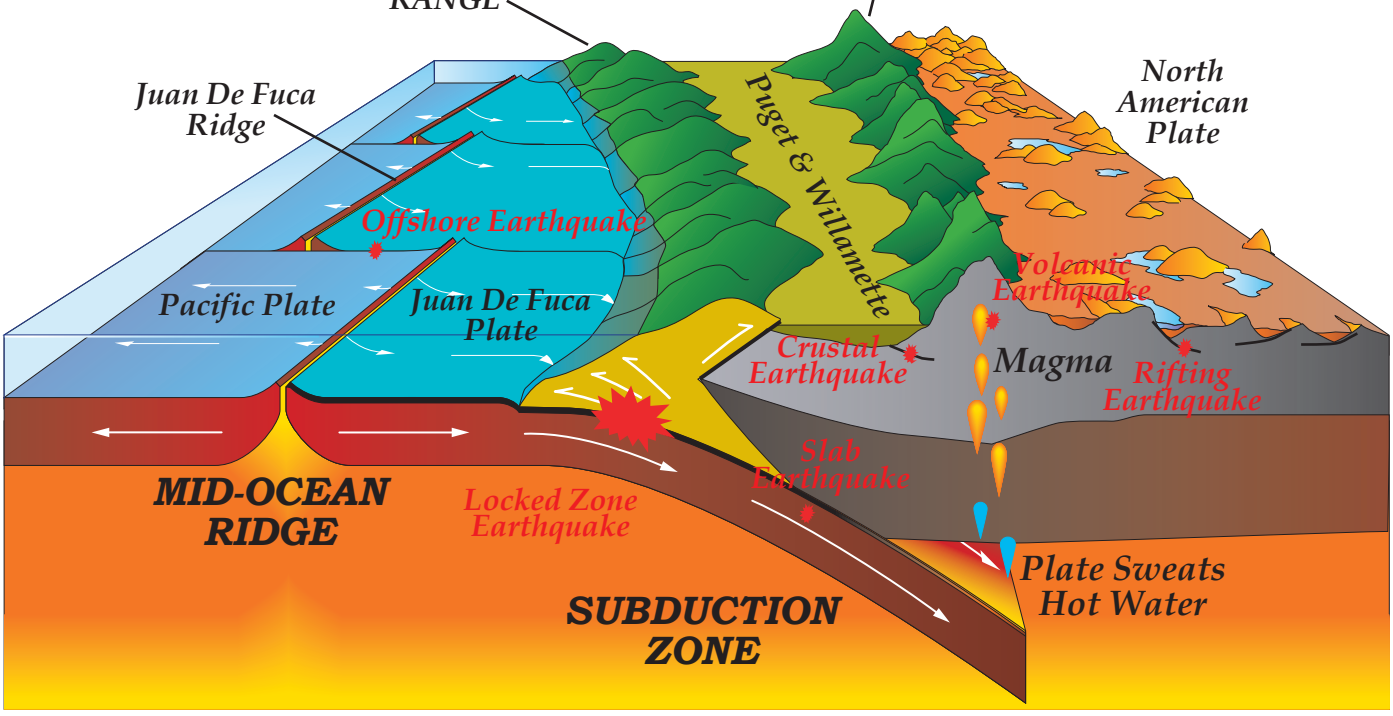
CEETEP Field Trip Guide
October 11, 2014



Cascadia EarthScope Earthquake and Tsunami Education Program (CEETEP)
October 10-13, 2014

Field Trip Overview Map

CEETEP Field Trip Guide – October 11, 2014

- **DEPART Olympic Natural Resources Center (8:00 am)**
- Driving (8:00-9:15 am)
- Stop 0 – Makah Community Hall for bathroom break
- **Stop 1 – Waatch Prairie Estuary (9:30-10:50 am)** **Pg 3**
- Driving (optional bathroom stop again at Makah Community Hall)
- **Stop 2 – Makah Senior Center (11:00-12:15 am)** **Pg 4**
- Driving (12:15-12:30 pm)
- **Stop 3 – Makah Cultural & Research Center & LUNCH (12:30-2:00 pm)** **Pg 5**
- Driving (2:00-3:20 pm)
- **Stop 4 – GPS Station at Quillayute State Airport (3:20-4:10 pm)** **Pg 5**
- Driving (4:10-4:30 pm)
- **ARRIVE ONRC (4:30 pm)** **Pg 7**

