

Identifying Small Volcano-Seismic Events Using A Single Close Station

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Figures 1 to 4 show data from the short-period seismic station MSS1, about 1.3km from the summit of the Soufriere Hills Volcano, Montserrat.

All the plots in Figures 1 to 4 have identical limits, except in amplitude. Each plot shows 90 seconds of data in the following windows:

- top: Signal
- middle: Logarithmic spectrogram (or scaleogram)
- bottom: Signal envelope
- right: Spectrum, frequencies plotted on log scale

VTs (see Figure 1)

- Sharp onset
- Brief duration
- Peak in spectrum above 10 Hz
- Spectrogram biased towards higher frequencies
- Multiple VTs can overlap to give emergent onset (see Figure 3)

Rockfalls (See Figure 2)

- Emergent onset
- Variable duration
- Peak in spectrum below 10 Hz
- Spectrum moves to lower frequencies with time

Some unusual signals are shown in Figure 4.

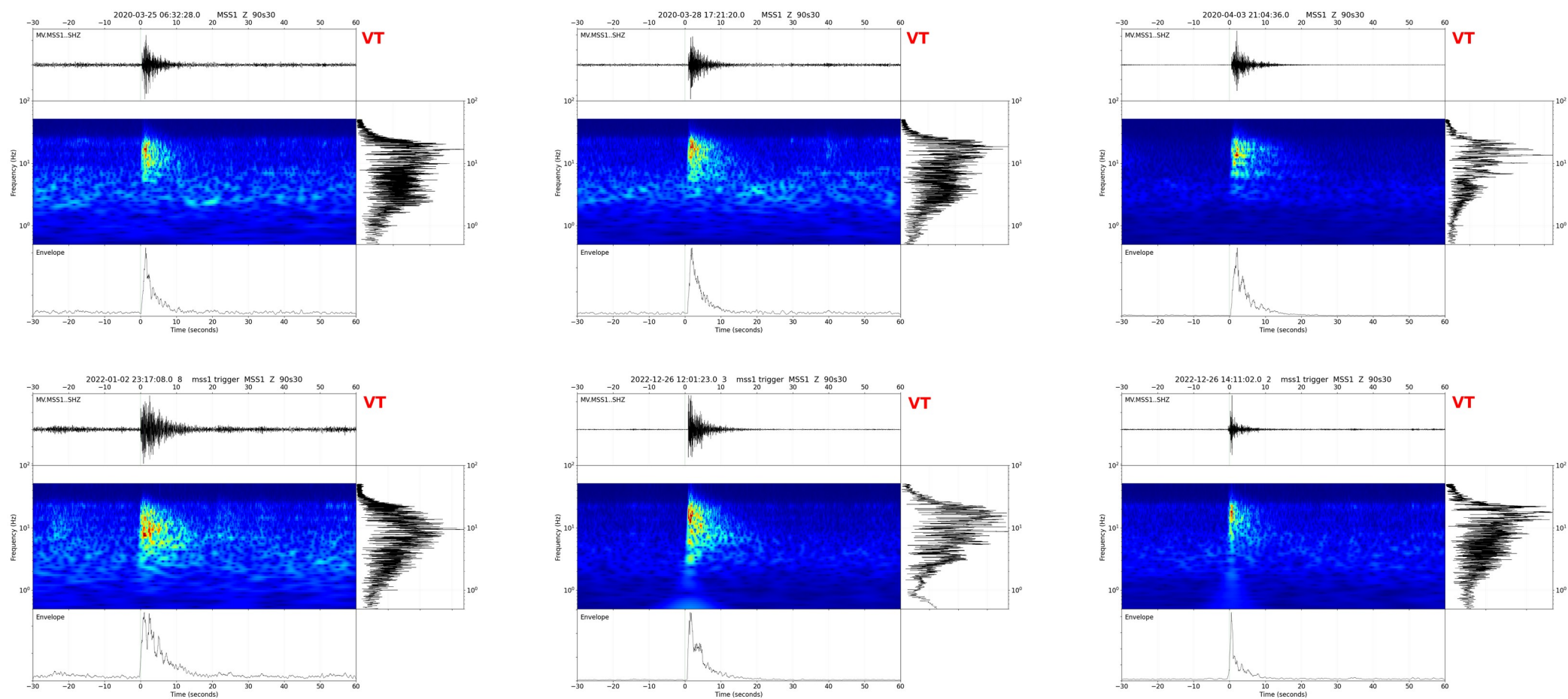


Figure 1 Examples of VT earthquakes recorded at MSS1.

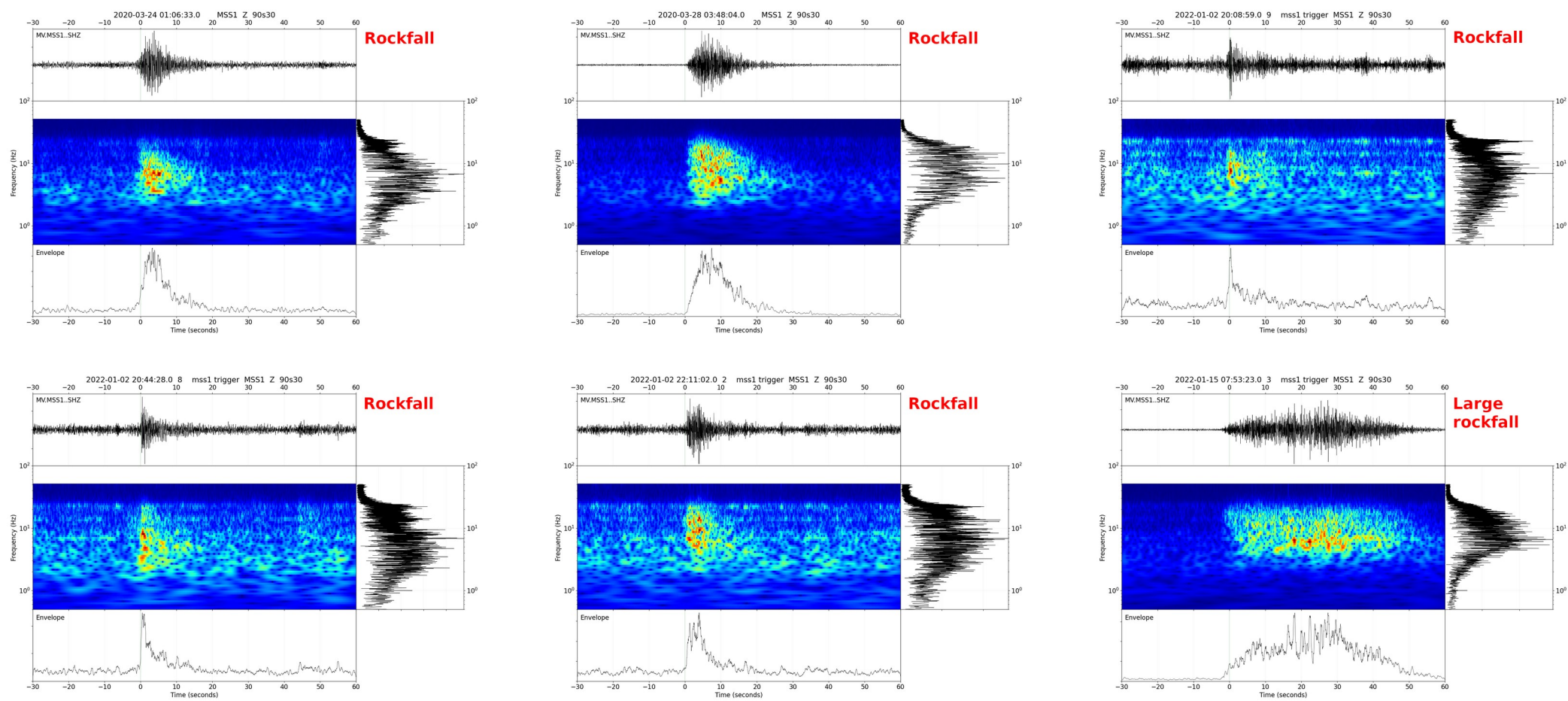


Figure 2 Examples of rockfalls recorded at MSS1.

