

“The Fiery Mountains Under The Sea” Transcript

Excerpt from [January 19, 2018](#) episode of Science Friday.

IRA FLATOW: This is Science Friday. I’m Ira Flatow, lots of stuff to talk about this hour. A bit later. We’ll evaluate the science behind sleep tracking apps and gadgets, and how the brain can be hacked with flashes of light to combat jet lag. First up though, has this ever happened to you? You’re sitting on a plane traveling over a large piece of open ocean, you look out the window, and you see something—something weird down there. It’s long and narrow, it stretches for miles, well, like it’s an island, and this one is gray colored like a cluster of rocks floating in the water. What would you do if you saw that?

Well, most people I’d say would go back to reading their Kindle or watching the in-flight movie, but in 2012, someone thought, hey, that’s weird I should tell someone, and that kicked off an expedition to the southwest Pacific Ocean where researchers would find out it was floating pumice expelled from an underwater volcano, one of tens of thousands of volcanoes under the sea. And here to talk about it with me, and tell us all about it, is Adam Soule. He’s chief scientist for deep submergence at Woods Hole Oceanographic Institute in Massachusetts. Adam, welcome to Science Friday.

ADAM SOULE: Thanks, Ira. It’s great to be here.

IRA FLATOW: Let’s start about just how incredible it is that someone saw this from an airplane and thought to say something to the right people? I would have thought someone— hey, someone already knows about this. Who am I going to tell?

ADAM SOULE: Yeah. It’s amazing. I mean, you mentioned there’s thousands of volcanoes in the ocean, there are erupting all the time, but we only find out about them through kind of serendipitous events like this, and we’re very appreciative of the woman who noticed this, and let people know, because it kicked off for us a really exciting expedition.

IRA FLATOW: Do you get a lot of eruptions reported that way? Or is this something unusual?

ADAM SOULE: It’s pretty unusual. You know, over the last 100 years or so, there’s been about 3,000 eruptions on land that have been documented. In the oceans, there’s only been about 30. So it’s really a rare event when we find out an eruption happened, and can get out there right away to look at it.

IRA FLATOW: So give us an idea of how you got this big pumice raft story. What did it look like? How big was it?

ADAM SOULE: The pumice raft was, based on satellite imagery that we looked at after the fact, the pumice raft was about 400 square kilometers. And that, for reference is about the area of New Orleans or Denver. So this is a massive body of pumice floating in the ocean.

IRA FLATOW: And so the eruption happened in 2012, but you’re not able to get out there to study it until 2015. First, why is there such a long delay? And did you miss it?

ADAM SOULE: You know, it takes a while to mount an expedition of this nature. It requires proposals to funding agencies, and we were very fortunate that the National Science Foundation supported this work, but you also have to get a ship and deep submergence vehicles together and a whole crew of scientists. And even though it took three years to get out there, it was still fantastic. To be able to see

the deposits from this eruption, and to know that they came from this particular event is something we don't often get to do in the deep ocean.

IRA FLATOW: Does a submarine volcano look like one that you see on land?

ADAM SOULE: Oh, remarkably similar. So when we created these detailed maps of the volcano, I kind of put them next to photos of some aerial volcanoes, or volcanoes on land, and literally, you cannot tell the difference. They look almost identical, some of the landforms that are produced.

IRA FLATOW: You know, because we see eruptions in Hawaii all the time, but you know you never hear about these underwater eruptions until somebody sees something unusual.

ADAM SOULE: Yeah, that's right. Most of the volcanism, about 75% of the Earth's volcanism happens under water, but we don't really have a great ability at this time to detect when those eruptions occur, and even less so to see them in action.

IRA FLATOW: So how many do you think? I said tens of thousands. Is that being too big a number?

ADAM SOULE: Oh, no, no, I think that's totally reasonable. I mean, there's a 65,000 mile long chain of volcanoes on the global mid-ocean ridge that we've visited probably 1% to 2% of it.

IRA FLATOW: And why don't we come up with some better way than of monitoring these submarine volcanoes? Is that just a question of money and putting down monitoring devices, satellites? What's the story here on that?

ADAM SOULE: Well, I think it's a question of technology, but I think the technology has caught up, and maybe it's a question of will. We have satellites above the Earth monitoring it, and we use those to understand weather and to do all sorts of amazing monitoring of our planet, and I think we have a growing recognition that the oceans are equally as important. So I think the technology exists, and it's a matter of finding the will and the resources to monitor the oceans in the same way.

IRA FLATOW: So how do you top this one? What's your most exciting next thing on your list?

ADAM SOULE: Oh my gosh. You know, the thing about working in the deep ocean and on volcanoes in particular is that we know so little about them that every time we have a chance to go out there, we get to make exciting discoveries. And a place that I'm heading this year is the mid-Atlantic ridge, where we actually find rocks on the seafloor that are lava that are so bubbly that when you bring them up, they start popping. And that's a really cool thing to see.

IRA FLATOW: I can't top that, Adam. Great way to end that segment. Adam Sule, chief scientist for deep submergence at Woods Hole, the famous Woods Hole Oceanographic Institute. Thank you for taking time to be with us today.

ADAM SOULE: It was great to be here. Thanks, Ira.

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