In Terra Bella, Water Only Flows as Tears
At first they called Fred Lujan a gentleman farmer. The retired barber washed his tractor every night and parked it in the garage, a source of gentle amusement to the veteran growers around him. He called his pistachio trees his babies, his girls, and gave them names.

“Come on, Suzanne,” he’d say to his wife in the evenings. “Let’s have a glass of wine and sit outside and watch our girls grow.”

Back when he was still learning to take corners while tilling, he sliced one of the saplings. The other farmers told him to pull it out, the tree wouldn’t make it. But he wrapped the trunk in mud and water and tape the way his grandfather, born on an Indian reservation, had taught him.

He named the tree Survivor.

Eight years later, Survivor and the other trees were ready to give their first mature crop. In February, the 10-acre orchard was Terra Bella, continued on page 2

‘Titanic’ and the Fate of a Doomed Island
It was a slow Sunday morning in January, Papua New Guinea’s rainy season, and the sun was making a rare appearance, lighting up the green and gold island where I was staying. I decided to walk its perimeter, but found it difficult: Large sections of the trail around the island were missing, the land fallen into the waves.

Beneath a washed-out bank, on a sandy point with colliding currents, I waded into the water to look for shells. A large, brown bone washed against my calf. At first I thought it belonged to some sort of marine mammal, maybe a dugong, and picked it up. But then I saw what was clearly a human jaw, five teeth still embedded in the bone, in the water next to me. I stared at the bone in my hand, shocked to realize that I was gripping a person’s femur. Once I started to see them, it seemed there were bones everywhere.

I stood in the wash of bones, numb and confused, then finally gathered what Island, continued on page 2

Family Wins $3 Million in First Fracking Judgment
When the Parr family started having serious health problems late in 2008, they had no idea it was associated with what they call “a multitude” of drilling operations that popped up near their 40-acre ranch in Decatur, 60 miles northwest of Dallas.

At first, Lisa Parr dismissed her migraine headaches, nausea and dizziness as the flu, but when her symptoms persistently got worse, she knew something more serious was involved. Judgment, continued on page 3

Retired Officers Urge Military to Step Up Plans
The military must do more to prepare for the impacts of a changing climate, including updating war plans and building more ships to operate in the Arctic, a group of retired military officers recommended in a report.

The report by CNA Corp., a nonprofit research group that frequently does work for the Navy, says the military must be more aggressive as it prepares to deal with everything from increased numbers of natural disasters in the Pacific to expanded Report, continued on page 3

A Climate Evangelist Puts Her Faith in Science
Climate scientist Katharine Hayhoe, an evangelical Christian, has had quite the run lately. A few weeks back, she was featured in the first episode of the Showtime series Years of Living Dangerously, meeting with actor Don Cheadle in her home state of Texas to explain to him why faith and a warming planet aren’t in conflict. (You can watch that episode for free; Hayhoe was a science adviser for the show.) Time magazine named her one of the 100 most influential people of 2014; Cheadle wrote the entry. “There’s something fascinating about a smart person who defies stereotype,” Cheadle observed.

Why is Hayhoe in the spotlight? Simply put, millions of Americans are evangelical Christians, and their belief in the science of global warming is well

Hayhoe, continued on page 4
Terra Bella, continued

sprouting spring leaves.

Then a man from the irrigation district came and sealed off Lujan’s water meter. A green tag read “No Irrigation Water Is Available This Year.” There was a $10,000 fine for breaking the seal.

For the first time in the more than half a century that the federal government had been diverting Sierra Nevada water to farmers, there would be no deliveries to most Central Valley irrigation districts. In the third year of drought, there wasn’t enough water to go around.

It was a blow to the entire region, but a possible death knell to Terra Bella, whose pistachio and citrus groves are watered only by rain and the government’s canals.

“How am I supposed to just sit here and watch everything turn brown and die?” asked Lujan, 68.

Sean Geivet had known the news was going to be bad. It had been the driest 13-month period in more than 100 years on the winter day the U.S. Bureau of Reclamation announced water allocations. The Terra Bella Irrigation District manager ran through options in his head.

If the feds said a 25% allocation, most of the area’s 700 citrus growers could still bring in a crop. If it was 10%, that was enough to at least keep the trees alive and try again next year.

Growers began dropping off checks with Geivet, authorizing him to buy emergency water, from wherever he could, for up to $1,200 an acre foot, six times the usual price.

It rained in March — barely.

“It smelled so good. It sounded so pretty,” Lujan said.

It’s the last time he saw rain.

Two weeks after irrigation water was cut, domestic water was rationed. Most of the 6,000 people who live in Terra Bella and whose children attend school here are immigrant farmworkers. They would have drinking water—about half the amount they usually got—but little work.

The couple once lived in a two-story house in Porterville. They had a swimming pool and a Jacuzzi, new cars in the garage. They had saved for retirement. But as they watched Fred’s mother grow older and face ill health, they decided their nest egg wouldn’t be enough. They downsized to the small house in Terra Bella and invested in pistachios. Lujan had several cancer operations, and this year he had heart surgery. Their retirement savings dwindled, but the orchard was their safety net.

