

*Supplementary material for*

## **Rose Parade seismology: signatures of floats and bands on optical fiber**

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This supporting material provides additional figures on data analysis. Contents of the supplementary material are shown as below.

### ***List of Supplemental Figure Captions***

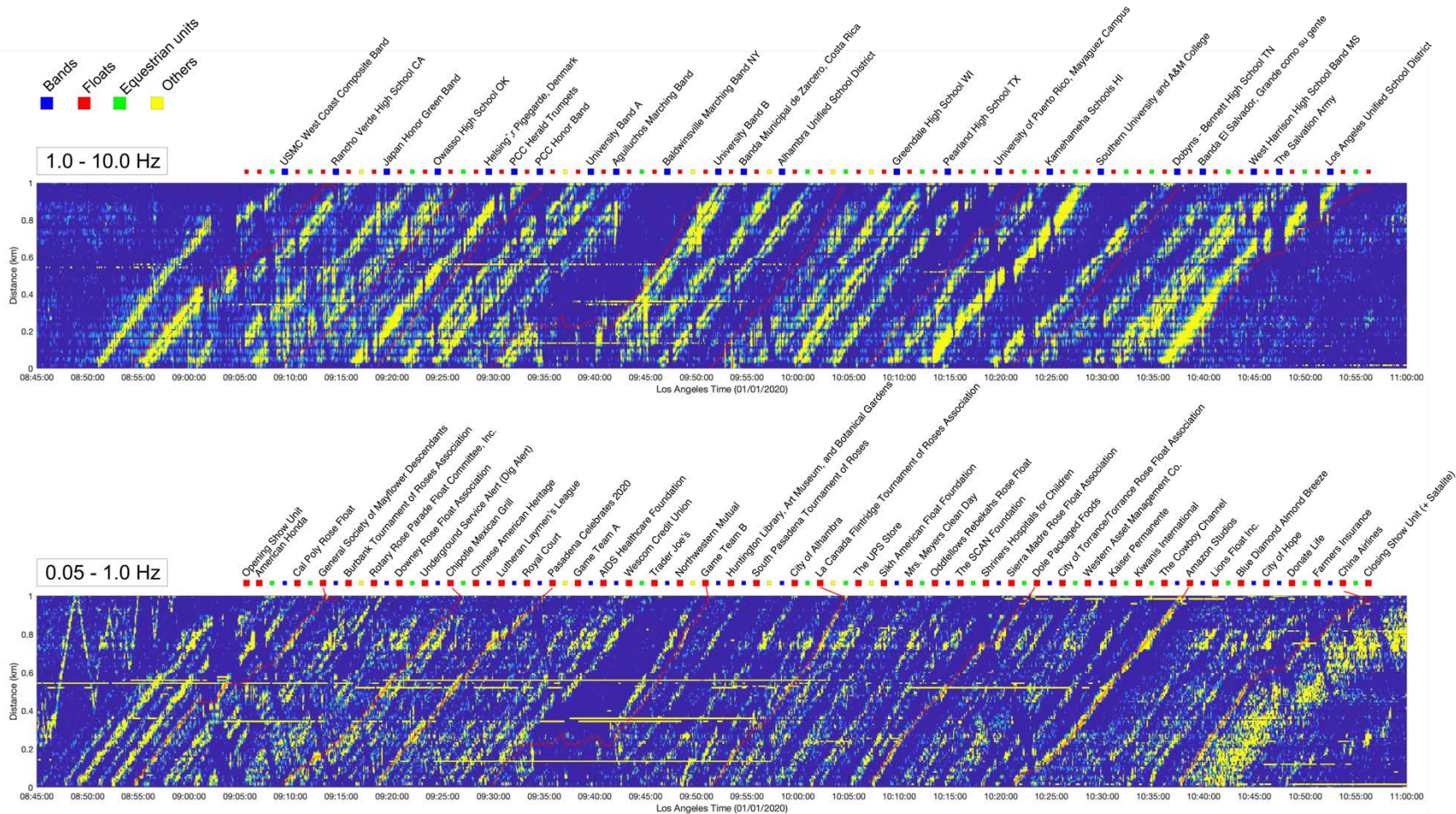
**Figure S1.** The 2020 Rose parade lineup, in order of appearance, along with the seismic signals in different frequency bands.

