

Revealing the signature of ground frost in continuous seismograms with machine learning

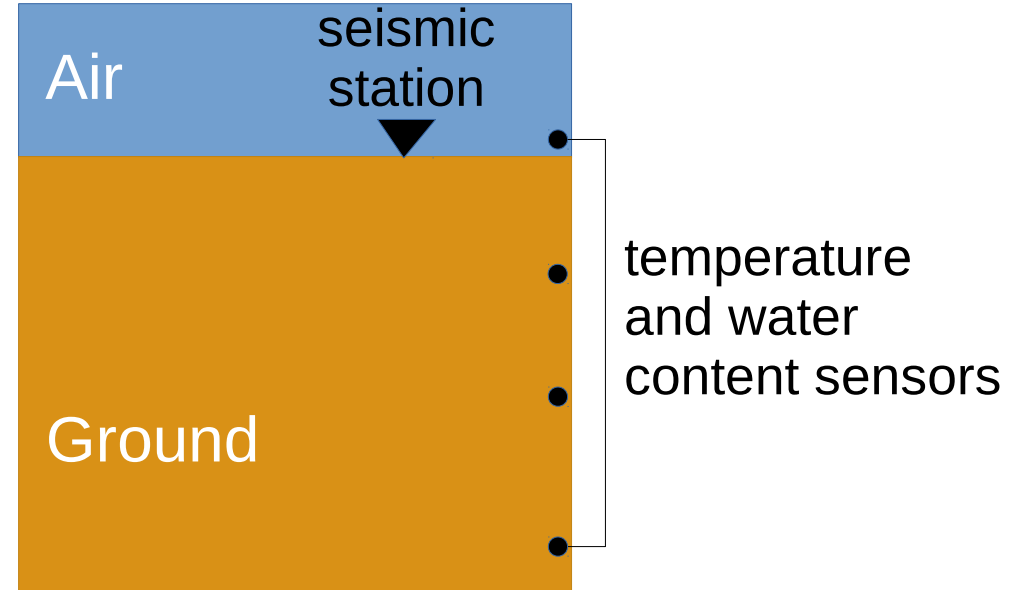
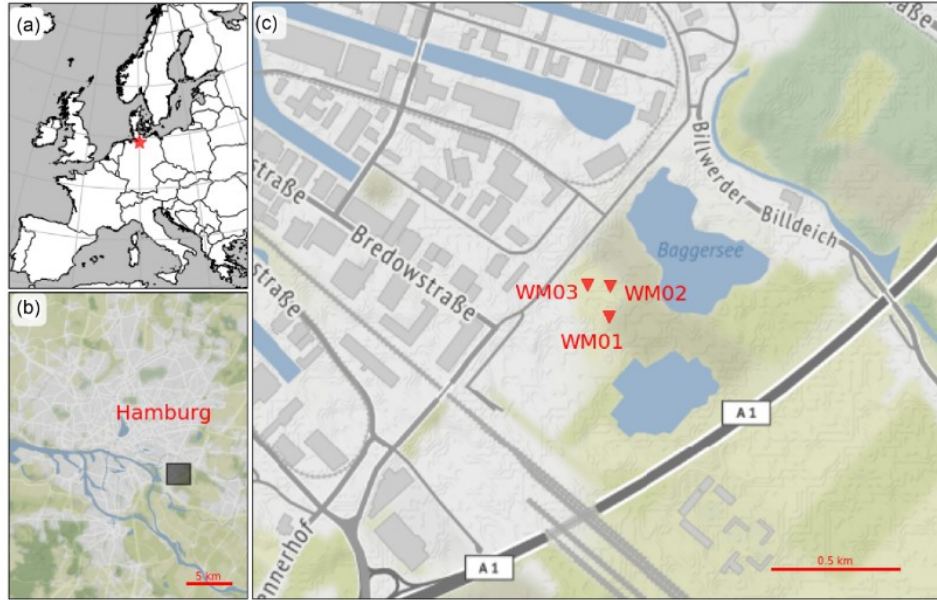
AGU 2021 – Environmental Seismology Oral III

