LAB EXERCISE 7 - EARTHQUAKES

Name:	Course ID:

During this Lab exercise you will become a seismologist determining the location (Epicenter) and strength (Richter Magnitude) of an earthquake. In order to do this exercise, you need to be familiar on how to interpret a seismogram as shown on the right in figure 5.6. By analyzing seismograms of the same earthquake event from three different geographic locations, you will be able to complete the stated objective.

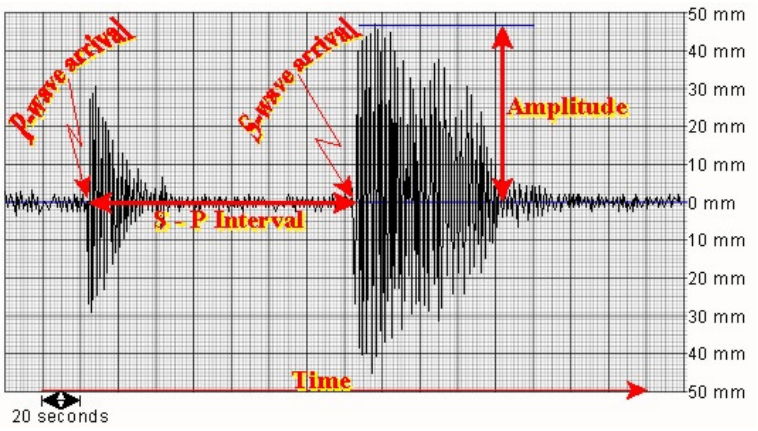


Figure 5.6 - Sample seismogram with explanation

Materials Needed

- access to the internet
- drawing compass
- ruler / straightedge
- three seismograms (fig. 5.7)
- Locator map (fig. 5.8)
- SP lag time / epicenter distance graph (fig. 5.4)
- blank earthquake nomogram (as shown in fig. 5.5)

EARTHQUAKE LAB

Establish the Earthquake Epicenter and Magnitude for a distant earthquake given in the three seismograms presented in Figure 5.7. Use a drawing compass to pinpoint the earthquake epicenter on the provided location map (Figure 5.8). Also, use the provided nomogram to identify the earthquake magnitude for ALL 3 seismograms.

Next to showing the graphical solution on the map and nomogram, give a written response concerning the location and magnitude in the spaces below:

Epicenter Location: *(In the space to the left give a detailed description of the geographic location of the epicenter)*	

Earthquake Magnitude: *(In the space to the left write down the earthquake magnitude with an accuracy of one decimal)*	

