ALABAMA PRISON ARTS + EDUCATION PROJECT

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Dear Student, Artist, Thinker,

Volcanoes have occupied a special place in humanity's collective imagination, partly because it took us so long to really understand how they work, and there are plenty of mysteries left for us to figure out. Ancient civilizations took the sudden, unexpected eruptions as actions of the gods (we even get the word "volcano" from Vulcan, the Roman god of fire). To them, seeing a regular old mountain, one that hadn't been disturbed for centuries, transform from peaceful and serene to an exploding mess of ash, rock, and lava simply *had* to be the work of a divine power.

If you've ever seen video footage of an eruption (or seen one in person, in which case, we're glad you're still here!), it can still seem like the result of some vast, supernatural force. A large enough eruption can literally change the landscape and emit energy hundreds to thousands times more than an atomic bomb. Forty years ago in Washington State, Mount St. Helens blew its top and wound up being over 1,300 feet shorter, and ash from the explosion circled the globe.

Vulcanologists (what a cool name!), the people who study volcanoes, now understand that these incredible eruptions are just the Earth letting off a little steam — releasing some built-up pressure from under the planet's crust. Other people (poets in particular) have seized on this knowledge as a good metaphor for the unseen forces that exist within humankind. Personally, I can't help but think of a volcano when I read Langston Hughes' "Harlem":

What happens to a dream deferred?

Does it dry up
like a raisin in the sun?
Or fester like a sore —
And then run?
Does it stink like rotten meat?
Or crust and sugar over —
like a syrupy sweet?

Maybe it just sags
like a heavy load.

Or does it explode?

Creating something, be it a story, a poem, or a drawing, can help relieve some of that pressure inside all of us. You never know how your thoughts may one day circle the globe too.

Kyes Stevens and the APAEP Team

WORDS INSIDE

FROM "GEOLOGISTS DISCOVER LARGEST UNDERWATER VOLCANO"...

seismic | relating to an earth vibration

roiling | moving turbulently; stirring up

fissures | long, narrow openings or lines of breakage in rock or earth

conundrum | a confusing and difficult problem or question

FROM "SCIENTISTS BREW THEIR OWN LAVA"...

crucible | a ceramic or metal container in which metals or other substances may be melted or subjected to very high temperatures

FROM "THE LOUDEST SOUND"...

imperceptible | impossible to perceive or detect

• • •

"Remind me that the most fertile lands were built by the fires of volcanoes." **ANDREA GIBSON** // American poet

The Warbler, an educational newsletter compiled of materials from the Internet, was created during the COVID-19 global pandemic for people who are incarcerated. All works are credited, and efforts have been made to exclude material that has copyright restrictions for educational use. Articles have been edited due to space restrictions.

GEOPHYSICS

Geologists Discover Largest Underwater Volcano, Explain Weird Hum Heard Around the World

BY LAURA GEGGEL | *Live Science* | May 23, 2019

A strange seismic event off the coast of Africa has led scientists to a mighty finding: the discovery of the largest underwater volcanic eruption ever recorded.

The eruption also may explain a weird seismic event recorded in November 2018 just off the island of Mayotte, located between Madagascar and Mozambique in the Indian Ocean. Researchers described that event as a seismic hum that circled the world, but no one could figure out what sparked it.

For starters, the hum rang at a single, ultralow frequency, which was strange because seismic waves usually rumble at many frequencies. Moreover, there were hardly any detectable "p-waves" or "s-waves," which usually accompany earthquakes. And, incredibly, the island of Mayotte moved a few inches south and east after the mysterious event.

Now, scientists have an idea why. This weird seismic hum was likely the birth announcement of a new underwater volcano, according to *Science* magazine.

The underwater volcano is enormous, rising nearly a half mile (0.8 kilometers) from the ocean floor. It's the length of a 3.1-mile (5 km) race and lies about 31 miles (50 km) off Mayotte's eastern coast. And it came into being in just six months.

"We have never seen anything like this," Nathalie Feuillet, a leader of an expedition to the site by the research vessel Marion Dufresne, who is with the Institute of Geophysics in Paris (IPGP), told *Science* magazine.

