

Will Yellowstone's geology produce rock music?

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Rapids along the road between Yellowstone and Teton National Parks. Credit: Unsplash/CC0 Public Domain

A scientist will attempt to turn seismic activity—recorded in real time at Yellowstone National Park—into music during an ambitious live

performance on Tuesday, May 9.

Dr. Domenico Vicinanza, a Senior Lecturer at Anglia Ruskin University in Cambridge, England, is a leading expert in data sonification, which is the process of converting scientific measurements into sound, and the event will be the first time that data sonification using live geophysical data has been attempted on stage.

During the performance at the [2023 Internet2 Community Exchange](#) conference in Atlanta, Georgia, which brings together universities and researchers from across the United States and beyond, Dr. Vicinanza will access seismographic data being recorded by the US Geological Survey in Yellowstone National Park.

The music will be produced live on stage with the help of a computer program developed by Dr. Vicinanza, which will map the seismographic data to musical notes. It will then be performed by Dr. Alyssa Schwartz, Visiting Assistant Professor of Flute and Musicology at Fairmont State University.

Yellowstone is one of the most seismically active areas of the United States, with as many as 3,000 earthquakes recorded annually. Earthquakes at Yellowstone often occur in "swarms", with many happening in a short space of time.

This element of chance makes it impossible to predict what the music will sound like, and the duo are ready for whatever nature throws at them.

Dr. Vicinanza, who in addition to his role at Anglia Ruskin University (ARU) is the coordinator for the arts and humanities at GÉANT, the European network for research and education, said, "We have absolutely no idea how the music will turn out.

"Using my program I'll be converting the data to [musical notes](#) and if there's significant [seismic activity](#) and big spikes in the data we're receiving at that time, the music will be incredibly dramatic. Equally it could be quite serene, so it's a huge artistic challenge for Alyssa to interpret, and it's really Alyssa who will be taking all the risks.

"Alyssa won't be able to change any note, but she will be able to interpret the piece of music created before her eyes, and she will be able to creatively use speed, articulation, or make certain parts softer or louder. It might be really difficult to play, but that's what makes it exciting, and Alyssa is incredibly brave to be doing this in front of a live audience."

Dr. Vicinanza's ongoing work with Yellowstone National Park is the first time the US National Parks Service has recognized music as a research output. He will visit Yellowstone next year to capture his own recordings among the [hot springs](#) and geysers, but in the meantime he's delighted to have this opportunity to bring scientific data from the country's oldest national park to a wider audience.

Dr. Vicinanza added, "By being able to 'perform' what would otherwise be viewed on a graph, we're able to bring the power of nature to life and help more people experience the natural wonders of Yellowstone.

"Music, and sound in general, can be a really useful way of experiencing science—for scientists as well as the general public. After all, our ears are much more sensitive to small changes than our eyes.

"Every pattern, spike, or sudden change in the music is a direct representation of what is happening at that spot in Yellowstone at that time. Rather than just looking at a seismograph we can listen to it, and that's an incredible thing."

Provided by Anglia Ruskin University

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