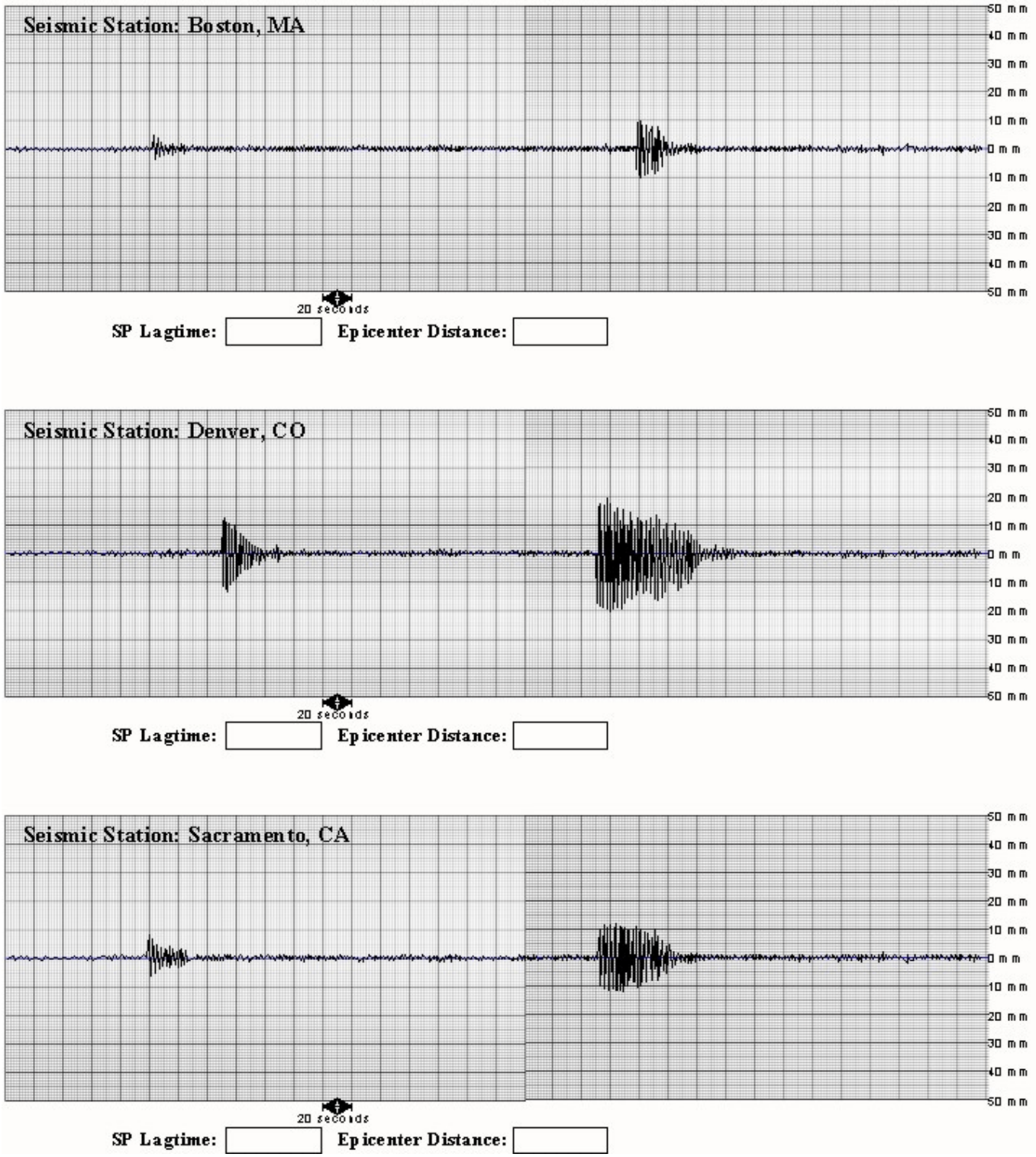
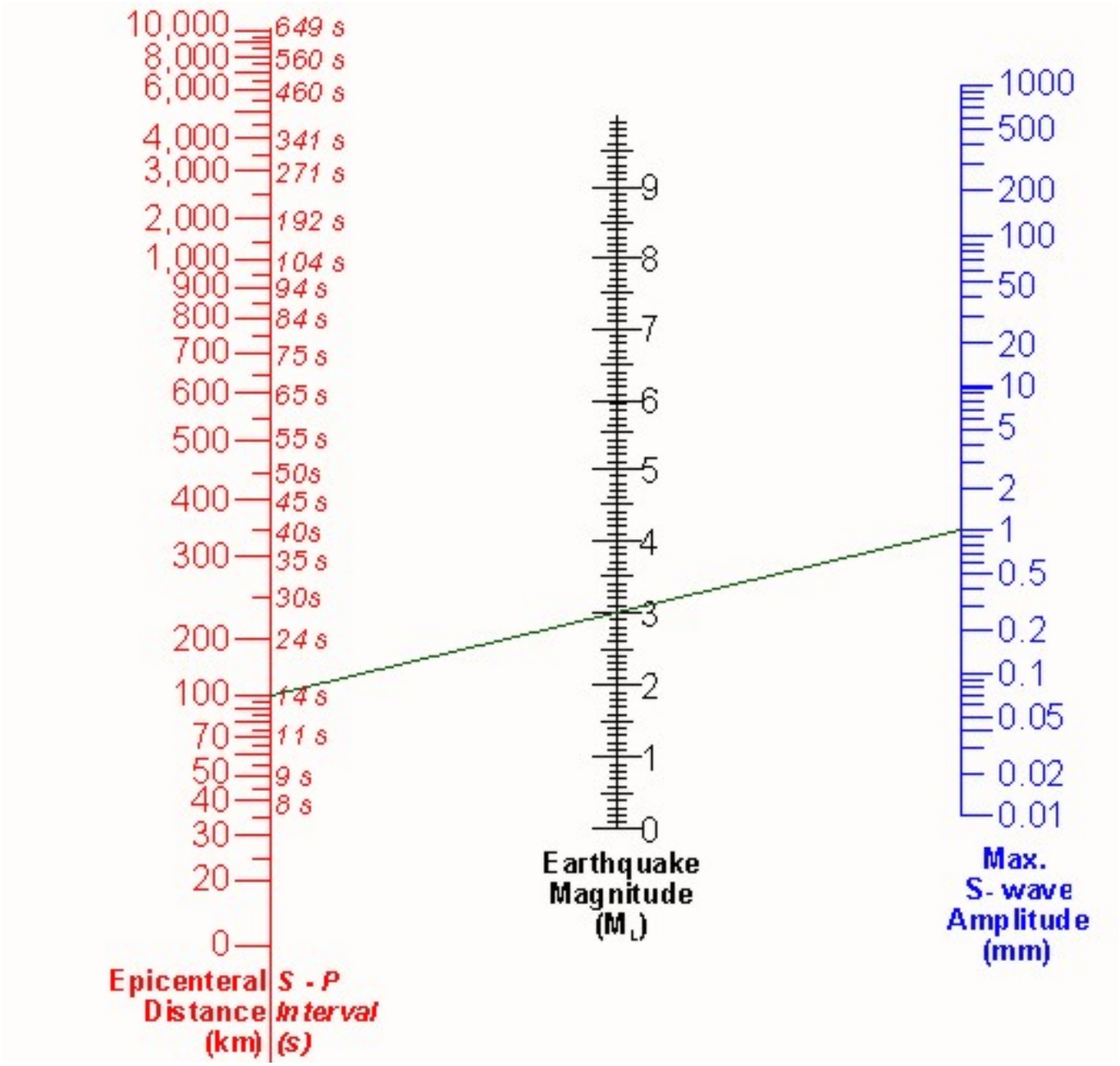


