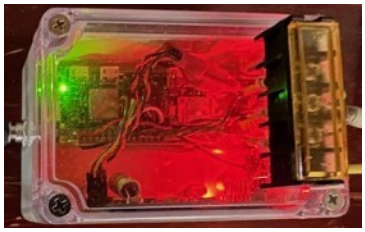
SAA Newsletter



The Peismo
#1/2026

From the Editors - Members are encouraged to submit articles with an earthquake connection of interest to members but accepting they may be edited or not published, at the discretion of the editors. Contributions to: mccue.kevin@gmail.com

Contents

Major Earthquakes Worldwide, October - December 2025, USGS

Date UTC	Time UTC	Latitude	Longitude	Depth km	Mww	Place
2025-10-10	01:43:59	7.27	126.76	58	7.4	Philippines
2025-10-10	20:29:20	-60.20	61.80	10	7.6	Drake Passage
2025-12-06	20:41:49	60.36	139.55	10	7.0	Southern Yukon Canada
2025-12-08	14:15:11	40.96	142.19	53	7.6	East coast Honshu Japan

On average the world experiences one earthquake per month of magnitude 7 or more and one earthquake per year of magnitude 8 or more. In the 4th quarter of 2025, there were 4 major earthquakes, the first two on the same day but at opposite ends of the Pacific Plate. The probability of having two magnitude 7+ earthquakes on the same day is small, but there is no suggestion that the first two earthquakes of the quarter on opposite sides of the Pacific Plate are related.

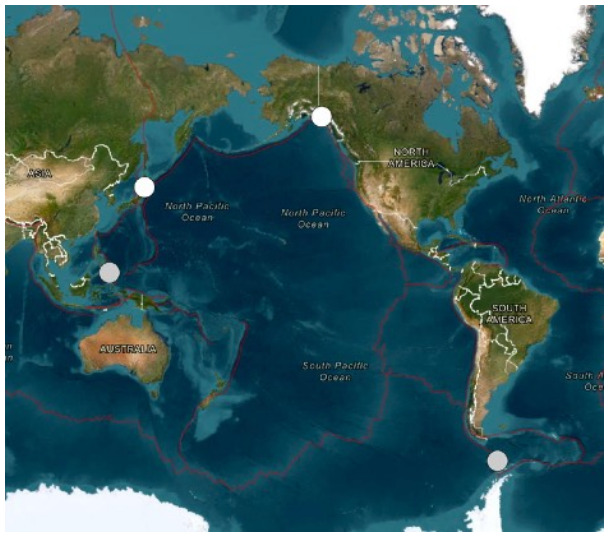


Figure 1 *Map of the four major earthquakes, October-December2025*

The epicentre of the **earthquake in the Philippines** was just 12km east of Santiago. Ten people were killed and at least 1027 were injured in Davao. At least 11 homes were destroyed and 814 damaged in Agusan del Sur; 280 were destroyed and 11201 damaged in Davao de Oro; 97 were destroyed and 483 damaged in Davao del Norte; 1286 were destroyed and 20422 damaged in Davao Oriental. At least 678 structures were damaged in the Caraga and Davao Regions. Landslides were reported at Manay, at Montevista and in Camiguin. Power outages occurred in Davao. A small tsunami was generated with wave heights: 7 cm at Davao, Philippines; 19 cm at Beo, 14 cm at Bere and 10 cm at Talengen, Indonesia.

Few people felt the **Drake Passage Chile earthquake** though the Chilean Government apparently ordered evacuation of some parts of the country.

It was somewhat similar under the St. Elias Mountains in the remote northwest of **Canada** on the border with Alaska, the region struck by a magnitude 7 earthquake on 6 December. Earthquakes Canada reports rather tersely:

- Felt in western Yukon Territory
- Reports of items falling off walls and shelves
- Several aftershock have occurred up to magnitude 5.3.

The local **Yukon Canada** Time was 1:41 p.m.. The epicentre was located just east of Mount Logan, about 250 km west of Whitehorse and 120 km west of Haines Junction. The earthquake initiated at around 10 km depth, which helps explain why it was felt across such a wide area.

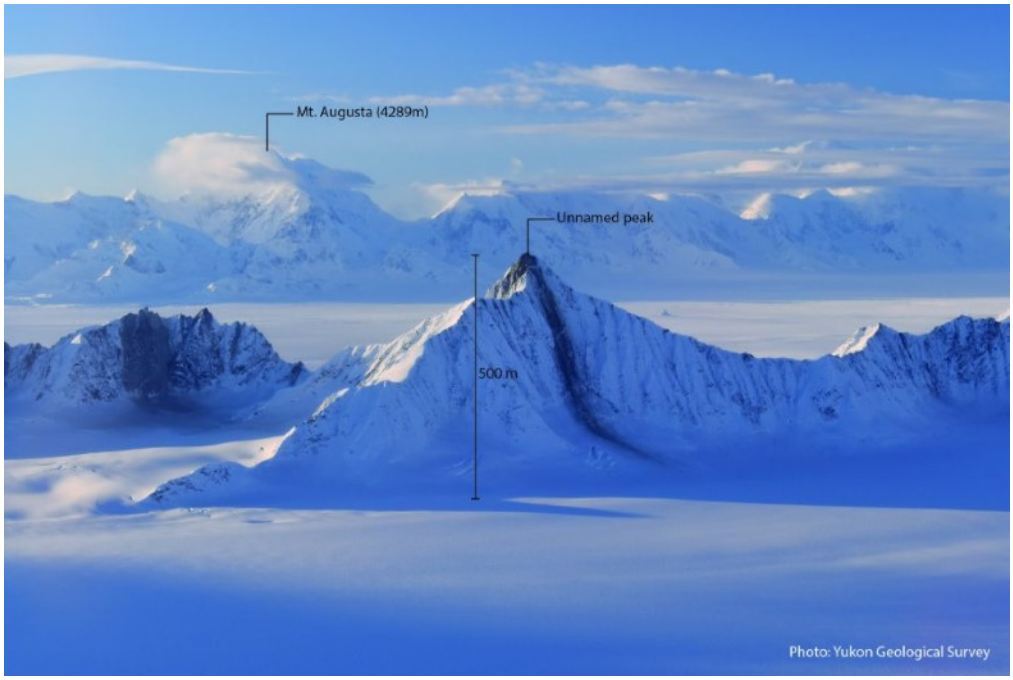


Photo *Landslides on the arete between Mt. Vancouver and Mt. Logan. Elevation difference between the central peak and the glacier is 500 m. Photo from YGS*

There have been hundreds of aftershocks, the largest a M5.7 event on Sunday evening, which many people also felt. Fortunately, no serious damage or injuries were reported.

The earthquake occurred at the northernmost end of the Fairweather Fault, an area with relatively few previously recorded earthquakes. Scientists have long suspected that a fault continues north from this region, connecting with the Totshunda Fault in Alaska. This proposed extension, known as the “Connector Fault”, has been difficult to study because of the glaciated terrain. This earthquake may have finally illuminated part of it, a strike-slip event. In this case, the northeast side moved southeast, and the southwest side moved northwest. Although the earthquake likely extended over more than 40 km along the fault, it is not yet clear from satellite imagery whether the rupture reached the surface of the Earth and affected the Hubbard glacier above.

The earthquake also triggered significant landslides near the epicentre. Satellite images taken Tuesday morning indicate the presence of many new large slides on the slopes of Mount Logan, Mount Vancouver, and Mount King George. This mountainous region is known for major landslide activity. An earthquake on the same fault system caused the 1958 Lituya Bay mega-tsunami on the Alaskan coast, which produced a wave height of 524 metres.

https://www.facebook.com/YukonGeologicalSurvey?fref=nf&ref=embed_post

YGS staff took advantage of a weather window and flew to the epicentral region. The objectives included documentation of landslide and avalanche activity triggered by the earthquake, to verify satellite observations of these events, and to determine whether the fault ruptured the ground surface. This information is helpful to improve location precision of the earthquake and strength of shaking. Additionally, this reconnaissance helps to evaluate public safety concerns for mountaineering and skiing activities in the area.