**Figure S2.** 2.5-hour-long seismic records acquired by the HDAS system along the Pasadena DAS array.

**Figure S3.** The estimated moving speed of the bands (~2.5 miles/h on average) using moving window slant-stacking.

**Figure S4.** Record section showing the envelope of seismic signals calculated at frequency of 0.05 – 0.5 Hz. The color bar has been rescaled to show the seismically “heaviest” float. The “heaviest” float is the Amazon Studios float (upper figure), which featured a real bus, a rocket, and the Voyager spacecraft on a truck.

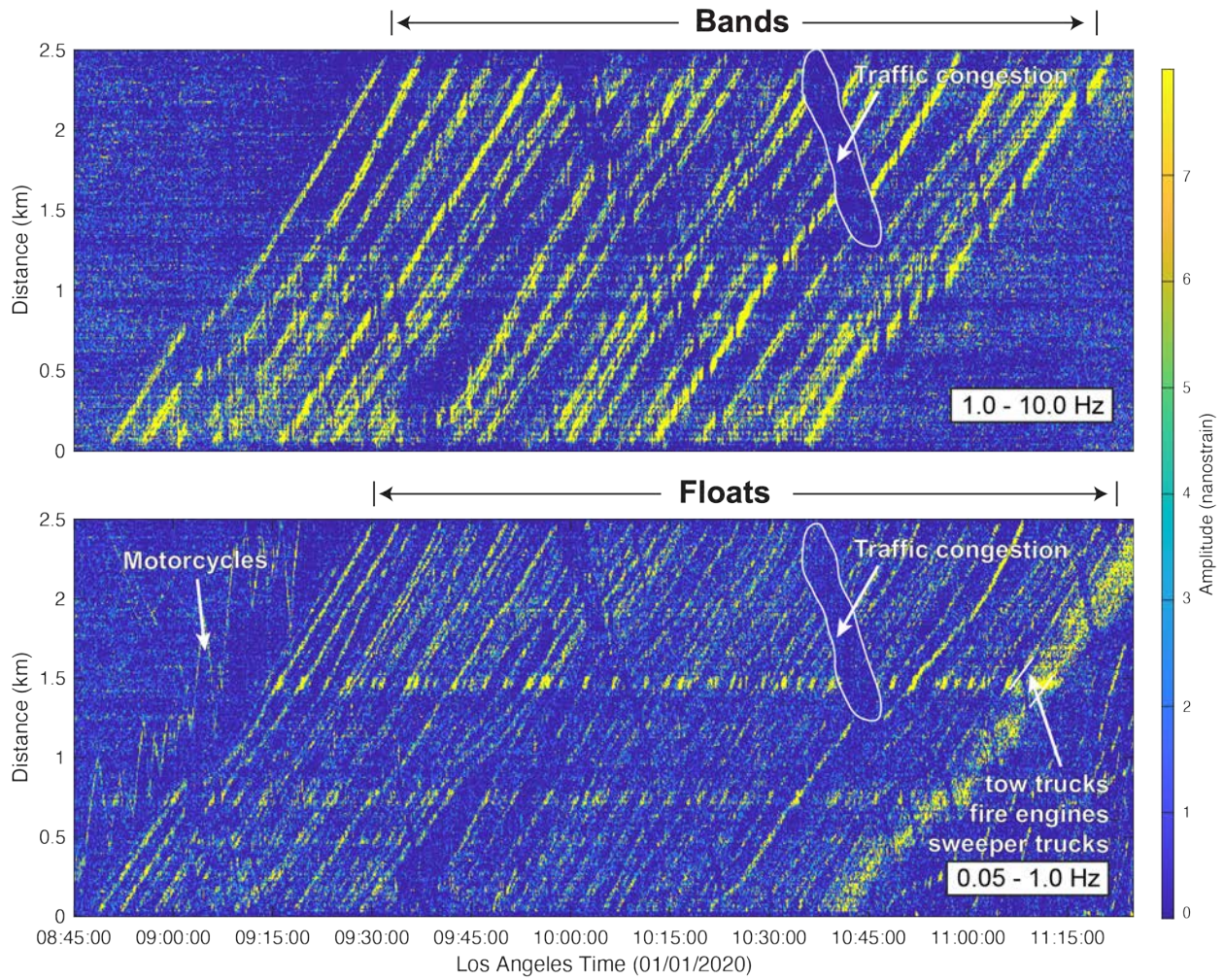
**Figure S5.** Record section showing the envelope of seismic signals calculated at frequency of 0.5 – 10.0 Hz. The color bar has been rescaled to show the seismically “loudest” band.



