

Volcanology with Jess Phoenix

Ologies Podcast

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Hello and welcome to the very first episode of *Ologies* with Alie Ward. I'm, clearly, Alie Ward.

I'm very, very excited that this is finally up. I've been working on this for so long – like the better part of a year – just to put out the first few episodes, and I've wanted to do something where I explore all these different ologies for over a decade. I came across this list of ologies, all these obscure ones, and I just thought: who does this stuff? Who studies it, why do they study it, what happened to spark their obsession with this? There's got to be something.

On the list was volcanology and I thought “who studies volcanoes and why?” and so I sent out some emails, and I just kept hitting cul-de-sacs where I couldn't find anyone to interview and I thought “Oh, I'll find a volcanologist later...” A few weeks later I happened to be at one of those dinner parties where you're socially just completely out of your league, like I think I brought a dip that wasn't vegan when I was supposed to bring something vegan, and people were talking about art films from the '70s and Romanian philosophers I was unaware of – wonderful people, very smart, much smarter than me – and as one of them was leaving she was like “I gotta peace out, I gotta get up and do some campaign stuff...” and I said “Who was that?” So, she's a volcanologist who's also running for Congress.

I approached her, and then gently stalked her, and we became friends on the Internet and then she invited me up to her campaign headquarters, which is a shared office space in the Valley right now. She made me a cup of tea, I met her dogs, and we sat down, and we talked about volcanoes! And she told me about lava flow and how islands get burped up from the ocean floor and her experience with horse bandits, and the best way to die, and we talked about running for Congress too and what that entails and – spoiler – it entails a lot of work, but if anyone's going to do it it's going to be this chick who stares into the open gaping maw of a volcano. So, get ready to learn a lot about volcanoes and also have an immediate crush on Jess Phoenix.

[Intro Music]

Alie Ward: So, let's get levels on you and then we're ready to go!

Jess Phoenix: Hello everyone... hello, hello!

Alie: Now, do you say vulcanologist or volcanologist? I've seen it both ways.

Jess: I say volcanologist because I am an American and we ruin everything, that is what we do. Vulcanology, with the u, actually, in ancient times – and, if you think about it, Italy is one of the centers of the study of volcanoes because of things like Pompeii – the Italians, their god was Vulcan with a u, and so, anything related to volcanoes, those folks address it with a u. Again, English speakers, it's with an o, volcanology.

Aside: Jess came to LA to do grad school in geology. And as sort of like a “Oh, this would be kind of cool” whim, she applied for a summer volunteer researcher position with the Hawaiian Volcano Observatory, because if you're going to volunteer somewhere do it on an island paradise.

Jess: They actually said “Yes, you can come.”

Aside: So, she was a new grad student, she wasn't sure what she was going to focus on. She thought maybe plate tectonics?

Jess: I thought subduction zones were really cool...

Alie: What is a subduction zone?

Jess: Subduction zones are where the ocean floor dives beneath the continents because the continents are less dense than the ocean floor. So, the continents are granite, granite is less dense, and then the ocean floors are basalt, more dense. So, the basalt sinks beneath the continents, and that's called subduction.

Aside: Okay, so pay attention because this is the basic premise of what a volcano is. This is it. And it's followed by an egregious geology pun.

Jess: And it's pretty cool because the sinking ocean floor gets melted as it gets hotter, as it deepens, and then it rises. Hot things rise, so it rises back to the surface and often forms volcanoes that erupt on the surface. So, subduction leads to volcanoes, and there's a joke, actually, in volcanology and in all geology, that subduction leads to orogeny [*ba-dum-tsh!*] which is – orogeny is mountain building. I have a shirt that says, "Subduction leads to orogeny."

Alie: [*laughs*]

Aside: I did not get this joke. But I laughed in the moment [*Jess saying "orogeny" and Alie laughing plays on loop*] because I felt stupid. And to this day I think it's a play on seduction and erogenous zones, but I Googled it just to check and, let me tell you, I did not find an explanation, but I did find shirts, and pins, and hats, and all manner of Etsy items available with this phrase on it [*Jess saying "Subduction leads to orogeny" with echo effect*] for anyone who needs to rep a lust for geology.

Jess: I mean, the humor, it's there. We love our terrible puns and we love anything that is – well, for the most part the volcanologists, or I should say geologists, I hang out with, we love the destructive things, so if it's got a terrible pun that can be made or it's going to kill everybody, we're into it.

Alie: I mean, that is one thing about volcanoes. I feel like it's such a thrilling study because there's a doom attached to it. You can throw virgins in it, it can destroy your entire city... Do you grow up being interested in, like, Mount St Helens or Pompeii or anything – the history of volcanoes?

Jess: Everything. Actually, it's funny, my undergraduate degree IS in history, and I studied Latin, and my emphasis was in art and architecture of ancient Rome. So, I was really aware of how ancient natural disasters affected people. You had volcanic eruptions that really shaped the founders of modern civilization, the Romans, with Pompeii in 79AD, and that was when the first volcanology was done. I was studying history but also learning about my future career and I didn't even know it.

Alie: What's been a really exciting discovery for you, either an actual discovery that hasn't been made by anyone or an epiphany that you've had while you were doing this?

Jess: You know, that's a cool question. I'll just tell you about the time that I really realized that volcanoes are IT. This is the most amazing thing I've ever done.

There were several. But when I was at the volcano observatory my third day on the job – first two days were paperwork because it's U.S. government, that's what you do – the third day my boss said "Hey, we're going to go to the summit of Mauna Loa," and that's the world's largest volcano. And you could see it looming; it looms very well. It's not your typical impressive straight up and down cone that people see, it's long. The name

in Hawaiian means long mountain. It's really REALLY long. There's no way to effectively convey it, even when I'm standing in front of someone and trying to gesture with my hands. You can't explain how long this thing is.

Alie: Like long vertically?

Jess: No, horizontally; it spreads. Hawaiian lavas flow, they ooze. They're not explosive like the ones you think of when you think of Mount St. Helens or, say, *Dante's Peak*. They're more oozy. And so, the mountain builds up over time and the lavas just ooze out and they stack on top of each other. Mauna Loa is a shield volcano; they named it because it looks like a warrior shield on its side. So, it's a gentle slope. But when you're on the summit of it you're almost 14,000 feet high.

Alie: Oh my God.

Jess: To drive up there we took my boss's modified Chevy Tahoe, which the U.S. government gave him expecting him to take care of it. He put rock crawling tires on it, ripped off the bumper – well, sawed it off, actually, with a hacksaw – and then pulled off the running boards, and then it had adequate clearance to go up Mauna Loa because you're driving over lava. Nobody goes up there. But when you get to the summit of it, there's a caldera.