Despite 2 m of fault slip occurring at 5 km depth, we found no clear evidence of the Earth surface having ruptured in this earthquake. However, it is possible that a surface rupture was hidden by glacier ice.

The majority of the landslides were on the slopes of Mt. King George, a 3741m tall peak approximately 40 km east of Mt. Logan. Many of these landslides showed ongoing signs of instability, and when the crew arrived in the area, there were clouds of dust in the air from a large slide that had just occurred on the east side of Mt. King George. Smaller landslides were observed on the slopes of Mt. Vancouver, Mt. Logan, and the surrounding sub-peaks. However, snow and ice avalanches were more common farther from the earthquake epicentre. Preliminary estimates place the location of maximum slip during the earthquake, as well as most aftershocks, beneath or immediately adjacent to Mt. King George. The distribution of the largest landslides therefore appears to reflect where shaking could have been most intense.

In addition to landslides, the earthquake caused widespread damage to glacial ice. Seracs and icefalls were commonly broken up and toppled by shaking. It is fortunate that this event did not occur during mountaineering season, as earthquake-triggered serac falls and avalanches have caused fatalities in the past.

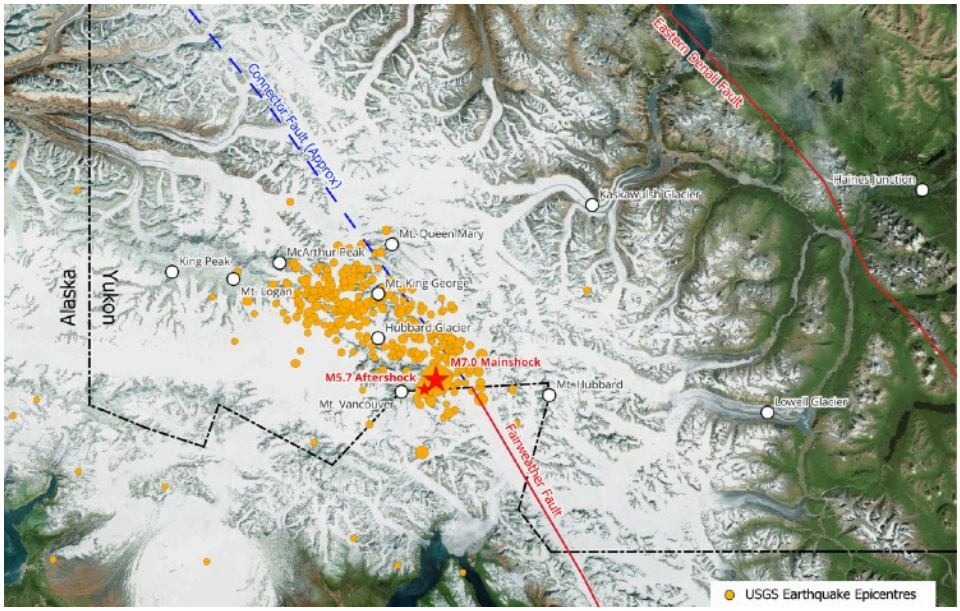


Figure 2 *Epicentre and aftershocks show the possible causative faults.*

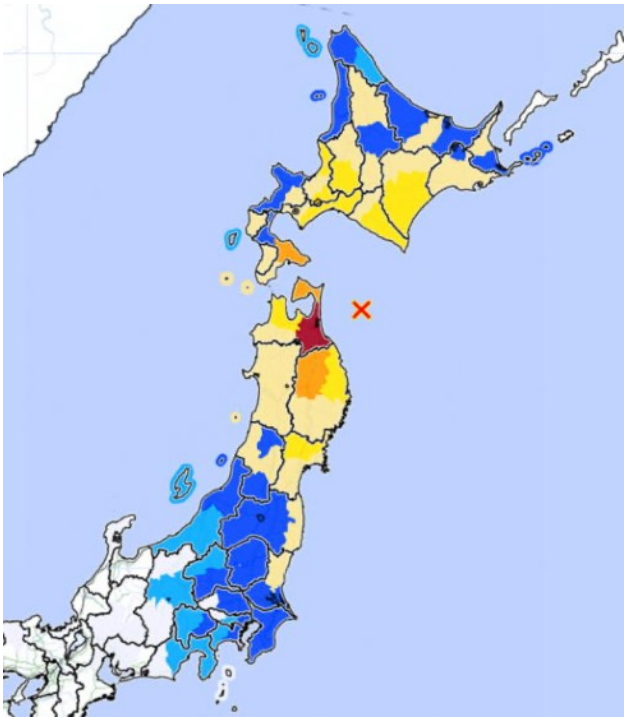
The damage to ice in the region and persistent rockfall from landslides scars may pose new additional hazards for mountaineering and skiing expeditions in the area. A powerful earthquake has triggered widespread landslides and avalanches in Kluane National Park and Reserve, according to the Yukon Geological Survey (YGS). Luckily, the earthquake happened outside of the mountaineering season.

Japan earthquake Shaking from the mainshock was felt to central Tokyo (Figure 3). A tsunami attacked the southern shorelines of Hokkaido and the north coast of Honshu (Figure 4) but at a fifth of the expected height.

There seems to have been little damage but at least 30 people were injured and thousands of people vacated their homes. Some train services were cancelled and thousands of homes were left without power.

Tohoku Electric Power said no irregularities were reported at its Higashidori and Onagawa nuclear power plants as a result of the quake, but nearly 120 gallons of water spilled from a fuel cooling system at a nuclear fuel processing plant in the city of Aomori near the epicentre of Monday's earthquake..

Authorities warned that a stronger tremor, M8, could occur in coming days - urging the public to remain on high alert for at least a week.



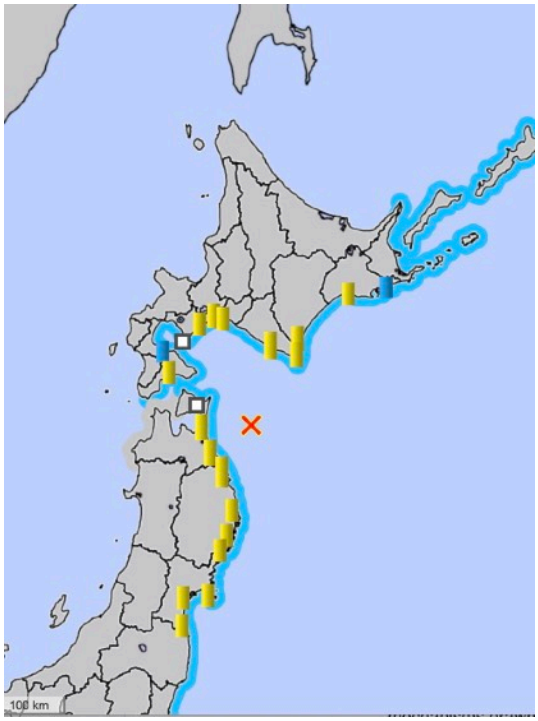


Figure 3 *(left) Felt map JMA intensities from 7 (red) to 2 (blue).* **Figure 4 (right)** *the epicentre marked by an X and tsunami wave heights, 0.7m max marked by the yellow columns, of the 8th December Honshu earthquake.*

Australian earthquakes ML ≥ 3, October-December 2025 (Maps by Clive Collins)