Survivor died in June.

Not having water during the first heat spell was too much stress for the injured tree. Lujan took it hard.

Driving to town, he noticed Setton Farms, which had a pistachio-processing plant in Terra Bella, had planted new trees—about all the way to Bakersfield, it seemed to Lujan.

Back when Lujan still had his barber shop, one of his clients was a lifelong farmer, Mike Smith. He had always liked Smith because he had a big laugh and a hard handshake.

Three years ago, Smith started a job as liaison between growers and Setton Farms. Lujan decided to talk to him.

Smith delivered Lujan’s plea, and Setton Farms agreed to advance the Lujans 10 acre-feet of the emergency water the company had bought, and let them pay for it after harvest.

“Mykey, my oldest grandson, just came back from Afghanistan. My trees, my babies, are alive,” he said. “Now, I’m just waiting for it to rain.”

He was sure it would.

The original version of this story appeared in the Los Angeles Times.

Island, continued

I could and wandered ashore without a plan. That’s when I came across the graveyard—part of it a small, neat plot with gardens of fake flowers still on the graves, the other a half tumbling down the eroding shoreline and into the ocean.

What remains of the island of Kulenus is a tiny, narrow strip of trees and houses—you can see straight through to the water on the other side—that rises just enough above the sea to meet the minimum criteria for an island.

That wasn’t the case the night before, during high tide. In the darkness, the sea rose to new heights, and swept through a number of nearby low-lying villages. On Kulenus, the water covered every bit of land.

As the water began to rise, residents brought their possessions inside their stilted homes, woven of bamboo and sago palm, to wait out the sea. Soon, in the lower houses and those closest to shore, the water followed them in. They moved their belongings out of the way, then moved them again when the tide kept rising. They stayed awake, sleeping only once the water finally began to recede.

Lately, a Kulenus elder named Ramis Thomas told me, this has been happening every few months. He heard on the radio that the high tides are the result of rising seas, and that rising seas are the result of mountains of ice melting into distant waters. But Kulenus is remote and just a few degrees south of the equator. Ice—available from the store an hour and a half away if you can get a ride on a boat with a motor—is a correspondingly difficult concept.

But Kulenus does have a generator, which the 70 or so residents sometimes use to watch movies. Thomas thinks of one in particular when he tries to imagine those melting mountains: “I just remember a movie about a ship that crashed onto the ice,” he said. A younger man next to him offered the forgotten title: “Titanic.” The movie’s iceberg scene is the closest Thomas can come to picturing the distant climactic changes that are raising the level of the ocean and dooming his island.

The original version of this story appeared on medium.com.
Some of the officers who helped draft the report see the Arctic region emerging as a possible area of rising tensions with Russia.

Report, continued

shipping in the Arctic.

The military panel that advises CNA also found that many changes were happening more quickly than they predicted in 2007 in their latest report that examined the national-security implications of climate change.

“For our national defense, we need to be making sure we are more resilient for the changes we have locked in,” said retired Rear Adm. David Titley, the former oceanographer of the Navy. “It is changing the battle space the Department of Defense operates in.”

Over the past year, the Pentagon has issued a series of reports analyzing climate change in the Arctic and outlining a strategy for operating in the far north as the ice retreats and the waters become navigable for longer stretches of time.

But the CNA report said the military must use more resources to improve communications in the Arctic, and harden some ships to withstand floating ice.

Leo Goff, a retired Navy Captain who helped write the report, said that while shipping and energy exploration are expanding in the Arctic, the military hasn’t begun building the equipment needed to respond to a crisis in the north.

“Right now there are plans and they don’t have action behind them,” he said.

Some of the officers who helped draft the report see the Arctic emerging as a possible area of rising tensions with Russia. “As sea-pack ice goes away, and we have more navigable water, people will put down a marker and say, ‘This belongs to us.’ ” said retired Gen. Ron Keys, the former head of Air Combat Command.

U.S. military officers have said they aren’t rushing to construct new ships capable of operating in the Arctic, given budget pressures. But the Navy and other military branches are taking steps to increase their training and improve their ability to operate in the Arctic.

Defense officials also insist they are taking climate change into account. After signing an agreement to use bases in the Philippines last month, the military moved to select a site for hardened, typhoon-resistant buildings in which to store equipment to use in response to natural disasters.

But the report says the response has been uneven, with commanders in some regions displaying more focus on the effects of climate change than others.

The report doesn’t argue that climate change is the cause of conflicts around the world, but maintains it is a catalyst. The report points to Africa, where climate change has “added environmental stressors” to underlying ethnic conflicts in Mali, Sudan, Nigeria and other countries.

“Climate change is not a cause,” Capt. Goff said, “but it’s the match that starts the tinderbox.”

The original version of this story appeared in The Wall Street Journal.

Judgment, continued

“By 2009, I was having a multitude of problems,” Lisa Parr told CNN. “My central nervous system was messed up. I couldn’t hear, and my vision was messed up. My entire body would shake inside. I was vomiting white foam in the mornings.”