The caldera is related to the word cauldron; it's basically where, if you envision yourself standing on the edge of a volcano and you look at the roiling lava lake, that's what you're thinking of, the caldera. But this caldera, it wasn't erupting; it hadn't erupted since the 80s. The lavas were all cooled and they're just shiny and black and beautiful and the caldera is miles long and miles across. It's huge. We're standing in the summit caldera and I was sitting there on lavas that were younger than me; they were from 1984.

The world's largest volcano was still growing, and I was looking into this vent where the lavas had come up from. And it's this abyssal looking hole. I mean, you look down into it and there's just nothing. And my boss said, "We're going to go down there and look at some of the lavas because we might want to take a sample." And I'm like "Really? We can just go down there?" and he's like "Yeah, we can go down there."

So, of course, I went down there and I'm in this vent on the world's largest volcano, almost 14,000 feet high, and I went "This is the best thing. This is SO amazing." And that wasn't even flowing lava; that came later. But just the scale of it, and the fact that we're still building this planet – we're not doing anything, I should say, humans aren't, but the planet is still alive. It's still growing and changing every day. And I'm like "This is living history." And I just fell in love.

Alie: Were you at all scared being down there at all?

Jess: Nah. I mean that's my problem. My parents would probably agree: whenever I'm going to go do something, I'm pretty well-versed in doing risk assessments, hazard assessments. It's been some of the stuff I've had to do for my jobs. And so, I look at the risks, and I take calculated risks, but I guess my scale for what's scary is a lot different than most people's.

I mean, I work in areas where there are venomous snakes and spiders. There are active volcanic eruptions. I've worked in areas where there have been narco trafficking routes going on. I've dealt with narco traffickers. I've had to deal with horse thieves.

Alie: Horse thieves?

Jess: Yeah, in Peru, on an expedition.

Alie: You can't, like, put a club on your horse...

Jess: When you're at 16,000 feet elevation no help is coming. Helicopters can't even get there really. You're basically in a remote valley and, if the horse thieves come, you better hope that the wranglers who are taking care of your pack animals have a rifle, which they did. So, all was well; we didn't lose any animals.

Alie: Did you just shoot at the thieves?

Jess: They just had to show 'em the rifle because the thieves were armed too, but when they saw that our camp was armed, that was it. But, when you deal with things like that, that's what you do. That's science today, and that's what people don't see. They see the volcano and they go "Oh, it's erupting!" but they're not necessarily thinking about the poisonous gases or the heat stroke. The less sexy and glamorous parts of doing field research.

Alie: But is that kind of what thrills you about it a little bit?

Jess: Yeah, because it kind of strikes a little bit more at the true heart of exploration as it was intended to be. Everybody needs to do what draws them. And for me it's volcanoes and for some people it's circumnavigating the South Pole – who knows?

Alie: Your particular study of volcanoes: do you focus on the spewy ones? The ashy ones? The oozy ones? What's your...

Jess: What's my niche?

Alie: Yeah, what's your jam?

Jess: I started out on Hawaiian volcanoes and I ended up doing undersea as well. And then I've also studied the explodey sorts of volcanoes too. I've done work in Mexico on some extinct volcanoes. I've done work in Ecuador on currently erupting volcanoes. And then just all over the US, on the Cascades volcanoes, Pacific Northwest. So, really, it's a mix. And my real specialty, what I love, is volcanic hazards.

Alie: You're the only person I'm ever going to meet in my life who's going to say that sentence.

Jess: You say this, but you could go to visit Kīlauea volcano in Hawaii. They have a visitor center there. And the volcanologists are usually inside doing work or outside doing work. But sometimes they'll wander around over the overlook, where the public is, and they'll look out and you may be standing next to a volcanologist and not know it. So, we look like normal humans.

Alie: You need to wear some cool hat or something...

Jess: We just need the pointy ears because then that would make the Star Trek jokes I get all completely relevant.

Alie: How often do you get that?

Jess: Pretty much all the time. Everyone goes "Wait, I didn't know that Star Trek was something you could get a degree in!" and I'm like "Yes, I've heard that one. Thank you, though." But no, I usually respond with "Live long and prosper" and then I do the hand gesture.

Alie: That's too kind of you.

Jess: You have to. Because to people who meet a volcanologist for the first time it's a cool thing – "you work on volcanoes?" – but when you're a volcanologist you're like "Yeah, so I get up in the morning and I have to pay the water bill." So, you know, you're just like anybody else, but it IS cool. And you can't forget that. Whatever you're studying, you love it, otherwise you wouldn't be doing it. You have to keep that joy. And that's what I

think is so important these days for scientists: we have to be telling people why we love what we do, what makes it so cool.

Alie: And now, what gets you excited is the hazards.

Jess: Hazards, yes.

Alie: And you mentioned the Pacific Northwest. There was an article going around last year that was like “The Pacific Northwest is just screwed.”

Jess: Pretty much.

Alie: How screwed are they?

Jess: There's just a number of hazards there. You've got tectonic hazards. They could have a major, major earthquake. We have that documented that there have been major earthquakes along the faults up there. There's also the possibility of tsunami. But then the volcanoes, which are my favorite, and a good example is Rainier.

Aside: Which is that really, really big beautiful mountain that's just outside of Seattle, and it looks like a drawing of a mountain on a bottle of water. It's so beautiful, it belongs on a beer can.

Jess: And I have friends in Seattle and I love to terrify them.

Aside: It's also very dangerous.

Jess: It just sits there looming over Seattle. I love things that loom; it's kind of like my favorite concept lately.

Alie: It is a loomy one.

Jess: It really looms and it's good at it. And so, it looks picturesque. It's covered in glaciers, twenty-six of them. And those glaciers, if you think about it, what happens to ice when you melt it?

Alie: Water.

Jess: So, when Rainier erupts again – it's not an “if”, it's a “when” – and it erupts about every 600-800 years, it's been about 500 years...

Alie: Oh, no!

Jess: It was identified as a decade volcano as part of the – there's a global effort to identify some of the most dangerous volcanoes based on the people who are nearby. So, you look at the exposure and then you look at the hazard. Like, what does the volcano do? Hawaiian volcanoes, there are no glaciers, so we're not worried about volcanic mudflows or lahars. It's not an issue for Hawaii. It's totally an issue for Mount Rainier.

Alie: What's a lahar?