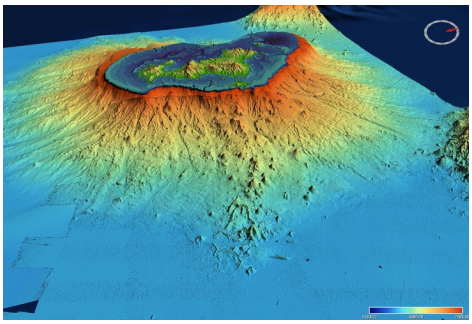
In addition to the weird "seismic hum," there were other clues that something big was happening. The inhabitants of the French island of Mayotte reported feeling more than 1,800 little earthquakes almost daily since the middle of last year, including a large magnitude-5.8 earthquake in May 2018, the largest ever recorded in the region, *National Geographic* reported.

Finding the newborn volcano took an enormous effort, including work from organizations such as the National Center for Scientific Research (CNRS) in France, the IPGP and the French Research Institute for the Exploitation of the Sea (IFREMER), according to a joint statement released May 16.

Part of that research included six seismometers placed on the ocean floor, close to the seismic activity, Science magazine reported. These instruments revealed a tight cluster of earthquakes deep in Earth's crust, likely stemming from a deep magma chamber that's gushing molten rock onto the sea's bottom.

This magma chamber may also be shrinking, as Mayotte has sunk about 5 inches (13 centimeters) and moved 2.5 inches (10 cm) to the east over the past year, *Science* magazine reported.

In addition, sonar revealed 1.2 cubic miles (5 cubic km) of magma on the seafloor, as well as plumes of bubble-rich water streaming from the volcano. Rock samples collected from the site may reveal the depth of the magma source, as well as the risk of a volcanic eruption.



The birth of the new underwater volcano off Mayotte is responsible for the seismic hum recorded around the world in November 2018.

Picture from strangesounds.org.

Mayotte isn't a stranger to volcanic eruptions, but it's been at least 4,000 years since volcanoes last stirred in the area, *National Geographic* reported. The island is part of the Comoro archipelago, islands created by volcanism.

As news of the seismic hum and the tiny earthquakes spread, a group of French researchers posted a draft of a research study on EarthArxiv, a non-peer-reviewed site in February 2019, positing that the rumblings might have to do with a draining magma chamber. But researchers still have to publish a peer-reviewed study on the events, and it remains unclear exactly how the weird hum, earthquakes and volcano are related.

It's also a mystery why volcanoes are found near the tiny island. Unlike Hawaii, which formed because of hotspot volcanism roiling up, the volcano near Mayotte lies within the ancient rift where Madagascar tore away from eastern Africa long ago. It's possible that fissures from this break are now a cradle for this new volcano. However, it's strange that the volcano popped up by Mayotte, which is the oldest island in the archipelago, Ken Rubin, a volcanologist at the University of Hawaii at Mānoa, told *National Geographic*.

It also remains to be seen if this volcano is completely new, or whether it sits on an older volcanic structure, the researchers said. In other words, geologists have a lot of work to do, and they're eager to get to the bottom of this geologic conundrum. ●

?

GIVE ME FOOD, AND I WILL LIVE. GIVE ME WATER, AND I WILL DIE. **WHAT AM I?**

riddles.nu

Edited for clarity

SCIENCE

Scientists Brew Their Own Lava

BY NICHOLAS ST. FLEUR | *The New York Times* | Jan. 8, 2019

When lava meets water, the results are often explosive.

Last year, lava from Hawaii's Kilauea volcano flowed into the ocean, creating bombs of molten rock that were flung into the sky and then smashed into a nearby tourist boat, injuring 23 people.

In 2010, a glacier-covered volcano in Iceland called Eyjafjallajökull erupted and spewed a plume of ash 30,000 feet into the air, causing hundreds of flights in Europe to be grounded.

Scientists want to better understand these violent reactions to help prepare communities near volcanoes and bodies of water or groundwater. But doing so at active sites can be impractical. Instead, a team of researchers recently brewed their own backyard lava.

"We are not just crazy people mixing and seeing what happens," said Ingo Sonder, a volcanologist at the University at Buffalo. "We are scientists and we want to quantify, and we do have an idea of what we are doing here."

