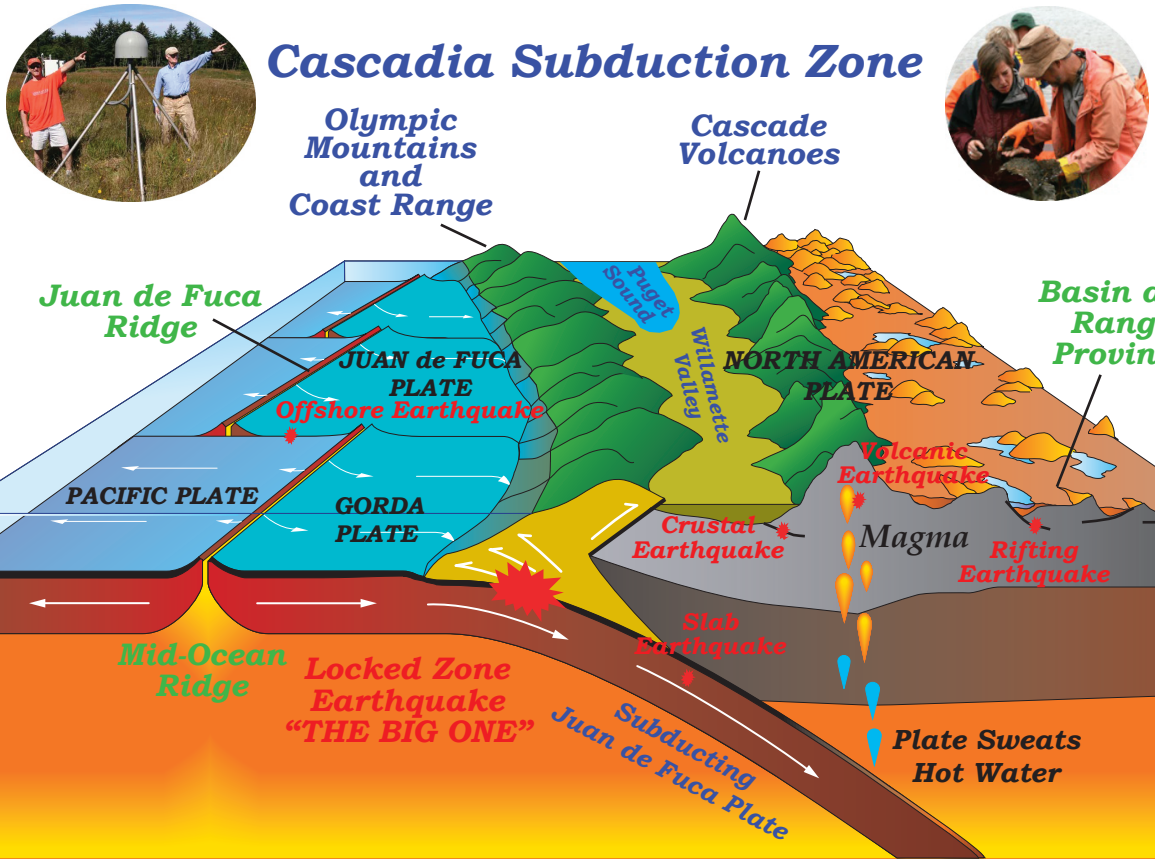
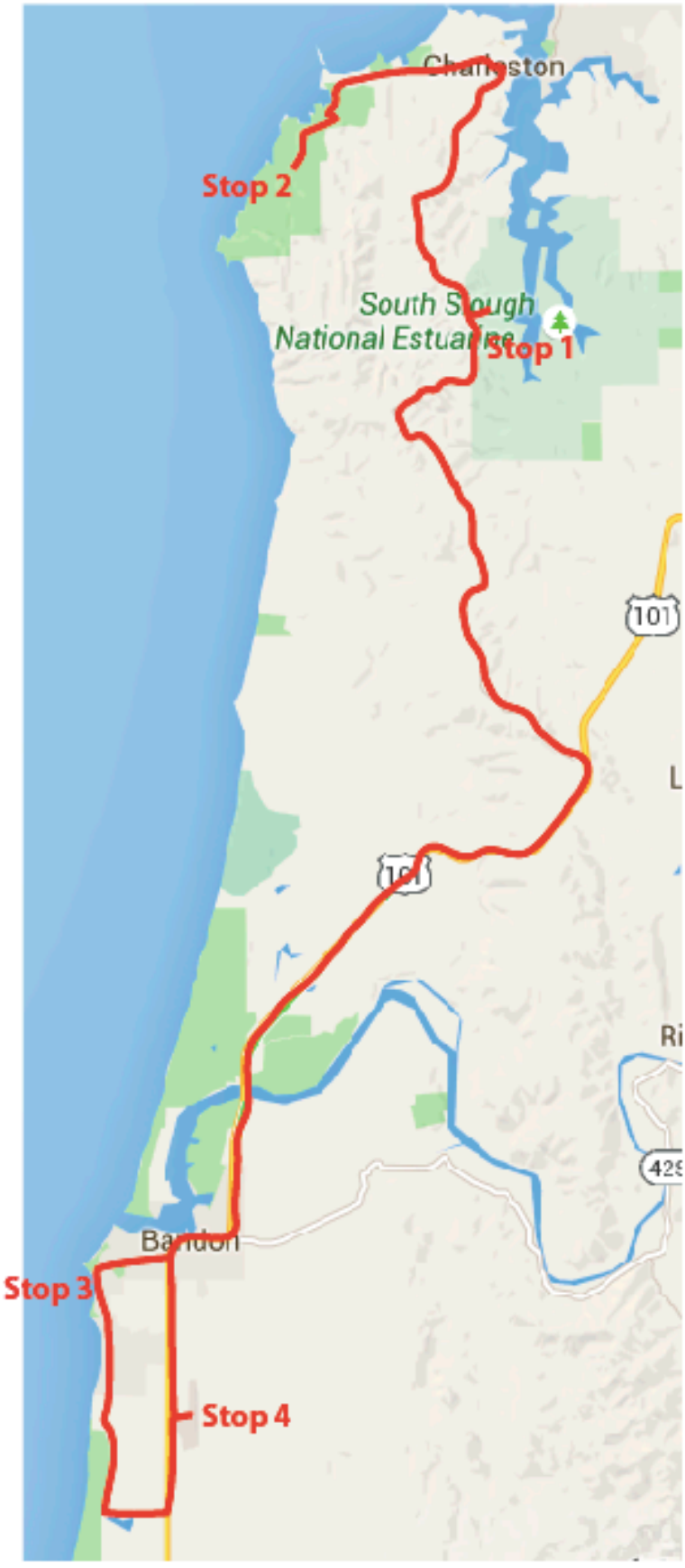
CEETEP Field Trip Guide