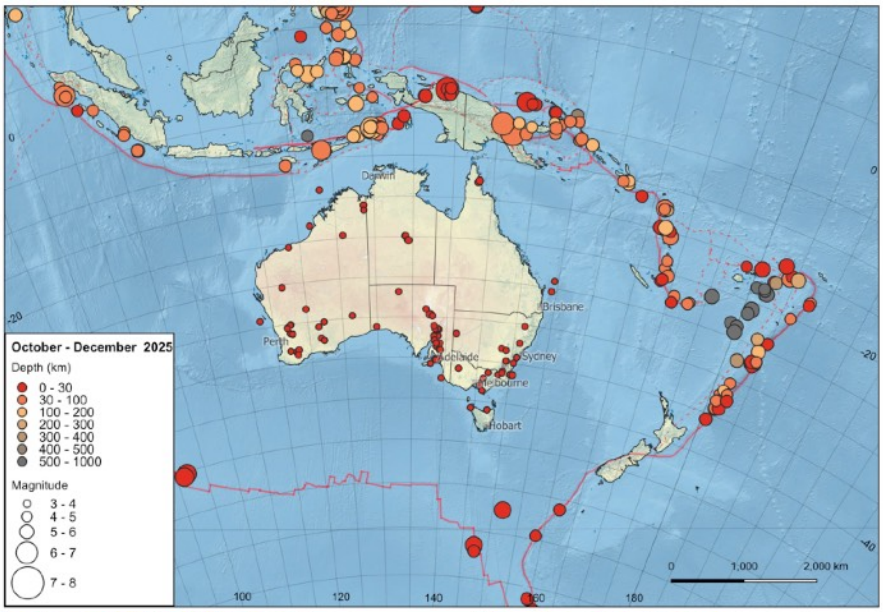
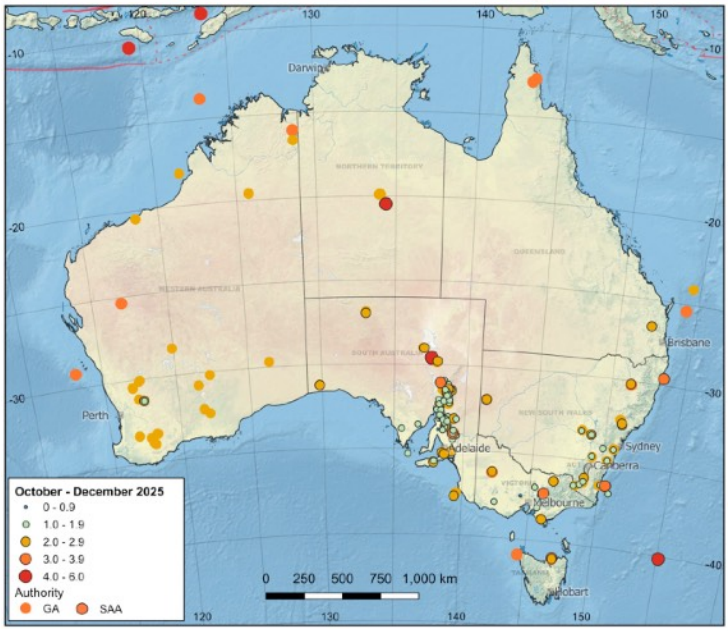


Figure 5 *Australia in its Plate Tectonic setting.*

The plate boundaries around continental Australia, the thin red solid lines in Figure 5, are the USGS version. We have plotted everything above ~M4.5 on the plate boundary but above M3 in continental Australia for October-December 2025. These limits are about what is practicable with the existing network.

The plate boundaries around Australia are marked by earthquakes though New Zealand continued to be quiet. There were the usual earthquakes in Papua New Guinea but relatively few in Indonesia and only four on the Australian/Antarctic plate boundary south of Australia. Subduction in the Solomon Islands and west of Tonga is clear in the map.



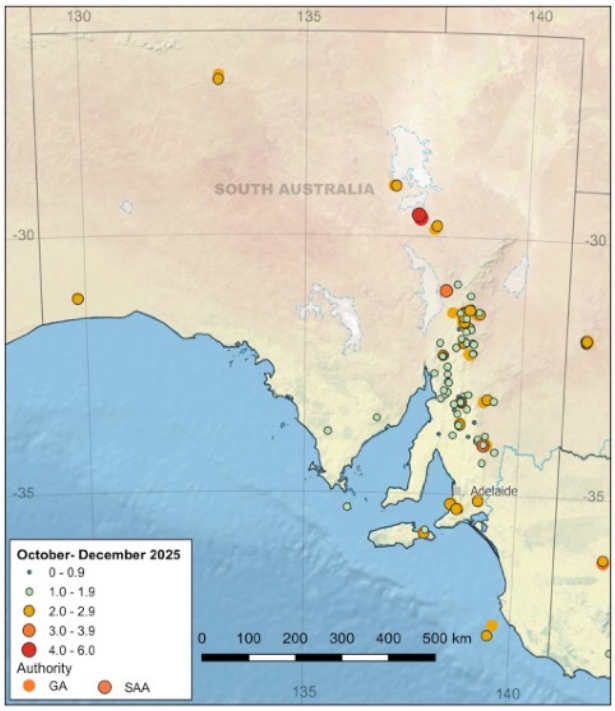


Figure 6 *(above) Australian earthquakes, October-December 2025.*

Figure 7 *(right) SA earthquakes, October-December 2025.*

Seismologists located just 18 earthquakes of magnitude 3 or more in the last quarter of 2025, an event in every state or territory bar the ACT. The largest in South Australia, M4.1, occurred near Lake Eyre, reported felt by just 1 person. Three others were in the high M3 range; 2 of them in far north Queensland near Lockhart River, the other near Narooma NSW. One small earthquake M3.0 near Broken Hill NSW was reported felt by nearly 200 people, and this gave rise to the only report of damage attributed to shaking from any of these earthquakes, a freshly cracked concrete foundation at Broken Hill (photo from the ABC below). The largest Australian earthquake occurred out in the Tasman Sea between Australia and New Zealand (article below p5).

It was very quiet in **South Australia**, 3 earthquakes above magnitude 3 according to SAA, only 2 according to Geoscience Australia. The largest was ML4.1, its epicentre 55km NW Maree.

In **Queensland** too there were 3 earthquakes of M3 or more, two at Lockhart in the far north, the other offshore the Sunshine Coast in the southeast of the state.

Unusually, the **Northern Territory** had just two earthquakes of M3 or more, both in the centre of the Territory and not in the usual aftershock zone, about 100km south of Tennant Ck, magnitudes 3 and 3.7.

Two of the 5 small earthquakes recorded in **WA** were offshore, the other two were near Lake Argyle and several hundred km east of Carnarvon.

In the Southeast of the continent there were:

- two earthquakes of 3 or more in **Tasmania**,
- a single earthquake in **Victoria** and
- three scattered across **NSW**, none of them large enough or close enough to do damage.

Photo *Staff at the Silver City Cinema, Broken Hill, found a crack in the theatre's foundations shortly after an earthquake in October. (ABC Broken Hill: Coquohalla Connor).*

Earthquakes felt in Darwin

ABC October 24 Friday at 2:30 pm

A magnitude 5.5 earthquake has occurred in the Banda Sea, north east of East Timor, with some people in Darwin and Palmerston reporting feeling tremors just before 11 o'clock last night.

The earthquake had a depth of 86 kilometres and there are currently over 70 "felt reports" on Geoscience Australia, spanning across Darwin City, the Northern Suburbs and in Palmerston.

The GA query T*erritorians, did you feel it?* elicited many felt reports but the respondents claimed it was felt between 9 and 11pm. Perhaps some of these reports are pure whimsy.

Another earthquake felt in Darwin

Darwin wakes to shaking from magnitude 6.4 earthquake in the Banda Sea

ABC October 29 Wednesday

Preliminary Report from the USGS

Darwin has been shaken by the second earth tremor this week with people as far afield as Katherine and Gove reporting the affects.

People across the Northern Territory's Top End woke to tremors in the early hours of this morning from a magnitude 6.4 earthquake. The earthquake, which had a depth of about 140 kilometres, occurred just after midnight in the Banda Sea near Timor-Leste, about 600km from Darwin.

Data from Geoscience Australia show the earthquake was mostly felt in Darwin City and the northern suburbs; however, there were also reports across the rural area, and as far as Kununurra, Western Australia.

A second year law student at Charles Darwin University, Joey, told ABC local radio of the moment he felt the earthquake while studying. "I was just sitting on my bed doing an assignment, in my own world, and I felt the shaking, and it made me get up," he said. "I had a drink on the table, and I just went over to the drink and could see it shaking really rapidly. "I reckon it went for about 90 seconds."