Jess: It's a volcanic mudflow. When you have that, you superheat the glaciers, they melt, it mixes with the dirt and debris and it forms a mudflow. So volcanic mudflows – lahars – are incredibly dangerous even in modern era.

Aside: This is where I find out that America as a nation is rife with volcanoes. We're just lousy with them. So many volcanoes!

Jess: Here in our backyard in the United States we have the second-highest number of volcanoes on the planet of any country.

Alie: Really. I didn't know that. That counts Hawaii?

Jess: Yep, it counts Alaska, Hawaii, Oregon, Washington, California, Nevada, Yellowstone... Wyoming. I mean, the whole Western U.S. Most of the states – let's say, a lot of the states – have areas that we've had volcanic activity. Anywhere you have hot springs, hot springs are geothermal, so it is powered by a magma chamber somewhere underneath. So, if you've sat in a nice hot spring in Colorado, in Glenwood Springs for example, that's geothermal.

Aside: I almost cut this reference to Glenwood Springs out because it seemed too specific, and then I Google Image searched it and was like “Whaaaat?” That place looks TIGHT. I wanna go.

Alie: Where are we right now? Like, how good of a warning system do we have?

Jess: We're working on it.

Alie: Okay...

Jess: So, here's the thing: we can only do as much science as we have money for. And if you don't have a volcano in your backyard you might not be very concerned about volcanic eruptions. Like, say, if you live in Kentucky, it might not be your priority.

Alie: Are there enough volcanologists out there?

Jess: You know, there's a good number. And I wish there could be more, but again it's all about where are you going to get the funding from. It's like any science and it's not... unless a volcano has killed a family member, like cancer has killed your family member... If cancer's killed your family member you're going to be more likely to donate to cancer research. But until a volcano kills your family member you're probably not going to donate for volcano research.

Alie: That's a very good point. So, we need more volcanoes killing more family members.

Jess: That's my problem. So that's the other thing, this is my conflict, right? If I hear about a volcano going off my instinct on one hand is to go “Oh, my God, yes, that's amazing! I wanna go see it!” and then on the other hand I go “Oh no; I wonder if anyone's in the path of that eruption. I really hope no one's affected by the ash cloud or by the gases.”

So, I'm constantly torn between – and a lot of my colleagues are the same – we're like “We want to see this nature in action!” and then at the same time we're like “Oh, ouch...” So, we don't really want people to die, but we totally want more data, so we want to see this stuff happen.

Plus, lava is cool. Eruptions are amazing to witness. And I just wish that there was a way that we could move people to safety more effectively. And so that's what a lot of disaster preparedness works on.

Aside: Alright, here's a PSA from Jess; I'm going to relay it. If you live in Southern California you need to have an earthquake preparedness kit, apparently. You should have five days' worth of supplies, minimum, for every person in the household. You

should have a plan, not just for yourself but for your pets or for your kids, for anyone important who you care about dying, where you're going to meet on any given day of the week. Also have batteries, have food. I will tell you: I do not have an Earthquake Preparedness Kit yet. I should get one. I grew up in the Bay Area and we had one for earthquakes, and it was a suitcase that had a gallon of water and I think some canned green beans and some canned Vienna sausage. Because it's weird that sausage even comes in cans, but we had a can of sausage and we were like "I don't know; just put it in the earthquake kit." So, do yourself a favor: get an earthquake kit and a plan.

Okay, speaking of growing up and hazards, Jess is no stranger to a household that involved dangerous jobs. This is insane.

Jess: My parents were FBI agents. And so, it's...

Alie: What?

Jess: Yeah. So, the fact that I went into volcano research is probably not that out of left field. It's like I had to do something cool but like...

Alie: FBI agents? Can you say what their deal was?

Jess: Oh, yeah, they were – well, my mom was one of the first wave of female agents in the bureau because she joined in the '70s. And my dad, he was a lawyer. When you joined the FBI then, you basically were a lawyer, an accountant, or a language expert. My mom was a language expert. She spoke Spanish, and she taught me when I was a kid, and my dad specialized, with his lawyer background, he did white collar crime, and then he did a bit of gang task force work, and then he did cybersecurity. And my mom was a terrorism and foreign counterintelligence expert.

Alie: So, what did they think of your career?

Jess: Well, my mom is the one who's like "Honey, get out of that volcanic vent, you're going to get hurt." And then I kind of always want to say "Hey Mom, Dad, you guys took bullet proof vests to work and wore guns every day. So, you know, let's just put it in perspective here!" But it all depends on what you're comfortable with and what you're good at. My parents are trained in using guns every which way and my mom used to say, when I would act up, she goes "I can make you disappear." And so, I was a good kid. She was joking; she would never do that. You know, I'm like "Well, actually my parents had good threats and my boyfriends were all terrified."

Aside: That'd be kind of scary, but her mom's such a badass that she gets a pass from me. Speaking of goosebumpy things [*drumroll*].

Jess: Volcanoes breathe, so...

Alie: Oh, that's creepy.

Jess: Yeah. The magma chambers actually fill and then release magma depending. But the magma, it's not always visible and when it's not visible in the summit that means it's going out to the sea. It's like, when it would inflate, the magma chamber at the summit was filling, you could see the lava visible at the lava lake there at the summit. And then when it deflates it just kind of empties and then it goes out to the ocean.

Alie: So that's called a lava lake?

Jess: There can be a lava lake, yeah. It's basically exactly what it sounds like, a lake full of lava.

Alie: Can I ask a creepy horrible question? How often are like human remains found in volcanoes, because I feel like the worst way to die, we've all agreed, is to get thrown into a volcano or to throw yourself into one.

Jess: This is where I get weird. I've actually decided that if I become incapacitated, I'm old, rather than doing euthanasia for myself, you know, assisted suicide, I would just request to be tossed in an active volcano.

Alie: Oh hell yeah!

Jess: Because - I have reasons - the gases, the sulfur dioxide fumes, that volcanoes produce will actually stop your breathing very, very quickly. They will basically solidify your airways. So, you're going to die from that. You're going to die from the fall if you're... the one I think of is Kīlauea because I've stood at the edge of it and looked down into the lava lake 150 feet below me and thought this would be pretty good because you're going to fall - you may die of a heart attack on the way down because you're terrified, but you're going to fall - into an 1,800-degree-plus roiling lake of molten rock. And so, you've got three things there that are going to kill you: the gas, the fall, or the actual lava itself. You're assured of dying. There will be no leftovers. There will be no "You know what? I messed up. It didn't work out right." You're done.