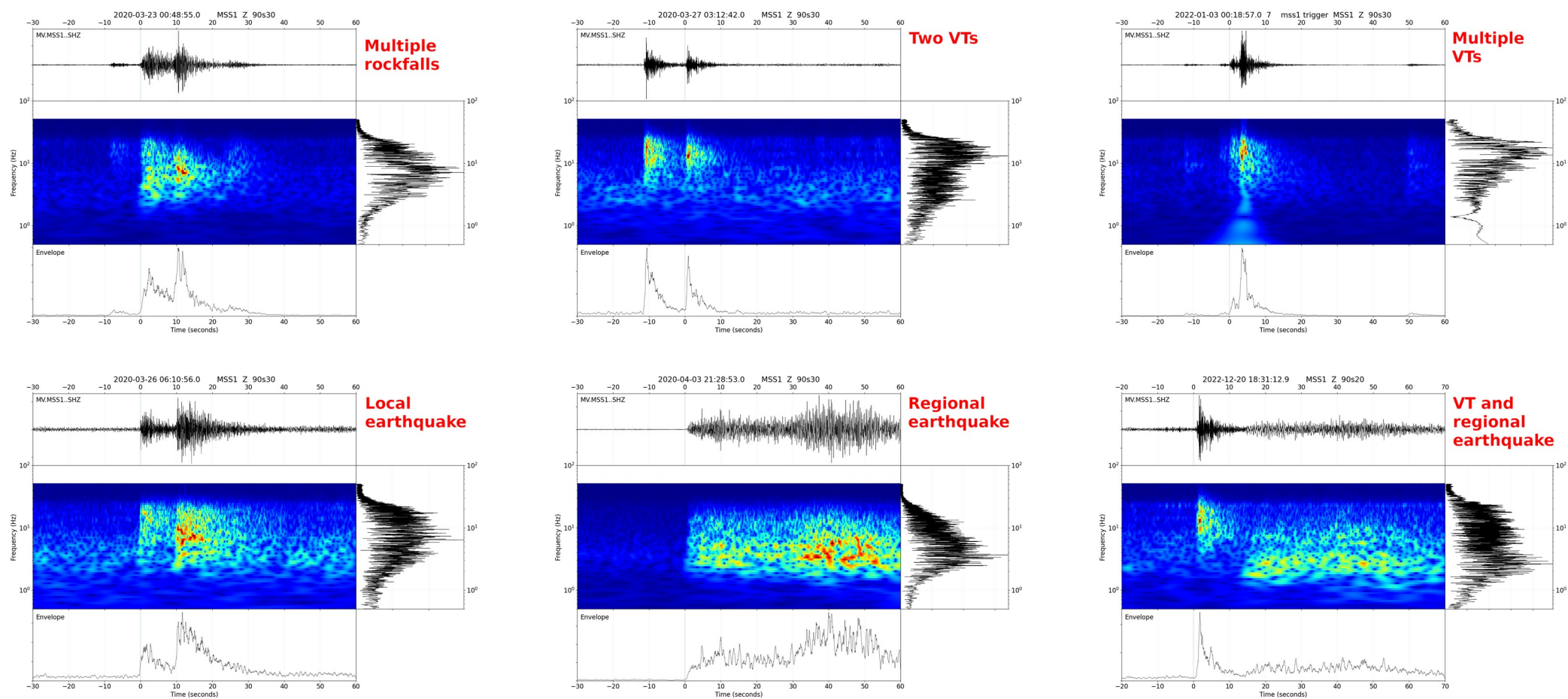


Figure 3 Examples of other seismic events recorded at MSS1.