First, Dr. Sonder and his colleagues got black chunks of ancient solidified lava, called basalt, from a quarry in Texas. They poured about 120 pounds of basalt into a crucible inside a furnace. Over four hours, with a few occasional stirs, the furnace heated the rocks to about 2,400 degrees Fahrenheit, until the basalt became a bubbling molten mix.

Donning silver thermal suits to protect against the intense heat and radiation, the researchers then poured 10 gallons of glowing goop into a series of insulated steel boxes. The containers varied in size: Some were long and flat, while others were tall and narrow, like a chimney, in order to replicate the types of magma columns found in nature.

The walls of the steel containers had injectors designed to spray pressurized water into the piping hot lava. After each contraption was moved a safe distance from the shed that housed the furnace, the scientists initiated a countdown on their computers.

Often, the instant the water hit the lava, it exploded, sending a blazing blob about six feet into the air, and a few lava bombs as high as 15 feet. But other times nothing happened, so the researchers used a remotely controlled sledgehammer to knock the container and trigger the blast.

The team used high-speed cameras to catch video of the explosions and published the first of their results, still preliminary, last month in the journal JGR-Solid Earth. They plan to continue brewing lava, carrying out the experiment with differently shaped containers and varying amounts of water.

"If we have a better idea of what conditions cause these violent lava-water explosions," said Greg Valentine, a volcanologist at the University at Buffalo and an author on the paper, "then we can do a better job of kind of warning people and mitigating the hazard." ●

Researchers pour lava from the furnace after the melt is complete. The furnace is located at the University at Buffalo's Geohazards Field Station in Upstate New York.

Douglas Levere / University at Buffalo

Edited for clarity

WORD PLAY

A Rebus puzzle is a picture representation of a common word or phrase. How the letters/images appear within each box will give you clues to the answer! For example, if you saw the letters "LOOK ULEAP," you could guess that the phrase is "Look before you leap." *Answers are on the last page!*

FEW MENTION FEW MENTION	Ci ii	YOUR 1111 LIFE

MATHEMATICS

Sudoku

#47 PUZZLE NO. 2960123

			4					8
	1						5	
	7	3	9				1	
					6	3		9
5	9				4	2		
3		6			9			
		9	3					5
1	4		6		8			

©Sudoku.cool

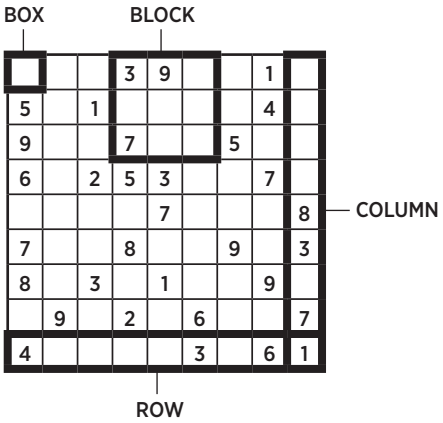
#48 PUZZLE NO. 4882351

9								2
4	6					1		
				8	3		6	
2	5		9		8			
					6		3	
	7							
5				6				
6				7	1			5
3		1	5		2		8	

©Sudoku.cool

SUDOKU HOW-TO GUIDE

1. Each block, row, and column must contain the numbers 1–9.
2. Sudoku is a game of logic and reasoning, so you should not need to guess.
3. Don't repeat numbers within each block, row, or column.
4. Use the process of elimination to figure out the correct placement of numbers in each box.
5. The answers appear on the last page of this newsletter.



What the example will look like solved

2	4	8	3	9	5	7	1	6
5	7	1	6	2	8	3	4	9
9	3	6	7	4	1	5	8	2
6	8	2	5	3	9	1	7	4
3	5	9	1	7	4	6	2	8
7	1	4	8	6	2	9	5	3
8	6	3	4	1	7	2	9	5
1	9	5	2	8	6	4	3	7
4	2	7	9	5	3	8	6	1

"We are volcanoes. When we women offer our experience as our truth, as human truth, all the maps change. There are new mountains."

URSULA K. LE GUIN // American author

Icons from the Noun Project

DID YOU KNOW?

The volcanic rock **pumice** is the only rock that can float in water. It is usually grey and full of bubbly holes, which form when hot gases jet furiously out of the rock as it cools.