So, you don't find human remains mainly because everything that you throw in is disintegrated. I lost a pocket knife in a Kīlauea lava flow at one point; this was on the side of the volcano. It's flowing through, flowing over the other flows and it's also flowing through a little forested area that was standing there and it was burning it. Those are called kīpuka, which is a Hawaiian word. It was flowing through this kīpuka and, you know, it's like a lava river. I've a picture of me poking the lava with a stick because...

Alie: Oh, that's badass.

Jess: For science. You know, you have to poke things with sticks. Plus, it was a cool picture, and I just mainly wanted to poke it with a stick and the stick caught on fire, as you would expect, so I threw the stick in. But then we were hiking through this kīpuka, through underbrush and everything and I had my pocket knife clipped in my pocket and when I got through it was gone. And I'm like "Oh." There was a Jack Handy quote from *Saturday Night Live* where he said something like "If you lose your keys in a river of lava you should just let them go, man, because they're gone." And I was like, oh my God I had the same thing with my pocket knife. My knife - not coming back. You would never find it. It would be just gone.

Alie: Okay, so this is a question that I feel like is on everyone's mind: *Dante's Peak* or *Volcano*?

Jess: This is important. This is scientific too. My opinion is scientific in this case, but it's not representative of the scientific community as a whole. I have to say that disclaimer. So, *Dante's Peak* has Pierce Brosnan: plus. That's good. It was vaguely more scientific, although you still cannot drive a car into an old mine shaft to escape a pyroclastic flow. It just... it doesn't work. So that one, kind of, breaks apart, too. But they at least tried to

give it some sort of semblance of credibility. In *Volcano*, the La Brea Tar Pits cannot and will not erupt, especially not with magma. The tar pits are related to what we get oil from, like it's dead dinosaur bones, it's plant matter. You know, it's not...

Alie: It's a completely different thing altogether.

Jess: It's a different thing, a different type of rock. It's like saying pudding is the same as cheesecake. No, they're not. They're two different things. They're both dessert. But they're two different things. Volcanoes and tar pits: they're both holes in the ground, I guess, but that's about where the similarity ends.

So, the tar pits, though, when they – you know, okay, let's say it was volcanic. If a volcano were to erupt in L.A. that would be amazing. But, if it happened, you cannot stop lava with a Jersey barricade, those concrete barriers, and you definitely cannot stop it with a bus. Buses do not stop lava flows; I'd like to debunk that one here once and for all. And yeah...

Alie: The bus would melt.

Jess: Yeah. It would be eaten. I mean just eaten. And so, the lava, because it's solidifying as it's cooling. There's a cool sign in Hawaii Volcanoes National Park where lava flows overtook a road and the sign says, "No Parking." And it's buried almost to the sign itself. The whole stand for the sign, the pole, is covered in several feet of lava flows. And then there's just this sign sticking out that says "No Parking." So, the metal pole is now part of the rock. Those flows were cool enough that it's still in there. But anything else you toss into lava is going to disintegrate.

But the cool thing is human remains, because I was a history major so I geek out on any of the human interactions with the volcanoes. You will find petroglyphs around volcanoes. You will find that the native Hawaiians buried people in lava tubes. They were where the lava had flowed through and then there was this empty tube of rock. That's where they buried their dead. They don't have nice big dirt plots where you can put people in; that's how they did it. So, you don't go into lava tubes. If you're a tourist in Hawaii, don't do it. Don't go in a lava tube, except for the ones that they've set up for the public near the volcano observatory; that's okay.

Alie: Is that like walking through an open graveyard?

Jess: Yeah. It's basically desecrating somebody's ancient family members, so you don't do it. And then the same thing in Chile, there's a volcano there that people may have heard about. They found mummified remains of kids up there who were sacrificed. And they were basically drugged, and then led up to the summit because it's very high, and they died of exposure and they were mummified. One of them was struck by lightning, too, which was crazy. But you find them on volcanoes and around volcanoes but definitely never IN, because the lava just melts you.

Alie: Wow. So, is there an anthropological part of your job too?

Jess: Not technically. It depends on what you're doing, really. Because I've worked in so many places around the world. I try to be really sensitive to the local cultures. You don't want to be disrespecting somebody's long-held beliefs, even if it's a culture that's no longer there, mainly because you could be ruining some sort of historical artifact, too. And it all

has value to understanding the world around us. I love learning everything. And there are scientists who are more focused and more specialized. But for me, if I'm in an area that has an extensive history of the locals interacting with the volcanoes, then it makes it extra interesting for me and I like to learn the historic names of mountains.

For example, Crater Lake in Oregon was originally called Mount Mazama and it was considered – I believe, and somebody will correct me if I'm wrong, because it'll be on the Internet – Mount Mazama was considered a deity, or the home of a deity, by the local indigenous people. Mazama blew everything; it blew its top off, essentially. It collapsed in a spectacular eruption and that massive crater you see, if you actually were to draw a line from where the crater walls are up to a peak, that's how big Mazama was. It was much bigger.

Alie: And Yellowstone is essentially just one big volcano?

Jess: Yellowstone, yeah. Yellowstone is crazy. Those are super volcanoes. That's actually what they call them. Thank you, BBC, for popularizing that with the *Supervolcano* pseudo-documentary; it was fictionalized but it did have a lot of good science in it. So, if people want to see something that's more accurate, but still cool, than *Volcano* or *Dante's Peak*, check out *Supervolcano* by the BBC, because that is cool. They have a lot of good science in there and it explains that Yellowstone is massive. Volcanologists have a scale called the VEI index – it's the Volcanic Explosivity Index – and it goes up to an eight and Yellowstone erupts at an eight. And zero is the Hawaiian eruptions.

Alie: No!

Jess: That's a zero. Mount St. Helens was – I think, and I'm going to say I forgot my St. Helens trivia, but it was pretty low – it was like a three or a four.

Alie: So, Yellowstone is an eight?

Jess: Yeah. When St. Helens erupted, people didn't know that volcanoes could erupt laterally, out the side.

Alie: Oh, right, yeah. Because it really was almost like it projectile vomited ash.

Jess: A landslide triggered the eruption. It was the largest landslide on record and basically a whole chunk of the mountain slid off and it released the pressure that was going on and then the eruption came.

Alie: Oh, I didn't know that.

Jess: Yeah. So, it was a landslide that triggered the eruption, and then it produced pyroclastic flows. It was crazy, but until that point we didn't know that volcanoes could do that.