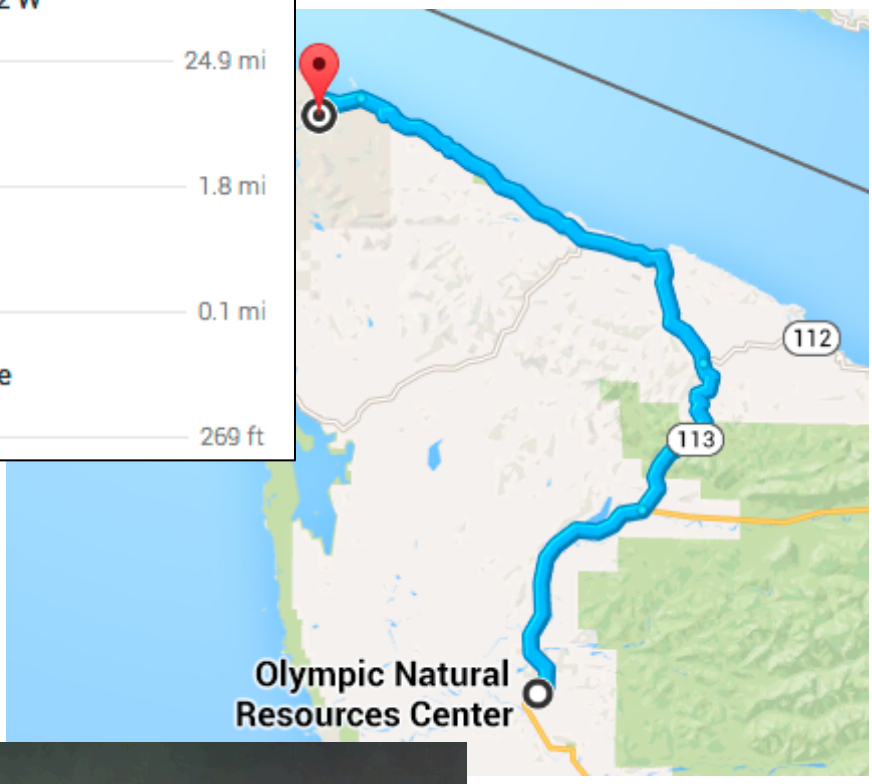
CEETEP Convener cell phone numbers
Bob Butler: (503) 313-3908
Nancee Hunter: (541) 961-4394
Beth Pratt-Sitaula: (509) 899-3480

Stop 0 – Bathroom break at Makah Community Hall

1. Head **northeast** on **US-101 N/S Forks Ave**
   Continue to follow US-101 N
   13.5 mi
2. Turn **left** onto **WA-113 N**
   10.0 mi
3. Continue straight onto **WA-112 W**
   24.9 mi
4. Continue onto **Bayview Ave**
   1.8 mi
5. Turn **left** onto **Fort St**
   0.1 mi
6. Take the 3rd **right** onto **3rd Ave**
   269 ft

Directions – Drive from ONRC through most of Neah Bay to the west side of town. Park in the Community Hall parking lot.

Figure 1. Driving directions and map from ONRC to Makah Community Hall.



Stop 1 – Tsunami Geology at the Waatch Prairie (south of Neah Bay)

Directions – From the Community Hall head southwest on Cape Flattery Rd. We are going to drive a little extra so that we can see the ocean and envision how the tsunami may have come ashore. Drive to the bridge across the Waatch River (about 2.4 miles from the Community Hall). Drive across the bridge slowly and look out towards the sea and consider what a tsunami's path might be. After the bridge, turn left onto Makah Passage and drive back about a mile. Park where you see the lead vehicle stop (Figure 2).

