GEOL106 Earthquake Country
Online Activity 1: Global Positioning System Based Geodesy

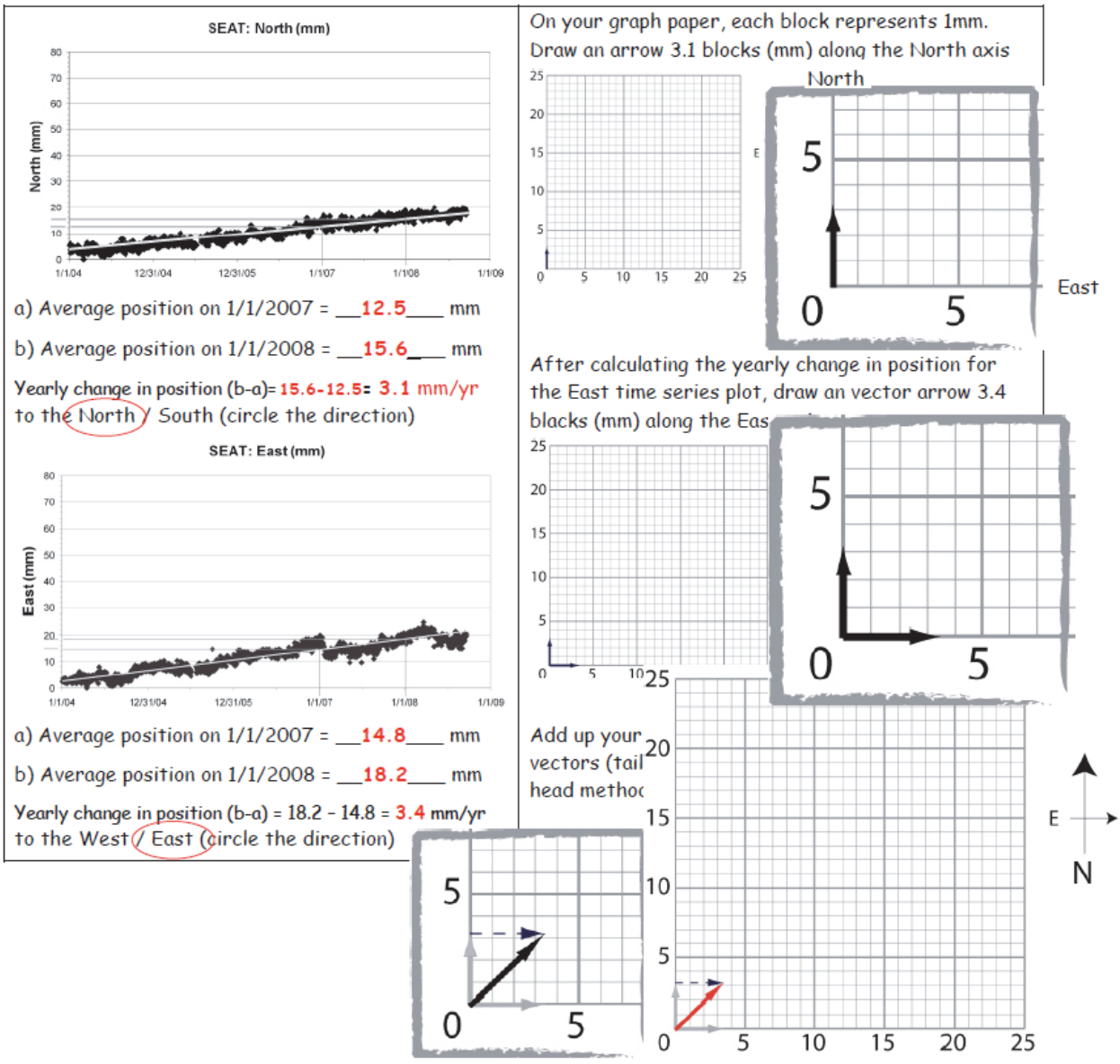
Name (Last, First): _____ Date: _____

Exploring Plate Motion and Deformation in Cascadia Using GPS Data

By: Shelley Olds, UNAVCO Education and Outreach, Anne Sheehan, University of Colorado

In this activity you will work with GPS data to explore plate motion and deformation in the Pacific Northwest. By analyzing multiple GPS Time Series Plots you can determine the direction and rate of regional deformation.

