Cascadia EarthScope
Earthquake and Tsunami
Education Program (CEETEP)

Exchange of Pedagogies:
Interpreting the “Beauty and the Beast” Story of the Oregon Coast

Cape Blanco State Park, Oregon
Goal: To provide coastal educators with background knowledge, strategies, and materials to engage students and visitors on the science of, and preparedness for, earthquakes and tsunamis.

Objectives: Participants will be able to:
1. Explain how the Oregon Coast Range formed.
2. Discuss geological hazards of the Oregon Coast.
3. Incorporate the region’s geological landscape and geophysical monitoring into lesson plans and interpretive programs that tell the story of the Coast’s formation and potential for earthquakes and tsunamis.
Cascadia Earthquake and Tsunami EarthScope Education Program (CETEEP)

Meanings (Geoscience, Hazards, Preparedness)

Students

Emergency Management Educators

The Public

Parks & Museums

Training

Interpreters

K-12

Teachers

Formal Learning

Colleges & Universities

Free Choice Learning

Scientists

“Storying it Up!”

“How can we collaborate to reach our audiences in our communities?

K-12

Trained Together in Coastal Communities

Science (EarthScope, Cascadia)
Action Teams: 2 Tasks

1. Develop and present 10-Minute Interpretive Program
   - Develop this afternoon
   - Present tomorrow afternoon

2. Develop product(s) for your community that serve your audiences in your settings
   - Plan tomorrow afternoon
   - Develop Now - February
   - Present at March 8 Share-a-Thon
Geology for Normal People

Normal Person:
“Anyone who is not a geologist.”
Comments Overheard:

• **From park staff:**
  – “Gee, it’s wonderful you’re here. We had a geologist here a couple years ago. A nice guy who really knew his stuff. Unfortunately, we didn’t understand a word he said.”

• **From a geologist:**
  – “Yea, I went to a ranger talk. But the ranger knew nothing about geology. Didn’t even know the difference between a granite and a granodiorite.”

*Yosemite National Park, California*
Fortune Cookie:

“Your romantic life is interesting only to you.”
What is Interpretation?

“Interpretation involves translating the technical language of a natural science or related field into terms and ideas that people who aren’t scientists can readily understand.”

From: “Environmental Interpretation: A Practical Guide for People with Big Ideas and Small Budgets” (Sam Ham, 1992)
Which statement would people most likely remember? Why?

- A tsunami is a seismically generated wave with an amplitude of less than one meter in the open ocean, growing to 10 meters or more in shallow water.
- More than a quarter million people were killed when a broad sea wave, caused by an undersea earthquake, raced across the Indian Ocean and swelled to great heights as it approached coastal communities.

Olympic National Park, Washington
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Intellectual Connections

Olympic National Park, Washington
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**Intellectual Connections**

**Emotional Connections**

Olympic National Park, Washington
What is Interpretation?

National Park Service (NPS):

“Interpretation ..... creates opportunities for visitors to form their own intellectual and emotional connections to the meanings inherent in a park resource.”
Agate Beach State Recreation Site, Oregon

Came from Misawa, Japan, on the north tip of Honshu

Agate Beach State Recreation Site, Oregon

Large dock washed up on Oregon Coast June 5, 2012.
Agate Beach State Recreation Site, Oregon
Agate Beach State Recreation Site, Oregon

Japan and Oregon: Linked by a special Sense of Place
Interpretation is about revealing the rest of the story.
Japanese Tsunami Dock Interpretive Exhibit

OSU Hatfield Marine Science Center, Newport, Oregon
Interpretation is about revealing the rest of the story.
It’s all about **Telling a Story:**

1. **Landscape:**
   - Shows how geological materials and processes affect biology, ecology, and human history.

2. **EarthScope and other Geophysical Monitoring:**
   - Reinforce these connections by highlighting a dynamic Earth.

*Images: Heceta Head Lighthouse State Scenic Viewpoint, Oregon*
Tangibles and Intangibles
Dock washed up on an Oregon beach …..

• What do you see when you look at the dock?
  The physical things you can see and describe are **tangibles**: (Size, shape, color, materials, plants/animals attached, word “Japan”)

• What about the rest of the story …..
  Things that come to mind are likely **intangibles**: (Awe, power, destruction, family, struggle, life, death, sense of place)

• Helpful if some of the intangibles are **universal** …..
  Most anyone can relate to them, and tend to be more **emotional**: (Life, death, family, etc.)

• But some of the intangibles can be **scientific** …..
  Also important and tend to be more **intellectual**: (Plate tectonic forces, frequency of earthquakes, causes of tsunamis)

*Agate Beach State Recreation Site, Oregon*
Effective Ranger Program

• Personal experience of the ranger
• Good factual content
• Level appropriate for audience
• Relates factual content to people’s lives
PAIRing People with Parks

Adopted from Allyson Mathis, Grand Canyon National Park
PAIRing People with Parks

Park Visitors

Interpretive Methods

Resource Information

Won’t work if any link is missing!

Grand Canyon National Park
Theme

1. Complete sentence
2. Connects tangibles and intangibles
3. Answers “so what”
4. A message, an idea
Can we design an effective interpretative talk on geology for the Oregon Coast?

Themes for Cape Arago Region State Parks: Geological Connections

• **Theme**: The Cape Arago Region is a dynamic edge where powerful forces shape the land and create a resource-rich environment.