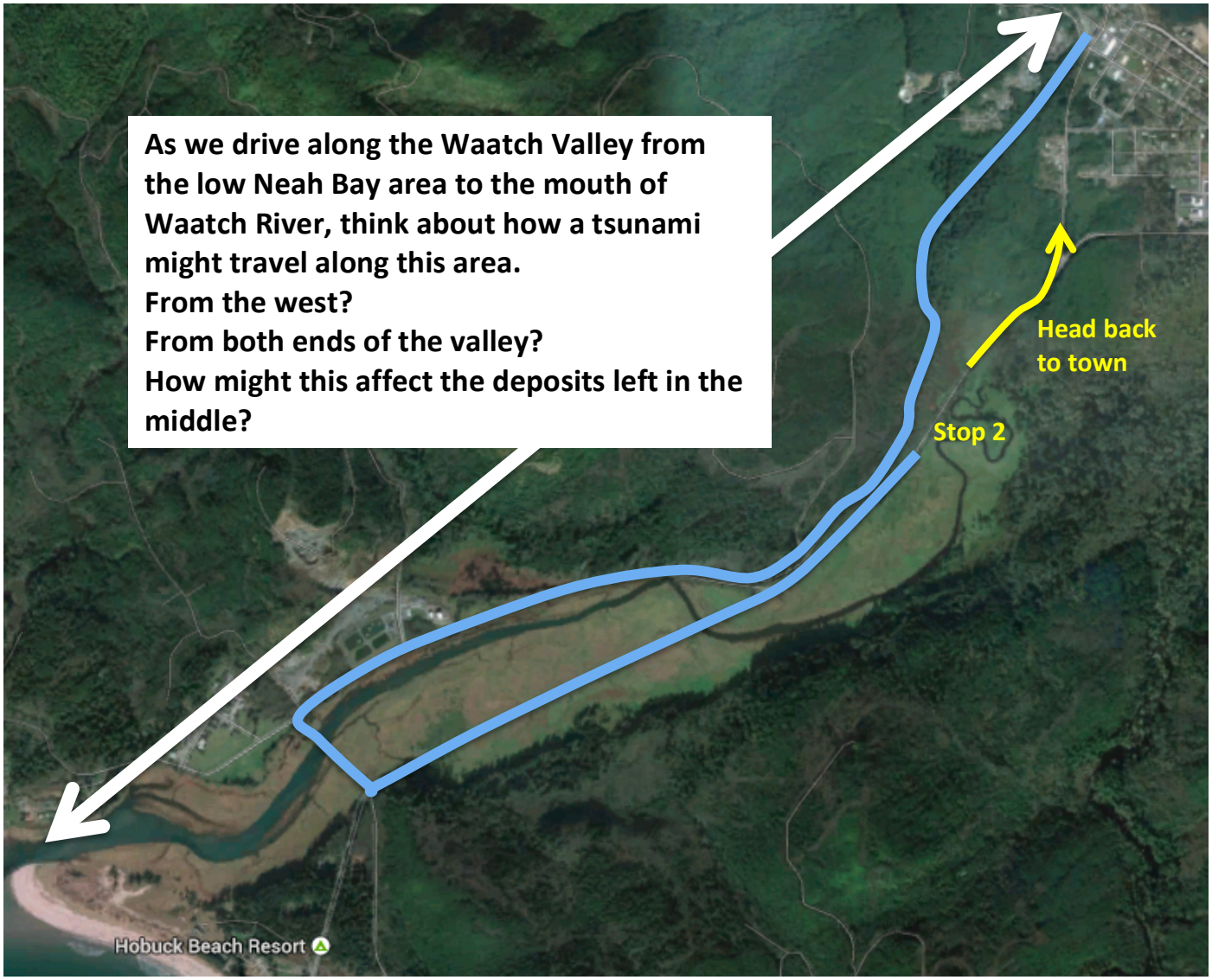


Figure 2. Map from Makah Community Hall to Waatch Prairie via the bridge across the Waatch River mouth.

Topics to consider at Waatch Prairie

1. **What are the different geologic layers observed in the cores?**
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 – Tsunami Evacuation Walk from Makah Senior Center

Directions – Head back to Neah Bay on Makah Passage. OPTIONAL stop again at the Makah Community Hall for toilet break. Thereafter meet the group at the Makah Senior Center – pull off the road next to the Center (Figure 3). DRIVERS drop off your passengers and follow the lead car to the end of the evacuation walk. You will be shuttled back to join the group (Figure 4).