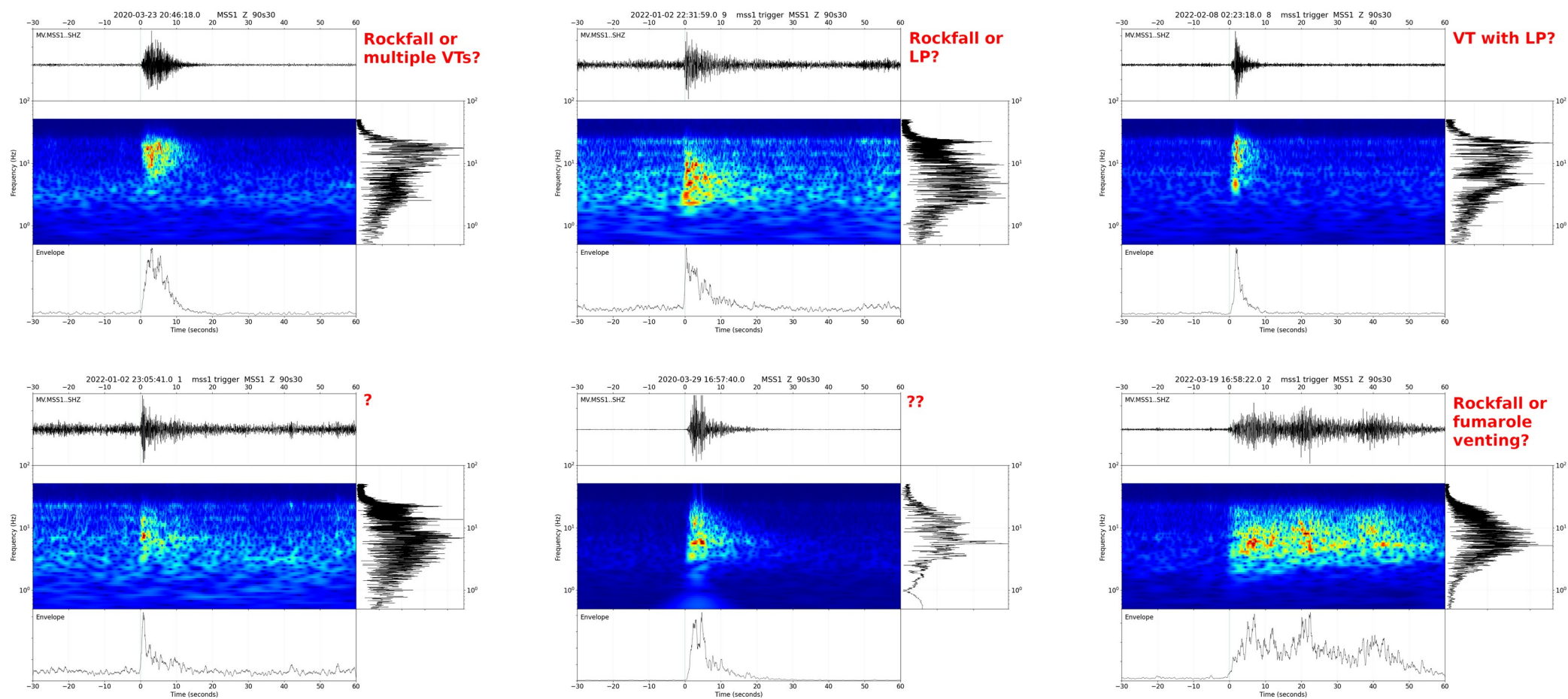


Figure 4 Examples of unusual volcano-seismic events recorded at MSS1.