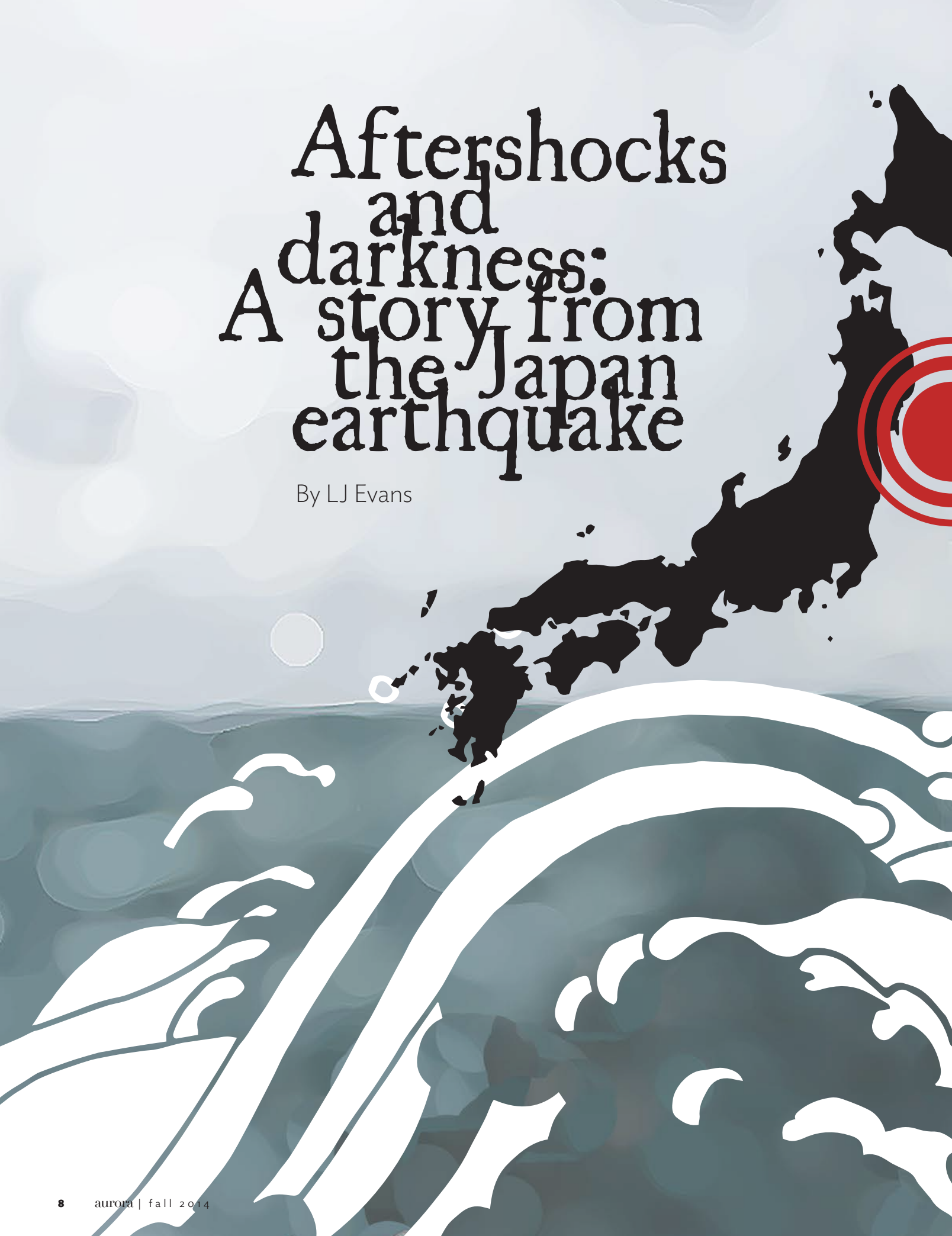
Aftershocks and darkness: A story from the Japan earthquake

By LJ Evans



Leah Denman was introduced to Japanese culture and language while at Lathrop High School in Fairbanks. She pursued that interest at UAF, and as a junior she received a scholarship to go on international exchange. On Oct. 2, 2010, she arrived in Sendai, Japan, to spend a year at Tohoku University, studying Japanese linguistics.

At 2:46 p.m. on March 11, 2011, a magnitude 9 earthquake shook northeastern Japan, unleashing a savage tsunami. The epicenter was approximately 80 miles east of Sendai, under the ocean. Leah, her mother, Sherrie Roberts, and Donna Anger of the Office of International Programs and Initiatives tell, in their own words, what happened.