It is not unusual for Darwinians to feel earthquakes, an average of about one per year. The plate boundary is about 600km north of Darwin and the intensity from this source depends on both the magnitude and the focal depth of the earthquake. It is unusual but not unknown to have two independent earthquakes shake the city within a week. But Darwin is also subject to intraplate earthquakes, small locals and large regional earthquakes like the three large earthquakes at Tennant Ck in 1988.

Tasman Sea earthquake 2025/11/06 at 11:36 UTC (Kevin McCue)

Every now and again, even seismologists are surprised by an earthquake. Back in November, SAA seismographs in the ACT recorded an unusual regional earthquake. I subsequently did a location using SAA, SRC and GA stations which put it out in the Tasman Sea with a magnitude of 4.5 (Figures 6 and 8). That it was recorded on Lord Howe island and in Tasmania supports the magnitude estimate. On an impulse I lodged a query with info@geonet in New Zealand and was pleasantly surprised to receive a positive response from Sara at GNS with a plot shown in Figure 9 verifying my location. I had forgotten the event until Clive noticed while editing the draft newsletter that there was a discrepancy, one earthquake on my list (see Figure 6) that was not on GA's list Figure 7) . For the magnitude, this was an event at the edge of detection, between Australia and NZ, theirs or ours? GA didn't locate it, and it didn't trigger the auto detection software in NZ: *it did not trigger an event in our system, however I asked our GHA team to have a squiz for you and they were able to locate it (Figure 9). ..... There is a high RMS, plus poor azimuthal coverage and a fixed depth due to the uncertainties of my solution. I had a look on stations in the Antarctic as well as in the Pacific Islands but could not see any clear signals. I located this using exclusively our Broadband National Network sensors, with some of the Australian sensors we have access to. As I'm sure you are aware all the waveform data is available freely: https://www.geonet.org.nz/data/types/seismic_waveforms.*

Thanks Sara! The event was well within Australia's claimed half of the Tasman Sea.

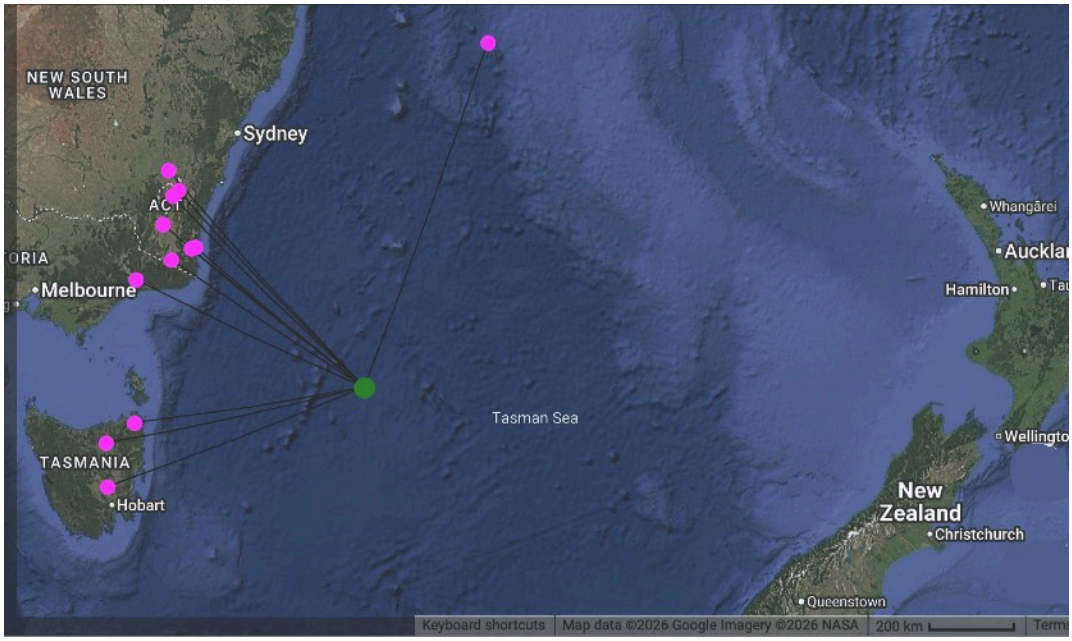


Figure 8 *The SAA location of the Tasman Sea earthquake of 2025-11-06 at 11:36 is:*

-40.14, 155.13

assumed depth 10km.

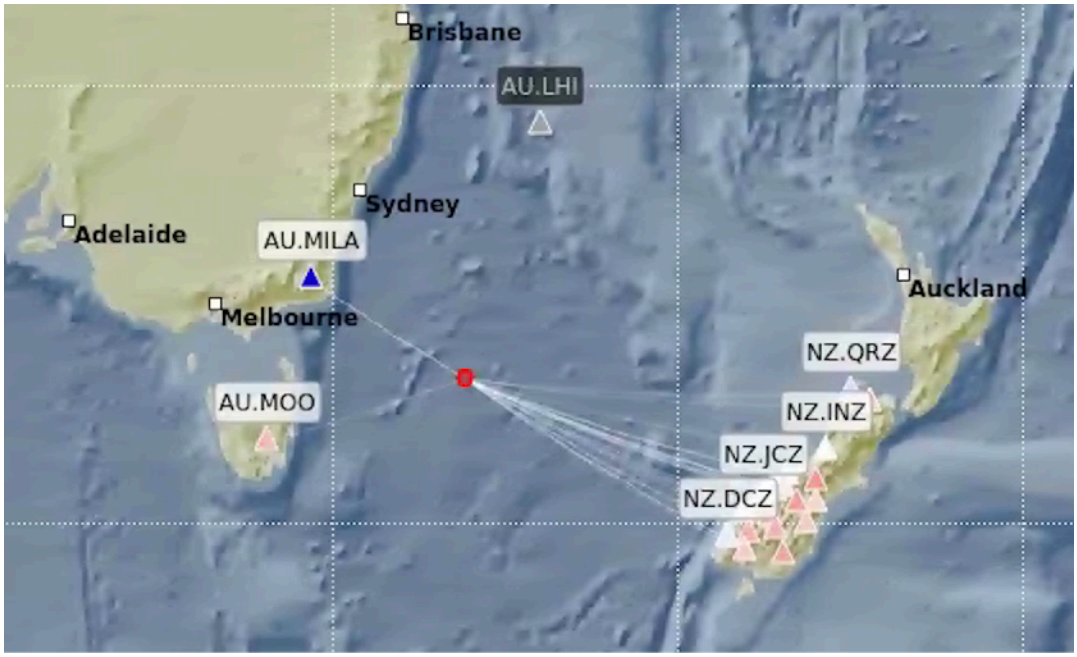


Figure 9 *(right) The GNS solution for the same event is:*

-40.39, 155.84 assumed depth 33km

The computed distance between the two estimates [-40.14, 155.13] and

[-40.39, 155.84]

is: 66.47 km.

Calibrating the accuracy of event locations in Queensland (Mike Turnbull)

I daily download data from available Queensland and other Australian seismic monitoring stations to identify and locate Queensland earthquakes. An important part of doing this is to discriminate between extraction industry blasts, natural earthquakes and mining related events. For the past several years I have requested and obtain blasting notifications from a number of Queensland mining operations, including the Commodore Mine,.

Periodically, I use the downloaded seismic data to do locations on mine blasts to confirm that the location methods I am using are reliable and accurate,
and to assess the degree of precision errors resulting from my methodology. This cross-checking is important to maintain credibility of my locations, and to help me refine the methodology.

I located an ML 1.7 Commodore Mine blast conducted on Friday 2026-01-09 at 1100 AEST, as shown on the map. This demonstrates that my location method, using Gary Gibson's eqLocl program, designed back in the 1980s for the Classic Apple Macintosh computers, running in a Windows emulator (BasiliskII), is accurate to within 6 to 10 km using station records from up to 300 km away.