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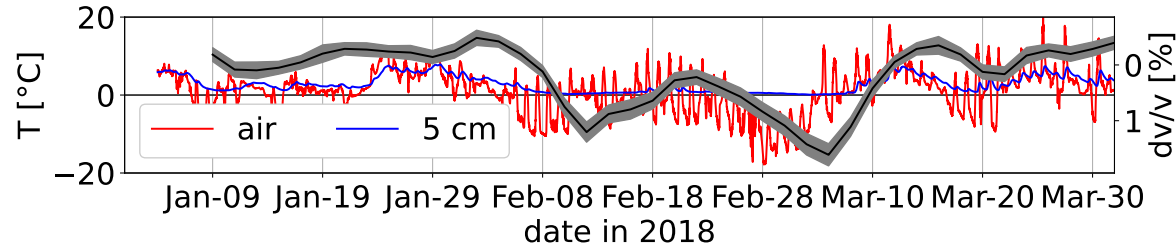
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Monitoring the near subsurface with seismology in an urban environment

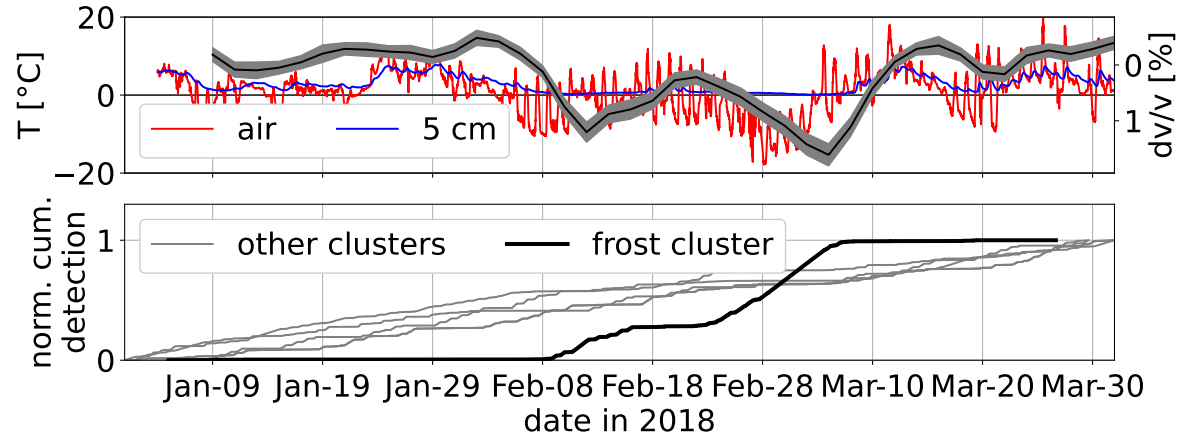


Unsupervised learning reveals seismic signature of centimeter thick ground frost



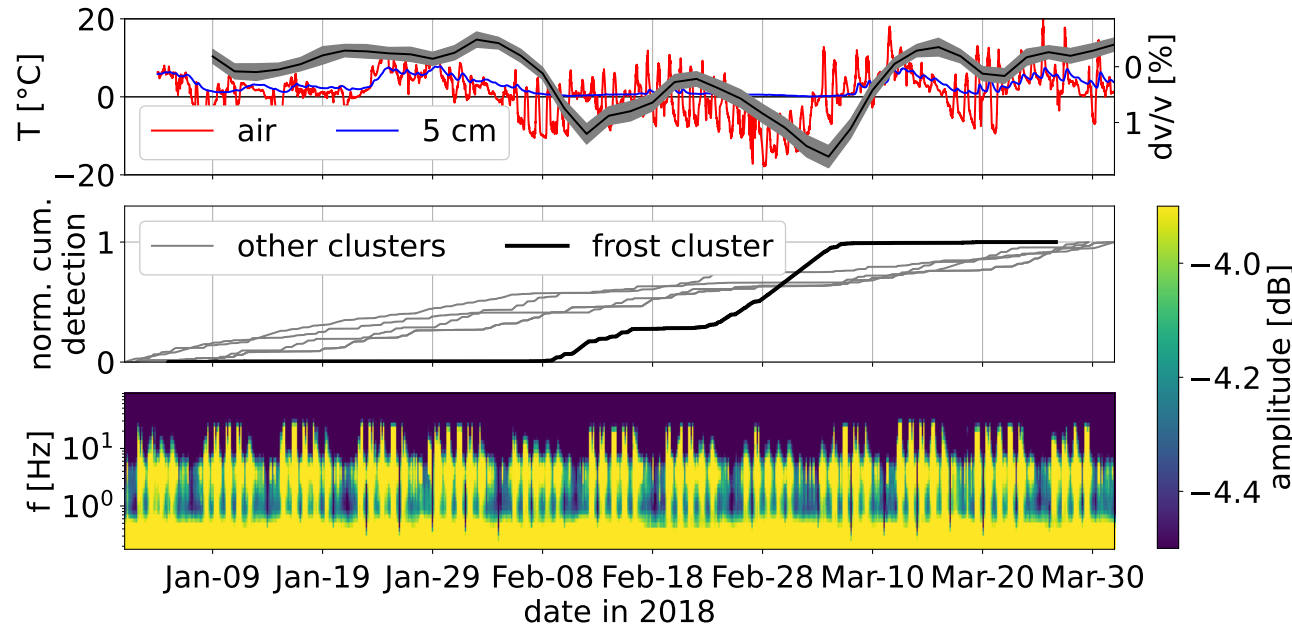
- dv/v tracks freezing and thawing on centimeter scale