The most formidable volcanoes are called **supervolcanoes**; their eruptions can rain hellfire across thousands of miles and cause worldwide climatic changes. One of the biggest is in Yellowstone National Park, and scientists say it may be due for another eruption.

The largest volcanic eruption ever observed was of **Mount Tambora** in Indonesia. Its eruption in 1815 killed about 100,000 people.

Most volcanoes occur near the edges of **tectonic plates**, the massive rock slabs that make up Earth's surface.

Volcanoes can grow. As lava and ash accumulate, they add layers and height to the volcanic surface.

Source: livescience.com

Idiom

"Sitting on a volcano"

Meaning To be in a place where trouble may start or danger may come suddenly.

Bob was in that part of South America before the revolution began. He knew he was sitting on a volcano.

Origin The origins of this phrase are unclear, but the word *volcano* is from the 1610s, from the Italian *vulcano* "burning mountain," from Latin *Vulcanus* "Vulcan," the Roman god of fire. The name was first applied to Mt. Etna by the Romans, who believed it was the forge of Vulcan. Earlier form in English was volcan (1570s), from French. The term was first printed in a book by Davy Crockett in 1833.

Source: sky-net-eye.com

VOLCANOES MAKE SUNSETS MORE COLORFUL. THIS VISUAL PHENOMENON IS THE RESULT OF FINE ASH PARTICLES IN THE ATMOSPHERE SCATTERING THE SUN'S RAYS.

THE **BIGGEST VOLCANO ON EARTH** IS HAWAII'S MAUNA LOA. ONE OF THE FIVE VOLCANOES IN HAWAII, IT TOWERS 13,000 FEET ABOVE SEA LEVEL.

Icons by Noun Project

ART + CULTURE

Negotiations with a Volcano

BY NAOMI SHIHAB NYE

We will call you "Agua" like the rivers and cool jugs.
We will persuade the clouds to nestle around your neck
so you may sleep late.
We would be happy if you slept forever.
We will tend the slopes we plant, singing the songs
our grandfathers taught us before we inherited their fear.
We will try not to argue among ourselves.
When the widow demands extra flour, we will provide it,
remembering the smell of incense on the day of our Lord.

Please think of us as we are, tiny, with skins that burn easily.
Please notice how we have watered the shrubs around our houses
and transplanted the peppers into neat tin cans.
Forgive any anger we feel toward the earth,
when the rains do not come, or they come too much,
and swallow our corn.
It is not easy to be this small and live in your shadow.

Often while we are eating our evening meal
you cross our rooms like a thief,
touching first the radio and then the loom.
Later our dreams begin catching fire around the edges,
they burn like paper, we wake with our hands full of ash.

How can we live like this?
We need to wake and find our shelves intact,
our children slumbering in their quilts.
We need dreams the shape of lakes,
with mornings in them thick as fish.
Shade us while we cast and hook—
but nothing else, nothing else.

Source: poets.org

Naomi Shihab Nye was born on March 12, 1952, in St. Louis, Missouri, to a Palestinian father and an American mother. During her high school years, she lived in Ramallah in Palestine, the Old City in Jerusalem, and San Antonio, Texas, where she later received her BA in English and world religions from Trinity University. Nye is the author of numerous books of poems, most recently *Cast Away: Poems for Our Time* (Greenwillow Books, 2020). She served as a Chancellor of the Academy of American Poets from 2010 to 2015, and is the Poetry Foundation's Young People's Poet Laureate from 2019-2021. She currently lives in San Antonio, Texas.

WRITING PROMPT
There are many things in life that are completely outside of our control or influence, but that doesn't stop us from trying to convince them to help us out from time to time. Think of something huge — far outside your (or anyone else's) ability to control, and have a conversation with it. How can you persuade it to do what you'd like? And will it listen?