Figure 5.7 - Three station seismograms for CO, CA, and MA

Figure 5.8 - Earthquake epicenter locator map - North America


10,000
8,000
6,000
4,000
3,000
2,000
1,000
900
800
700
600
500
400
300
200
100
70
50
40
30
20
0
649 s
560 s
460 s
341 s
271 s
192 s
104 s
94 s
84 s
75 s
65 s
55 s
50s
45 s
40s
35 s
30s
24 s
14 s
11 s
9 s
8 s
Epicenteral Distance (km)
S - P Interval (s)
9
8
7
6
5
4
3
2
1
0
Earthquake Magnitude (M_L)
1000
500
200
100
50
20
10
5
2
1
0.5
0.2
0.1
0.05
0.02
0.01
Max. S-wave Amplitude (mm)

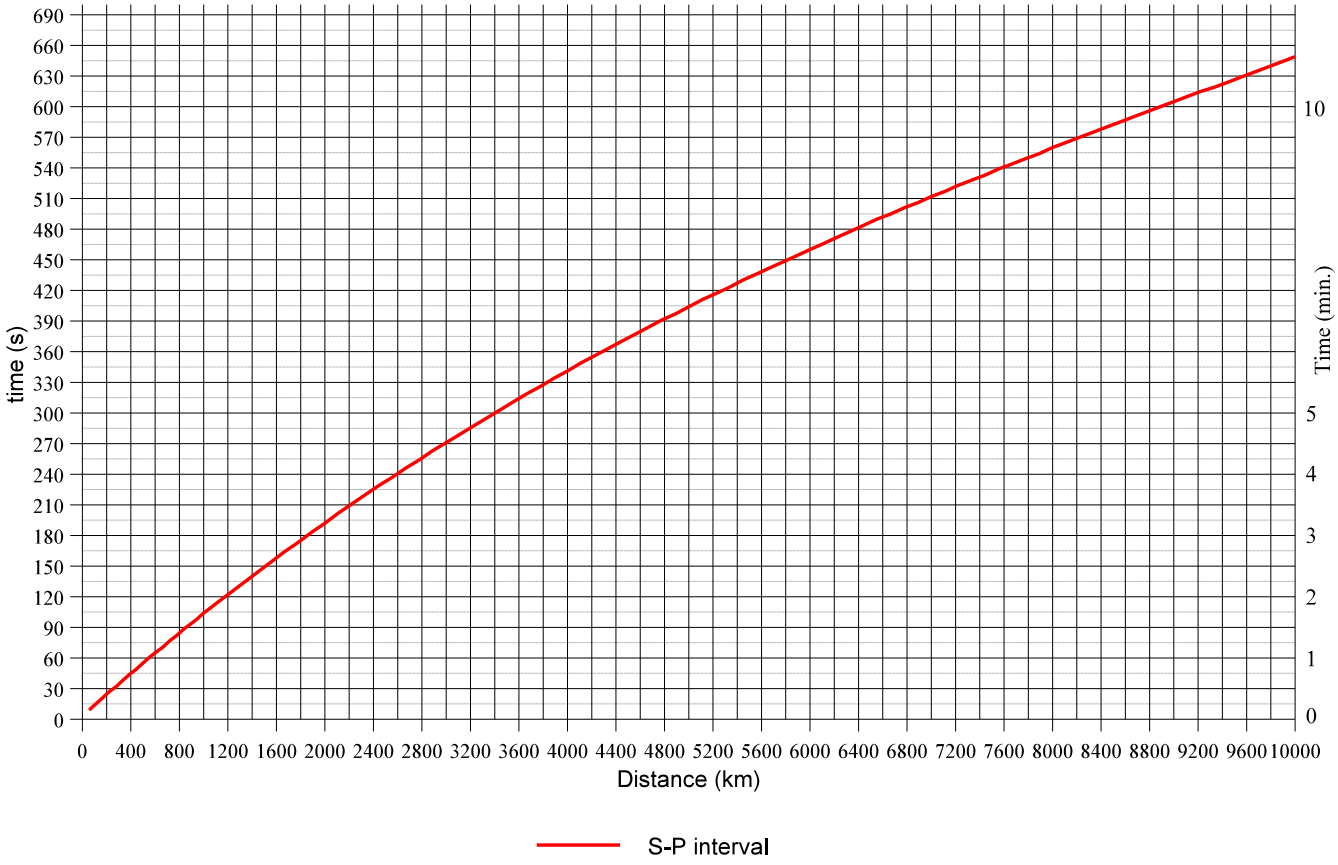


Figure 5.4 - SP Lagtime Time Distance Graph