

U. Washington Tsunami Certificate Program

Course 2: Tsunami Warning Systems

Exercise 1: Seismic Network Distribution versus Tsunami Warning Center Response Time

Purpose: The purpose of this exercise is to help participants understand the relationship between seismic network density and tsunami warning response time.

Instructions: For each of the follow 3 maps which contain seismometer locations and an epicenter location, determine the expected time it would take a tsunami warning center to issue a message.

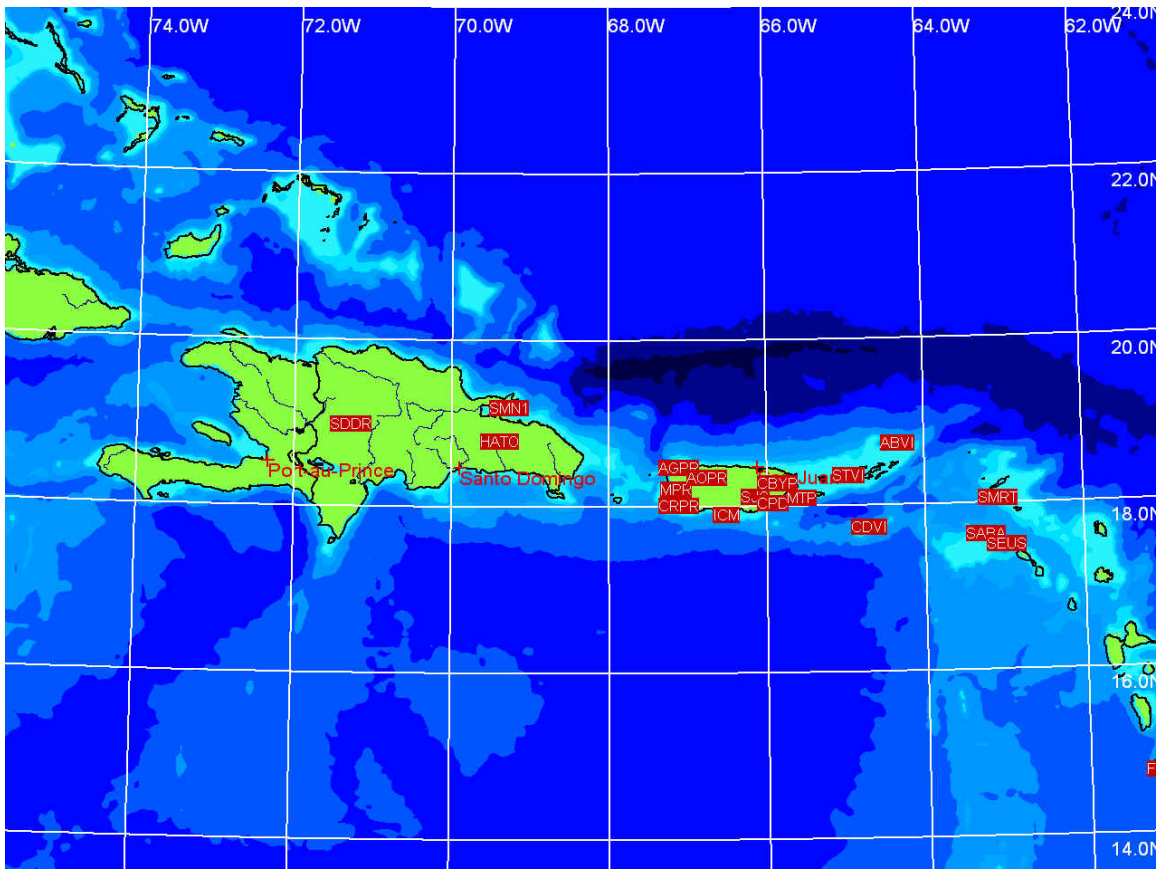
Assumptions:

- All stations are operating.
- 9 stations must record the earthquake prior to issuing a message
- 60 seconds of signal must be recorded after the P-wave arrival to determine magnitude.
- An analyst needs 30 seconds to review the event after all necessary data has arrived.
- 60s are required to generate and review the appropriate message.

