

Video Transcript - Smithsonian's Nature of Science: Expedition to Arctic Volcanoes

- Liz Cotrell: This is me, Liz Cotrell. I'm the scientist, not the helicopter pilot. He's having fun. I'm trying not to think about crashing into the water. We're on our way to the top of an active [00:00:30] volcano in Alaska's remote Aleutian Islands.
- Liz Cotrell: So you might ask yourself, why go all the way to the Western Aleutians? Can't you find a volcano closer to home? But these volcanoes are really unique. We had some really particular ideas to test and to test those ideas we needed to get volcanic glass. And that wasn't in any of the sample collections that we have anywhere in the world [00:01:00] so we had to go get our own.
- Liz Cotrell: With my family, I had a real heart-to-heart. When you're out in the field, every time was a potentially a critical time as a scientist.
- Liz Cotrell: For three weeks the ship was our home. The helicopter was our only mode of transportation and the weather, a constant challenge. The storms that roll across North America are born here in the Bering Sea. We're on the front lines of it.
- Liz Cotrell: [00:01:30] And then of course are the active volcanoes. When a volcano erupts explosively, the magma that was beneath the Earth blasts out and freezes to a glass in the air. Some of it comes out as large boulders, but we're interested in the fine particles of glass that settle into layers. The layers contain the specific history and character of each volcano and each event. A window to Earth's interior.
- Liz Cotrell: Logistics [00:02:00] was a challenge, and this was a real frontier. We were on this boat so far out in the ocean from the Alaskan mainland. I was trying to coordinate a bunch of different missions. We had gas chemists, seismologists, and the people there for the rocks making sure that everyone got the science done that helps us understand how the Earth is working out there in the Western Aleutians.
- Liz Cotrell: Each day of our trip meant getting up early, grabbing [00:02:30] breakfast with the team and crew, and heading out to find a site to collect samples. We need to dig them out, bag them, label them, and load them into the helicopter. We'll be packing and sorting them on the ship late into the night. The next day we do more of the same, if the weather cooperated.
- Liz Cotrell: Buldir volcano was our most ambitious target, but it's way out here in the middle of the ocean. [00:03:00] The rocks that erupt from Buldir really mimic the rocks that are found on the continents. Lavas from Buldir suggest that this island may provide key data about how continents form, but we need volcanic glass to know. But there wasn't anywhere near Buldir for the ship to harbor, so

we had to fly 45 minutes over the frigid Bering Sea. If the weather changed for the worse we would be cut off from the ship unable to fly back, but that wasn't my biggest fear.

Liz Cotrell: What worried [00:03:30] me most was the prospect of a forced landing in the ocean. The helicopter would instantly flip upside-down, plunging us into the frozen darkness. And if we survived that, the ship would still be eight hours away. That would be too long. My family back home was counting on me. I didn't want to exchange my life for these rocks, and it definitely made me think.

Liz Cotrell: I put my [00:04:00] trust in my team. My graduate students were supporting me. Team member Michelle Coombs works for Alaska Volcano Observatory. She has lots of helicopter experience. My collaborator Katie Kelly back home was counting on me. We just kinda knew we had to do it. This is what we came here to do, and we're going to do it.

Liz Cotrell: So we went. When we got there we found black ash. Ah, so nice. That's something that few people predicted we'd find. [00:04:30] This is a mafic eruption of this volcano, and we're succeeding. This is gonna work. That black ash has what we're looking for. The mineral olivine.

Liz Cotrell: Olivine is a mineral that crystallizes in the magma beneath Earth's surface. It can sometimes trap bits of that magma and preserve them like a time capsule for us to study later. [00:05:00] The sample we collected from Buldir should give us a unique look into Earth's interior and help reveal the origins of continents.

Liz Cotrell: Luck was on my side that day. Other days, not so much. Volcanic slopes can be really dangerous places. They're essentially giant unstable rubble piles of razor sharp rock. [00:05:30] While I was carrying a pack of rocks down the slopes of Gareloi volcano, I fell. It really hurt, I thought my leg was broken. There were no doctors and no hospitals for hundreds of miles. Luckily my leg wasn't broken, but it was a nasty injury. I had my team to help me get the job done. Everyone came together to complete the mission, and we had fun too.

Liz Cotrell: Science isn't always [00:06:00] about a white lab coat. It's not a solo journey. Something you do with your team, your friends, your family, and the communities you reach through your work. I am living for that moment of discovery. That moment where things start to come together and I see how something works, I see the evidence. I'm learning for myself, for the first [00:06:30] time how something works. Or maybe I'm learning it for the first time for all of humankind. And that's a really great feeling.

Liz Cotrell: Science is a place that you can experience that feeling of discovery, mastery, and insight, and sharing it. And that's what science is all about.