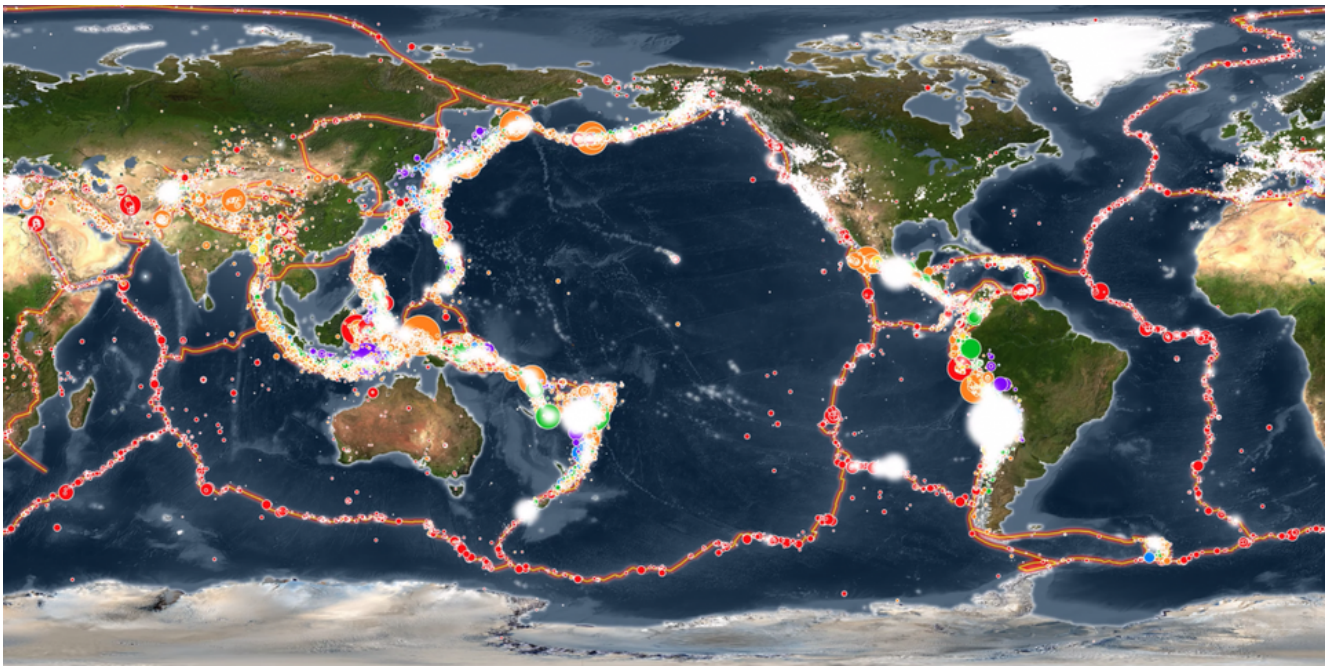
Watch 100 Years Of Earthquakes Rock The World In This Incredible Animation



Earthquakes are happening everywhere, all the time. – PACIFIC TSUNAMI WARNING CENTER/NOAA VIA YOUTUBE

As you've probably noticed, I write about earthquakes a fairbit. Although I do my best to describe the scale of them in the most evocative way possible, sometimes you just need to zoom out and, you know, actually see them. Thanks to the incredible work of the National Oceanic and Atmospheric Administration, the United States Geological Survey and the National Earthquake Information Center, you now can – and I suspect even seasoned seismologists will be blown away by the animation they've produced.

The video below, released back in December of last year, shows every single recorded earthquake or earthquake sequence from January 1, 1901 straight through to New Year's Eve of the year 2000. The size of the circles is proportional to their magnitude (roughly speaking, a measure of how much energy each quake unleashes from its source), and the colours are linked to how deep beneath the surface the quake took place.

If you needed a reminder that the planet has a pulse – largely thanks to plate tectonics – then here it is. There's a lot of information to take in, so let me highlight the most interesting points of the animation for you.

See animation here: http://www.garnertedarmstrong.org/earthquakes-of-the-20th-century-video-animation/ or https://www.youtube.com/watch?time_continue=156&v=jhmF-IwP6uM

First off, the number of recorded earthquakes seems to dramatically increase over time, particularly from the 1970s onwards. This isn't because the planet is suddenly becoming more seismically active; it's because around that time, seismometer tech, as well as telecommunications and signal processing tech, became significantly more advanced. As time ticked on, more seismometers were increasingly placed in seismically active and potentially treacherous parts of the world. Both these factors meant that more quakes were being detected with greater precision than ever before. (In fact, seismometers today are so ludicrously sensitive that they pick up on all kinds of rumbles, not just those created by tectonic activity.)

That technological improvement is still continuing, by the way: Aside from continual improvements to computational processing power, newer machine learning techniques are able to pick out previously undetected, very low magnitude (as low as 0.3, for example) quakes hidden in pre-existing seismological records. In fact, as smaller quakes have and still happen all the time compared to their larger and far less frequent brethren, these techniques are increasing the number of documented earthquakes by at least ten times in parts of California compared to those picked up by more traditional methods.

You can also probably spot that most earthquakes take place on a horseshoe-shaped ring around the Pacific Ocean. This is the so-called Ring of Fire, a conveniently shaped network of major tectonic boundaries that are continuously shifting around in very complex ways.

This part of the world is responsible for 75 percent of the world's volcanoes and a staggering 90 percent of the planet's earthquakes, but despite these statistics, this colloquially named network doesn't mean much geologically. Although the underlying causes may be similar, any quakes that occur here happen independently of each other. In some cases, an earthquake can trigger another

one on the same fault or on a fault very close to it, but that's it. There's also pretty much no evidence that volcanic eruptions can trigger other volcanic eruptions, although there's an ongoing healthy debate as to whether earthquakes, in some circumstances, can initiate volcanic eruptions nearby.

As is also depicted by the animation, the very largest earthquakes, particularly those approaching or exceeding a magnitude 9.0 event, occur on or within subduction zones, like the one running along the western seaboard of South America. This is when one tectonic plate is descending and falling beneath another and into the lower mantle to be slowly destroyed. In general, the geological conditions at these sites allow for the greatest amount of stress to accumulate over long periods of time, as well as permitting huge and sometimes lengthy slips on the faults in question. Nothing lasts forever, mind you: More than a billion years from now, when enough of Earth's internal heat has trickled away into space, plate tectonics will grind to a halt, subduction zones will die out, and these sorts of colossally powerful earthquakes will cease to happen.

At any one moment in time, an earthquake is taking place somewhere in the world, just as around 40 volcanoes or so are erupting. It's one thing to say it; it's another, far more impactful thing entirely to *see* it. So do yourself a favour: watch these quakes rock the planet, and you might just come away with a new appreciation of how unbelievably active our planet is.

Robin Andrews Contributor
Robin George Andrews is a doctor of experimental volcanology-turned-science journalist. He tends to write about the most extravagant of scientific tales, from eruptions and hurricanes to climate change and diamond-rich meteorites from destroyed alien worlds – but he's always partial to a bit of pop culture science. Apart from Forbes, his work has appeared in National Geographic, Scientific American, IFLScience, Earther/Gizmodo, WIRED, Discover and others. You can get in touch with him at robingeorgeandrews.com.

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