August 11, 2015



Cascadia EarthScope Earthquake and Tsunami Education Program (CEETEP)
August 10-13, 2015

Field Trip Overview Map



CEETEP Field Trip Guide – August 11, 2015

CEETEP Convener cell phone numbers
Bob Butler: (503) 313-3908
Nancee Hunter: (541) 961-4394
Beth Pratt-Sitaula: (509) 899-3480

Stop 1 – South Slough Estuary Tsunami Geology Sites

Directions – Both tsunami geology sites are a few minutes drive and short walk from South Slough NERR. Half the group will start with Site A and half with Site B. A little after 9 am the two groups will switch places

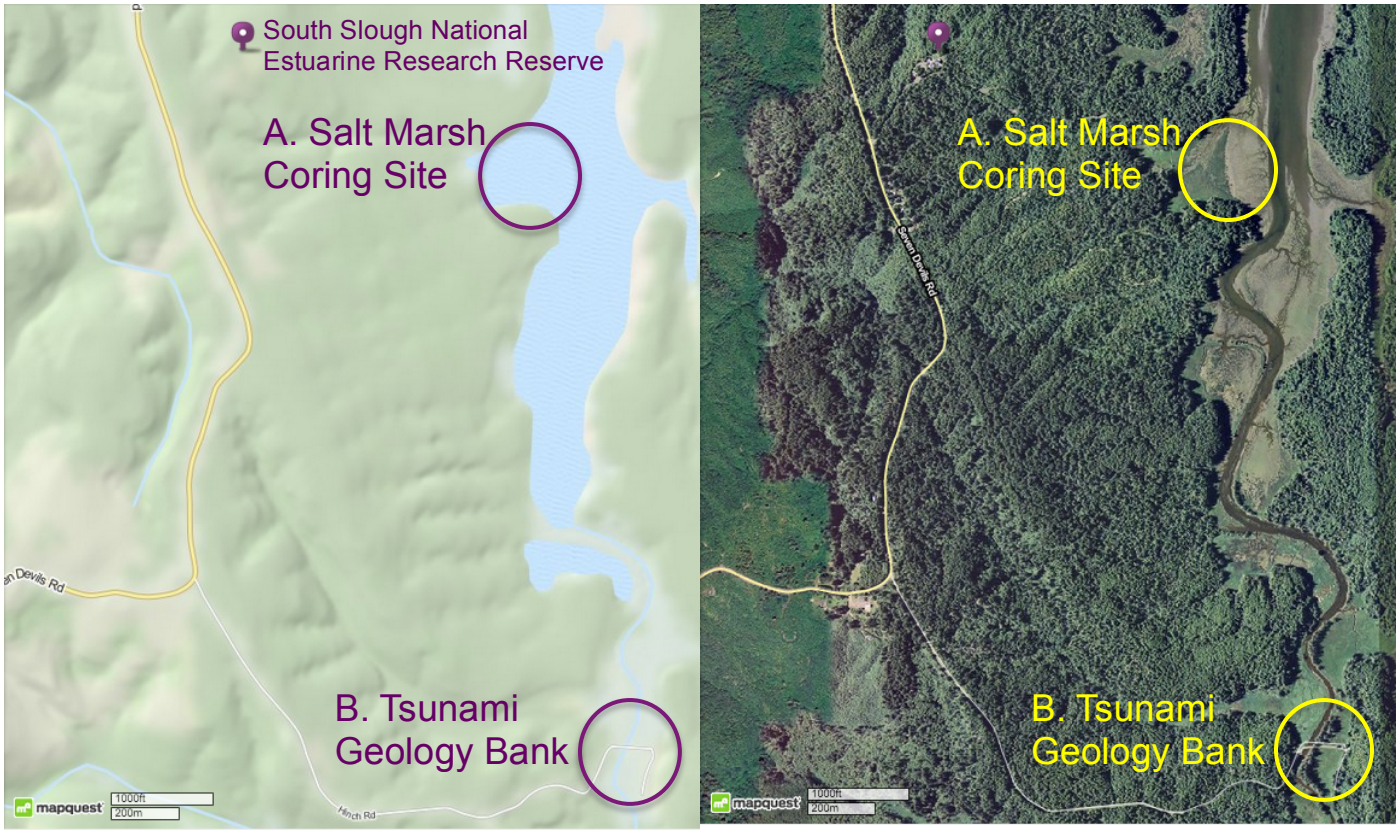


Figure 1. Location of the two tsunami geology sites – very close to South Slough NERR.

(Figure 1).