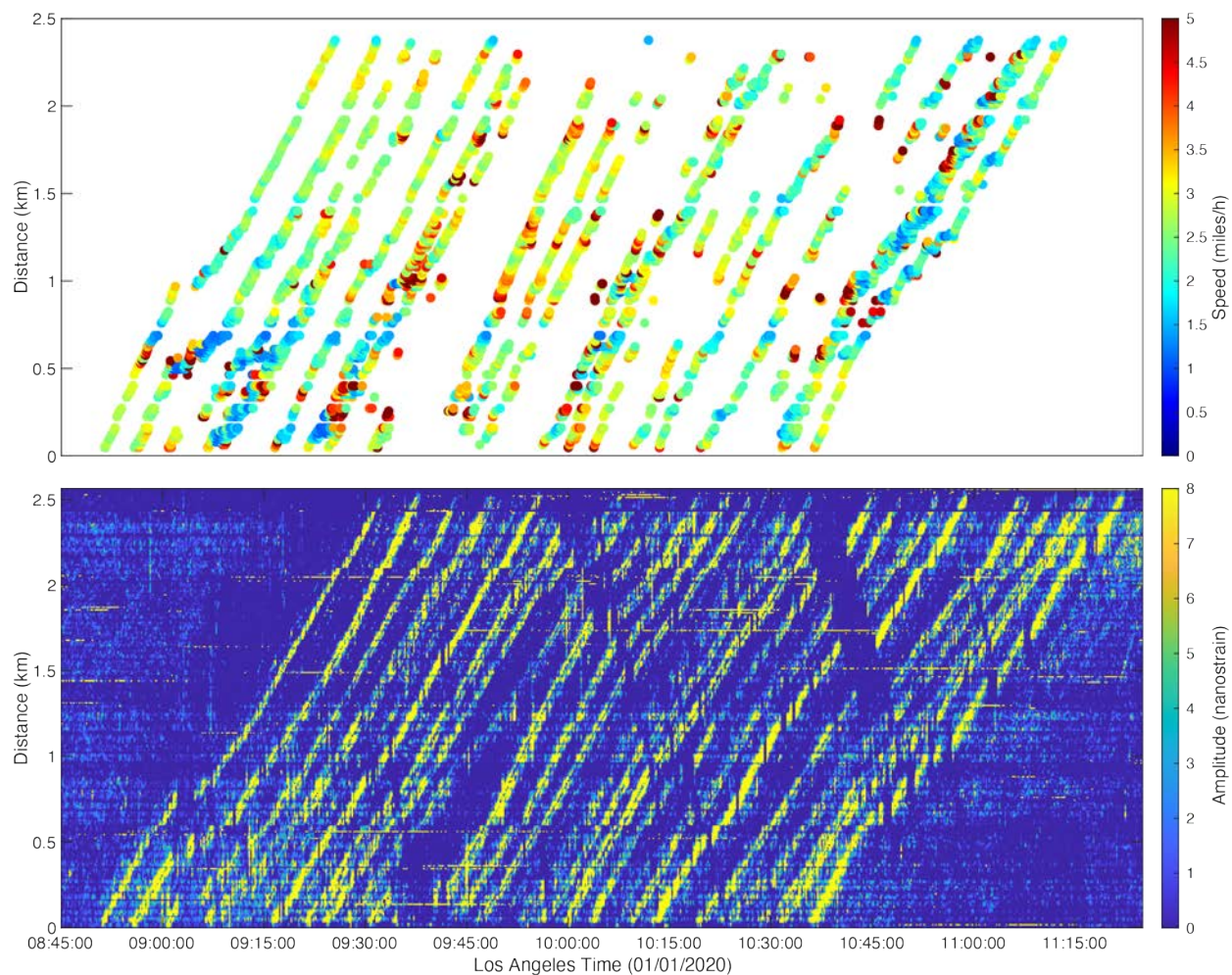
**Figure S1.** The 2020 Rose parade lineup, in order of appearance, along with the seismic signals in different frequency bands. We overlap the floats' GPS track records (red lines) and seismic data at two different frequency bands. It is clear that the 0.05-1.0 Hz signals are from the floats, while the 1.0-10 Hz signals are from the bands.



