Introduction to Earthquake Seismology

Assignment 4

Department of Earth and Atmospheric Sciences **EASA-452**

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Particle Motion – P-waves

Goals:

- **Identify phases on seismograms**

Background:

It is time to put know knowledge of wave type identification to use. The following figures are synthetic seismograms for a very simple Earth structure (just a halfspace). Even for this simeple approximation to the real Earth, you will see more than a P, S and surface-wave arrival. We can understand these arrivals if we know what they are.

In the figures your are given three-component time series. The observation point is due east of the source.

What you must do:

I require you to tell me what the phase is at the required times.

What you must submit:

Identify the phase. Also use the opportunity to indicate in words the basis of your decision. Also use words to indicate anything odd that you note about the traces.

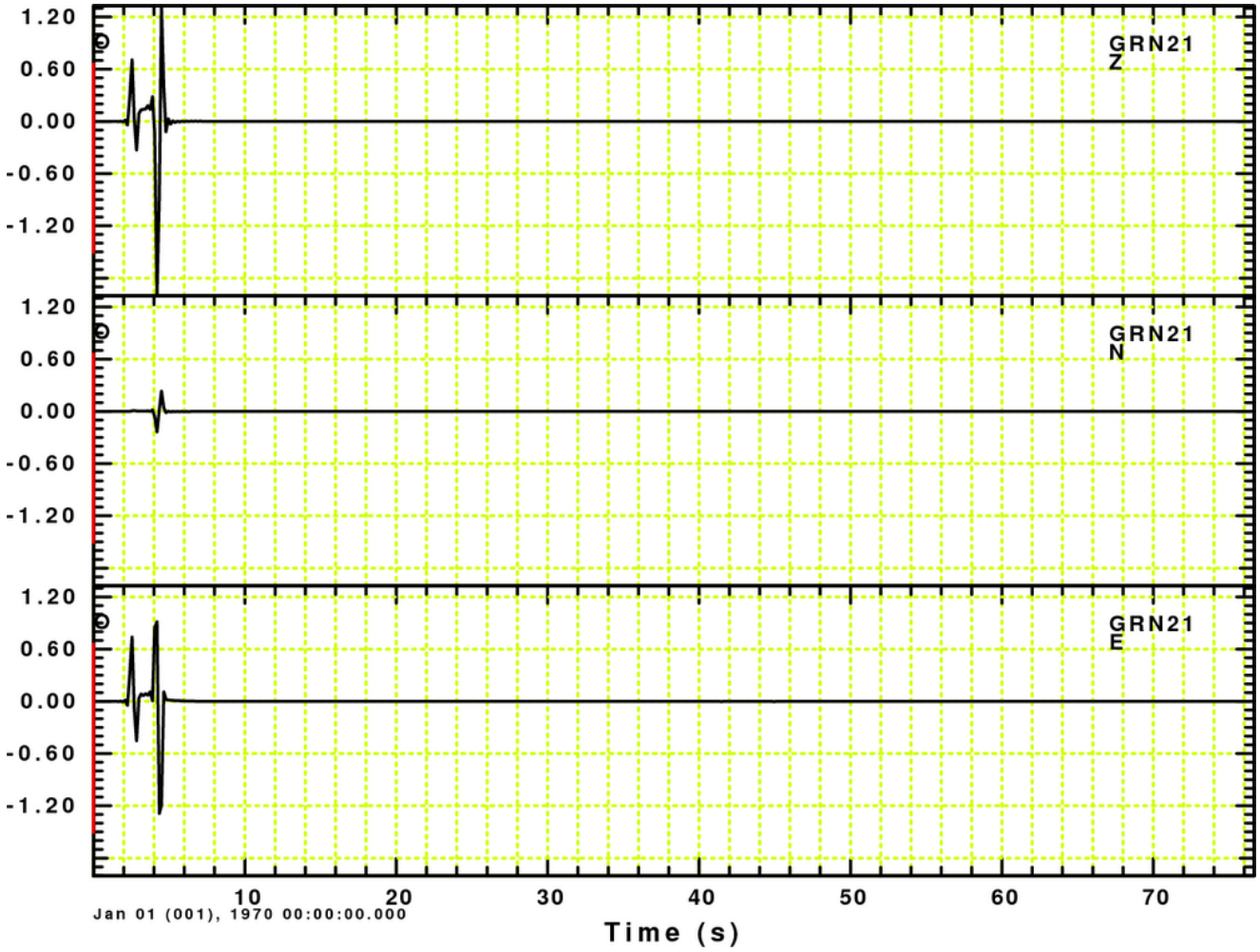

Fig. 1. Seismograms at a distance of 10 km for a source at a depth of 10 km.