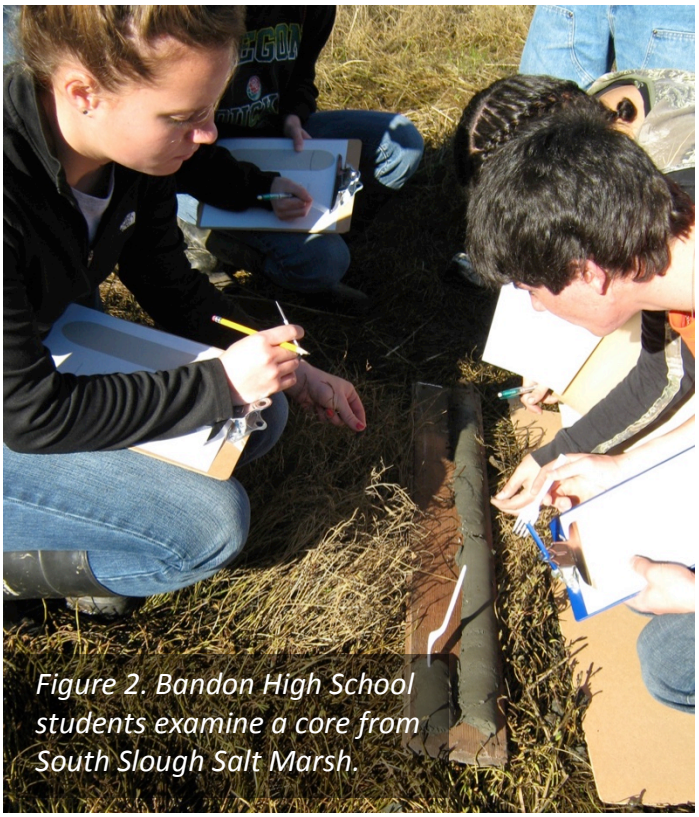


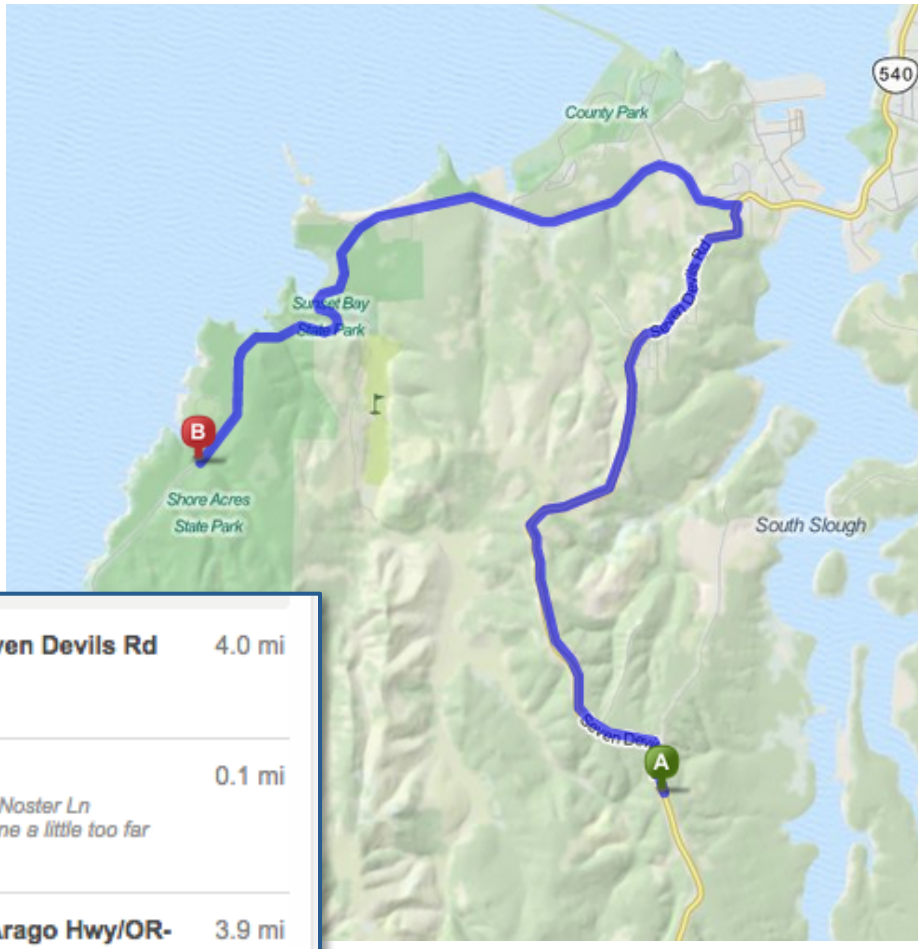
Figure 2. Bandon High School students examine a core from South Slough Salt Marsh.

Topics to consider

1. **What are the different geologic layers observed?**
2. **What sequence of events can explain the observed layers?**
3. **How would you use these geologic observations to engage your audience in earthquake/tsunami science and preparedness?**

Stop 2 & LUNCH – Shore Acres State Park

Directions – When we reach Shore Acres State Park, we will park in the parking lot and walk as a group out to an overlook just north of the Whale Watching Building. After our discussion, we will eat lunch on the park grounds.



1. Start out going **north** on **Seven Devils Rd** toward **Salal Rd**. 4.0 mi
2. Turn **left** onto **Walker Rd**. 0.1 mi
   Walker Rd is 0.1 miles past Knob Noster Ln
   If you reach Sunrise Rd you've gone a little too far
3. Turn **slight left** onto **Cape Arago Hwy/OR-540**. 3.9 mi
4. **89039 CAPE ARAGO HWY**.
   Your destination is 0.3 miles past Shore Acres State Park

Figure 3. Map and directions to Shore Acres State Park and satellite image of the park.

Figure 4. Tilted sedimentary rocks at Shore Acres State Park, which are planed off on top into a marine terrace.

Topics to consider

1. **How would you engage your learners at a park or museum about geohazards?**
2. **How can you introduce these topics in an empowering rather than frightening way?**
3. **What can we learn from the tilted rock layers visible here?**
4. **If a great earthquake occurred right now, what would you do?**

Stop 3 – Bandon Tsunami Evacuation Walk and Community Preparedness Discussion

Directions – We will drive from Shore Acres State Park to Coquille Point Beach Access in Bandon, OR. From there we will follow the tsunami evacuation route up to the Community Center in the City Park. After the tsunami walk, we will have access to the toilets in the Community Center before returning to the vehicles.

