

[Sign in](#)[Support us →](#)[News](#) [Opinion](#) [Sport](#) [Culture](#) [Lifestyle](#)[Environment](#) ▶ [Climate change](#) [Wildlife](#) [Energy](#) [Pollution](#)**Terrawatch**

## Terrawatch: unearthing snow's 'Fukushima layer'

Chinese glaciologists have found the freeze-thaw process has concentrated discharge from the disaster

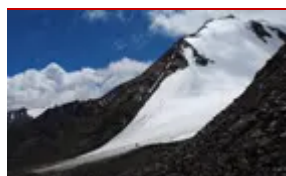
**Kate Ravilious**[@katerav](#)

Wed 1 Jul 2020 06.30 AEST



**T**he Fukushima nuclear accident has added a distinctive signature to snow and ice across the northern hemisphere, new research published in [Environmental Research Letters](#) shows. Triggered by the Tōhoku earthquake and tsunami off the coast of Japan on 11 March 2011, the disaster resulted in a month-long discharge of radioactive material into the atmosphere, ocean and soil.

Feiteng Wang from the Tian Shan glaciological station in Lanzhou, China, and colleagues collected snow samples in 2011 and 2018 from a number of glaciers (spanning a distance of more than 1,200 miles (2,000km) in north-western China. They expected the Fukushima signature to have faded away by 2018, but to their surprise the freeze-thaw processing had made it more concentrated, creating a strong and lasting reference layer in the ice.



Life in the shadow of China's melting glacier

[→ Read more](#)

Many reference layers from the last 50 years (such as the Chernobyl nuclear disaster) have melted away in recent warming events, making it difficult to date the upper layers of ice cores. "Reference layers are crucial and a prerequisite for telling the story of the ice core," says co-author Jing Ming. "The Fukushima layer will be useful for dating ice in one or two decades when the snow transforms to ice," he adds.

**146,655**  
*supporters in Australia*

**150,000**  
*our goal*

## We can see the power in numbers ...

... as our community grows in Australia. Across the country, more people are reading and supporting our open, independent journalism than ever before. Many of you have told us how much you value, and turn to our quality reporting on the most critical issues of our times - from the climate emergency to government accountability to Indigenous affairs.

The crises we've experienced in 2020 have underlined why factual information is indispensable. We believe everyone deserves access to it, and analysis that has authority and integrity. Guardian Australia has high editorial standards, providing

accurate, reliable news that holds firm against the spread of misinformation and sensationalism. Your support is crucial to what we do and it sustains us so, unlike many others, we can keep our journalism open to all.

As an independent news organisation we investigate, interrogate and expose the actions of those in power, without fear. With no shareholders or billionaire owner, our journalism is free from political and commercial bias - this makes us different. We can give a voice to the oppressed and neglected, and stand in solidarity with those who are calling for a fairer future. With your help we can make a difference.

One in three people in Australia have read the Guardian in the last year, and we want to grow further. You can do something powerful today and help us reach our ambitious goal of 150,000 supporters in Australia.

Every contribution, however big or small, has a lasting impact and helps assure our

future. From as little as \$1 you can show your support for our work. Thank you.

Support the Guardian →

Hear from our editor →



Topics

[Science](#) / [Terrawatch](#)

[Fukushima](#) / [Climate change \(Environment\)](#) / [Climate change \(Science\)](#) / [China](#) / [features](#)



## comments (8)

[Sign in](#) or [create your Guardian account](#) to join the discussion.

Sort by Oldest ▾ Per page 100 ▾ Display threads Collapsed ▾



**ErikFrederiksen** 1 Jul 2020 8:03

1 ↑

If "Many reference layers from the last 50 years (such as the Chernobyl nuclear disaster) have melted away in recent warming events", then it appears to me that the layer from Fukushima won't last long. But hey, what do I know.

↳ [Reply](#)

[Report](#)



**ErikFrederiksen** 1 Jul 2020 10:28

3 ↑

"reference layers"

Dig two 3 meter deep and wide holes in an ice sheet next to each other with a thin wall between the holes, climb down in, and look at the wall that the Sun shines through and you can clearly see the annual layers.

Dig a deeper hole down through the layers, count down and check if you are correct by seeing where the radiation from the dirty atomic bombs the US detonated on Bikini Atoll is to see if you got it right.

Dig an even deeper hole, wait a year for the heat from the drilling to dissipate, drop a thermometer and see what the temperature was a long, long time ago.

Amazing history; melting away, faster and faster.

↳ [Reply](#)

[Report](#)



**Irishlaine** ↳ [ErikFrederiksen](#) 9 hours ago

0 ↑

Coring is easier. Also measuring the temperature of the air now can't tell you what the temperature was a long time ago, even if you measure it at the bottom of a hole.

↳ [Reply](#)

[Report](#)

**Erik Frederiksen** → Irishlain 8 hours ago

0 ↑

I meant coring for the last two. And regarding getting a temperature reading, I got that bit from the most renowned glaciologist on the planet, Richard Alley, so you might take it up with him. His email is available as is he.

View more **Reply**ments

Report

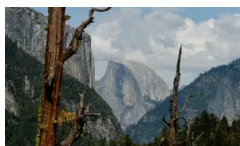
## Terrawatch



**Terrawatch: unearthing snow's 'Fukushima layer'**

2d ago

8



**Terrawatch: could granite solve the hard problem of nuclear waste storage?**

3 Jun 2020

122



**Terrawatch: glacial erosion creates higher mountains**

6 May 2020

25



**Terrawatch: plastic-rich canyons forming in the deep ocean**

1 Apr 2020

35

**Terrawatch: Is a seismic spectacle brewing in Iceland?**

4 Mar 2020

159

**Terrawatch: how tropical islands feed algal blooms**

5 Feb 2020

9

**Meet Steve, the winter sky phenomenon**

1 Jan 2020

44

**Terrawatch: how Earth's conveyor belt hides rare metals**

4 Dec 2019

## Most popular

1

Ten years of the sun in one hour - Nasa releases mesmerising space film

2

I feel fine: fans of world-ending films 'coping better with pandemic'

2

3

Vast neolithic circle of deep shafts found near Stonehenge

4

'I felt guilty': volunteer on signing up for Oxford Covid-19 vaccine trial

5

Beyond Pluto: the hunt for our solar system's new ninth planet

6

New study of naked mole rats' cancer resistance sparks row

7

Dinosaurs wiped out by asteroid, not volcanoes, researchers say

8

Global heating will make it much harder for tropical plants to germinate, study finds

9

Scientists say most likely number of contactable alien civilisations is 36

10

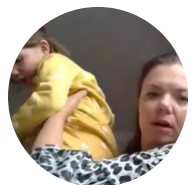
'We've bought the wrong satellites': UK tech gamble baffles experts

**Most commented**

Airplane! at 40: the best spoof comedy ever made?

**Most shared**

'Mummy, what's his name?': expert's daughter invades BBC interview

**Environment** ▶ **Climate change** Wildlife Energy Pollution**News Opinion Sport Culture Lifestyle****Sign up to our daily email**

Email address

**Sign up**

About us

Information

Contact us

All topics

All writers

Events

SecureDrop

Vacancies

Privacy policy

Cookie policy

Terms & conditions

Help

Guardian Labs

Advertise with us

Search UK jobs

Discount Codes

Digital newspaper archive

Facebook

Twitter

Support The Guardian

Available for everyone, funded by readers

Contribute →    Subscribe →

Back to top ^