Part I: Analyzing real time series data to calculate GPS velocity vectors



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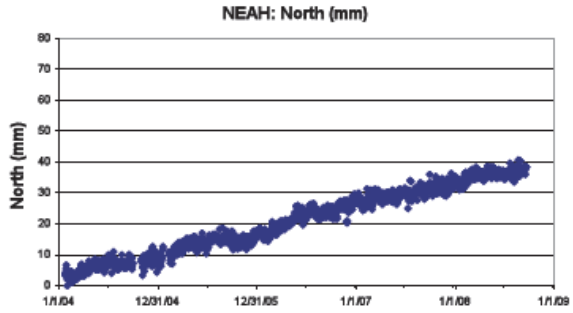

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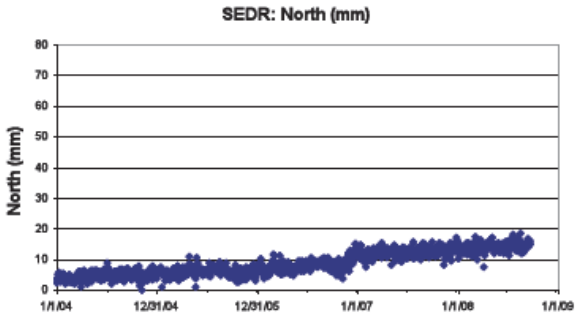

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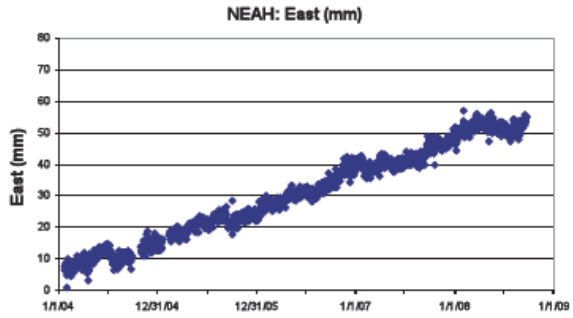

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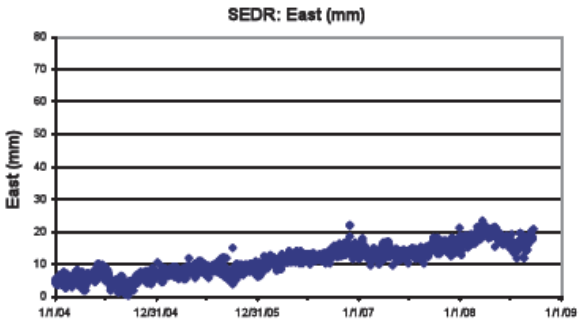

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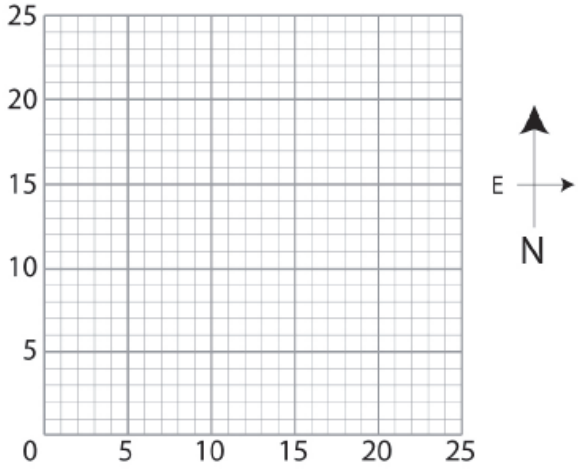
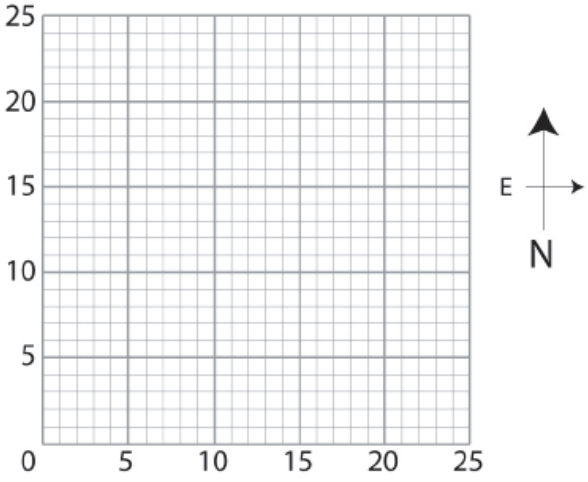
NEAH