Aside: Just a sidenote: I looked it up. "Pyroclastic" means: relating to, or consisting of, fragments of rock erupted by a volcano. Mount St Helens is also a stratovolcano, which is also called a composite volcano. This means that they're made of up strata, or layers of ash and lava. These kinds of volcanoes tend to be the conical, pointy, iconic ones. They're also the most deadly. A few examples of stratovolcanoes are Mount Fuji in Japan, Krakatoa in Indonesia, and Italy's Mount Vesuvius. These are the celebrity stratovolcanoes. Okay, back to Yellowstone.

Alie: And Yellowstone is an eight?

Jess: Yeah.

Alie: I was going to go to Yellowstone.

Jess: You can go. So, here's the thing with Yellowstone...

Alie: I'm not going to die?

Jess: No. So, this is what I tell people... I mean you CAN die, if you go into one of the pools, like, they're superheated. Don't go in those pools, people!

Alie: I could get bored by a moose. I mean, who knows?

Jess: Yes, exactly.

Alie: Or gored by a moose, rather.

Jess: Yeah. Or bored.

Alie: I could never be bored by a moose.

Jess: I was just talking about riding a moose the other day with somebody. I don't know, it's been a week... So, Yellowstone is basically a caldera. It's a giant caldera, like the summit of Mauna Loa, but bigger. It's a huge, huge massive magma chamber underground. And calderas are crazy, because if it's an old one people might not even know it's there. A good example is Long Valley caldera which... most people have never heard of that. They don't know what it is.

Alie: Yeah, where is that?

Jess: It's right near Mammoth, in California. And there are hot springs near Mammoth. A lot of people who've been up there skiing will know that. The Long Valley caldera had an ancient massive eruption, similar to Yellowstone, not quite as big. And if you're driving through it you wouldn't know you're in a volcanic caldera unless you look at the rocks on the side of the road. It's like thirty feet thick of ash that was deposited from the volcano. And you'd have to know you were looking at volcanic ash.

So, it's cool, when ash falls... ash is rock. When you're talking about volcanic ash it's pulverized rock. So, you've got magma; magma is essentially the rock, and it's molten. It's like a plastic solid. It's underground, it's really hot, so it oozes. When it builds up under pressure, the volcanoes actually explode. But if the rock breaks into tiny, tiny, tiny pieces, it's volcanic ash, and that is what causes airplanes to have problems. When the Icelandic volcano erupted a few years ago that's why it was such a hazard; you've got fine rock particles that will jam your plane engines.

Alie: Oh hell no.

Jess: And you can't breathe that in, so if you're around an ash-rich eruption you want to put a bandana on because it actually will... you'll breathe in this fine rock and that will shred your lungs. You don't want that.

Alie: Well why the hell do chinchillas have to bathe in volcanic ash? Where did chinchillas get this idea?

Jess: Yeah, you know what? It's just about their environment. They're adapted to the environment, and there's that really fine ash that is around where they're from in South America. They're really cool animals. I used to have one.

Alie: Really? And did it have to roll around in volcanic ash?

Jess: Yup. It's finally ground pumice which is... we call it vesicular. Basically, vesicles are like little airholes, like air bubbles, and so when gas is trapped in rock it forms vesicles. If you have really highly vesicular rock we call it pumice, and that's what the pumice stones that you use on your feet or whatever... they're actual, if you get a real one, it's an actual rock from a volcano that you're using to scrub your dead skin off with.

Alie: Who knew? I have another pop culture volcano question. Did you see that weird Pixar short that was before *Inside Out*?

Jess: Yes.

Alie: What the fuck was that? I'm like, okay, so there's like a big man volcano who's really lonely. And then suddenly, like, a hot young volcano erupts next to him...?

Aside: Alright, so there is a short by Pixar called *Lava*, and boy howdy did it ruffle my feathers. It is about a horny volcano who really wants a woman. And he just hangs out getting older and grosser the entire short and he's thirsty as hell for a hot lady, and she finally erupts from the ocean floor and then they live happily ever after. And it's like "Chill out, dude, your life is fine. Your life is fine. Why do we have to teach everyone that they need a life partner? You can be a volcano in the ocean but I'm sorry, if you don't have a plus one to a wedding you're a piece of shit? I don't think so, volcano lava." Also, I live in Los Angeles. I don't need to see a volcano looking for a younger, hotter, Instagram-model-equivalent of another volcano. I see it everywhere I go. I see it in the White House. We don't need it in volcanoes.

Also, if she sprouts up next to him, I feel like they've come from the same magma chamber, perhaps, under the sea floor. Does that mean that he's just fallen in love with his conjoined twin? But who is much, much younger? I don't know. I get that subduction leads to orogeny, we know that, but I don't want to think about this volcano having a chub and needing to rub it on someone. I don't need that. I don't like it. Pixar, I love you. You make me cry all the time, and it hurts, and I love it. This one? Mmmmph. And if you worked on this, I'm sorry, because you're probably legitimately a really good person. This... it just was... it was a miss for me.

Alright, so when they're not crooning about getting some tail, what are volcanoes sounding like? I had never thought about this. Jess had joined a research scientist named Jeff Johnson from Boise, Idaho, and they recorded some volcanoes. They laid down some hot tracks.

Jess: And so, when you record a volcano in infrasound, you then have to bump it up so we can hear it in the playback, and we listened to some of the playback and it's like the volcano goes "Rrrrawwwllroooarr" and its guts are talking.

Alie: Does it sound like a demon?

Jess: Yes, actually, it really, really does [*low, rumbling noise of volcano recorded in infrasound and then bumped up, or possibly of a demon*]. Like, exactly what you think a volcano sounds like deep inside its magma chamber, it sounds like that. But at the surface, too – this is another cool fact, that unless you go and stand over a lava lake you won't know this – it sounds like a guy banging a hammer. Like, a big, big big hammer [*thunderous banging sound of lava lake at the surface, or possibly of a giant banging a hammer*]. It sounds like crashing metal. And what it is is the rocks breaking, but it sounds like you can totally see where the ancient Greeks and Romans got Hephaestus and Vulcan, guys who were underground banging out tools on a forge.

Aside: If you're like "Who's Hestafastafis or whatever?" FYI, Googled that also. That is the Greek god of fire, metallurgy, volcanoes, and he was the blacksmith of the gods. So, apparently, he was a god who was also a blacksmith to the gods. I don't know how that works. I don't know if they had unions, or... do gods even need jobs? It'd be like "Yeah, I'm the god of volcanoes, like, I don't need to be working on anyone's iron gates as a side hustle." Anyway, Hesafasafus, it's the Greek pronunciation.

Jess: It sounds like that. So, there's a legit place that comes from.

Alie: Why does it sound metallic, I wonder?