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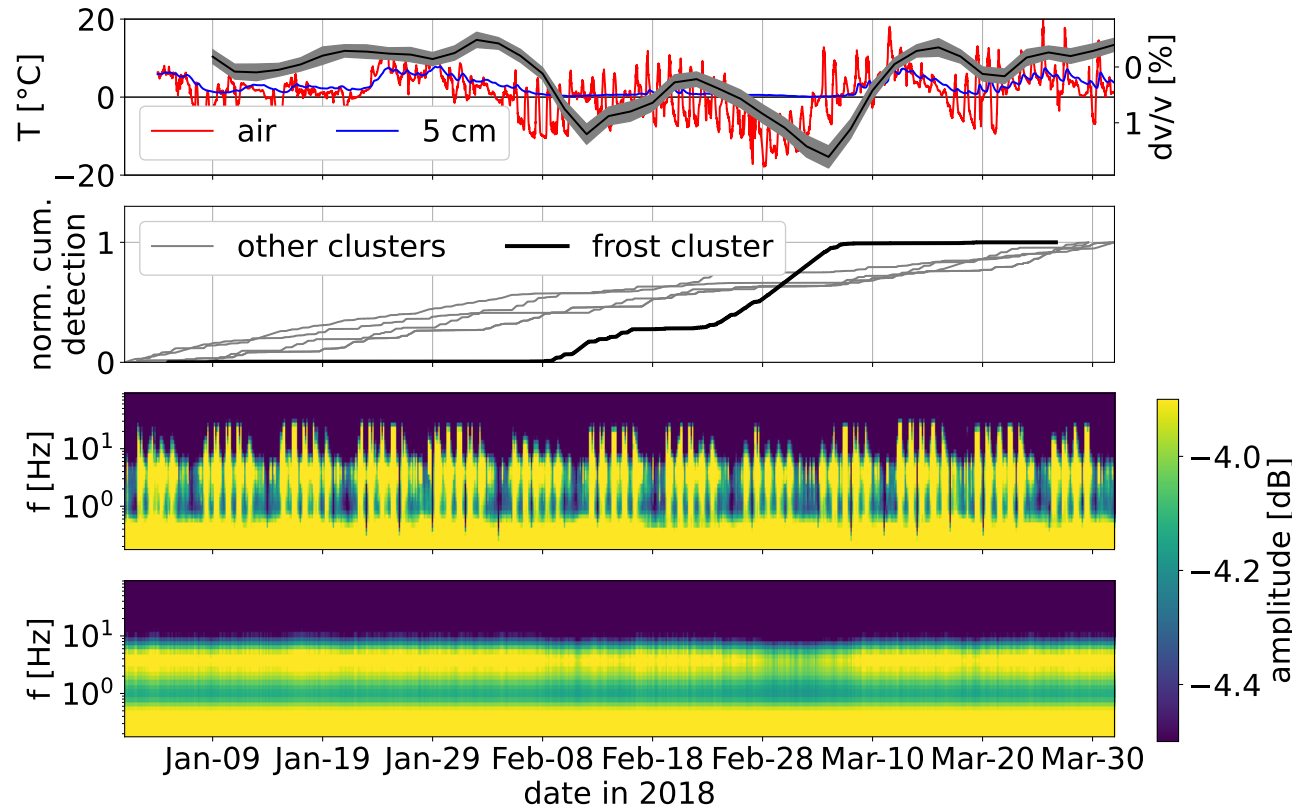
- dv/v tracks freezing and thawing on centimeter scale
- pattern during ground frost in seismograms

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- dv/v tracks freezing and thawing on centimeter scale
- pattern during ground frost in seismograms
- decrease of amplitude and H/V due to ground frost

What are the implications?

1. Leverage the potential of 3C-Seismometers for permafrost monitoring with machine learning
2. How does a surface freezing effect surface wave modes? → interpretation of dv/v more complicated?

*Want to chat about it in-person or
virtually?*

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