SEDR



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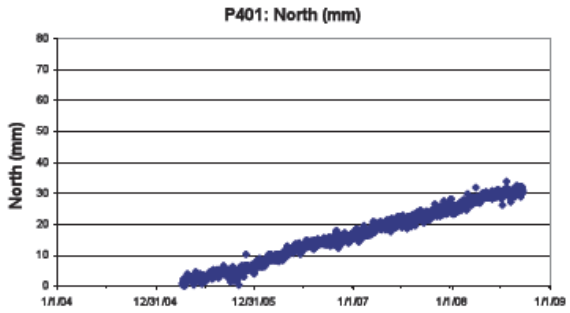

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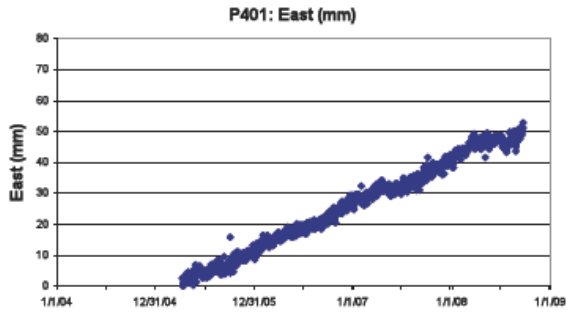

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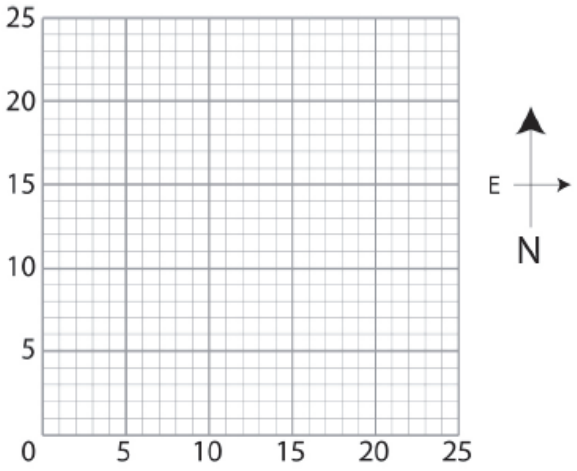
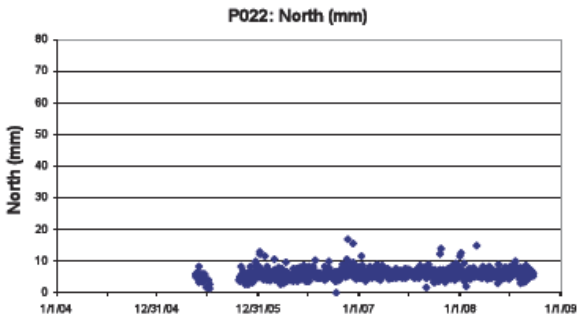
P401





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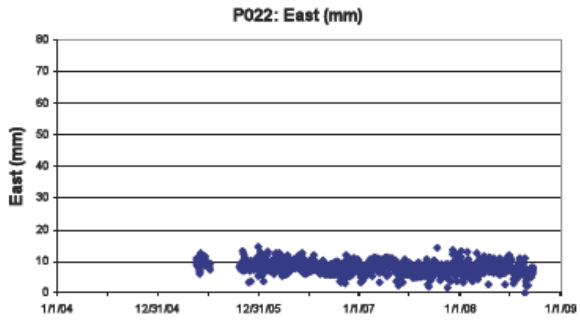

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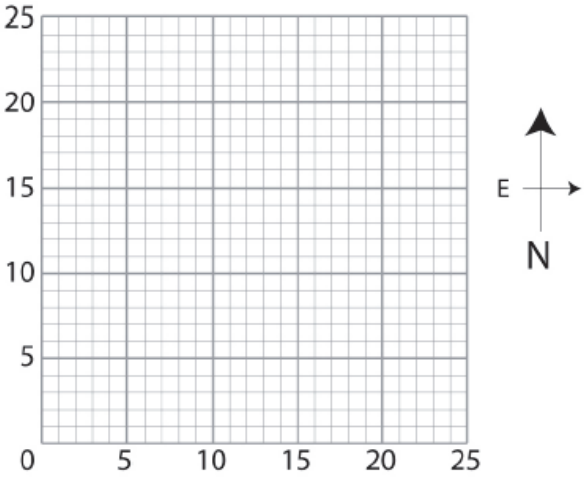
P022