Necessary Information:

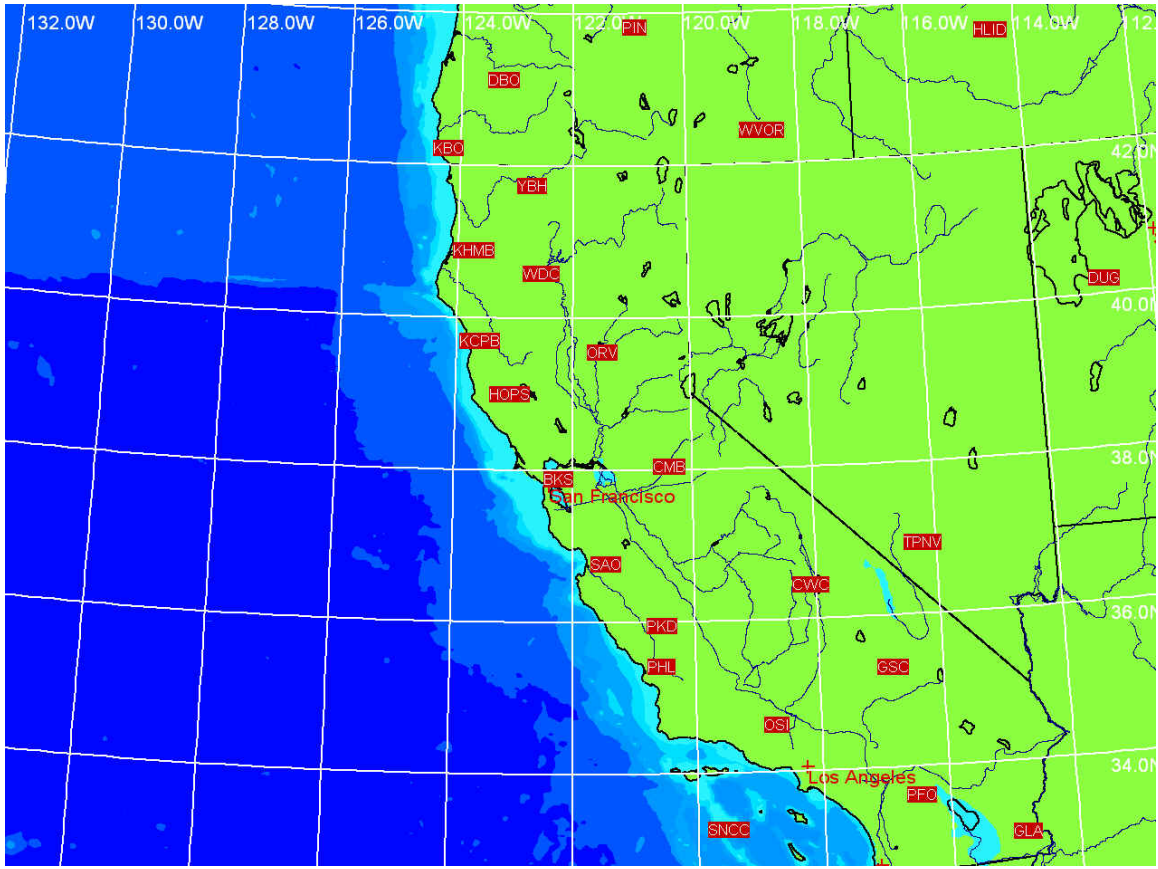
One degree latitude equals approximately 111km.