Seismic records from the HDAS



**Figure S2.** About 2.5-hour-long seismic record acquired by the HDAS system along the Pasadena DAS array. The Rose Parade-generated seismic signals can also be clearly observed on the HDAS system.

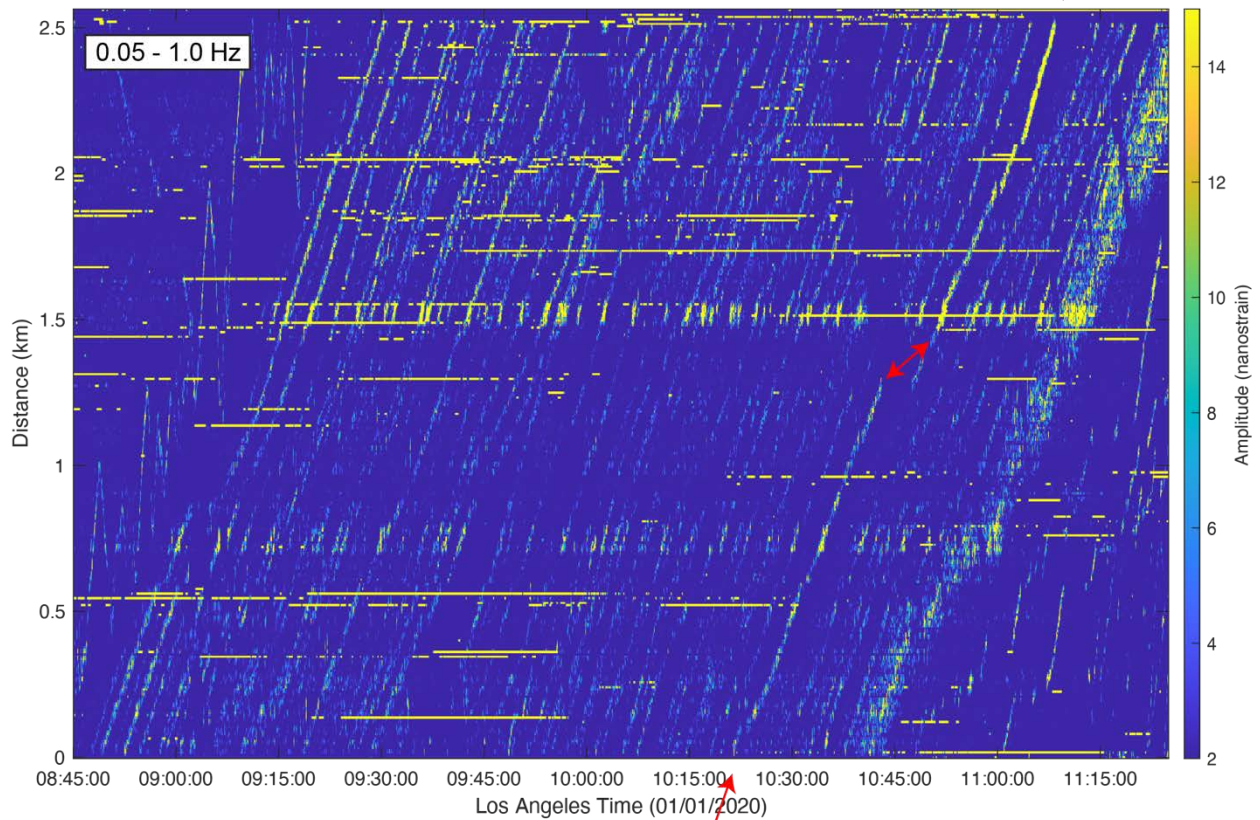


**Figure S3.** The upper panel shows the estimated moving speed of the bands using moving window slant-stacking (sliding window of every 20 channels). The lower panel shows the corresponding DAS records for comparison. Even though it's quite challenging to individually identify and track all of the floats, the average moving speed is around 2.5 miles/h.