Identify the arrivals as P, S, Rayleigh or unknown at the following times with respec to the trace beginning:

Time	**Phase**
2 sec	_____
4 sec	_____

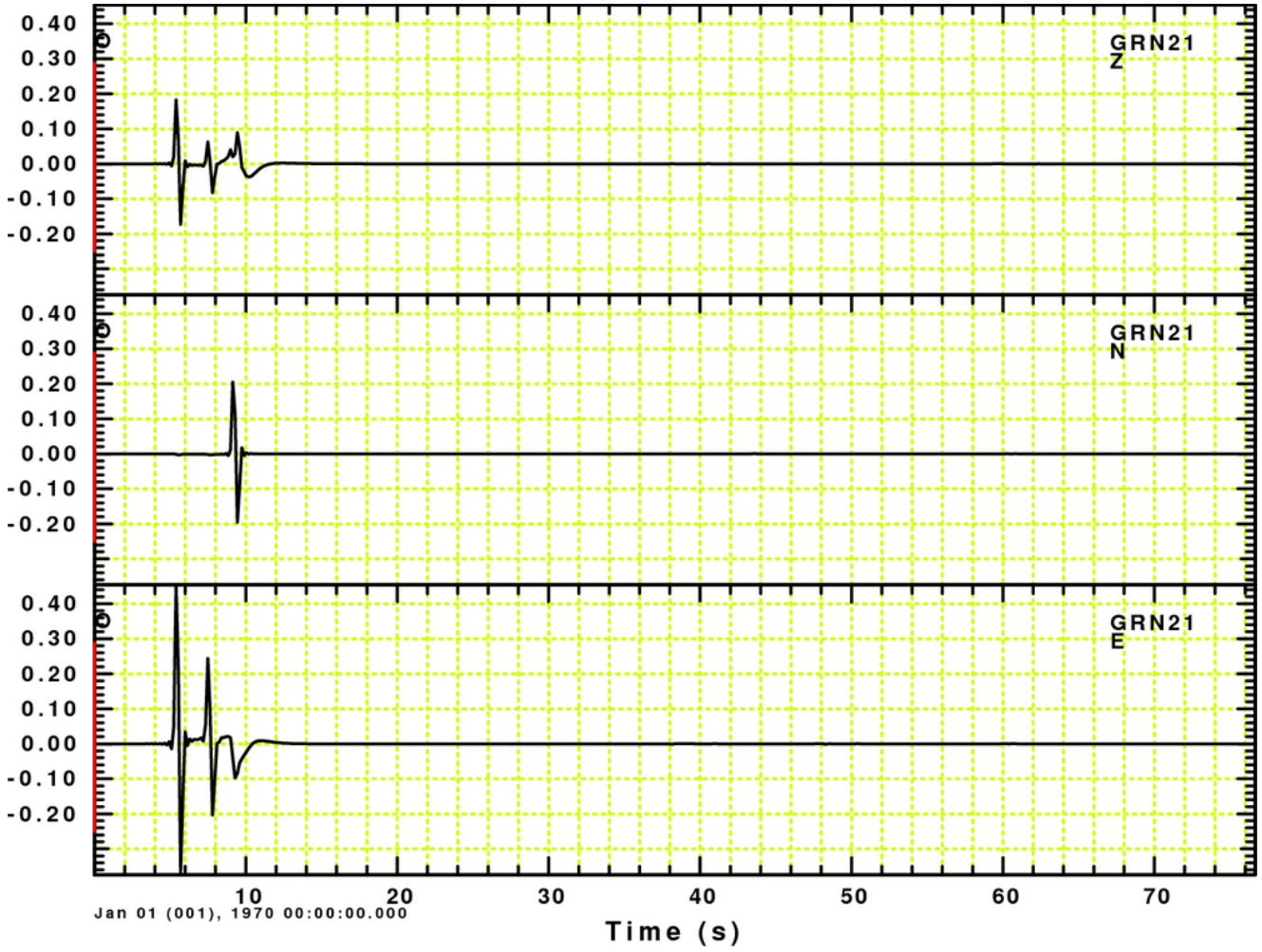

Fig. 2. Seismograms at a distance of 30 km for a source at a depth of 10 km.

Identify the arrivals as P, S, Rayleigh or unknown at the following times with respec to the trace beginning:

Time	**Phase**
6 sec	_____
8 sec	_____
9 sec	_____

Fig. 3. Seismograms at a distance of 100 km for a source at a depth of 10 km.

Identify the arrivals as P, S, Rayleigh or unknown at the following times with respec to the trace beginning:

Time	**Phase**
16 sec	_____
19 sec	_____
28 sec	_____
31 sec	_____

Fig. 4. Seismograms at a distance of 200 km for a source at a depth of 10 km.