, Junie Jiang, Mikki Lin, Belle Philibosian

- Science Saturday, REEL Science, Watson Lectures
  - Donald Prothero: “What is the asthenosphere like?”
  - High Point Academy
  - Caltech Alumni Day
  - Ken Farley, John Eiler, & Brian Wernicke: “How earthquakes and landslides shape the landscape”
  - Grad Student Michelle Selvans: “Shaping the landscape”

- Schools visited:
  - Tom Heaton, “How plate tectonics shape the landscape”
  - Karen Jakes, “Earthquakes, tsunamis, and plate tectonics”
  - Mike Lamb & Jeff Prancevic, “Himalayan region”

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  - What is the asthenosphere like?
  - Subducted plate dynamics
  - Origin of earthquakes and tsunamis in Sumatra
  - Minerals in everyday life & how to get water from rock
  - Sylvia Barber, Erin Burkett, Jamshid Hassanzadeh, James Holzworth, Yihe Huang, Junie Jiang, Mikki Lin, Belle Philibosian

- Working with teachers
  - Scientists partnered for the academic year with two 6th grade teachers
    - helping in the classroom once or twice a month
    - Joel Schengrooss, Erin Burkett
  - Joann Stock led a PUSD 6th grade teacher workshop
    - on How Plate Tectonics shaped southern California
    - video available on DVD & on TO website under Outreach Materials
  - Joann led a similar teacher workshop at the California Science Teacher’s annual conference here in Pasadena, Oct 2011
    - as part of a field course put on by the Caltech Seismic Lab

- Visiting Local Schools
  - Scientists went to classrooms:
    - Schools visited:
      - Blair Middle and High School
      - Red Rocks Canyon Middle School
      - Pasadena High School
      - Washington Elementary
  - Topics included:
    - The periodic table in everyday life
    - Seismic waves and resonant frequencies
    - Earthquakes, tsunamis, and plate tectonics
    - Erosion and weathering
    - What is a volcano?
    - What is the asthenosphere like?

- Scientists brought hands-on activities to family science nights, in partnership with Intensive Learning
  - Jill Beard: “Erosion and Sediment Transport”
  - Jill Beard: “Intermediate Science”
  - Jill Beard: “Low Grade”

- Scientists served as judges at local science fairs
  - David Case
  - Jenn Johnson
  - Eric Swanson

Upcoming Outreach Opportunities

- Weekend of March 25 – 27: 117 participants (including mostly community college and fourth-year teachers, as well as high school teachers, 6-10 teachers, college students, and 25 volunteers who led field trips and workshops and gave presentations)
- Our Goal: For teachers to learn/experience current research; and in turn share this with their students
- Schedule:
  - Friday night – socials, Science@Lab tour, SCED display, presentations
  - Saturday – field trips, workshops, banquet with presentation
  - Sunday – original half-day workshop, but extended to full day by popular demand

- Workshops:
  - Ken Farley, John Eiler, & Brian Wernicke, “How T the asthenosphere and their movements and applications (including dating the formation of the Grand Canyon)”
  - Elizabeth Heaton (UA’s Fairbanks) & Belle Philibosian, “Geologic and Geophysical Observations from Sumatra”
  - Tim Heaton: “The Hypothesis of Far-Hanging Topography”

- Field trips:
  - Mike Lamb & Jeff Prancevic, “Resonance and Resonant Frequencies in the World”
  - David Case
  - Donald Prothero (Occidental College), “Erosion and Sediment Transport”
  - Emily Hoefen (IPAC), “Erosion and Sediment Transport”

- Presentations:
  - Tom Heaton, “Theories of Earthquakes”
  - Jennifer Jackson, “How plate tectonics shape the Earth’s surface”
  - Jason Adams, “Journey to the bottom of the sea”
  - Deep-sea photography and why we care

- Tours/demonstrations:
  - Margaret Vinci & Anthony Grasso (Science@Lab)
  - Bob de Groot (SCED display)

- More details: www.tectonics.caltech.edu/meetings/nagt/

Thank you volunteers!

And thank you behind-the-scenes volunteers: Jeff Grosser (co-organizer), Heather Steele (bantam, & almonds) & Lisa Christensen (field guide)

And thank you Mike Lamb for helping fund field trip transportation.

Upcoming Outreach Opportunities

- Visit classrooms
  - High school Earth Science classes (Monterey HS)
  - 6th grade classes

- Lead 4th grade classes on a tour of the TO
  - Hamilton Elementary: PUSD Science Coordinator
  - Sometime after the new year – not scheduled yet

- Help create educational Earth Science video games
  - Partner with GameDev, Inc.
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- Let me know if you are interested in any of these! (lauriek@gps.caltech.edu)

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