Shore Acres State Park
89039 Cape Arago Highway, Coos Bay, OR 97420

- Head northeast on Cape Arago Hwy — 4.1 mi
- Sharp right onto Seven Devils Rd — 6.3 mi
- Turn left onto W Beaver Hill Rd/Chrome Mountain Rd — 6.2 mi
  - Continue to follow W Beaver Hill Rd
- Turn right onto US-101 S — 7.4 mi
- Continue straight to stay on US-101 S — 2.5 mi
- Turn right onto 11th St SW — 1.0 mi
- Turn right onto Portland Ave SW — 243 ft

Coquille Point

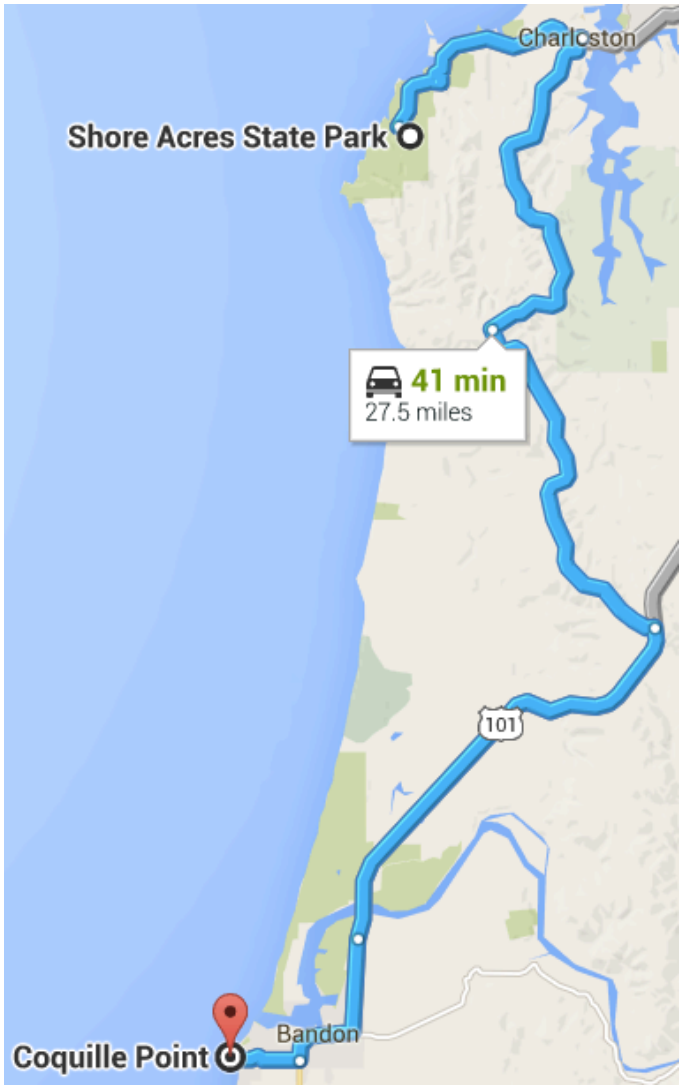


Figure 5. Map and directions from Shore Acres State Park to Coquille Point Beach Access, Bandon, OR.

Topics to consider for evacuation walk

1. **What sort of signage would you want to see to help with navigating this route?**
2. **What other issues come to mind regarding a community Inventory of Hazards? How passible do you think the route would be? What could help improve it?**

Figure 6. Meeting site at Coquille Point Beach Access in Bandon, OR.