Jess: You know, it probably has something to do with the gas and the rock ratios to each other. I'm not a sound expert. There's probably a soundologist in here who knows the answer to that. But the other scientists and I, when we were standing above the lava lake, it was my first time standing there and for some of them it was their first time standing there too and we're sitting there going "This is amazing!" Like, we're hearing volcano. And not just "Run, it's an eruption!" but you're actually hearing the sound of rock breaking and small explosions.

That trip was really interesting, that first trip to the summit there of Kilauea when the new eruption that's going on right now had first started. I was there like a month after the eruption began, so I was prime time for setting up cameras and things. I helped set up the first webcam that was overlooking the lava lake there at the Volcano Observatory; I was part of a team doing that. And our boss for that, Tim, he's at the HVO now, Tim Orr, he's a great scientist.

We're sitting there working and we're starting to set the camera up. We're wearing hard hats, and we're wearing high visibility shirts that were bright orange, and work boots. And we had a respirator; we weren't wearing the respirators, they were hanging around our neck, and we'd, of course, put them on and go "Luke, I am your father," and take them off again. Tim was talking to us, we're about to start work and he goes, "Okay, if you hear a big explosion, you just run. Drop the equipment, just turn and go" and we're like "Okay..."

And we're sitting there looking at these little lava bombs that are sitting all around us. And that's exactly what it sounds like: it's a piece of rock that's been ejected out of the volcano. These things range in size from a quarter – and they can be smaller than that, but it could be a quarter size thing – up to, you know, something the size of a refrigerator, can come out of that. I mean, there weren't any fridge-sized ones when I was there, but...

Alie: And are they hot lava?

Jess: When they come out they're hot. But then they cool really quickly, and they cool as they're flying through the air too, so you get some cool formations and lava bombs that look like spindles, like they're twisted or they're elongated, and it's pretty neat.

So, we're seeing these lava bombs. The closest ones to us were probably twice the size of a football. They were a good size, and your hard hat's not going to do anything. And if the plume of volcanic smog, which is called vog, if the vog plume shifts, the respirator's not going to help you for more than thirty seconds or a minute, so you need to get out. Tim's making all this very clear, and it's a calculated risk. You calculate the wind direction, you figure out how active has it been, you look at the situation when you're there. You're not just stupid. You want to live otherwise your data is no good, no one knows what it is.

So, we're about to set this stuff up and Tim goes, "You know there's a very real possibility that we could die?" And I said —I looked at the volcano, looked at Tim, I looked at the volcano, and I said "Okay." And then he goes "Okay, hand me that wrench" and we got to work. And that's the thing: you just have to be aware and you have to know what you're doing. It's always a calculated risk because volcanologists, we're all well-educated, we all have families, we want to go home.

We're not out there because we're crazy thrill-seekers, but we understand that in order to get some of this information... Some of it can be done with satellites, some of it can be done with sensors, and we're making strides in that every day, but you still have to have people on the ground, actually walking up to it and going "Hmm, what do we see here?" And you have to have people sampling this stuff. We don't have... I mean, if you try to send a drone over a volcano, drone battery life is like fifteen minutes. And, you know, electronic equipment corrodes pretty quickly in high sulfur dioxide areas, even the parking brakes. The brakes and the rotors on the cars that the staff at the Volcano Observatory use have to be replaced about every six months because they just corrode so much more quickly because of the volcanic concentrations, volcanic gases.

Alie: Oh, I never would have thought of that at all.

Jess: Yeah. No one realized it till the summit eruption started in '08 on Kīlauea. And then people were starting to have to replace their brakes on the government vehicles, like, constantly. And it was, "Well, it must be the vog!"

Alie: "The vog", I've never even heard that.

Jess: The vog plume can actually be hazardous to people's health. The good thing is, most people on the big island of Hawaii, the vog plume goes south around the bottom of the island. There's not a lot of people that live there relative to other parts of the island; Hilo never gets vog but Kona, on the West Coast, the vog wraps around the south and then comes up the coastline, so in Kona you can have vogy days and everyone's like "Vog? Did you make that up?" and, like, some volcano scientists made that up. You know vog is a thing. It's a real big... if I say vog, any volcanologist knows what I mean.

Alie: If you go to Hawaii and you want to see a volcano, is there a good helicopter tour you should be hip to?

Jess: I think it was Blue Hawaii was the one that, for this latest Discovery shoot, we used. Because the USGS, we use a different guy, he contracts just with the USGS, but I think Blue Hawaii's very very good. And we had a good experience with them. We also got to fly for three hours. Most tours are not that long.

Alie: Which volcano was it?

Jess: That was Kilauea. You don't really go up too much around Mauna Kea or Mauna Loa because they're so high and it's hard to fly at that altitude because the air's so thin. I think there probably are tours that do it, but definitely Kilauea, it's spectacular. If you can afford that helicopter ride it will be a defining moment of your life.

And I say this not just as someone who geeks out on volcanoes, but you're human, and even if you can't afford the helicopter ride, if you can get yourself to Hawaii - and I don't care if you have to hitchhike your way onto an airplane but everybody should go - even if you just drive up to where the lava is flowing into the ocean, or at night where it's flowing down the coastline on the land, you should see it, because there is nothing like watching new Earth being born. It's spectacular, and it really puts you into perspective as a person. You're like "This is the planet, forming itself right now."

Alie: And now, you are busy as a volcanologist but you're also running for Congress.

Jess: Yes, yes.

Alie: Can we discuss that?

Jess: Yeah, sure.

Alie: Now what district are you running for Congress? When is the election? And tell me a little bit about what inspired this?

Jess: Sure. I'm running in California's 25th Congressional district; that's in L.A. County, but also a little bit is in Ventura County. It's a really big district... and then what was the second part? Why am I running? I decided to run mainly because of Trump's election. I was really concerned about the fate of science, and scientific research, and environmental protections under the Trump administration. And not just because of Trump, but before that we saw that the Republicans in Congress, a lot of them are climate change deniers, which is weird because the experts in the field... there's overwhelming evidence supporting this. In the face of evidence, I don't understand why people... well, I mean, I DO understand, because there are financial things at play here, but it doesn't make sense that we keep scientists on the back burner of decisions that we're making.

And I do have a background studying history and government, and I went to a liberal arts college. I got a great education in a lot of things, plus I worked for the state of Arizona. You know, my parents were in the FBI., I have a good sense of how government functions and why. So really what I'm new to in this is actually running. It's going, "Oh my God, I'm a candidate!" but I really think that we need people who look at all the available evidence on any issue - ANY issue - not just science issues but social justice issues, human rights issues, jobs, taxes. On all those things you need to look at everything that's available to you and then look at the different groups who are affected

by it. Weigh all of that evidence and use your best analysis get information from experts if you yourself are not an expert. That's what I do in my job.