Leah: I had reached that point in my stay where I was over my culture shock. I kind of felt at home. I had gone out grocery shopping. On my way back to the dorm, the earthquake hit. To this day I am happy that I was outdoors. I think it helped me handle it better.

I was almost at my dorm when the gate at the graveyard next to me that I was walking by started shaking, making noise. I was taking steps but I was going side to side. It was hard to walk. Then the real shaking happened.

There was a little enclosure made from concrete about as tall as I was. I grabbed onto it because I couldn't stand up any more. I could see my dorm, shaking back and forth. This huge, strong, seven-story building was just swaying back and forth.

Donna: It was around 11 at night on the 10th when I got my first email about the earthquake. [Japan is 17 hours ahead of Fairbanks.] I got something from Marmian [Marmian Grimes, UAF public information officer], "I'm guessing you've heard about this," and asking about our collaboration with IARC [International Arctic Research Center] and the Geophysical Institute, thinking about the students and faculty here. Of course, we also had students in Japan, and we started to think about where they were.

I sent emails to all of the students, asking them to check in, let us know if they were OK.

Leah: When it finally stopped shaking, I stood up and got on my phone. I think I was trying to maybe access the news. I went on Twitter even, just to see what had happened.

After that is kind of a blur.

My Chinese friend Emma came and grabbed my hand. She was full-blown hysterical. I didn't understand why she was panicking so much. I was thinking, "Oh, it was just an earthquake."

A bunch of people congregated in front of the dorm. Every time an aftershock hit, everyone would scream. Then they would try to calm down again.

At some point, Emma and I went to look at our dorm rooms. She kept on running outside every time there was an aftershock, so we couldn't get to her room. My room was right by the door. Everything was everywhere. Just oh, my God.

That was when I realized that we had no power.

Sherrie: I heard about it at work, in our [Marketing and Communications] office. I sent Marmian an email and asked if she'd heard anything about the students in Japan. I went on Facebook to see if Leah had posted anything.

LEAH'S FACEBOOK MESSAGE, MARCH 11:

> **Massive quake just hit Sendai, still rocking. Outside with everyone ... so scared.**

ON 3/11/11 12:06 PM, MARMIAN GRIMES EMAILED:

> **We have nine exchange students in Japan: 7 have been heard from, including one in Sendai. Of the remaining two: One is thought to be in Tokyo, where communications are limited. The other is likely in the Sapporo area, which is not among the hardest-hit areas.**

LEAH'S FACEBOOK MESSAGE, MARCH 11:

> **Smoke in the air, alarms, helicopters. Not what I signed up for. Still shaking off and on.**

Leah: Emma and I found out they were setting up a place to go at a middle school gym just down the road. We took our blankets and food and walked to the gym.

We still didn't know what was going on. We didn't know about the tsunami. The university is up high and we were inland, so the tsunami never reached us. We were very, very lucky because the earthquake was nothing — nothing — compared to the tsunami.

The gym quickly grew very crowded. Emma was just terrified. We laid out our blankets and claimed our little spot. Sleeping that night, we were head to foot. We would roll over on each other, everyone.

LEAH'S FACEBOOK MESSAGE, MARCH 11:

> **In a gym at the school, but okay. Phone is dying, no elec. Love you all.**

Sherrie: That was the last I heard from her for a couple of days. I tried to call but couldn't get her to answer her phone. I couldn't get her to answer in Facebook, either. I'm thinking, "OK, she's scared, but she says she's OK. Everything's good!"

Then the scare about the Fukushima nuclear plant started

happening. [Tohoku University is about 52 miles from the plant.] If it had just been a little bit different, if she'd been in a different place, it would have been OK.

I kind of fell apart.

Leah: It was below freezing, they had no heat, we just had our blankets and whatever clothes we were wearing. Some other international students and a couple of Japanese people were sitting with us. I gave them my groceries. I thought, people were hungry, they need food — it will keep them calm.