1. Head northeast on Makah Passage
0.4 mi
2. Slight left to stay on Makah Passage
0.5 mi
3. Turn right onto 3rd Ave
269 ft
4. Take the 1st left onto Fort St
0.1 mi
5. Turn right onto Holden Creek Ave
161 ft
6. Continue onto Bayview Ave
Destination will be on the left
466 ft

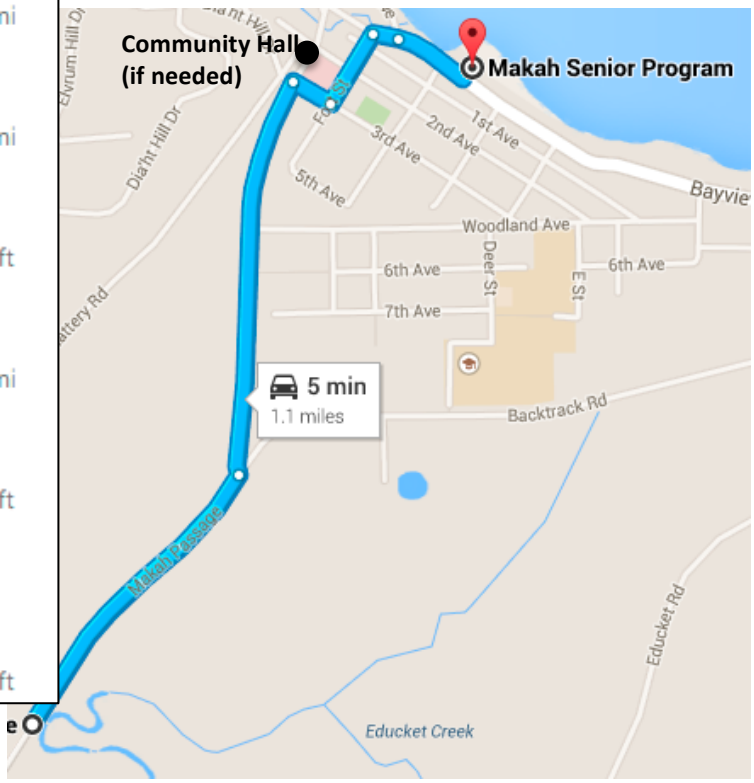


Figure 3. Driving directions and map from Waatch Prairie to Makah Senior Center.

Figure 4. Actual Tsunami Evacuation Walk route.

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?**

Stop 3 & Lunch – Makah Cultural & Research Center

Directions – Head back down the hill and along Bayview Ave to the Makah Cultural & Resource Center (Figure 5).

Figure 5. Map of Makah Cultural & Research Center on the east side Neah Bay.

Topics to consider

1. **How would you engage your learners at a museum or park about geohazards?**
2. **How can you introduce these topics in an empowering rather than frightening way?**
3. **If a great earthquake occurred right now, what would you do?**

Stop 4 – Quillayute Airport GPS Station (N 47.937188, W 124.557019)

Directions – Depart Neah Bay and drive to Quillayute State Airport near La Push, WA. Go through the gate and park near the buildings towards the east side of the paved area. We will walk to the GPS stations from here.

1. Head east on Bayview Ave toward Waadah View St
3.0 mi
2. Continue onto WA-112 E
22.4 mi
3. Continue onto WA-113 S
10.0 mi
4. Turn right onto US-101 S
10.7 mi
5. Turn right onto WA-110 W/La Push Rd
3.1 mi
6. Turn right onto Quillayute Rd
5.1 mi