The last four years I've been working really hard to make a difference in the environment and the future and for students, but it wasn't enough. So, I'm like, okay, if I can get elected to Congress, I can advocate not only for the environment, and education, and science, but also for a bunch of other issues that are really important to people and affect them every day. You can't do good science if you don't have good healthcare.

Alie: Yeah, that's also true. Because you'll have a disease and no coverage, and you'll have to throw yourself into a caldera.

Jess: Or you'll have a lot more asthma because your air is really polluted, because it's no longer regulated by the EPA, and air quality will go to hell and your kids will all have asthma and so will you. It'll be fantastic.

Alie: I love that you're like "Hazards – that's my deal!"

Jess: ALL the hazards, yeah. That's what I've been trying to do in my work. Look at a situation, analyze it, where are the hazards, how can we mitigate them, or how can we avoid them or fix them? I'm a problem-solver. Scientists are creative problem solvers. And I think that would be really good to have in government.

Alie: So, you've got another, what, year and a half?

Jess: Yes, a year and a half. It's a while. It's November 2018 – oh my God, it's so long...

Alie: It'll come before you know it.

Jess: I know. You say that, but you're not having to call people to ask for donations.

Alie: That's also very true. I imagine that's probably harder than scaling volcanoes.

Jess: Yeah, when your friendly neighborhood volcanologist says, "I'm going to run for Congress!" you usually pick up the phone, which is pretty cool, so people do want to talk to me and people are excited, but man, it takes a lot of effort.

Alie: Well, people seem very jazzed about the notion of a volcanologist also being in government.

I've put out questions. Are you ready for the rapid-fire round?

Jess: Yeah, give them to me.

Alie: I put out questions. I said, "I'm interviewing a volcanologist; who's got questions?" I got a billion of them, roughly. So, I'm just going to go through them; we'll answer them as fast as we can.

Jess: Okay. I will do this. I'll do my best.

Alie: Okay, ready?

Jess: I'm limbering up here.

Alie: Okay. Crack your neck.

Jess: Yeah. Oh, got it; it does crack.

Alie: Here we go. John wants to know: hottest recorded temperature of lava?

Jess: Well on the surface 1,800 is pretty standard, 1,800 Fahrenheit.

Alie: John wants to know: *Dante's Peak* or *Volcano*?

Jess: *Volcano* for comedy, *Dante's Peak* for more legitimacy.

Alie: Stephen wants to know: what exactly is a dormant volcano?

Jess: It's one that's not currently erupting but it has erupted in the past and it will erupt again in the future.

Alie: Michelle wants to know: how close can I get to lava before I catch fire?

Jess: Well, I've been right up to it and I've sampled it with a rock hammer for scientific purposes. You can walk up to it, but you can feel your eyes dehydrating as you go. It's three times hotter than your hottest setting on your oven.

So, go stand by your oven for a few minutes and tell me how you feel. But don't put your head in it.

Alie: Don't put your head in it.

Jess: Do not play with ovens, children, if any are listening.

Alie: Good to know. Solid advice. Nadelle wants to know if you've sent a drone in?

Jess: You can't send them into the lava, but you can use them, and they're being used more and more to monitor volcanoes. There's a group of guys – I forget the name of their project, I'm so sorry – but they're going all up and down South America using drones to do gas geochemistry recordings of volcanoes. They're sponsored by Land Rover. I'm sure you can find them online.

Aside: P.S. I looked this up and it's on a website called TrailByFire.org. It's amazing. It's like looking directly into Satan's asshole. 10/10. Okay, back to questions.

Alie: Diana wants to know: where are the best lava tubes in the world? But now I'm worried that they're all mausoleums!

Jess: Well, not all of them. You can walk in them, in Hawaii. There's a pretty spectacular one in South Korea that I've heard of. I've never been there. But I would say the easiest ones for people to go see are the ones in Hawaii that are already okayed for you to go in. I don't know about all cultures in terms of how they treat their lava tubes, but definitely just be cautious. Maybe do a little checking with the local government if there's any regulations about going into them or not.

Alie: Right. You don't want to accidentally invite a hex on you.

Jess: No. And plus, some of them the roofs aren't stable, so you could actually have a big chunk of lava roof fall on you, and you don't want that either. There's no way to tell, either: if you or I just walk up to it you don't know if it's stable or not. So, be careful if you're going to go into a lava tube and check around, make sure you do your due diligence.

Alie: If I ever went in a lava tube and it collapsed. I'd be just, like, "Leave me here."

Jess: Yeah. Why not? It's a burial ground already, at least in Hawaii.

Alie: And then no one come and like duck in here and pee on me later. You know what I mean? Just don't do that.

Jess: Yeah, definitely don't pee in any lava tubes if you can avoid it. Hold it.

Alie: Don't pee in a lava tube.

Jess: That should be our lesson for the day. Avoid peeing in a lava tube. I've slept in one, but that was a special case. I was given permission by my part-native-Hawaiian boss. It was creepy. I didn't sleep super-well. It was on the side of Mauna Loa at 9,000 feet high and we were hiking down, doing a survey, and it was pouring rain and I was like, "Where are we going to camp?" because we were going to pitch a tent, and Frank was like "There's a lava tube. Get in the lava tube." and I was like. "But... but... the native Hawaiians..." and he goes "Pele says it's fine. Get in the lava tube."

Alie: Did you have crazy dreams?

Jess: I did. I had nightmares all night and I woke up in the morning... it was a beautiful sunrise, but it was... oh my God, it was so uncomfortable... so I don't recommend it either.

Alie: Okay, well, I'll cross that off my bucket list that I won't do.

Jess: Yeah, seriously. Go peer inside but don't go sleeping in it.

Alie: Greg wants to know: how much has climate change affected volcanic activity, and also *vice versa*, like there's this notion that volcanoes are responsible for climate change?

Jess: They're not responsible for it, but they contribute to it. Volcanoes, when they erupt, they can actually affect weather for a year or two at a time, if it's a big enough eruption and we saw that Tambora can do that, Krakatoa... the one in Iceland affected things because it's releasing volcanic ash into the atmosphere. It's particulate matter, and sulfur dioxide, which contributes to the greenhouse effect. So, when gas and tiny rock fragments are floating around in the stratosphere – or I don't know if it's technically the stratosphere, please forgive me, atmospheric people, oh my God, I'm trying to be technically correct...