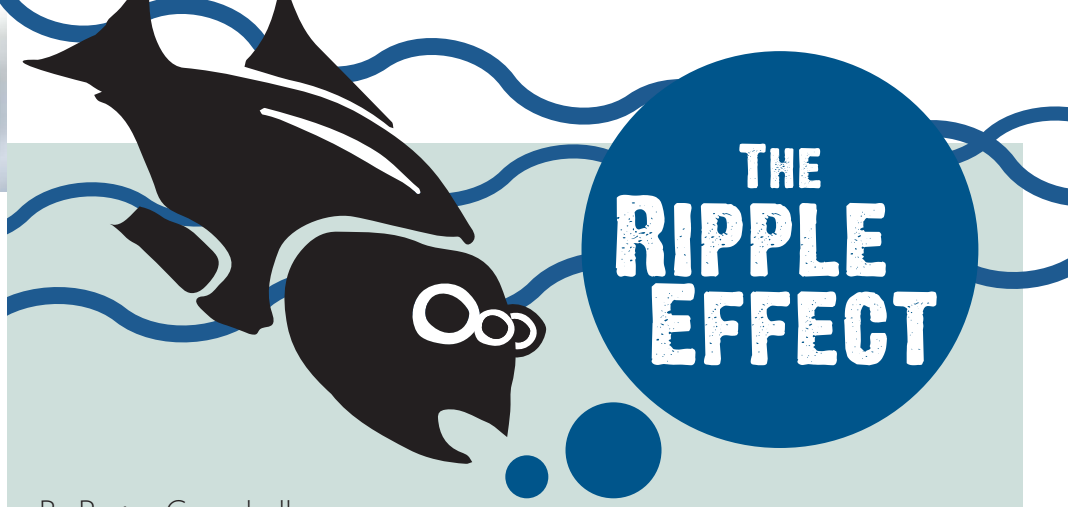
I wish I could properly explain just how uninformed we were, how in the dark. It's terrifying to think about.

At some point, the next day or the day after — it's all kind of blurred together now — I realized that things were more serious than I thought when I went back to my dorm to try and clean up. I turned on the water and all that came out was this brown gunk.

LEAH'S FACEBOOK MESSAGE, MARCH 13:

> **I have electricity again, still no water. Safe and sound in my dorm, stored up plenty of food and water for the time being. Thank you everyone, I seriously appreciate everyone who took time to write something, or was there for my family. The phone networks are still a mess, so I can't call out, but I will as soon as I can.**

Leah: I went back to the gym and Emma was gone. I guess she left with the other Chinese exchange students. I never saw her again. I



THE RIPPLE EFFECT

By Regan Campbell

The catastrophic meltdown of the Fukushima nuclear plant after the March 2011 Tohoku earthquake has created ongoing concerns in the United States about the radioactive material released into the sea and the atmosphere.

This has been a matter of interest to Stephen Jewett, in his 40th year as a research professor at UAF, and Douglas Dasher, a research professional at UAF who worked for the Alaska Department of Environmental Conservation for 31 years.

Three years after the Fukushima disaster, both have concerns about the lack of comprehensive radiation monitoring in the wake of the disaster.

Modeling studies and air monitoring showed that radioactive cesium made it to Alaska's western coast and the Aleutian Islands during the first few weeks after the Fukushima plant explosions, Dasher said. Sampling by Jewett and Dasher at Amchitka Island in the Aleutians, part of the U.S. Department of Energy's long-term monitoring of underground atomic bomb test sites, found "clear evidence" of Fukushima fallout in nearshore marine fish, seaweed and lichens. Fallout also showed up in "very limited" tests of Dolly Varden, a freshwater fish species, they said.

> "Terrestrial animals like caribou and freshwater fish are what we really should have been looking at."

Why won't anyone fund more monitoring specifically for Fukushima contamination? "It's two-pronged," Dasher explained. Agencies agree that it's good to know what radiation levels are, but the levels detected so far have proved to be acceptably low for humans, so it hasn't become a priority, he said.

Alaska's Commissioner of Environmental Conservation Larry Hartig confirmed that view.

Levels seen in tests to date have been so tiny that "you get more radiation risk from eating a banana than eating a tuna in that area," he told state legislators, as reported in the *Fairbanks Daily News-Miner* in January. "When we look at this we don't see a driving need in Alaska to try to institute a program, particularly where we would need to start from scratch. It would be a tremendous expense for a risk that we don't see."

Nothing radioactively "hot" has turned up in seafood on the U.S. side of the Pacific yet, Jewett and Dasher acknowledged, but they said the sample sizes may be too small to detect changes in the marine food chain.

"You've got to do some monitoring," Jewett implored.

What's more, the Fukushima plant continues to leak radioactive water into the ocean.