Word Search

A	P	S	A	E	J	S	R	E	P	P	E	P	M
P	J	M	N	F	A	S	H	S	M	L	A	U	O
S	D	U	F	N	M	S	P	T	R	A	P	E	O
N	E	F	G	E	P	L	S	L	E	H	S	S	L
S	A	E	E	S	E	O	O	S	O	D	L	H	S
F	E	A	R	T	R	I	S	M	D	O	U	D	H
D	H	A	S	L	S	D	N	O	P	T	R	C	A
S	E	M	P	E	U	A	S	E	P	E	O	R	D
D	R	E	E	A	A	R	S	E	A	E	R	E	E
N	R	M	P	L	D	E	L	M	A	E	D	S	E
A	C	S	P	A	E	S	S	R	N	S	A	O	O
M	U	P	G	G	F	N	E	P	F	S	S	E	D
E	H	G	S	K	I	N	S	S	E	E	R	I	F
D	P	I	N	C	E	N	S	E	S	H	U	M	I

PEPPERS
NESTLE
PERSUADE
DEMANDS
ASH
DREAMS
SLOPES
LOOM
INCENSE
SKINS
FIRE
RADIO
FEAR
JUGS
SLEPT
SHADE

WORLD EVENTS

Guatemala Volcano Killed Dozens with Its Pyroclastic Flow. Here's What That Is.

BY ANGELA FRITZ | *The Washington Post* | June 4, 2018

Guatemala's Volcan de Fuego — Volcano of Fire — erupted spectacularly Sunday, shooting a plume of ash and gas nearly six miles into the sky and spreading ash and debris across towns and farms more than 10 miles away from the volcano.

A river of lava, rocks and ash poured down the mountain, burying homes and people. This river, or pyroclastic flow, may not be glowing orange like molten earth, but it is undeniably the most deadly part of the volcano.

Do you recall that scene in "Independence Day," the one where the aliens detonate their weapon of mass destruction over New York City, Washington and Los Angeles? A wall of fire tears through the cities, incinerating everything in its path. Jasmine, played by Vivica A. Fox, leaps into a tunnel service closet with her son and dog Boomer, narrowly escaping the fiery wave. It was a close call, but Boomer, Jasmine and her son are safe.

Pyroclastic flow is kind of like the alien wall of fire in "Independence Day." It's full of rocks, ash and hot gas. It blasts across the ground at speeds over 50 mph and is incredibly hot — sometimes over 1,000 degrees Fahrenheit.

"It is universally deadly," the U.S. Geological Survey says.

There's no service closet in the world that could save you when pyroclastic flow is shooting down the mountain.

Pyroclastic flow is how 30,000 people died in the eruption of Mount Pelee in 1902. When Vesuvius erupted in 79 A.D., more than 13,000 people died in pyroclastic flow, although the exact death toll is unknown. And it's also being blamed for dozens of deaths in the Fuego eruption Sunday.

There are several ways pyroclastic flow can develop during an eruption.

The plume of ash and gas above the volcano cools and falls to the ground. Amplified by gravity, the flow pulls hot debris down with it.

Instead of erupting into a big plume, the volcano can "boil over" and its contents flow rapidly down the mountain.

Like an avalanche, lava that piles up can become unstable, break off and shoot down the mountain.

Even though the pyroclastic flow just looks like ash, it's actually a flash flood of rocks and boulders. Just like a flash flood, it will naturally flow into dips and valleys, but if the valley narrows or the volume of flow becomes too large, it will spill out and flood the surrounding area.

A view of the damage caused by the eruption of Fuego volcano in San Miguel Los Lotes on June 4, 2018.

Photo credit: Johan Ordonez / AFP / Getty

"The clouds you see mask a dangerous interior to these currents," Rebecca Williams, a volcanologist at the University of Hull, said on Twitter. "Often a dense avalanche is at the base, capable of carrying huge blocks of rock. This has great force and will destroy buildings and flatten forests."

The USGS says that pyroclastic flow — made up of pieces of rock, ash and hot gas — can vary in speed and is universally deadly and destructive. "A pyroclastic flow will destroy nearly everything in its path," the USGS says. "With rock fragments ranging in size from ash to boulders traveling across the ground at speeds typically greater than [50 mph], pyroclastic flows knock down, shatter, bury or carry away nearly all objects and structures in their way.

"The extreme temperatures of rocks and gas inside pyroclastic flows, generally between [400 and 1,300 degrees Fahrenheit], can cause combustible material to burn, especially petroleum products, wood, vegetation and houses." ●

Edited for clarity and space

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WHAT IS BLACK WHEN YOU BUY IT, RED WHEN YOU USE IT, AND GRAY WHEN YOU THROW IT AWAY?

riddles.nu

HISTORY

The Loudest Sound Ever Heard

BY AATISH BHATIA | *discovermagazine.com* | July 13, 2018

On 27 August 1883, the Earth let out a noise louder than any it has made since.