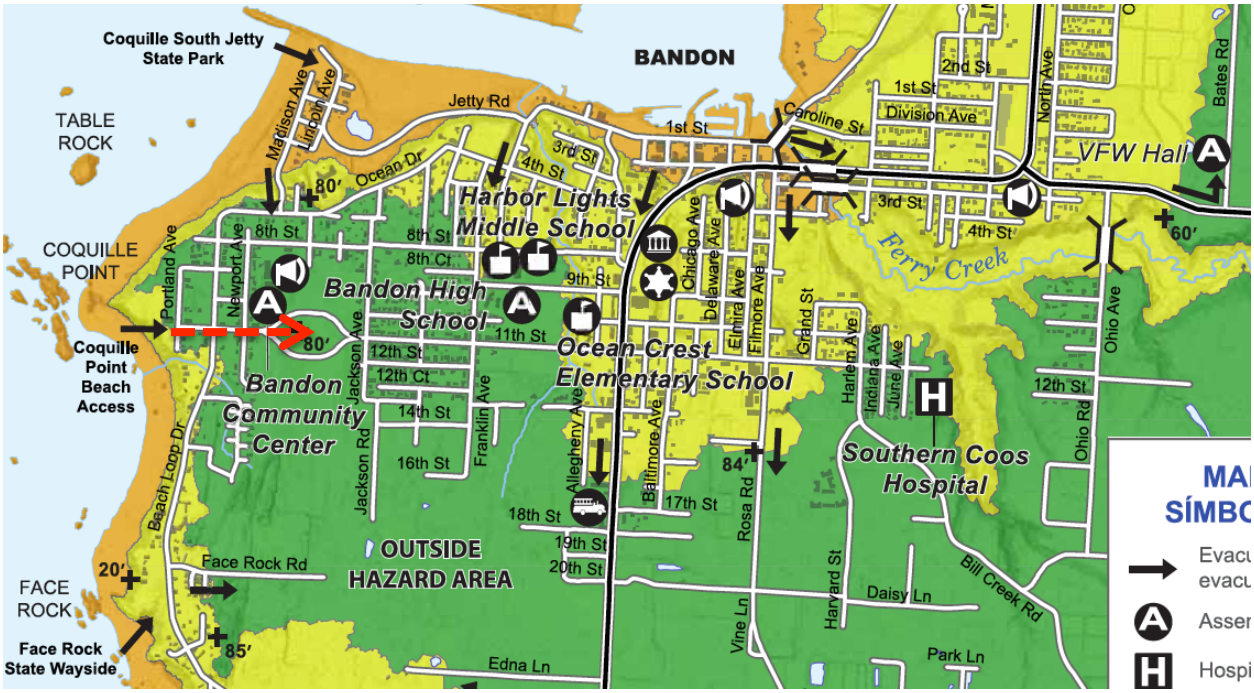
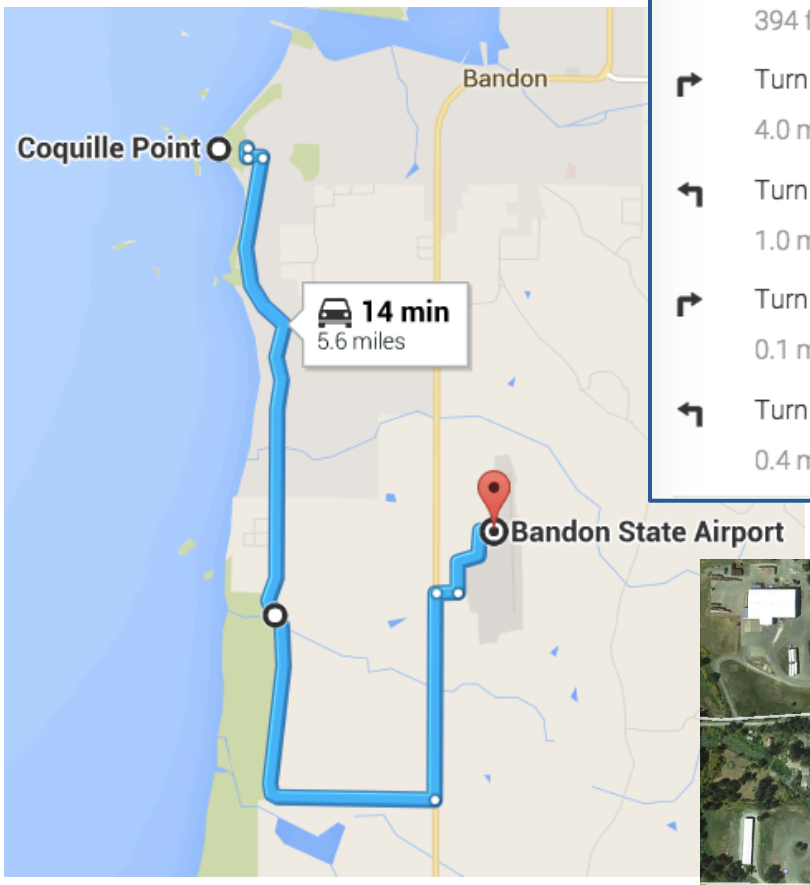