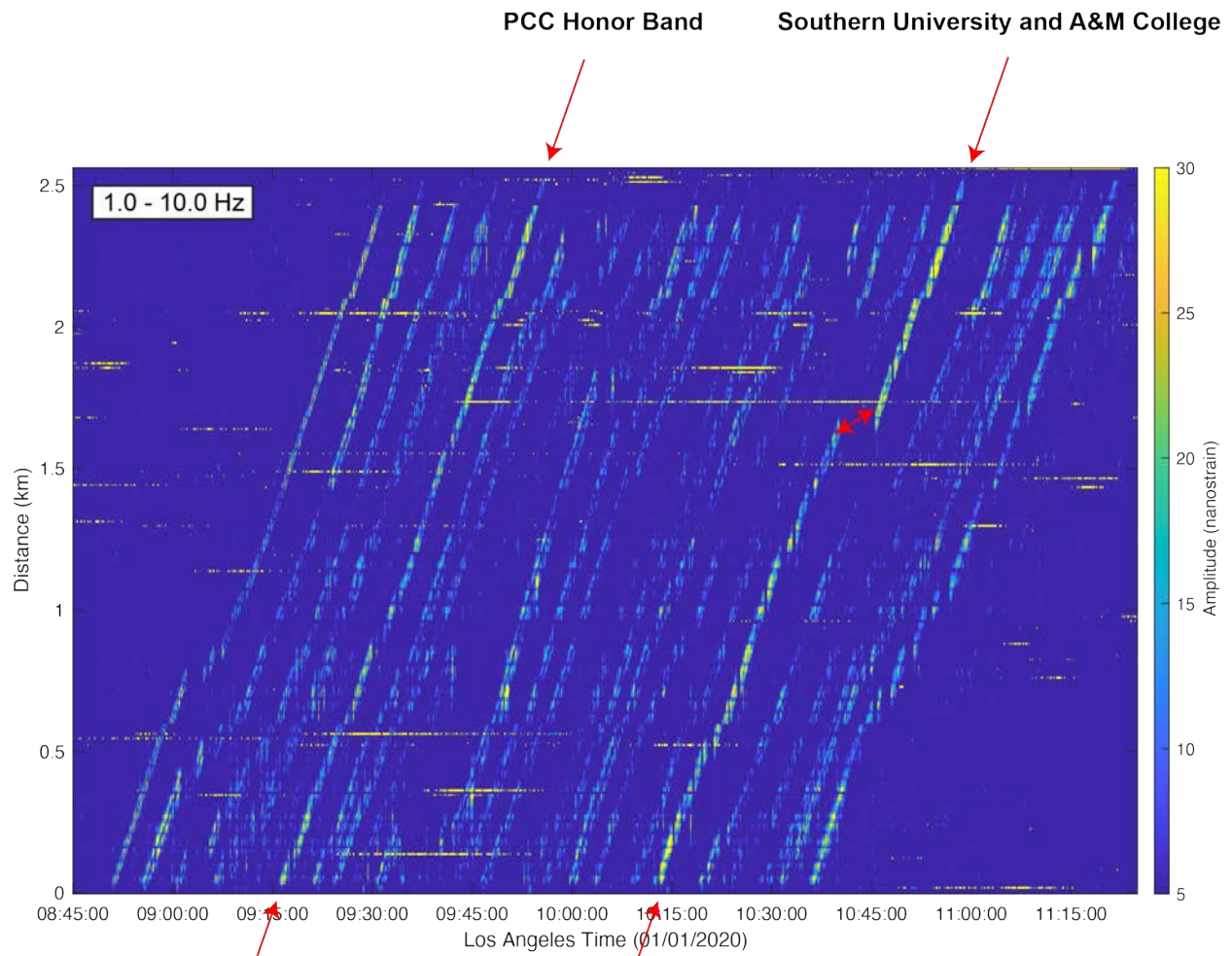




Amazon Studios



**Figure S4.** Record section showing the envelope of seismic signals calculated at frequency of 0.05 – 1.0 Hz. The color bar has been rescaled to show the seismically “heaviest” float. The “heaviest” float is the Amazon Studios float (upper figure), which featured a real bus, a rocket, and the Voyager spacecraft on a massive truck.



**Figure S5.** Record section showing the envelope of seismic signals calculated at frequency of 1.0 – 10.0 Hz. The color bar has been rescaled to show the seismically “loudest” band.