Distance (degrees)	P-wave time (seconds)	Distance (degrees)	P time (s)
0	0	10	145
0.5	10	11	159
1	19	12	172
1.5	28	13	186
2	35	14	200
2.5	42	15	213
3	49	20	274
3.5	56	25	325
4	63	30	370
4.5	69	35	414
5	76	40	456
5.5	83	45	497
6	90	50	536
6.5	97	55	572
7	104	60	608
7.5	111	65	642
8	117	70	673
8.5	124	75	703
9	131	80	731
9.5	138	85	757



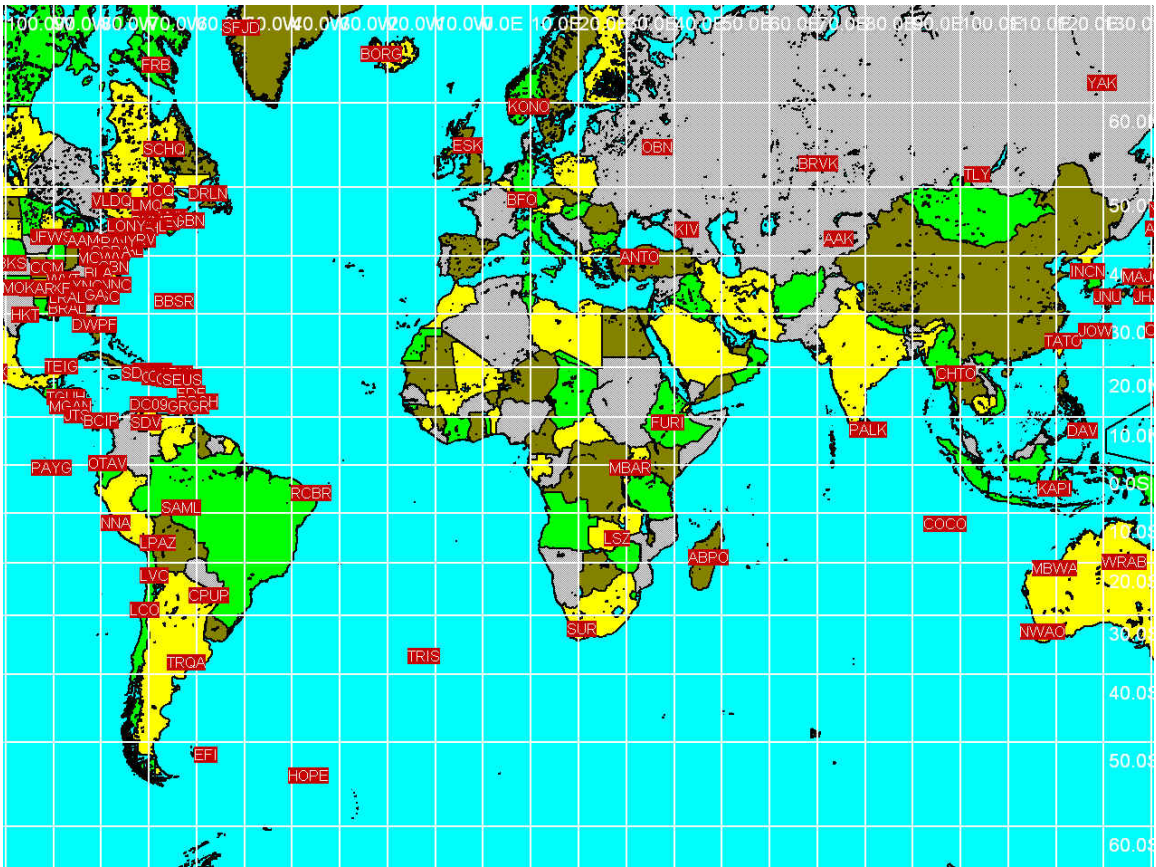
Latitude grid is 2 degrees increment.
 Epicenter is at 18N, 66W

Expected response time = _____



Latitude grid is 2 degrees increment.
 Epicenter is at 36N, 122W

Expected response time = _____



Latitude grid is 10 degrees increment.
 Epicenter is at 10N, 90E

Expected response time = _____