In 2009, Lisa’s husband, Robert, and their daughter, Emma, 11, also became ill, suffering a laundry-list of symptoms.

“They had nosebleeds, vision problems, nausea, rashes, blood pressure issues. Being that the wells were not on our property, we had no idea that what they were doing on the property around us was affecting us,” she said.

After a two-week trial that ended on Earth Day, coincidentally, a Dallas jury awarded the Parr family $2.9 million for personal injury and property damages in the family’s lawsuit against Plano-based Aruba Petroleum Inc.

According to the lawsuit, Aruba Petroleum had 22 natural gas wells within a 2-mile radius of the Parrs’ property, with three wells in close proximity to their Texas home. The closest was 791 feet away.

As a result of poor management and lack of emission controls, Aruba created a “private nuisance” to the Parr family by producing harmful air pollution and exposing them to emissions of volatile organic compounds, toxic air pollutants and diesel exhaust, the lawsuit said.

Aruba Petroleum argued to the jury that it consistently met state regulatory standards for air emissions and that there was no evidence its fracking of the wells harmed the Parr family in any way.

“Unfortunately, [the jury] returned a verdict that we believe is counter to the evidence presented,” the company said in a statement. The company further said it complied with state air-quality limits.

The original version of this story appeared on cnn.com.
Hayhoe, continued
below the national average. And if anyone has a chance of reaching this vast and important audience, Hayhoe does.

“I feel like the conservative community, the evangelical community, and many other Christian communities, I feel like we have been lied to,” explains Hayhoe on the latest episode of the Inquiring Minds podcast. “We have been given information about climate change that is not true. We have been told that it is incompatible with our values, whereas in fact it’s entirely compatible with conservative and with Christian values.”

Hayhoe’s approach to science—and to religion—was heavily influenced by her father, a former Toronto science educator and also, at one time, a missionary. “For him, there was never any conflict between the idea that there is a God, and the idea that science explains the world that we see around us,” says Hayhoe.

When she was 9, her family moved to Colombia, where her parents worked as missionaries and educators, and where Hayhoe saw what environmental vulnerability really looks like. “Some of my friends lived in houses that were made out of cardboard Tide boxes, or corrugated metal,” she says. “And realizing that you don’t really need that much to be happy, but at the same time, you’re very vulnerable to the environment around you, the less that you have.”

Her research today, on the impacts of climate change, flows from those early experiences. And of course, it is inspired by her faith, which for Hayhoe, puts a strong emphasis on caring for the weakest and most vulnerable among us. “That gives us even more reason to care about climate change,” says Hayhoe, “because it is affecting people, and is disproportionately affecting the poor, and the vulnerable, and those who cannot care for themselves.”

The fact remains, though, that most evangelical Christians in the United States do not think as Hayhoe does. Recent data from the Yale Project on Climate Change Communication suggests that while 64 percent of Americans think global warming is real and caused by human beings, only 44 percent of evangelicals do.

From an interview, here are examples of Hayhoe’s top arguments, for evangelical Christians, on climate change:

1. Conservation is Conservative.
The evangelical community isn’t just a religious community, it’s also a politically conservative one on average. So Hayhoe speaks directly to that value system. “What’s more conservative than conserving our natural resources, making sure we have enough for the future, and not wasting them like we are today?” she asks. “That’s a very conservative value.”

2. Yes, God Would Let This Happen.
One conservative Christian argument is that God just wouldn’t let human activities ruin the creation. Or, as Sen. James Inhofe of Oklahoma has put it: “God’s still up there, and the arrogance of people to think that we, human beings, would be able to change what he is doing in the climate, is to me, outrageous.”

Hayhoe thinks the answer to Inhofe’s objection is simple: From a Christian perspective, we have free will to make decisions and must live with their consequences. This is, after all, a classic Christian solution to the theological problem of evil. “Are bad things happening? Yes, all the time,” says Hayhoe. Climate change is, to Hayhoe, just another wrong, another problem, brought on by flawed humans exercising their wills in a way that is less than fully advisable.

3. The Bible Does Not Approve of Letting the World Burn.
Hayhoe agrees with the common liberal perception that the evangelical community contains a significant proportion of apocalyptic or end-times believers—and that this belief, literally that judgment is upon us, undermines their concern about preserving the planet. But she thinks there’s something very wrong with that outlook, and that the Bible itself refutes it.

4. Even If You Believe in a Young Earth, It’s Still Warming.
One reason there’s such a tension between the evangelical community and science is, well, science. Many evangelicals are Young-Earth creationists, who believe that the Earth is 6,000 or so years old.

Hayhoe isn’t one of those. She studied astrophysics, and quasars that are quite ancient; and as she notes, believing the Earth and universe to be young creates a pretty problematic understanding of God: “Either you have to believe that God created everything looking as if it were billions of years old, or you have to believe it is billions of years old.” In the former case, God would, in effect, seem to be trying to trick us.

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