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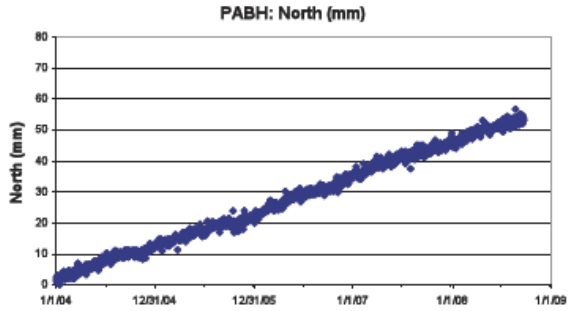

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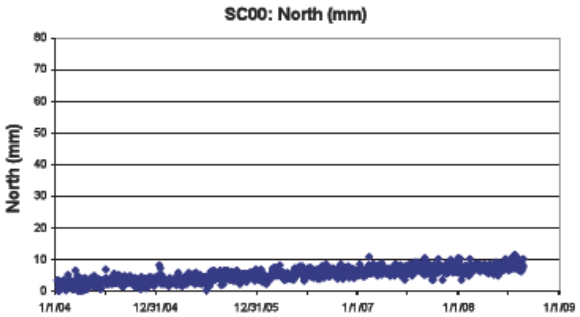

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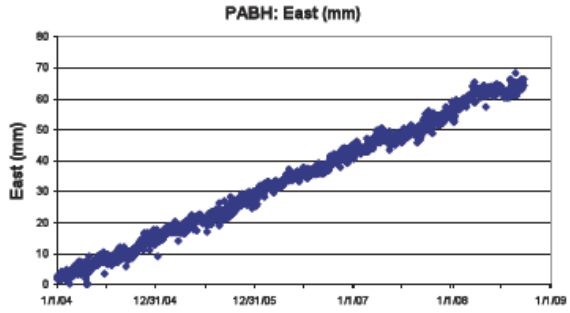

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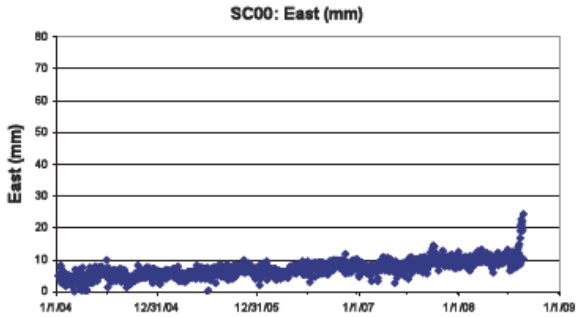

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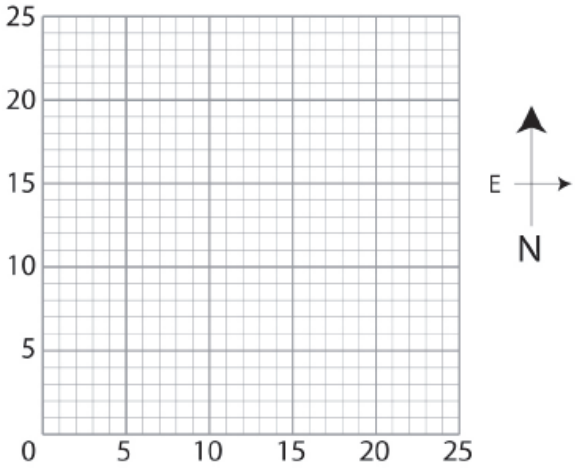
PABH



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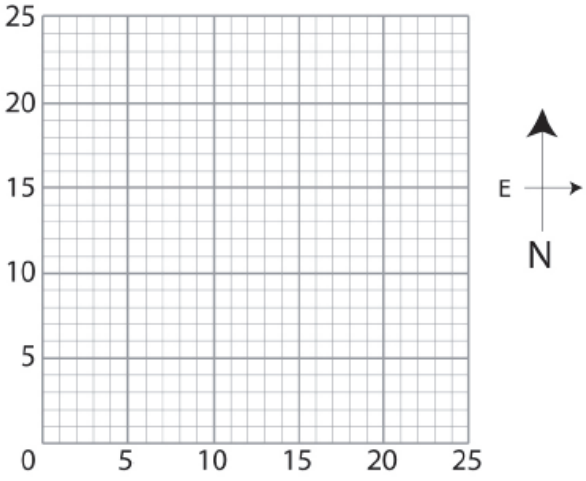