"You have that constant input. The thing's still leaking. It's a concern," Dasher said.

The monitoring work that has been done also might not have looked in the right places, they said. The heaviest airborne contamination to hit Alaska's land area fell with rain and snow in the Aleutians, Dasher said. Yet he and Jewett know of no efforts to look specifically at that fallout.

"Terrestrial animals like caribou and freshwater fish are what we really should have been looking at," Jewett said.

"You drop cesium into an environment like that, and [freshwater fish] are going to pick that up much more readily and concentrate it much higher — levels thousands of times higher than they were in any marine fish," Dasher said.

can't find her because I don't know her Chinese name; she always went by an English name. I can't even ask the school how to reach her because I don't know her real name.

Sherrie: About the third day she was able to get a charge to her phone and send me a text. She still couldn't call, but texts could go out.

Leah: I realized the severity of my situation when I finally went out to get food and water. It was only the second or third day, and the shops were ransacked, the shelves were bare.

At one mom and pop store they had a whole assembly line set up. They had this little gas cooker and they were making little meals for people. All we had had at the gym shelter was rice soaked in cold water. Very crunchy and strange. I was really hungry and it was so nice to see cooked food. It wasn't easy for them, and they were selling it really cheap, 100 yen — about a dollar.

Sherrie: I was kind of in panic mode, but I wanted to be not panicking too much because I felt like I just had to bring her home.

Donna Anger got me calmed back down. She said, "We'll figure out what to do."

Donna: Her mom was the one looking at all the routing for Leah's travel to Tokyo. So many of the airports were closed.

They [UAF administrators] were expressing support for whatever we needed to do. They were very concerned about the Japanese nationals we had here, the students, scholars and also of course our students who were away. It was just an outpouring of support for what we were doing, the students and the families.

Sherrie: I asked for help from Sen. Murkowski's office; Nathan Bergerbest from her office was very helpful. We got directions from the U.S.-Japanese Task Force through Nathan. There was a path and a time schedule Leah was to follow [from Sendai to Tokyo].

Leah: The rest of that week was just a blur. Every time there was an aftershock, I would get under my desk. My room was on the first floor, and I could just picture it all collapsing. There were aftershocks about every 15 to 20 minutes.

I wouldn't say so much that I decided to come home. I felt like it was a necessity for my family that I should come home.

The usual route out of Sendai was impassable. A bus was taking people to Yamagata, a mountain village about 40 miles away. Then I would take another bus to Niigata, where I could catch a train to Tokyo.

I packed up what I could fit in my luggage and threw everything else out. Some part of me didn't want to leave my dorm room a mess, so I made the bed and put everything else out with the trash collection. I grabbed my one piece of luggage and my messenger bag and just took off.

The messenger bag held the laptop and my phone. The luggage had clothes and pictures, a lot of pictures.

ON 3/15/11 2:29 PM, DONNA ANGER EMAILED:

Sherrie:

I've just received a text from Leah that she is in line for the bus at Yamagata which means that she's successfully completed the first part of her journey out of Sendai. I understand how distressing this is for you and for Leah and I'll continue to remain in contact by phone and email for updates and additional information.

Best regards and know our thoughts are with you,

Donna

Leah: It was snowing there — great big fat, wet snowflakes. I had this tunnel vision: you need to get a bus to Niigata so you can go to Tokyo. I bolted out of the bus. The place was packed with people. I walked straight up to the person at the gate and asked, "Do you have any buses to Niigata?" and he said, "No, they're all full."

I remembered my luggage. They had been pulling the luggage out and putting it on the sidewalk. Mine wasn't there. I talked to the bus drivers but they said there are hundreds, maybe thousands of people here. Someone probably took it.

I still had my laptop and phone, passport and money — I had the important things. I just didn't have the clothes and the books. And the pictures, those were a big deal. Those were the only pictures I had of me and Emma.

Sherrie: I stayed with her, texting back and forth. When her phone

would catch reception we would talk. I was trying to call ahead of her to get hotel reservations, which was so funny because I don't speak Japanese and everyone I was talking to could barely speak any English.

Leah: I went to a little store and bought some grapes. I ate two of them.

I asked my mother, please can you find me a hotel here? Back in Fairbanks she had Internet access, but for me to make calls was really expensive.

When I got [to the hotel Sherrie booked], I asked, "Do you have a reservation for Leah Denman?" The guy looks at me kind of funny and he's smiling. He hands the reservation to me and written on it is "Cableah Beaman." My mom had told him, "She'll be coming by cab and her name is Leah Denman." I think that was the first time I had laughed in a while.