It was 10:02 AM local time when the sound emerged from the island of Krakatoa, which sits between Java and Sumatra in Indonesia. It was heard 1,300 miles away in the Andaman and Nicobar islands ("extraordinary sounds were heard, as of guns firing"); 2,000 miles away in New Guinea and Western Australia ("a series of loud reports, resembling those of artillery in a north-westerly direction"); and even 3,000 miles away in the Indian Ocean island of Rodrigues, near Mauritius ("coming from the eastward, like the distant roar of heavy guns.") In all, it was heard by people in over 50 different geographical locations, together spanning an area covering a thirteenth of the globe.

Think, for a moment, just how crazy this is. If you're in Boston and someone tells you that they heard a sound coming from New York City, you're probably going to give them a funny look. But Boston is a mere 200 miles from New York. What we're talking about here is like being in Boston and clearly hearing a noise coming from Dublin, Ireland. Travelling at the speed of sound (766 miles or 1,233 kilometers per hour), it takes a noise about 4 hours to cover that distance. This is the most distant sound that has ever been heard in recorded history.

So what could possibly create such an earth-shatteringly loud bang? A volcano on Krakatoa had just erupted with a force so great that it tore the island apart, emitting a plume of smoke that reached 17 miles into the atmosphere, according to a geologist who witnessed it. You could use this observation to calculate that stuff spewed out of the volcano at over 1,600 miles per hour — or nearly half a mile per second. That's more than twice the speed of sound.

This explosion created a deadly tsunami with waves over a hundred feet (30 meters) in height. One hundred sixty-five coastal villages and settlements were swept away and entirely destroyed. In all, the Dutch (the colonial rulers of Indonesia at the time) estimated the death toll at 36,417, while other estimates exceed 120,000.

The British ship Norham Castle was 40 miles from Krakatoa at the time of the explosion. The ship's captain wrote in his log, "So violent are the explosions that the ear-drums of over half my crew have been shattered. My last thoughts are with my dear wife. I am convinced that the Day of Judgement has come."

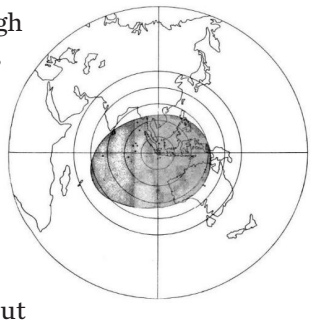
In general, sounds are caused not by the end of the world but by fluctuations in air pressure. A barometer at the Batavia gasworks (100 miles away from Krakatoa) registered the ensuing spike in pressure at over 2.5 inches of mercury. That converts to over 172 decibels of sound pressure, an unimaginably loud noise. To put that in context, if you were operating a jackhammer you'd be subject to about 100 decibels. The human threshold for pain is near 130 decibels, and if you had the misfortune of standing next to a jet engine, you'd experience a 150 decibel sound. (A 10 decibel increase is perceived by people as sounding roughly twice as loud.) The Krakatoa explosion registered 172 decibels at 100 miles from the source. This is so astonishingly loud, that it's inching up against the limits of what we mean by "sound."

A lithograph of the massive 1883 eruption of Krakatoa.

Parker & Coward 1888/Wikipedia

A map *(below)* showing the area in which the Krakatoa explosion could be heard.

Source: "The eruption of Krakatoa, and subsequent phenomena," 1888



When you hum a note or speak a word, you're wiggling air molecules back and forth dozens or hundreds of times per second, causing the air pressure to be low in some places and high in other places. The louder the sound, the more intense these wiggles, and the larger the fluctuations in air pressure. But there's a limit to how loud a sound can get. At some point, the fluctuations in air pressure are so large that the low pressure regions hit zero pressure — a vacuum — and you can't get any lower than that. This limit happens to be about 194 decibels for a sound in Earth's atmosphere. Any louder, and the sound is no longer just passing through the air, it's actually pushing the air along with

EasyDrawingGuides.com

it, creating a pressurized burst of moving air known as a shock wave.