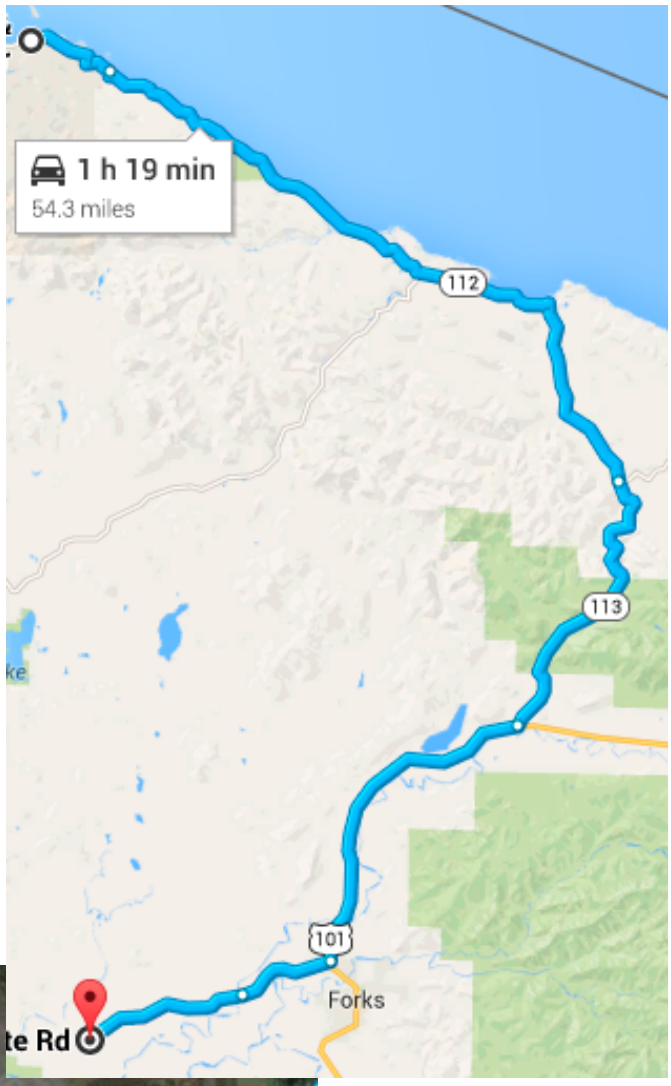
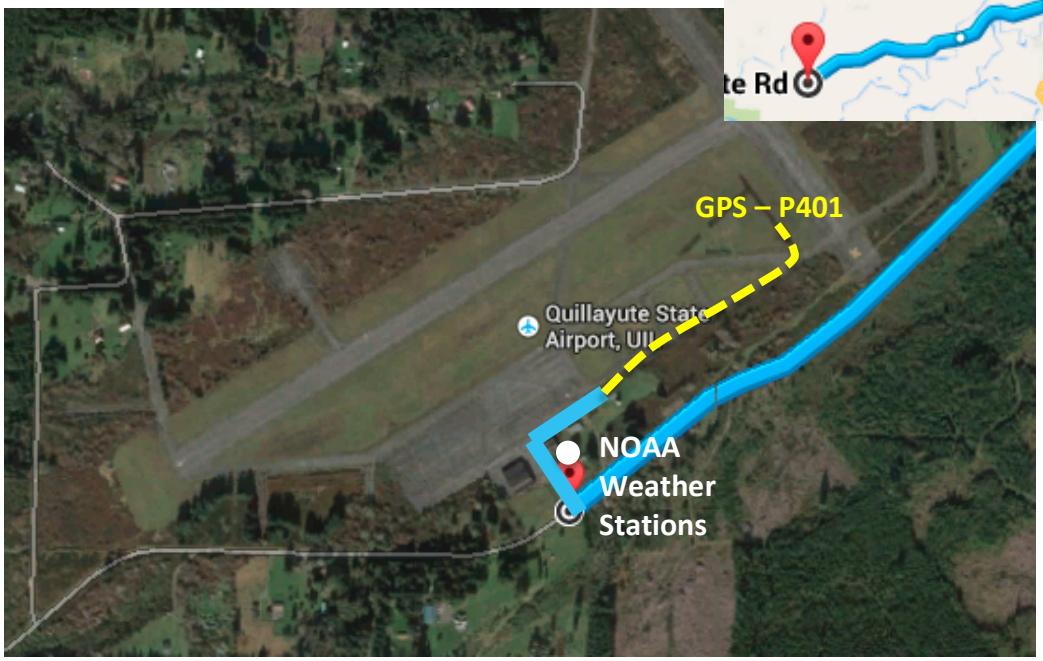


Figure 6. Directions and maps to Quillayute State Airport GPS Station and NOAA Weather Station.



