Outreach Activities – Highlights over past year and upcoming opportunities

### Laurie Kovalenko and the TO team

A major objective of the Tectonics Observatory (TO) is to develop an Education and 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 Jain, PUG Science Coordinator
  - James Melaney, Caltech Classroom Connection
  - Summer Research at Caltech
- Partner with Caltech outreach programs
  - Science Saturday, REEL Science, Watson Lectures
- Partner with National Association of Geoscience Teachers (NAGT)
- Workshop on Plate Tectonics for SoCal
- Student-led field trips through Eaton Canyon
- Seismo Lab tour
- Outreach activities at family science nights at local schools

#### Outreach in Local Schools

- **TO tours**
  - 6th graders from Hamilton Elementary
  - Caltech’s Take Your Child to Work Day
  - Topics included:
    - How much heat trapped in crystals can tell how long a rock has been on the earth’s surface
    - How the Himalayas mountains formed
    - Origin of earthquakes and tsunamis in Sumatra
  - Willy Ammon, John Galebeck, Anthony Sladen, IülHAVIV, Aron Meitznzer

- **Family Science Nights at local schools**
  - TO grad students and faculty presented hands-on activities at family science nights at Hamilton Elementary
    - Topics included:
      - How mountains are built
      - Origin of eruptions
      - How volcanic eruptions tell us about the mantle
    - Sylvain Barbot, Nina Lin, Wang Yu, Steve Skinner, Jean-Philippe Arcoua, Laurie Kovalenko, Joel Schengross, Jamshid Hassanzadeh

- **Field trips through Eaton Canyon**
  - TO grad students led field trips through Eaton Canyon
    - 4th graders
    - Combined 6th-grade and High School (challenging!)
    - Alan Chapman, Janet Harvey, Jeff Thompson, Kristel Chanard, Jamshid Hassanzadeh, Joel Schengross

- **Summer research for High School teachers and students**
  - Nadaya Cubas and Kristel Chanard mentored two high school students and a teacher for a month of research
    - As part of Caltech’s Summer Research Connection
    - They designed and built a sandbox experiment to study the effect of friction on mountain building
    - Juno Mountains of France

- **Working with teachers**
  - Participated in PUSD workshops for 6th grade and high school teachers
    - Single experiments: tectonics puzzles, convection
    - Tectonics of SoCal
    - 6th grade teacher Roger Gray gave brownbag seminar
    - 7th grade teacher Rick Niehaus
    - Restored PUSD’s rock and mineral collection
    - Partnering with 6th grade middle school teachers
    - Upcoming: Joann Stock will lead a workshop on Plate Tectonics of SoCal

#### Outreach Activities

- Watson Lectures
  - Jean-Philippe Arcoua (October 2010) Rising Mountains and Subduction Zones: Earthquakes That Shape the Earth
  - Brian Wernicke (April 2011) The Ancient California River and how it Carved the Grand Canyon in the Age of T. Rex

- Pasadena Public Library’s One City, One Story
  - Joan Stock (March 2010) Earthquakes: the Human Story

- Public Panel Discussion at Beckman Auditorium
  - Included Mark Stodolsky and Anthony Sladen (March 2010) Modern Methods of Observing Earthquakes: What We Have Learned About Haiti and Chile using Seismology and Space Observations

- National Association for Geoscience Teachers (NAGT) Conference
  - **Speaker**
    - Jason Saleeby (October 2010) Keynote speaker and co-leader of two field trips to the foothills of the Sierra Nevada, one to view the suturing of oceanic crust to the continental crust and the other to view anomalous subsidence and ridges in the mantle

- Presentations in Nepal on earthquake science and safety
  - Joann Stock (Spring 2011)
    - UNISDR
    - Nepal government officials
    - US embassy staff
    - International Committee of Red Cross

#### Public Lectures

- Watson Lectures – Jennifer Jacobs (January 2011) Good Vibrations Inside the Earth

- Caltech Science Saturday and REEL Science programs – TO students will lead 4 of this year’s 11 events

#### Upcoming Public Lectures

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#### Employment Opportunities & Outreach Resources

- New web pages
  - Outreach Animations and Graphics
  - Outreach Activities
  - Outreach Events
  - Outreach Animations

- Outreach Animations
  - Animations: http://tectonics.caltech.edu/outreach/animations/

#### Upcoming Outreach Opportunities

- Partner with local High School Earth Science teacher (who is a Caltech alum?)
  - to help with experiments

- Lead tour of the TO for 6th grade classes
  - Huntington Middle School, San Marino
    - Tuesday Jan 6 at 10:00 am and 11:00 am
    - Thursday Jan 8 at 10:00 am and 11:00 am
    - Tuesday Feb 1 at 10:00 am and 11:00 am
    - Thursday Feb 3 at 10:00 am and 11:00 am
  - American Martyrs Catholic School, Manhattan Beach
    - May 3 & 5 at 10:00 am
  - Sierra Canyon School, Chatsworth
    - Jan 6 – two tours, not scheduled yet

#### The TO will be hosting the upcoming spring meeting of the National Association of Geoscience Teachers (NAGT)

- **Weekend of March 25 – 27**
  - About 150 participants, mostly community college and four-year college teachers, some high school teachers
  - **Goal**
    - For teachers to learn/experience current research
    - and in turn share this with their students

- **Typical Schedule**
  - Friday night socials, displays, and keynote speaker
  - Saturday all day field trips and workshops followed by banquet with second keynote speaker
  - Sunday half day of field trips, workshops, tours

- **Workshops so far**
  - Brian Wernicke, John Elser, Ken Farley (G repeats thermodynamics and thermodynamics applications)
  - Elisabeth Naden, UA Fairbanks (Meso-Quaternary Earthquake and Subduction of Sumatra from Pale Earthquake)
  - Joann Stock (workshop TBD)

- **Tours/displays so far**
  - Margaret Wood (Seismos Lab tour)
  - Bob Doggert (SCEC display Friday night)

#### Let me know if you have more ideas or would like to volunteer!

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