Closer to Krakatoa, the sound was well over this limit, producing a blast of high pressure air so powerful that it ruptured the eardrums of sailors 40 miles away. As this sound travelled thousands of miles, reaching Australia and the Indian Ocean, the wiggles in pressure started to die down, sounding more like a distant gunshot. Over 3,000 miles into its journey, the wave of pressure grew too quiet for human ears to hear, but it continued to sweep onward, reverberating for days across the globe. The atmosphere was ringing like a bell, imperceptible to us but detectable by our instruments.

By 1883, weather stations in scores of cities across the world were using barometers to track changes in atmospheric pressure. Six hours and 47 minutes after the Krakatoa explosion, a spike of air pressure was detected in Calcutta. By 8 hours, the pulse reached Mauritius in the west and Melbourne and Sydney in the east. By 12 hours, St. Petersburg noticed the pulse, followed by Vienna, Rome, Paris, Berlin, and Munich. By 18 hours the pulse had reached New York, Washington DC, and Toronto. Amazingly, for as many as 5 days after the explosion, weather stations in 50 cities around the globe observed this unprecedented spike in pressure re-occuring like clockwork, approximately every 34 hours. That is roughly how long it takes sound to travel around the entire planet.

In all, the pressure waves from Krakatoa circled the globe three to four times in each direction. (Each city felt up to seven pressure spikes because they experienced shock waves travelling in opposite directions from the volcano.) Meanwhile, tidal stations as far away as India, England, and San Francisco measured a rise in ocean waves simultaneous with this air pulse, an effect that had never been seen before. It was a sound that could no longer be heard but that continued moving around the world, a phenomenon that people nicknamed "the great air-wave."

Recently, an incredible home video of a volcanic eruption taken by a couple on vacation in Papua New Guinea started making the rounds on the Internet. If you watch closely, this video gives you a sense for the pressure wave created by a volcano.

When the volcano erupts, it produces a sudden spike in air pressure; you can actually watch as it moves through the air, condensing water vapor into clouds as it travels. The people taking the video are (fortunately) far enough away that pressure wave takes a while to reach them. When it does finally hit the boat, some 13 seconds after the explosion, you hear what sounds like a huge gunshot accompanied by a sudden blast of air. Multiplying 13 seconds by the speed of sound tells us that the boat was about 4.4 kilometers, or 2.7 miles, away from the volcano. This is somewhat akin to what happened at Krakatoa, except the 'gunshot' in that case could be heard not just three but three thousand miles, away, a mind-boggling demonstration of the immense destructive power that nature can unleash. ●

"If your heart is a volcano, how shall you expect flowers to bloom?"

KHALIL GIBRAN // Lebanese-American poet, writer, and artist

?

I CANNOT BE BURNED IN LAVA OR DROWNED IN WATER. **WHAT AM I?**

brainzilla.com

RANDOM-NEST

Common Spanish Phrases for Your First Conversation With a Native Speaker

... continued from previous week

BY IVY DO CARMO | MIMICMETHOD.COM

THANK YOU AND OTHER COURTESIES
Gracias | Thank you
Muchas gracias | Thank you very much
De nada | You're welcome
Perdón | Pardon
Lo siento | I am sorry
Disculpe | Sorry
Mil disculpas | A thousand sorry's
Por favor | Please
Con permiso | Excuse me
Perdone / Perdona | Pardon me
Señor (Sr.) | Mr.
Señora (Sra.) | Mrs.
Señorita (Srta.) | Miss

WHERE ARE YOU FROM?
¿De dónde eres? | Where are you from? (informal)
¿De dónde es? | Where are you from? (formal)
¿De dónde son? | Where are you from? (plural)
¿Dónde vives? | Where do you live?
Yo soy de ... | I am from ...
Somos de ... | We are from ...

ASKING INFORMATION
¿Qué ... ? | What ... ?
¿Cómo ... ? | How ... ?
¿Cuándo ... | When ... ?
¿Cuánto ... ? | How much ... ?
¿Dónde ... ? | Where ... ?
¿Quién ... ? | Who ... ?
¿Por qué ... ? | Why ... ?
¿Cuál? | Which ... ?

