

# March 16, 2020

## Ignite Open Innovation (OI) Forum

*Series of talks and open discussions to inform the USGS Open Innovation Strategy*

### **Monday, March 16, 2020 at 3 PM ET / 9 AM HT**

Jefferson Chang from the USGS Hawaiian Volcano Observatory (HVO) will present a new citizen science initiative using low-cost emerging technology with students to aid volcano and earthquake monitoring efforts on the Hawai'i Island. This will be followed by an interactive Q&A discussion with Jefferson and an open forum for others to share and get feedback on potential open innovation projects related to volcanoes and earthquakes. See below for more information on the agenda, Jefferson's talk abstract and bio, the Zoom video conferencing information, and the OI Community resources. Feel free to forward this to others that may be interested in this meeting.

3:00 - 3:05 PM **Introduction to Ignite OI Forum and Menti Poll**

3:05 - 3:20 PM **Using Volcanic Hazards in Hawai'i as a STEM Platform in Problem-Based Learning**

3:20 - 3:35 PM **Q&A with Jefferson Chang**

3:35 - 4:00 PM **Open Forum - Share Potential OI Projects related to Volcanoes and Earthquakes**

### **Using Volcanic Hazards in Hawai'i as a STEM Platform in Problem-Based Learning**

Hawai'i Island is home to Mauna Loa and Kilauea, respectively the largest and most active volcanoes on the planet. The USGS Hawaiian Volcano Observatory (HVO) monitors, investigates, and assesses the hazards posed by these volcanoes since 1912. HVO uses real-time information from instruments to monitor thermal and visual changes, volcanic gas emissions, ground deformation, and seismic activity. However, most of these monitoring instruments are located along volcanic edifices and rift zones, far from heavily populated areas, such as Hilo, Kona, and Phoa. Increasing the coverage of monitoring stations on the island is financially impractical, due to the high cost of instrumentation. In recent years, publicly available data and technological advancements have given new momentum to citizen science initiatives. Data gathered by specialized instrumentation are reproducible by enthusiastic hobbyists, using readily available off-the-shelf components. We use emerging technology to empower youth in a problem-based learning approach during a summer-long course. With guidance from HVO scientists, students essentially adopt the hazards mission of the USGS. Students not only aid in the volcano monitoring efforts on Hawai'i Island, but also (1) take ownership of their own learning, (2) increase their capacity in STEM, and (3) engage the local community and address its needs.

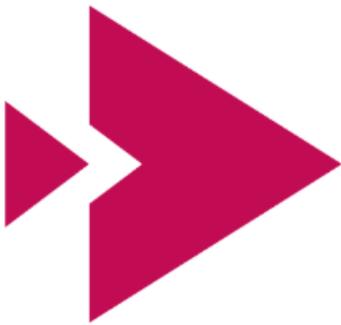
***Jefferson Chang** is a geophysicist at the Hawaiian Volcano Observatory (HVO). Before coming to the USGS in 2018 (in the middle of the Kilauea volcanic crisis), he was the geophysical network manager at the Oklahoma Geological Survey (and interim state seismologist during the 2015-2016 induced seismicity crisis).*



Jefferson Chang... 3-16-2020.pptx



Ignite OI Forum...erson Chang.mp4



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[Jefferson Chang Powerpoint Slides  
Jefferson Chang](#)

[Ignite OI Forum Video with  
Jefferson Chang](#)

#### **Q&A Chat and Discussion**

Annie Scott: How did you choose the students or classrooms? Or, how did they find you?

Virginia Burkett: What was the cost of the Raspberry shake sensor?

<https://raspberrysshake.org/products/>

Jefferson: View of Raspberry Shakes sharing data, all over the globe: <https://raspberrysshake.net/stationview/>

Eleanour Snow: We are working on digitizing some of these old records through STEP-UP, but could use some transcribing

Chris Hammond: If you have a STEP-UP project idea, please contact me.

Jo Ellen Hinck: I work with the DOI Natural Resource Damage and Restoration Program (NRDAR). We are looking for new ways to monitor restorations projects using citizen science, etc to keep costs down. Would love to brainstorm with folks on this topic.