The first thing I did was take a shower. It was the best shower in my entire life.

Then I was just there, going crazy. I left the hotel and went back to the bus station. I asked, "Do you have any bus rides now?" The woman looked at me and said, "Wait, you need to get to Niigata?" She ran back to where the bus drivers were and she worked something out. I had been trying to keep outwardly calm, but when I got on the bus it washed over me.

Sherrie: She texted me, "Can't believe it. I'm on the bus and I'm going to make it."

Leah: The buses in Japan make a lot of stops at these little bus stops along the roads. They're really nice, they have these little shops, vending machines, really nice bathrooms. I'd been up for a really long time. I was standing at the vending machine and I kept on putting in coins. The extra coins were just coming out the bottom. The old Japanese man behind me said, "What are you doing?" "I don't know, I don't know," I said.

Eventually we got to Niigata. I went straight to the train station and got my ticket for the Shinkansen bullet train.

I got to Tokyo late at night. I got lost in the lower levels [of the train station]. Every time there was an aftershock I was like, "Oh, I don't want to be down here!"

Finally I made my way to the surface, but then I couldn't get a taxicab to stop. I was still wearing pajama bottoms and a hoodie, something you don't see on the streets in Japan, even in times like that.

I nearly broke down. All of a sudden I hear this gruff voice. A really old cab driver was peering out of his window. He was asking me, "Hey, you need to go somewhere? Where do you need to go? I'll take you."

When I got to the hotel room, the first thing I did was take another bath. Then I just went to bed. I was woken up by aftershocks a few times, but ultimately it was the best sleep I'd had in so long.

I got a text in the early morning from my mom. "I got you a flight. You need to get in a taxi right now because it leaves soon."

Normally, you take a train to the airport. It's much cheaper, it's fast — but it wasn't fast enough. I didn't realize how far away it was. I ended up spending $300 for a cab ride. I do not regret it to this day.

LEAH'S FACEBOOK MESSAGE, MARCH 16:

> **Thank you everyone for your concern, help, and well, everything really. I'm safe in Tokyo waiting for my turn to get in line to check in. The amount of support I have received is a bit surreal. I have a lot of people to thank when I get home.**

Donna: I felt like Leah was doing all of the right things. I was more concerned with the infrastructure, especially when a person is moving from one place to another and you don't know what's going to happen at the next spot.

Leah: The Japanese were so amazing. Through all of that, this horrible thing that had just happened, they were still running bus stations and convenience stores. They were so calm and so ready to help each other out. They got me through it.

The Tokyo Narita airport was jam-packed. I remember thinking about how awful it must be for all the foreign families who came here for a vacation.

My mom texted me that my little brother was crying because he was scared. She said, "Your brother says you need to eat bananas because they help combat radiation." He was about 14 years old then, and the idea of him crying just broke my heart. I

bought a banana in the food court. I told her to tell him, "I'm eating a banana, fighting that radiation!"

LEAH'S FACEBOOK MESSAGE, MARCH 17:

> **I'm in Seattle. Finally on ground that isn't shaking, and absolutely relieved.**

Donna: We arranged for them to be able to have a private space at the [Fairbanks] airport. If someone's been through an experience like that, you want the family to be able to have some time for the process.

Sherrie: Kevin [Kevin Kircus, Leah's fiancé] was at the airport with us. I told him to go out to greet her. I said, "I think she's going to need you more than Mom right now." He seemed very calm, but when she showed up, you could see in his face that he wasn't going to let her go.

She looked tired and worn out, but she looked so good to me! She came in and she's hugging everybody and she's just saying in this little voice, "Let's go home, I just want to go home!"

Leah: An attendant and Kevin met me at the gate. They pulled me into a back room reserved for us. My mom was there, my grandpa, my brother, Tyler, my older sister, Alicia, Donna Anger — they were all there. They kept me pretty sheltered there for a bit.

EPILOGUE: LESSONS LEARNED

Donna: I think we're tending to think more cautiously now about political unrest and natural disasters. The first thing when we hear about anything is we ask, "Do we have any students there or do we have any students or scholars from there?" We think about what support we need to provide. And the other thing, and this is across the board in international education, is a heavier reliance on social media. This was the first time Facebook played such an important role in communicating with our students.

Sherrie: I would never want to say don't travel, don't go anywhere, because then you lose out on so much. Just have a way to get out, a way you can jump on in a heartbeat.