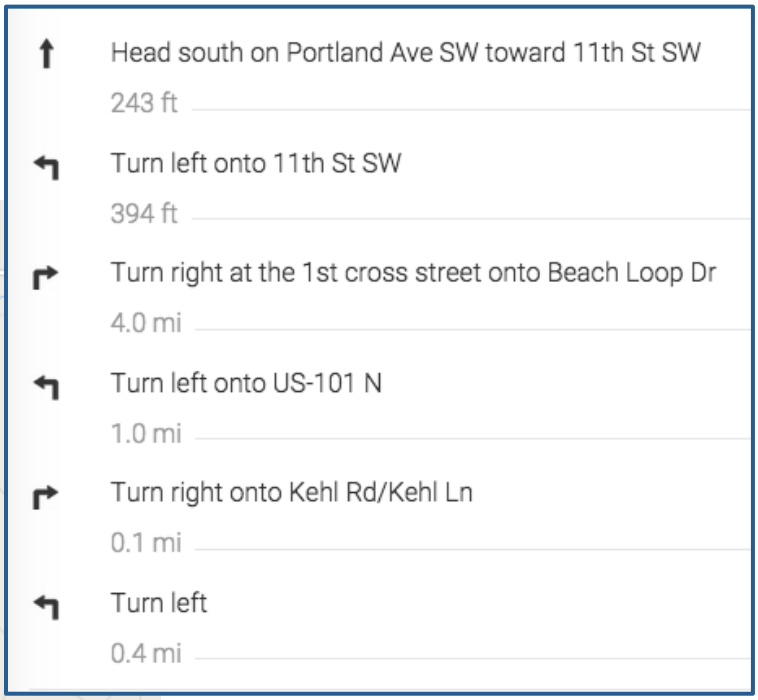
Figure 7. Bandon Tsunami evacuation map.

Stop 4 – Bandon Airport GPS Station (N 43.0903283712°, W 124.4092897517°)

Directions – We will take a coastal route from Coquille Point to Bandon Airport GPS Station so that we can see the low-lying dunes within the inundation zone that would be very challenging to evacuate from in the case of a local tsunami (Figure 8). This route also passes Bradley Lake, where Harvey Kelsey (Humboldt State) and Rob Witter (DOGAMI) collected lake-bottom sediment cores that contain multiple tsunami sands. Walk to and from GPS station on grassy area west of taxiway. Distance ~ 200 yards from parking area (Figure 5).

Figure 8. Maps and directions to Bandon Airport GPS station from Coquille Point.