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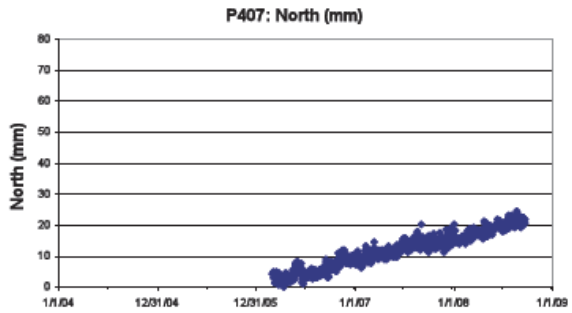

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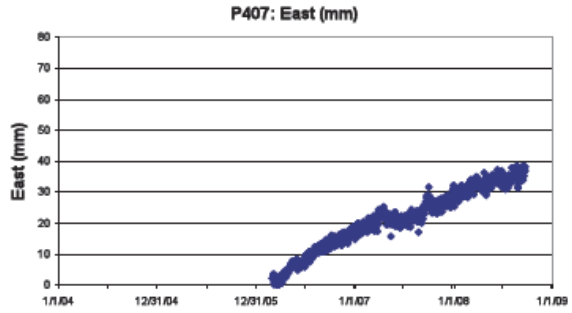

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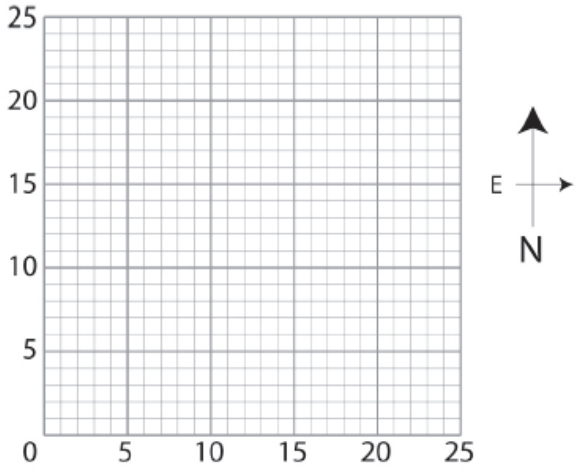
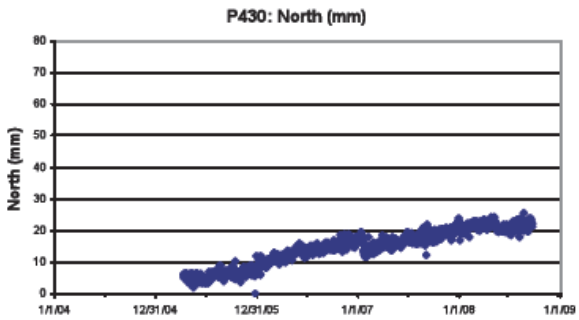
P407





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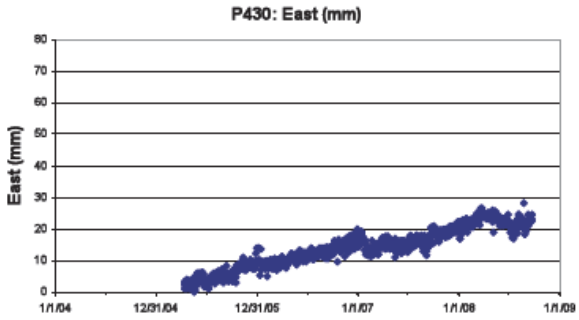