Topics to consider

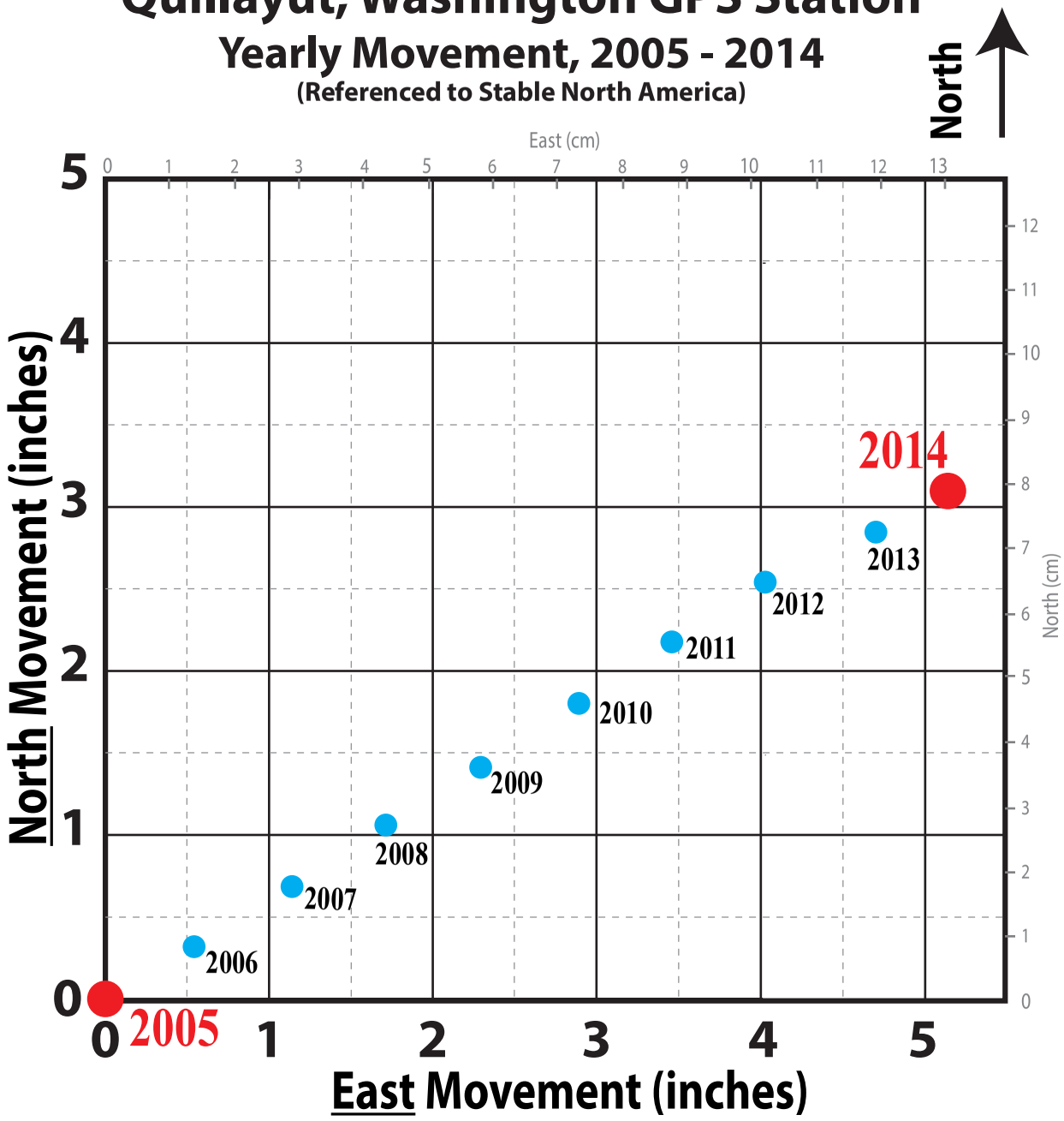
Refer to the Quillayute Station GPS Card on the next page

Figure 7. (next page) Quillayute GPS Station annually-averaged position data 2005-2014

Quillayut, Washington GPS Station

Yearly Movement, 2005 - 2014

(Referenced to Stable North America)



Cut Here

The dots on this card show motion of the Quillayut GPS station over the past nine years. Because the station is anchored into hard rock beneath the soil, the dots represent the year-to-year movement of the Quillayut 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 Quillayut region moved since the year 2004? 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 toward the northeast?

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

Station P401 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 14, 2014.

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

Return to ONRC

Directions – Backtrack along same route to Hwy 101, turn right and go ~3 miles to ONRC.