Edited for clarity

Words of Encouragement

"I heard that we are in the same boat.
But it's not that.
We are in the same storm, but not in the same boat.
Your ship can be shipwrecked and mine might not be.
Or vice versa."

Someone shared these lines with me near the beginning of quarantine and I think about them often, especially when I think about all of you, our students, riding out this storm. The piece goes on further,

"It is very important to see beyond what is seen at first glance. Not just looking, more than looking, seeing.

See beyond the political party, beyond biases, beyond the nose on your face. Do not judge the good life of the other, do not condemn the bad life of the other.

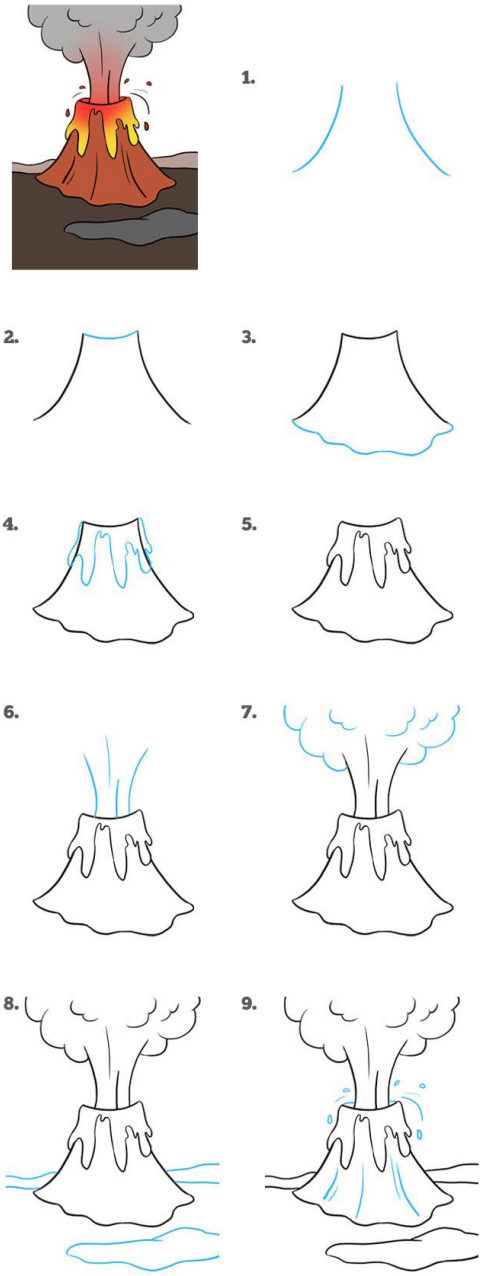
Don't be a judge.

Let us not judge the one who lacks, as well as the one who exceeds him. We are on different ships looking to survive.

Let everyone navigate their route with respect, empathy and responsibility."

I hope you know and can feel that so many of us have been spending our time thinking about you, rooting for you, advocating for you! We want you to be safe and healthy so we can see you again when this storm is over.

Cory



HOW TO DRAW A VOLCANO

EasyDrawingGuides.com

Answers

SUDOKU #47

2	6	5	4	7	1	9	3	8
9	1	4	8	2	3	6	5	7
8	7	3	9	6	5	4	1	2
6	3	8	2	9	7	5	4	1
4	2	1	5	8	6	3	7	9
5	9	7	1	3	4	2	8	6
3	5	6	7	1	9	8	2	4
7	8	9	3	4	2	1	6	5
1	4	2	6	5	8	7	9	3

SUDOKU #48

9	3	5	6	1	7	8	4	2
4	6	8	2	9	5	1	7	3
7	1	2	4	8	3	5	6	9
2	5	6	9	3	8	7	1	4
1	4	9	7	5	6	2	3	8
8	7	3	1	2	4	9	5	6
5	8	7	3	6	9	4	2	1
6	2	4	8	7	1	3	9	5
3	9	1	5	4	2	6	8	7

Brainteasers

Page 2 Fire
Page 3 Rebus Puzzle: 1. Too few to mention 2. See eye to eye 3. For once in your life
Page 7 Charcoal
Page 9 Ice

Send ideas and comments to:

APAEP
1061 Beard-Eaves
Memorial Coliseum
Auburn University, AL 36849

UNTIL NEXT TIME!