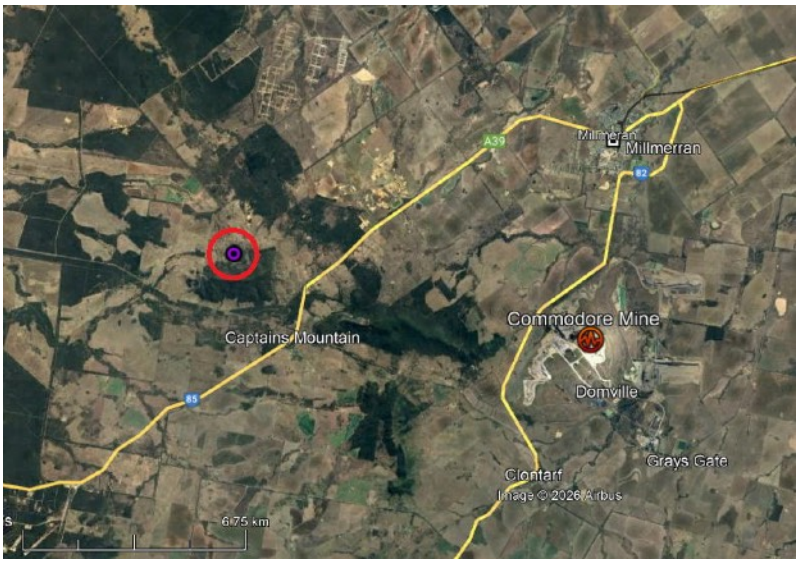


Figure 10 ***(right)*** *Mine blast location red blob and computed location red circle.*

Exceptional ground motion during the shallow Mw 4.9 2019 Le Teil earthquake, France

https://www.nature.com/articles/s43247-020-00089-0

On 11 November 2019, a MW 4.9 earthquake occurred in Le Teil, southeastern France, at an exceptional depth of 1 to 2 km. We benefit from a comprehensive dataset of high-quality seismic records to investigate ground motion features in terms of source, path, and site effects. Clear regional variations of intensity measures are identified.

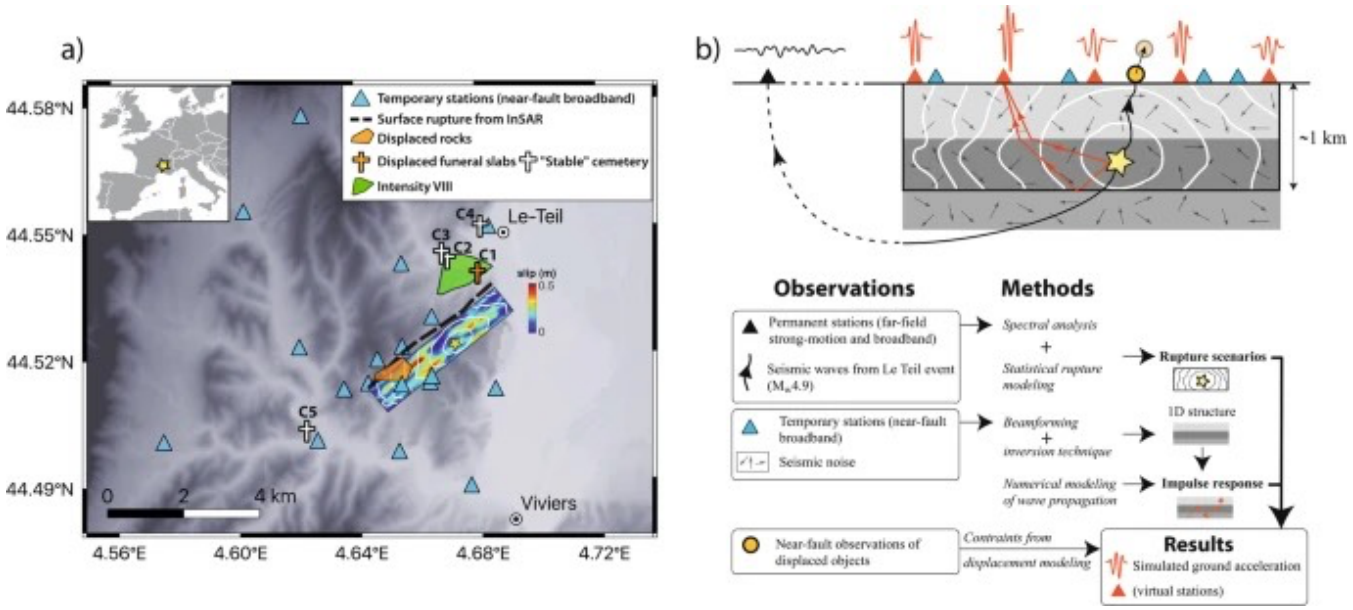


Figure 11 *Map of the Le Teil area. The coloured rectangle shows one realisation of rupture model (chosen within the 2000 generated models), with final slip indicated by the colour scale (max = 40 cm in red), and white contour lines indicating the rupture front every 0.5 s. The rupture plane reaches the surface and dips 58° toward the southeast. The star denotes the hypocentre.* ***11b*** *Flow chart describing the strategy to compute near-fault ground acceleration.*

Modelling of funeral slab motion is performed at cemetery C1, including a large majority of the observations (Table S3, Fig. S7). We observed only a few (<5) displaced slabs at C2 and C3, while all slabs remained stable at C4 and C5. The orange polygon is the area where displaced rocks are observed.

Additionally, we conduct a residual analysis by comparing observed motions with predictions from ground motion models (GMMs), revealing a systematic underestimation of amplitudes at low frequencies (< 1 Hz), associated with the generation of Rayleigh waves. These waves are generated due to the shallow depth of the rupture and are most prominent in directions orthogonal to the fault. At higher frequencies, additional spatial variations are observed. In particular, ground motions recorded in the southeast show significantly lower amplitudes than those predicted by GMMs. This phenomenon may be attributed to the regional attenuation and geological structure or to local geological conditions combined with the extremely shallow depth of the seismic event, as demonstrated with numerical simulations. Our study emphasises the necessity for further analyses of ground motions generated by such moderate extremely shallow earthquakes.

Peismo News The Peismo was designed by SAA member Colin Love and manufactured with regular upgrades by John Millard. John is currently testing his latest 3-component Peismo. Fourteen Peismos in the Sydney area were installed by PhD student Eric Wang. In the ACT the 6th Peismo, NNP2, in Namadgi National Park now has internet access but 50Hz noise is a problem. Peter Smith's station KBRI is the first of the ACT region Peismos to be migrated to the SRC's new Seismosphere server. There are 3 Peismos in SA. A stand alone Peismo was recently installed at Bendelby Ranges in the Flinders Ranges.

A note for Raspberry Shake users We recommended you upgrade the plug pack to a 3A model. This is a recognised problem with the Shake which can draw more power to start up than allowed for with the plug pack provided causing failure of the seismograph.

US West Coast Faults could trigger Catastrophic back-to-back Earthquakes, study finds

Study shows high-magnitude temblor in north-west could set off another in California, causing unrivalled disaster.

Gabrielle Canon Thu 9 Oct 2025 22.00 AEDT

https://www.theguardian.com/us-news/2025/oct/09/back-to-back-earthquakes-west-coast

Warnings about the looming threat of "the big one" – a catastrophic earthquake that could devastate cities – have stoked fears across the US west coast for decades. But according to a new study, a high-magnitude earthquake in the Pacific north-west could set off a secondary one on California's San Andreas fault, causing an unrivaled catastrophe.

"The bigger one" would have the potential to wreak havoc up and down the coast at once, researchers say.

"We could expect that an earthquake on one of the faults alone would draw down the resources of the whole country to respond to it," said lead author Dr Chris Goldfinger, a marine geologist and geophysicist. "If they both went off together, then you've got potentially San Francisco, Portland, Seattle and Vancouver all in an emergency situation in a compressed timeframe."

The Cascadia subduction zone, which can produce magnitude 9 earthquakes on its own, has triggered temblors on the San Andreas fault in the past, according to the study, which was published on 29 September. Goldfinger said the findings came after decades of head-scratching and a lot of data that was difficult to explain.

Drilling into deep-sea sediment cores that contain thousands of years of geologic history, the researchers combed through the layers left from ancient earthquakes. They thought the submarine landslide deposits were from San Andreas quakes "but they were upside down from what we typically see", Goldfinger said.