I think Leah will still have a little sensitivity to things for a while. She carries things with her, deep down, where no one knows it unless they know her really well.

Leah: When I was back in UAF, in the classrooms with rows of seats that are hooked together, when someone moves the other seats moved, it would trigger a really bad panic attack. I'd ask myself, "Am I OK?" I took a class on earthquakes, because my fear was uncontrollable. I needed to educate myself so I could stop. That was essential in helping me come to terms with earthquakes and the dangers.

Although I was there and deeply affected by what happened, my story is the story of someone who was alongside the disaster. I don't feel I was fully "in it," as I consider the tsunami to be the true disaster, but I was definitely not outside of it either.

There was one thing — it was so small, but it was so awful. I had just

Across the subducted Pacific

By Regan Campbell

No one was in the office at the Alaska Earthquake Center on the Fairbanks campus when the Tohoku earthquake struck at 8:46 p.m. local time on March 10, 2011. Occurring only 43 miles off the coast of Japan, it was the fourth-largest earthquake since modern record keeping began. It created a catastrophic tsunami that led to the death of nearly 16,000 people and the evacuation of many more.

It's not a scenario remote to Alaska residents. For decades, the Alaska Earthquake Center has kept watch on seismic activity. It manages 400 monitoring sites, picking up the tremors and aftershocks that make up approximately 100 in-state earthquakes per day and 2,500 per month.

Natalia Ruppert, a seismologist who completed her PhD at UAF in geophysics in 2001, is the seismic network manager at the AEC. She recalled what happened after the 2011 quake struck.

"Immediately people were receiving emails that a significant earthquake had occurred in Japan, and tsunami warnings had been issued," she said.

"Nobody thought that plate boundary would produce a magnitude 9," Ruppert said. "It caught scientists by surprise."

In time, as the news coverage and raw seismic data began to flood in, the staff took careful notice of the proceedings and the handling of the aftermath.

gotten out of the taxi in downtown Sendai and I was about to cross the street to the bus station. When you're at a crosswalk in Japan, cute female voices say, "You can cross now, the light is blue!" It's so adorable.

But, because of the earthquake, the voice was distorted. It was croaky, crackling, robotic and weird. You couldn't even tell it was a woman's voice. The sound of that crosswalk voice will never, ever leave me.

Leah Denman graduated in 2013 with a bachelor's degree in Japanese studies and a minor in linguistics. She plans to pursue graduate work in Japanese literature. In 2014, Leah journeyed back to Japan for three months. She volunteered in a summer camp helping children affected by the earthquake. She now lives in Austin, Texas, with her fiancé.

Donna Anger

Sherrie Roberts

Leah Denman

LJ Evans has a multifaceted, postretirement freelance career guiding visitors up the Dalton Highway to Coldfoot and Deadhorse, starting a peony farm in Ester, and writing whenever she can squeeze it in.

Regan Campbell is an MFA candidate in English at UAF. As a toddler growing up in Indiana, he repeatedly failed to run away from home with a circus troupe while disguised as a capuchin. He eventually grew out of that phase and got away for real.

Web extra: Learn more about the disaster at **www.uaf.edu/aurora/**.

Alumni in this story: Douglas Dasher, '10; Leah Denman, '13; Stephen Jewett, '77, '97; Sherrie Roberts, '07; Natalia Ruppert, '95, '01

"We were watching what information was available — what extent of the fault this earthquake ruptured, the extent of tsunami damage," Ruppert said.

Alaska, it happens, sits on the edge of the very same seismic plate as Japan, but at the opposite corner. Like Japan, Alaska is at the edge of a subduction zone, where the Pacific plate, with nowhere else to go, is forced under the neighboring plate as they press together.

If Alaska's 9.2 quake in 1964 is any indication, Alaska is particularly likely to see the process at its worst.

According to Ruppert, Japan has the best seismic network in the world, in terms of technology, awareness and evacuation policies.

Nevertheless, the Tohoku earthquake was the most expensive natural disaster in global history, according to the World Bank's estimates.

In terms of evacuation procedures, things mostly worked the way they were supposed to in Japan.

"They knew what to do," Ruppert observed.

That's something Alaska is still working on.

While communities in the Aleutian Islands have tsunami evacuation protocols, the infrastructure and extensive public awareness showcased by Japan do not exist consistently across Alaska's coastal areas, Ruppert said.