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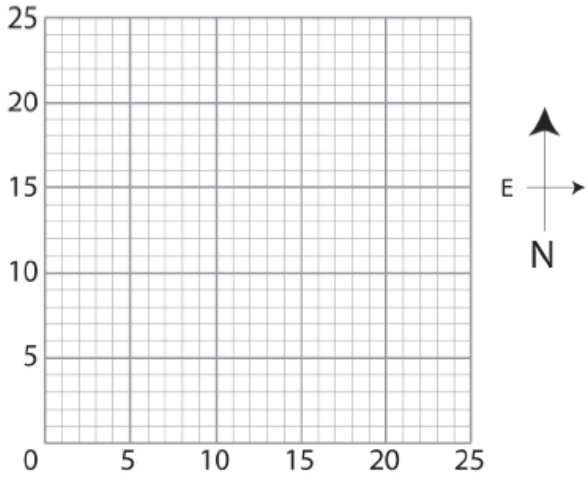

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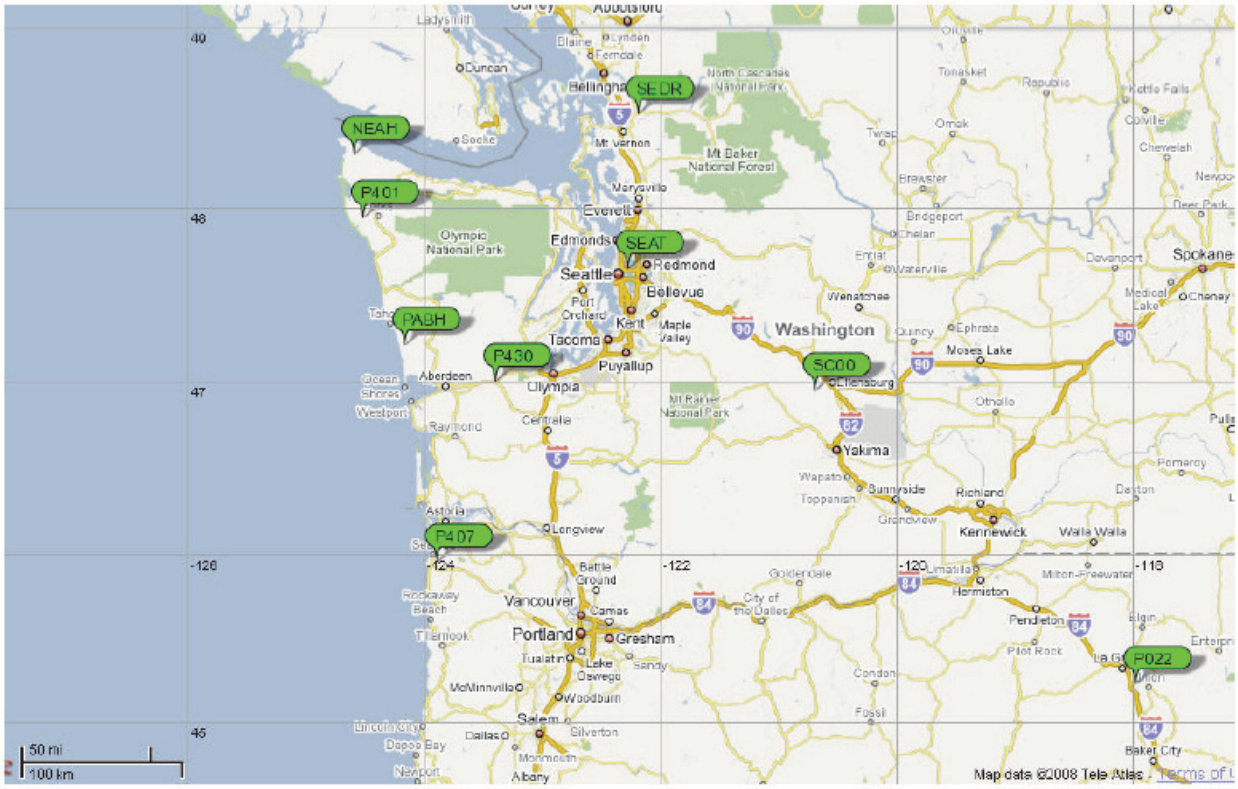
Part II: Drawing your vectors on the map of Cascadia

Place the tail of the vector on the 'point' of the corresponding bubble and trace the arrow from your worksheet. Place the GPS station graph behind the map, then copy the vector onto your map.



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Part III: Questions

What do you notice about the velocities of the GPS stations and their geographic locations?

How do the velocities at each station change from west to east?

Which stations are moving fastest?

In 500 years, how far will the stations along the coast have moved?

What possible outcomes can you imagine if different portions of the plate continue moving at different rates over millions of years?