"We realised that it wasn't a single deposit," he added, "it was two."

The patterns, studied over decades through generations of graduate students led to a lightbulb moment around 2017 when the scientists realised they were evidence of synchronicity between the Cascadia subduction zone and the San Andreas fault.

By analysing the sandy structures within turbidites, which are layers of sedimentary deposits, the scientists were able to determine some ruptures happened just hours – or sometimes even minutes – apart. There was evidence, according to the study, of 18 synchronised earthquakes during the last 3,000 years. Their findings suggest that these back-to-back quakes are not the exception but rather occur in the majority of cases.

The most recent occurrence they uncovered was connected to a tremendous temblor in 1700, which sent a tsunami sweeping across the Pacific. Archeological artefacts show that homes of the Cowichan people living on Vancouver Island were levelled during the magnitude 9 earthquake, which also caused landslides and severe subsidence, all left behind in the geological record.

The researchers have now found that a second quake – up to a magnitude 7.9 – probably affected northern California shortly after the first struck. Experts have long hypothesised that faults could be connected but this study offers the greatest amount of evidence of the significant dangers with the potential to affect millions of people.

A magnitude 9 earthquake along the Cascadia subduction zone fault has the potential to produce an initial tsunami wave of up to 27m that would slam into coastal communities within 30 minutes after shaking begins, according to a scenario sketched out by federal emergency managers in 2022. Their analysis found the impact from the quake would stretch across more than 140,000 sq miles, affecting people in three states and parts of Canada, and the following tsunami would reach 27 countries and 17 tribes.

According to a similar kind of analysis that was done on a magnitude 7.8 earthquake on the southern San Andreas, areas of California could shake for more than two minutes, causing more than 1,800 deaths, 50,000 injuries and $200b in damage, with “severe, long-lasting disruption”.

Large earthquakes on these faults occur roughly every 200 years, according to experts.

Together, these events would cause unprecedented destruction. But for Goldfinger, there is a silver lining: Cascadia going off, he said, could serve as a natural early warning system giving those who might be affected by a San Andreas quake more time to prepare.

The breakthrough in the science, even though it comes with terrifying implications, is also giving researchers more insights that will aid in adapting and responding when catastrophes occur.

“Our preparedness level is poor,” Goldfinger said. “We have a long way to go, and all these areas were built on top of ticking time bombs.”

The work also keeps the dangers fresh on the minds of emergency managers and residents in the places most at risk. While it is uncertain when the next large earthquake might occur, there is still time to prepare.

“Get earthquake insurance. Explore options for strengthening homes built to older standards,” Ben Deci, the senior media officer for the California Earthquake Authority, said in an emailed response. “Know what to do when the shaking starts: drop, cover and hold on.”

”Environmental risks are interconnected on so many levels,” he added. “Understanding that can be an important first step toward inspiring people to participate in an ecosystem of resilience.”

AEES Conference 2025 More than 90 participants attended the 34th Annual Conference of AEES on 20-22 Nov 2025 at Swinburne University of Technology, Hawthorn, Melbourne, Victoria.

Keynote speakers were Professor Kenneth Elwood University of Auckland *Changes to the New Zealand Earthquake-Prone Building System* Dr Anna Kaiser Earth Sciences New Zealand *Complex site amplification effects: case study of research to code application in New Zealand’s Wellington Basin,* and Dr Lisa Tobber from the University of British Columbia *Seismic Design and Performance of Precast Walls in Canada*.

Swinburne’s Dr Scott Maynard opened the conference after lunch on the Thursday following a tour of his very impressive lab. A special feature of AEES2025 was the large group of young enthusiastic presenters, engineers and scientists, students and recent postgraduates, women and men.

Topics ranged from earthquake geology, seismology and hazard assessment, to dynamic analysis of structures and the Australian Loading Code. SAA members David Love and Eric Wang presented papers.

SAA congratulates the incoming AEES president Dr Dee Ninis, first woman and youngest ever elected president of AEES.

Photos Dr Dee Ninis, President AEES 2025- , and at work in a fault trench in Aotearoa New Zealand.

Ian Ripper 1940 - 2025

Ian David Ripper passed away on 21 November after a severe illness. He was born on 12 December 1940 in Launceston, Tasmania, and died just a few days before his 85th birthday.

Ian's health deteriorated during the last few years. His untimely death is a tragic loss to his wife Diane Gene Ripper, and their children Kristine and Michael and his many friends..

Ian received his BSc (Hons) from the University of Tasmania in 1963, his mentor and Head of Geology was the world renowned Professor Sam Carey of Earth-expansion fame. Ian's thesis was on the remarkable Tasmanian earthquake swarm of 1883-1892. He added an MSc in Geophysics in 1975 at the same university, this time his topic was focal mechanisms of PNG earthquakes.

In 1963, his honours year, Ian was awarded a valued cadetship with the Australian Bureau of Mineral Resources (now Geoscience Australia). In 1964, accompanied by his wife Dianne, Ian was promoted as geophysicist to the Port Moresby Geophysical Observatory, Papua New Guinea after two months induction at Toolangi Observatory in Melbourne. He worked under Observers-in-charge Jim Brooks, David Denham and then Ian Everingham whom he succeeded in 1979 as OIC. He was responsible for the overall operation of the observatory with his scientific work focused on PNG seismicity and maintaining and expanding the seismograph network. He also managed the magnetic observations and Ionosonde operation. He investigated damaging earthquakes and was involved in international campaigns including seismic, gravity and magnetic surveys. Ian published the results in more than 50 scientific papers.

In 1996 he took leave of absence from BMR (then briefly AGSO) to act as Assistant Director, Geophysical Surveys in the PNG Geological Survey. Finally in 2000, he reluctantly 'went finish' to serve out time to his retirement at Geoscience Australia in Canberra. This was cut short when he took carer's leave to look after Di following a serious boating accident off Rottnest Island near Perth.

From Canberra, he and Di made a lifestyle choice to retire to Brisbane to be near Kristine and Michael and their families and several long term ex-PNG friends.

His inputs at all levels, practical ideas, his profound knowledge of PNG earthquakes, and the ability to successfully manage the observatory for more than 30 years, were great achievements that resulted in a high-class observatory with a very good reputation far beyond Australasia.

Ian was a scientist with many attributes - a quiet achiever, a very good colleague, a real gentleman who got on with everybody and a wonderful friend. It was a pleasure to work with him. He was a person you could trust. He offered every professional support he could give, got new staff organised on the job and was happy sharing his profound knowledge about PNG he had acquired over the many years. Be it the social life in Port Moresby or how to get around in the country, his advice was invaluable. Without his support, life would have been different for us in PNG. In 2000, Ian retired after 32 years of active duty.

The quintessential family man, Ian loved and supported his wife Diane and their children, he was a very special person to them. He enjoyed playing squash and got us newcomers in PNG involved. Ian was popular with the community of squash players and a well-liked team member at the Aviat Club and Boroko courts. He also followed the cricket. We highly appreciated his friendship, and mourn the loss of a great friend!

Dr Horst Letz and Kevin McCue (PMGO colleagues)

Note: A 100km deep, magnitude 6.6 earthquake rattled cities in Papua New Guinea on October 6, 2025. It was felt strongly in Lae and also in Goroka, Popondetta, Madang, Kimbe, Mt Hagen and Port Moresby.

Ian would have been right onto it.

Marian Leiba another of Carey's students at UniTas mentioned that Lesley Hodgson (née Read) the most skilled seismic analyst I ever met also died, a month before Ian. Carey had sent Lesley from the Geology Dept. at TasUni to Blacknest UKAEA for training and she had a long successful career at the ANU and Geoscience Australia.

Grabs from the IASPEI Newsletter Oct 2025

IAGA-IASPEI Joint Scientific Assembly 2025

The International Geomagnetism and Aeronomy (IAGA) and the International Association of Seismology and Physics of the Earth's Interior (IASPEI) held their IAGA-IASPEI Joint Scientific Assembly 2025 in Lisbon, Portugal, from 31 August to 5 September 2025. The assembly was attended by 1,266 participants, about half from each of the two Associations. The participants came from 66 countries and included over 120 students (mainly PhD students).