• **Sub-themes**:
  1. At this coastal edge, landforms shift slowly but constantly through the interplay of natural processes and cycles that occur on a spectrum of scales from large to small.
  2. Sudden, cataclysmic events such as earthquakes and tsunamis change the landscape and present ongoing challenges for coastal communities.
  3. Pinnipeds depend on this coastal edge to rest on offshore rocks and rear their pups in safety. Other communities thrive on this dynamic edge as well.

_North Cove Tidepool Area, Cape Arago State Park, Oregon_
Beauty and the Beast Theme

“The same geological processes that sculpt Oregon’s breathtaking headlands and beaches also threaten our lives with earthquakes and tsunamis.”
How can we incorporate EarthScope and other geological observations into educational programs spanning a variety of topics in parks, museums, and classrooms along the Cascadia coast?
Interpretive Presentations

Groups of 3-5, including at least:
- one Teacher
- one Interpreter
- one Emergency Management Educator

Develop presentation today, including:
- Content
  - Landscape
  - Geological Processes
  - Seismic and/or GPS monitoring
  - Emergency Preparedness
- Might have Props:
  - Posters? Rocks?
  - Slide for background (beach?)

Thursday Afternoon Presentation:
- “Fearless Leader” tells us:
  - Name of Group
  - Title of Presentation
  - Setting
  - Audience
  - Theme Statement
- Then:
  - 10-Minute Presentation
You’ve heard of “Fun with Phonics?”
This is fun with Plate Tectonics 😊

Jen Natolli, OSU Geosciences Graduate Student
Park Ranger, Redwood National and State Parks, California
Monitoring the Dynamic Landscape Enhances our “Sense of Place”

2. Basin and Range Province
- Reno, Nevada
- October 19–22, 2008

www.earthscope.org/eno/parks
University of Nevada – Reno
October, 2008

Plate Boundary Observatory
GPS Station

Slide Mountain, Nevada

Brian Wernicke, Cal Tech
University of Nevada – Reno
October, 2008

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Brian Wernicke, Cal Tech
Plate Boundary Observatory
GPS Station
Slide Mountain, Nevada

Bill Hammond, University of Nevada – Reno

EarthScope Workshop for Interpretive Professionals in the Basin and Range Province, 2008
We’re not standing still …

PBO – GPS
Slide Mountain,
Nevada

EarthScope Workshop for Interpretive Professionals in the Basin and Range Province, 2008
We’re moving away from Kansas 😊

PBO – GPS
Slide Mountain,
Nevada

Sense of Place: Our place is moving!

EarthScope Workshop for Interpretive Professionals in the Basin and Range Province, 2008
EarthScope GPS Stations

How do stations in the Basin and Range Province ..... move relative to “backbone” stations on the stable Craton?
Interpretive Presentation: Basin – Range Tectonic Development

Future Mountain Ranges

EarthScope Workshop for Interpretive Professionals in the Basin and Range Province, 2008
Interpretive Presentation: Basin – Range Tectonic Development

EarthScope Workshop for Interpretive Professionals in the Basin and Range Province, 2008
Interpretive Presentation:
Basin – Range Tectonic Development

EarthScope Workshop for Interpretive Professionals in the Basin and Range Province, 2008
Interpretive Presentation: Basin – Range Tectonic Development

Sense of Place: Our place is moving and changing!

EarthScope Workshop for Interpretive Professionals in the Basin and Range Province, 2008
For Interpretive Professionals in Parks and Museums
Monitoring the Dynamic Landscape Enhances our “Sense of Place”

6. New Madrid - Central U. S.
- March 17-20, 2011
- 200th Anniversary of Big Earthquakes
- USArray Rolling across the Midwest ....

www.earthscope.org/eno/parks
Grace Landforms

EarthScope New Madrid -- Central U.S. Interpretive Workshop, March 17-20, 2011
Grace Landforms

Sense of Place: Our place is special!

EarthScope New Madrid -- Central U.S. Interpretive Workshop, March 17-20, 2011
Shaken’ Bacon

Who’s afraid of the Big Bad Earthquake Wolf?

Sense of Place: Our home can fall down ....
But we can do something about it!

EarthScope New Madrid -- Central U.S. Interpretive Workshop, March 17-20, 2011
Interpretive Presentations
(Thursday Afternoon)

Develop presentation today, including:

- Content
  - Landscape
  - Geological Processes
  - Seismic and/or GPS monitoring
  - Emergency Preparedness

- Might have Props:
  - Posters? Rocks?
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  - Theme Statement

- Then:
  - 10-Minute Presentation
Educational Products
(Now - February)

A product or related products that serve:

1. Students
2. Park/museum visitors
3. Concerned citizens

Messaging should include:

1. Some science content, for example:
   - Landscape Development
   - Seismic/GPS monitoring
2. Emergency Preparedness

Time Frame:

- Plan Thursday Afternoon
- Develop Now - February
- Present at March 8, 2014 Share-a-Thon

Examples:

- Posters, Exhibits
- Trail Guides, Brochures
- Presentations at beaches, overlooks, classrooms, visitor/community centers
- Movies, Animations, Flip Books
Educational Products
(Now - February)

A product or related products that serve:
1. Students
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Kip’s “Ideal” Example:
- Emergency Management Educator works on program for Senior Citizen Center
- EM Educator Collaborates with Teacher to involve his/her students
- Teacher has Interpreter work with students on skit involving earthquake/tsunami science and preparedness
- Students present skit at Senior Citizen Center, followed by question/answer session involving Teacher, Interpreter, and EM Educator.