Topics to consider

Refer to the Bandon Station GPS Card on the next page

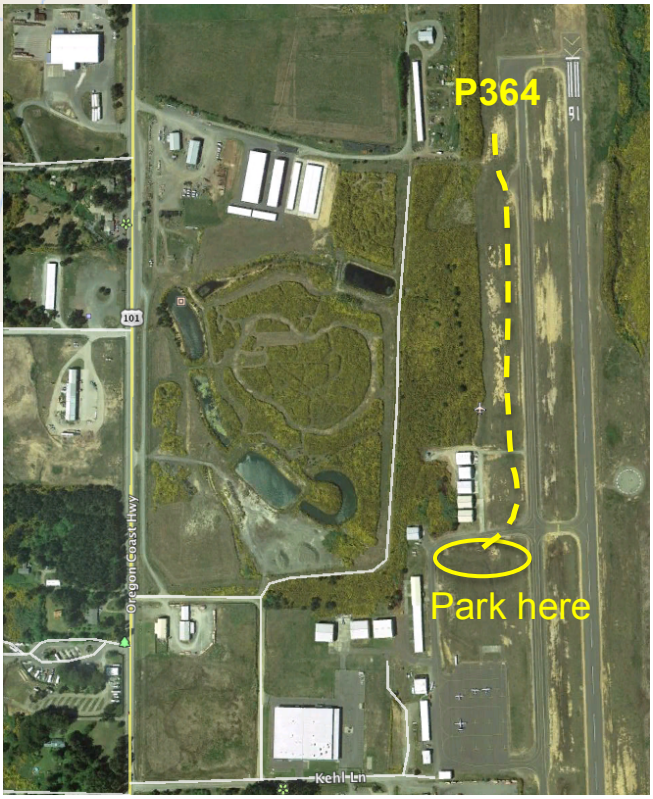
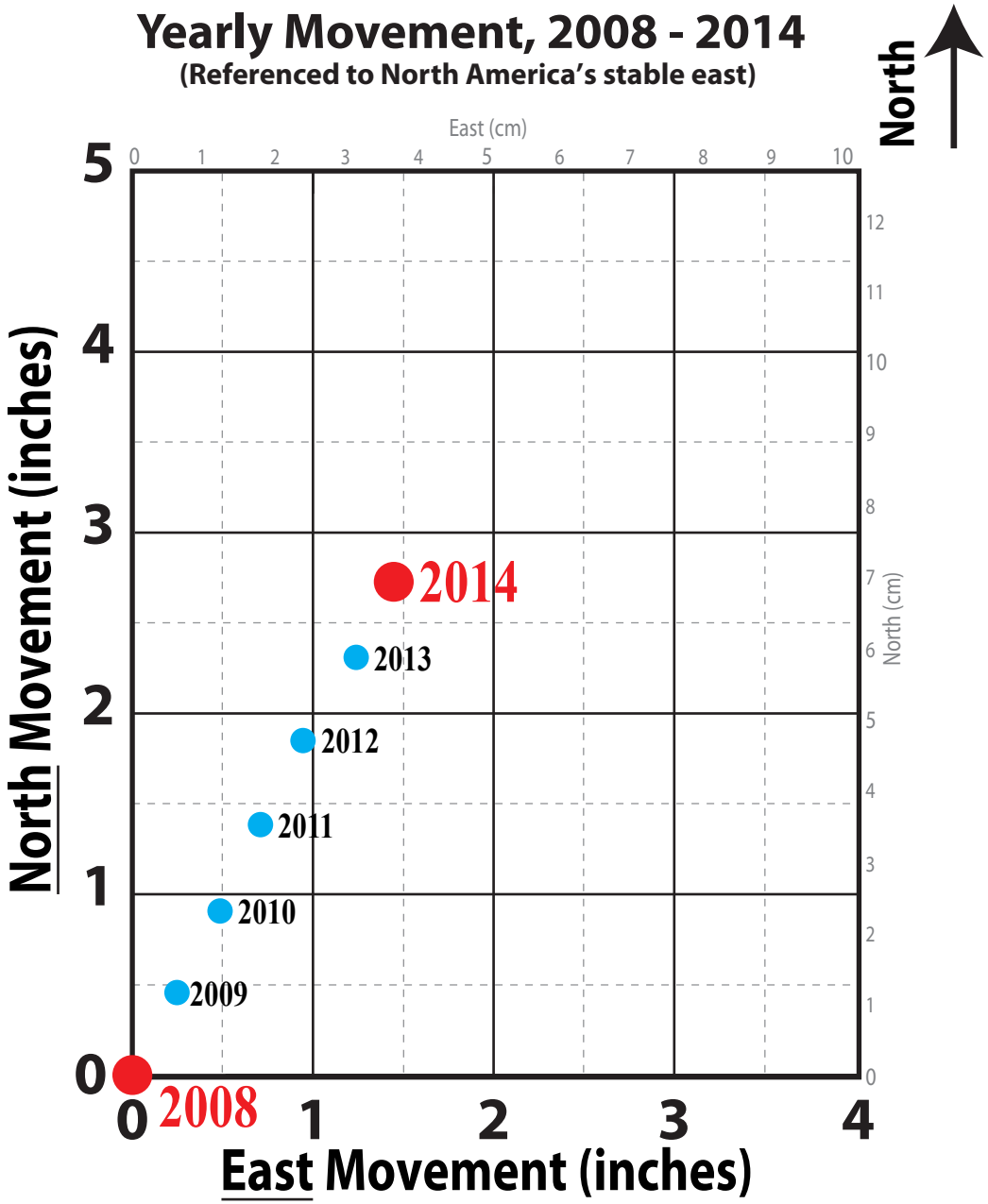


Figure 9. (next page) Bandon Airport GPS Station annually-averaged position data 2007-2014

Bandon Airport, Oregon GPS Station

Yearly Movement, 2008 - 2014

(Referenced to North America's stable east)



Cut Here

The dots on this card show motion of the Bandon Airport GPS station over the past seven years. Because the station is anchored into hard rock beneath the soil, the dots represent the year-to-year movement of the Bandon region toward the northeast.

Orient this graph toward the north, tape it to the floor, and think about the questions below.

1. How far has the Bandon region moved since the year 2008? At what rate (inches per year) is the region moving? At that rate, how far has the region moved since the year 1700?

2. Why is the region moving towards the northeast?

3. The last big earthquake in the Pacific Northwest occurred in the year 1700. What will happen to the Bandon region when the next big earthquake occurs?

Station P364 from the EarthScope Plate Boundary Observatory (**http://pbo.unavco.org**). GPS time series data provided by UNAVCO (**http://www.unavco.org**). Data as of June 1, 2015. Position offset -0.24 inches east and -0.27 inches north from the NAM08 .cvs file to bring 2008 average to zero.

Card developed by the Cascadia EarthScope Earthquake and Tsunami Education Program (**http://ceetep.oregonstate.edu**) and UNAVCO. CEETEP is sponsored by a grant from the Earth-Scope Program of the National Science Foundation (**http://www.earthscope.org**) to Oregon State University, the University of Portland, and Central Washington University.

Return to South Slough NERR

Directions – Head straight back to South Slough.