The program consisted of 33 joint sessions, and additionally 106 IAGA and 63 IASPEI sessions and about 50 business meetings where the activities of different Association Divisions, Commissions, and Working Groups were discussed.

Other business of the 43rd Scientific Assembly (note for your diary!).

RESOLUTION ON THE INTERNATIONAL DAY IN MEMORY OF THE VICTIMS OF EARTHQUAKES

RECOGNISING the important role seismologists can fulfil in earthquake preparedness; IASPEI encourages all members and institutions to observe the ***International Day in Memory of the Victims of Earthquakes*** on 29 April through education and awareness activities.

16th General Assembly Asian Seismological Commission (ASC) 2026

Under the banner "Intelligent Seismology, A Resilient Future," the Asian Seismological Commission (ASC) will hold its 16th General Assembly in Tashkent, Uzbekistan, from 25 to 30 April 2026.

The Assembly is set to be a defining forum for exploring how artificial intelligence and advanced computational methods are transforming seismology. The scientific program will highlight cutting-edge research in AI-powered earthquake forecasting, real-time hazard assessment, seismic data analysis, and risk mitigation strategies, aiming to build more resilient communities worldwide.

Hosted by the Institute of Seismology of the Academy of Sciences of the Republic of Uzbekistan, the Assembly will also commemorate the Institute's 60th anniversary, reflecting on a legacy of seismic research born

Illuminating Subsurface Structures Beneath Lake George Fault Zone, Southeast Australia with Traffic Noise

Chengxin Jiang; Meghan S. Miller, Seismological Research Letters (2025)

https://doi.org/10.1785/0220250046

Abstract

Mapping fault−zone properties is crucial for mitigating seismic hazards, particularly in urban settings. This process often requires high−resolution seismic imaging, which depends on dense data coverage and high−frequency seismic energy sensitive to shallow structures, with traffic noise providing an ideal source. However, extracting coherent phases from traffic noise remains challenging due to the complex conditions of variable sources and array configurations. Although array seismology techniques enhance coherence, they can limit model resolution. In this study, we demonstrate that high−quality surface Rayleigh−wave dispersions (2.5–10 Hz) can be extracted from single−station−pair cross correlations using a meticulously designed dense nodal array near a highway in the

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Lake George fault zone, southeast Australia. By analysing the complete nine−component cross−correlation tensor, we find that radial–radial correlations, rather than conventional vertical–vertical correlations, yield the strongest dispersion signals. These high−frequency dispersion measurements enable surface−wave tomography, providing the first detailed velocity structure of the top 800 m of the fault zone. The mapped Lake George fault zone displays seismic characteristics similar to those of several major active fault systems worldwide. It represents a long−lived damage zone capable of hosting significant seismic events. These results provide new insights into the application of traffic noise for near−surface imaging and monitoring in urban environments, and they have significant implications for considering the directionality of distributed acoustic sensing data in future.

Back then in Australia - an earthquake related injury

Leader (Orange, NSW : 1899 - 1945), Friday 23 November 1934, page 2

MORE EARTH TREMORS.

Rector of Gunning injured. GUNNING, Thursday.

Further heavy earthquake shocks were experienced to-day, and Rev. Canon Burgess, Church of England rector, was injured by a large piece of plaster which became dislodged from his ceiling. The shocks commenced shortly after midnight, and continued at intervals during the day.

(Ed. This earthquake was assigned a magnitude of 5.6 , based on its felt area). For relevance see next article.

Earthquake swarm causing damage in the Netherlands

Photo: *The provincial flag of Groningen flies in Winschoten with a seismogram printed on it in protest of gas extraction and the resultant earthquakes. 20 Sept. 2019 - Credit: Donald Trung Quoc Don (Chữ Hán: 徵國單) / Wikimedia Commons - License: CC-BY-SA. NL Times article.*

Damage reports rise to 593 after Zeerijp earthquake, 25 cases may be unsafe.

Damage reports following one of Groningen's strongest earthquakes in years have surged to 593, more than doubling the previous total of 246, the Institute for Mining Damage Groningen (IMG) reported.

Among the new notifications, 25 were flagged as potentially "acute unsafe situations." Some of these cases have already been inspected, and in two instances, measures were necessary to ensure safety.

The earthquake struck on Thursday and measured 3.4 on the Richter scale, with a 2.1-magnitude aftershock. The epicentre was located near Zeerijp, northeast of the city of Groningen. Experts attribute the tremors to years of natural gas extraction in the region.

Historical records show that Zeerijp has experienced multiple significant earthquakes, including a 3.4-magnitude tremor on January 8, 2018. The current quake ranks among the ten strongest in Groningen since 2006.

Ed: these two quakes, just M3.4, are deemed the cause of local damage.

Know your seismologist

Dr Jim Mori spent 1984-1988 at the Rabaul Observatory studying the volcanoes and a great earthquake in New Ireland. He worked as the U.S. Geological Survey Southern California Regional Coordinator and Scientist-in-Charge at the USGS Pasadena office from 1992 to 1998. Jim was a professor at the Disaster Prevention Research Institute at Kyoto University from 1999, with a focus on earthquake and volcano hazards. He served as president of the Seismological Society of America in 2016.

Photo *Jim Mori (right), Akiko Mori (centre) and Marian Millard (left) in Kyoto (photo by SAA member John Millard).*

Tsunami Travel Times to Victor Harbour (Paul Hutchinson)

A sad cry often heard from seismologists is "I missed that quake because of the ill-timed failure of my seismograph equipment" (Ed. as happened at Adelaide in 1954). My experience was quite the opposite. Literally hours after finally turning on my home-built seismograph at Victor Harbour, it recorded the biggest quake of the 1980's[1]. The M 8.1 Macquarie Island quake of 23 May 1989, is designated a "great"earthquake.

My continuous paper trace of this Macquarie Island quake is over 8m long. The pen was still recording motion 75 minutes after the P wave arrival. Interest in my recorded trace came from the local, Australian and international seismic community.

But my interest as an amateur seismologist became focussed upon why did such a great quake under the sea not generate a tsunami. I learnt that along the Australian/Pacific Plate boundary the collision of the plates is oblique and motion can be either strike-slip or thrust so that any earthquake may or may not have a vertical component and so may or may not displace the water column giving rise to a tsunami. Even a great shallow M 8.1 quake, under the ocean, need not create a tsunami.

But my interest, looking SSE out of my house out over the Great Southern Ocean, some 2,500 km's in the direction of Macquarie Island, was what if perchance next time a big quake occurred along this fault line, what if the fault moved in a manner which did cause the sea floor to displace volumes of water, and so create a tsunami.

I learned later that US seismologists were equally divided whether this Macquarie M8.1 quake was a strike slip or thrust type or a mixture of both. One paper even suggested there was no evidence for strong horizontal directivity of this Macquarie quake, rather the rupture may have extended down to (or up from) at least 40km below the surface[2].

That did not give me much assurance that there never would be a tsunami generated from this particular fault line, lying 1,000's of kms to the SSE of Victor Harbour.

Years later, I learned that a 300 mm high tsunami from this Great Macquarie quake of 1989 was recorded at various tidal gauges along the SE coastline of Tasmania[3].

I learned that even with a "pure horizontal" motion of the sea floor along a fault line, if perchance the ocean floor topography is not flat but has significant topographic relief, valleys and peaks, even with a "pure horizontal" motion, these peaks and troughs can when moving horizontally past one another result in significant volumes of water being displaced.

I learned that a 400 mm drop occurred at the Victor Harbour Tide Gauge the day after the M 9.1 Boxing Day quake of 2004 which occurred off the coast of Sumatra, Indonesia. [4]

I wondered just how long a tsunami would take to travel from Macquarie Island to Victor Harbour, or just how long would a tsunami take to travel from Sumatra, Indonesia to Victor Harbour.