Aside: According to *National Geographic*: "Volcanic ash and gases can sometimes reach the stratosphere, which is the upper layer in Earth's atmosphere." So. We good. Checks out.

Jess: Anyway, when it's released really high up – we'll go with that – that stuff hangs out there and it insulates. So that can actually either block the sun's rays and insulate the warmth so that area stays cooler, which is what happens. We see that a lot. Or it can contribute to gases being trapped, and then that increases the greenhouse effect. So, the volcanoes contribute to the climate.

However, people have said maybe the rising sea levels are causing increased volcanic eruption activity; I haven't seen anything to substantiate that that I believe in just yet. I need better evidence if I'm going to think that there is sea level rise - volcanic eruption

frequency correlation. But, for now, I would say volcanoes affect climate; climate does not affect volcanoes.

Alie: Chris asked: if you really drop your keys in lava should you forget them because, man, they're gone?

Jess: Yes. Oh my God, Chris, you win, Jack Handy quotes for the win. Yes. Keys, pocket knife, cell phone: it's gone. It is gone, it is SO gone, don't even try to fish it out. It will never come back. Just say goodbye.

Alie: Then final rapid-fire question. Ethan wants to know: when will we finally be swallowed by the molten wrath of a supervolcano, thus freeing us from this pain called Earth?

Jess: Well, we can remove ourselves from this mortal coil by volcano any potential day, but the probability is actually low on any given day. Yellowstone, while yes, it erupts about every 640,000 years, based on our records, and it last erupted 640,000 years ago, meaning we're "due" – heavy air quotes there because it's plus or minus a lot of thousands of years. Human lifespans, what are they? 75-80 now in the U.S? The odds of us being alive when Yellowstone goes again are super low. Plus, the activity there is not worrying anybody right now. If you want to worry just worry about Rainier. Worry about all your friends in Seattle and Tacoma.

Alie: By the way, side note: I thought it was pronounced Mount Ran-YAE for many years. I had just never said that word aloud.

Jess: Yeah, because why would you, right?

Alie: I don't know.

Jess: It's not relevant. Yeah, Rainier. Still, I've had tons of my colleagues work on the one in Iceland that erupted, which I'm not saying on purpose because I cannot remember how to say it properly. There is a proper way. My colleagues who worked on it, they know how to say it, I don't. So, apologies there, but the other ones... I worked on El Reventador in Ecuador which is "The Eruptor" or "The Exploder" depending on which translation you're using. But yeah, they have cool names a lot of the time.

Alie: What is the one in Icelandic? What does it mean in Icelandic. I feel like it's all just Js and Ks and umlauts.

Jess: Yes, it's Eyjafjallajökull... I don't know, there's a right way of saying that. But, no, I don't actually know what it means. I don't know. And that's the thing: never trust a scientist who's afraid to say that they don't know.

Aside: So, I looked it up because I was curious how you say it. And it's really easy; it just sounds like this: [*Icelandic man saying "Eyjafjallajökull"*] Eyaffluffwoyoyuch. Just kidding; who can say that? No one. I bet Björk doesn't even know how to pronounce that. But apparently in Icelandic it means "Islands, mountains, ice cap" which is SO on the nose. But it's such an insanely long word that it's oftentimes referred to as just E15, which is apparently a thing called a numeronym: that's when there are so many letters – there are fifteen letters in this word – that they just put an E on it. Fifteen. Other numeronyms are K9, for canine unit, like dogs, Y2K is a numeronym, and – shout out to my buddy Jonah Ray, who hosts this – MST3K is a numeronym. There you go.

Alie: Final two questions. What is your least favorite thing about being a volcanologist? Hardest, least favorite thing? Biggest pain in the ass?

Jess: That I don't get to do it more often. That I don't get to spend more time on volcanoes; that there's not unlimited funding where I can go do research on everything I think about and take all of the scientists I want to with me, and all the people who want to go see, if I can keep them safe. I just wish I could show everybody how cool they are and do more work on them.

Alie: That's a great thing to hate.

Jess: Yeah really. It's the best problem to have.

Alie: I thought you were going to say something like insurance paperwork. What about your favorite thing? What's the thing that excites you most about the job?

Jess: I would – and this is really fundamental – just watching lava in all of its forms. It is the most fascinating substance on the planet to me because it's liquid – well, it's technically a plastic solid, but it has two different states. And then the fact you've got gas interacting. It's so cool, and lavas contain the secrets of the universe. When I'm holding a piece of lava in my hand that tells me about how our planet was formed, about the stardust it was formed from, and it tells me where the planet is going, and it blows my mind. So, the fact that lava can blow my mind is why it's my very favorite thing.

Alie: Do you have a lava lamp?

Jess: I don't, but I did when I was in high school. It was blue.

Alie: That's amazing.

Jess: Yeah, I think my mom may have given it to Goodwill a few years back.

Alie: How dare she?

Jess: Yeah; it was pretty great, though. I should get one.

To gently stalk Jess Phoenix, you can find her at volcanojess.com. She's on Twitter and Facebook as volcanojess, you can find her on Instagram as volcanojessofficial, and if you're curious about all this political stuff you can go to jess2018.com, [jessphoenix2018](https://twitter.com/jessphoenix2018) on Twitter, she's [jessphx](https://twitter.com/jessphx). She's very Googleable: Jess Phoenix. She's a volcanologist, she's running for Congress; you're not going to get her confused with another one of those.

Anyway, you can find Ologies on Instagram. You can also email me at helloalieward@gmail.com. If you're an Ologist and you want to be interviewed, if you have an Ology that you want explored, if you love this or hate this holler at this bitch. So, thank you for listening; I hope you enjoyed. We'll be back next week with more Ologies. Eeeeeek!

Until then, remember to ask smart people dumb questions, because we're all going to die anyway. Okay! Next up is Primatology.

[clip of next show]

Kate Gilmore: I always look fresh as a daisy; the marks on my outfit are not poop at all...

[Outro music]

Transcribed by Leah Earl

That transcriber who thought volcanology would be easy to transcribe, because not much Latin, but who reckoned without Eyjafjallajökull

Links:

[Jess Phoenix on Twitter](#)

[Jess Phoenix on Instagram](#)

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[Mauna Loa](#) ("It's long. It's really really loooooong.")

[Kīlauea](#)

Video of Mt. St. Helens "[projectile vomiting](#)"

[BBC docudrama on Yellowstone/supervolcanoes](#)

[Earthquake kit instructions](#) (ahem, California and Pacific Northwest)

["Subduction leads to orogeny"](#)

Pixar's [Lava](#) short [heavy sigh]

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