So in 2012, I commissioned the Tsunami Research Facility of the University of Hawaii, to produce a map, (Figure 12) showing predicted Tsunami Travel Times to Victor Harbour. The map below highlights the vast distance a tsunami is predicted to travel in one hour when traversing very deep ocean and conversely highlights the (relatively) small distance a tsunami is predicted to travel in one hour when transversing the shallow waters of the Continental Shelf.

This slowing down of the speed of an oncoming tsunami, is readily apparent in the zoomed in view below (Figure 13) Tsunamis move at speeds v equal to the square root of the product of gravity ($g = 9.8\ ms^{-2}$) and the depth of the water Hm, $v = \sqrt{(gH)}$ (strictly where the water depth is much less than the container width).

But always remember the sage advice from the Simeulue tribal people who were saved from the 2004 Boxing Day tsunami, because they immediately moved to high ground based upon their long standing oral tradition, if you are at the beach and you feel strong ground motion, make haste to move to high ground.

Nowadays the Joint Australian Tsunami Warning Centre (JATWC) may give at least 90 minutes warning of an impending tsunami for Australians.

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1 Short-term increase in earthquake risk at Macquarie Island Kevin McCue Australian Seismological Centre, Canberra ACT Australia https://aees.org.au/wp-content/uploads/2013/11/37-McCue.pdf

2 Macquarie earthquake of May 23, 1989. Romanowicz, Barbara ; Ekstrom, Goran https://ui.adsabs.harvard.edu/abs/1989EOSTr..70..700R/abstract

3 Fault parameters and tsunami excitation of the May 23, 1989, Macquarie Ridge Earthquake. Satake and Kanamori, 1990. https://earthref.org/ERR/11460/

4 https://www.abc.net.au/news/2014-12-17/boxing-day-tsunami-effects-felt-as-far-away-as-sa/5972688

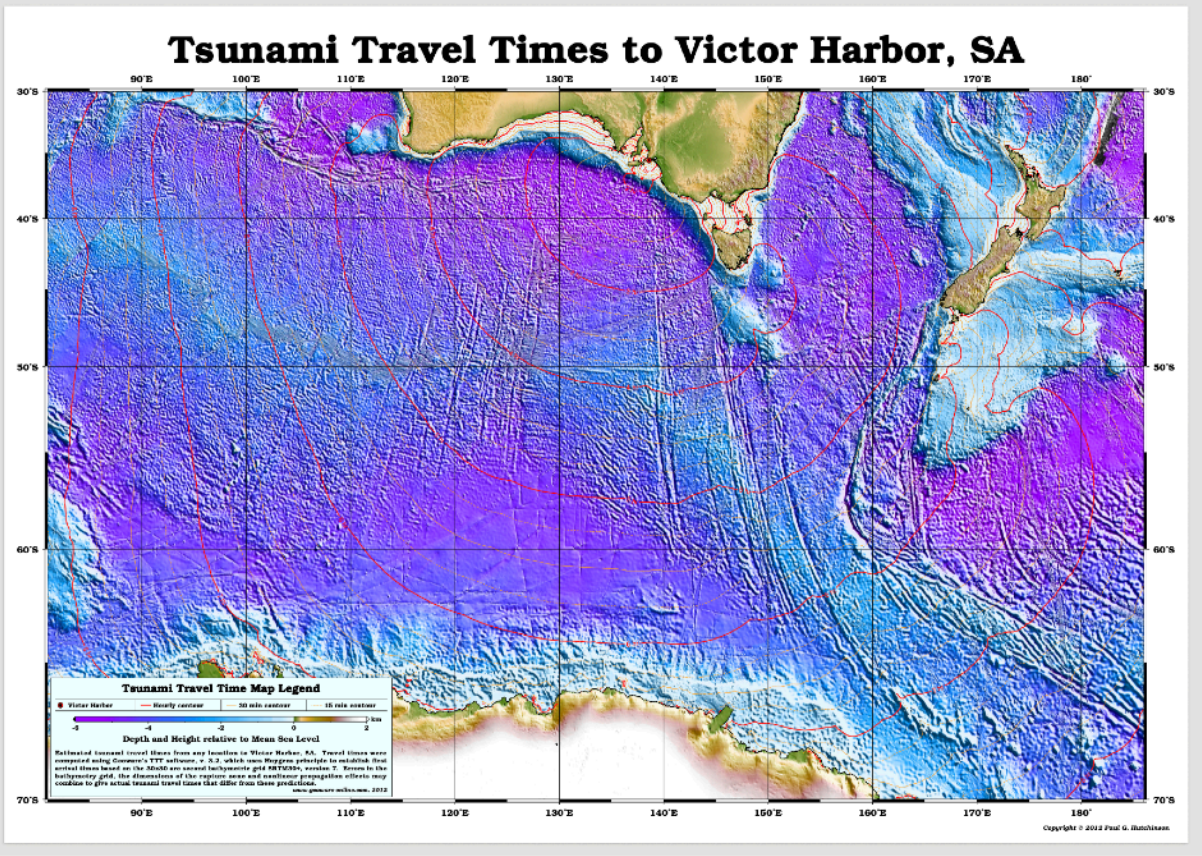

Figure 12 Tsunami Travel Times to Victor Harbour, South Australia.

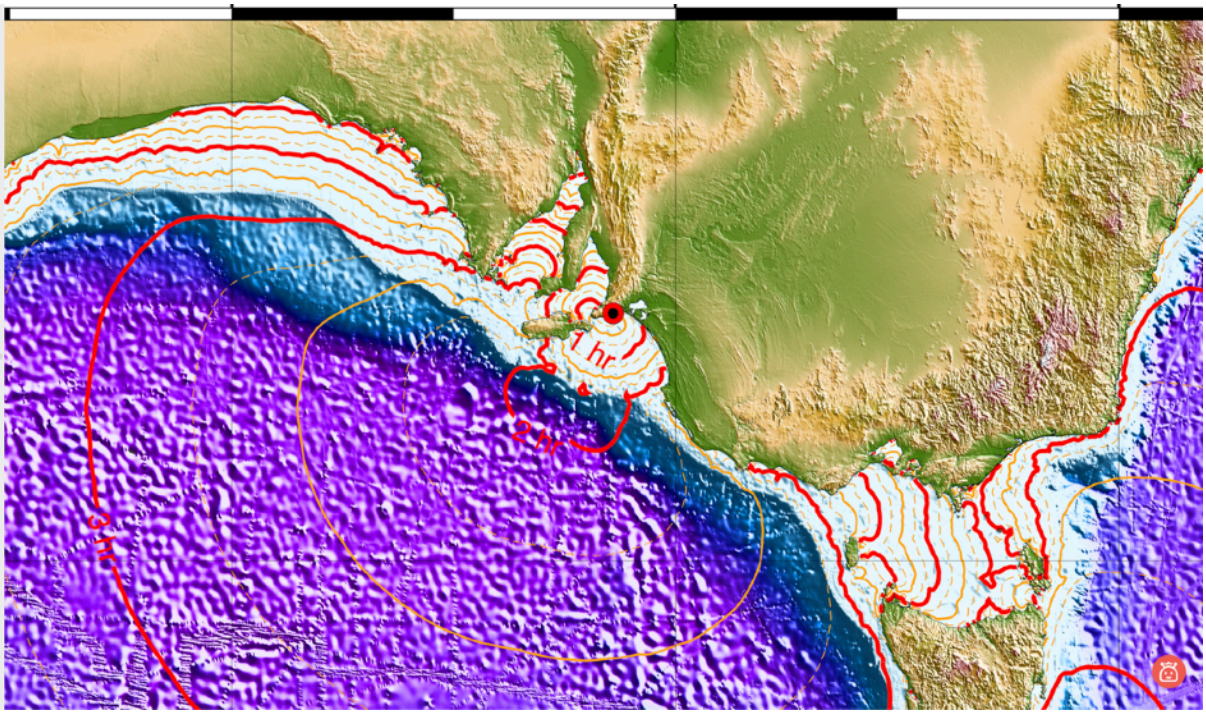

Figure 13 Tsunami Travel Times zoomed in around the Victor Harbour area.

Tsunami is a Japanese word 津波 that comes from two Chinese characters (kanji), 津 “tsu” means harbour and 波 means wave.

Paul