

## Introducing the....



# Seismological Association of Australia Inc.

The **SAA Inc** is a group of professional and amateur seismologists, interested in earthquakes and building and running seismographs.

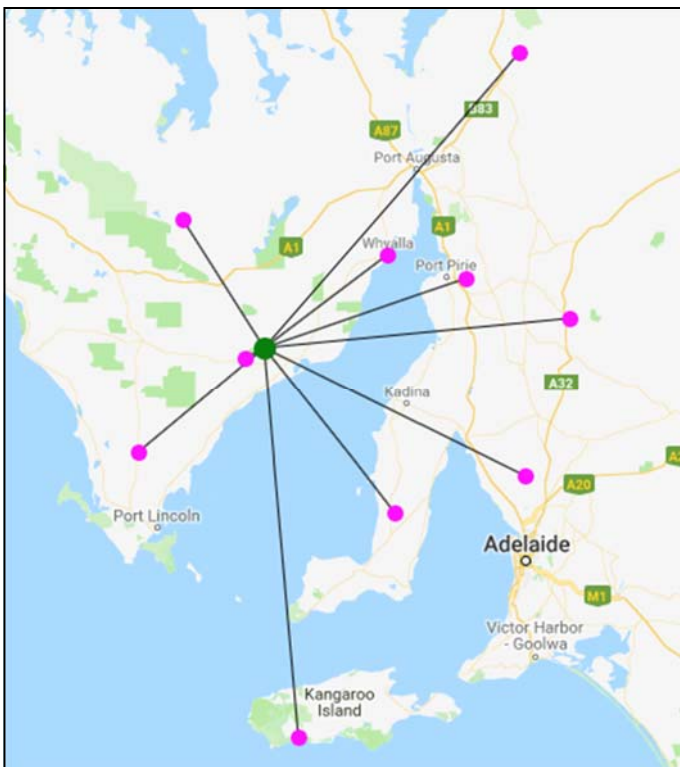
The SAA and its members currently operate 26 seismographs in SA with several in other states. The extra stations built and operated by SAA members mean that earthquakes can be more accurately located, particularly in depth, and finding out more about the direction of movement. Apart from near the Adelaide area, there are not yet enough seismographs to reliably calculate earthquake depth.

The association was incorporated in South Australia in March 2017. It was previously an interest group, but became incorporated following the Geological Survey of South Australia announcing its intention to

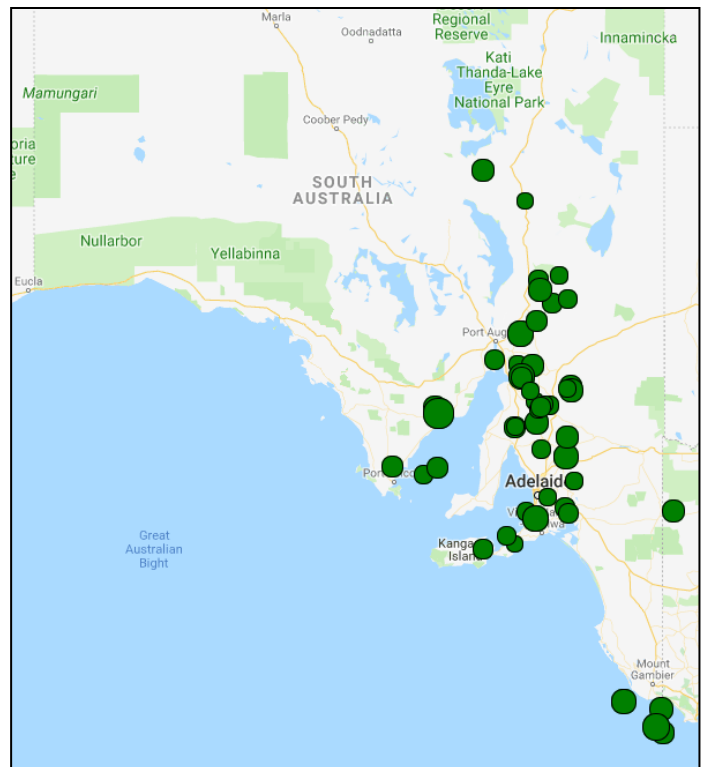
discontinue the state seismograph network. The association continues to run much of this network.

The **Objects** of our Association are:

- to promote and engage in the science of seismology and the recording of earthquakes in Australia
- to be able to advise and assist people with what equipment to get, how to set it up and where to send the data so that it can be useful and fill in gaps within the existing monitoring systems across Australia.
- to run workshops, design and build instruments and recording hardware, provide demonstrations and training to people and organisations such as schools interested in recording earthquakes.



*Above: Sites used by SAA to locate the epicentre of the 1 July 2018 Cleve SA earthquake: SAA 4, GA 5 ANU 1.*



*Above: South Australian earthquakes located by SAA for the first half of 2018*

More details at:

<https://www.assa.org.au/resources/technical-special-activity-kolletive/seismology/>

## Why is it important to monitor earthquake activity?

Earthquakes can be very dangerous, if you are in the wrong place.

They can make buildings fall down and set off landslides, as well as having many other deadly effects.

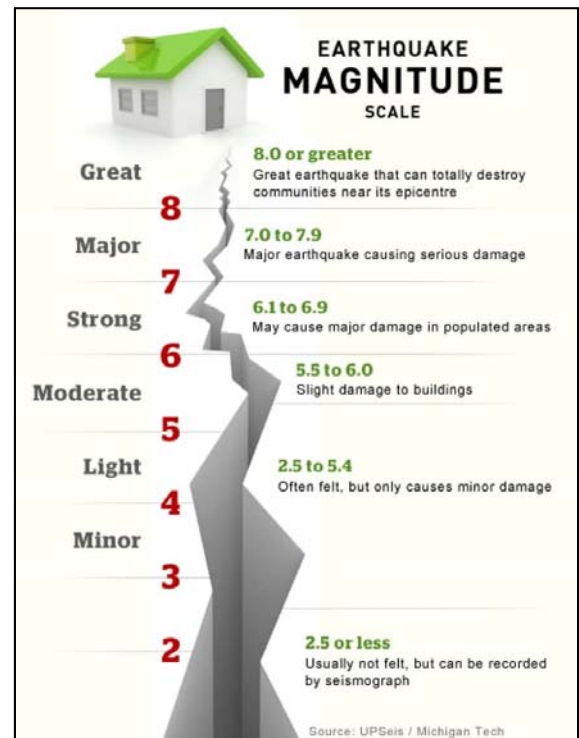
An earthquake that occurs at the bottom of the sea can push water upwards and create massive waves called tsunamis.

These waves can reach speeds of up to 500 kilometres per hour and cause massive devastation to anything in their path.

The strength of earthquakes is measured on a scale of magnitude. The higher the number on the scale, the more powerful the quake. The more powerful a quake is, the more damage it can cause.

Earthquakes have killed hundreds of thousands of people even though scientists are able to make buildings much safer and stronger than in the past.

Unfortunately many quakes happen in parts of the world where people can't afford to spend lots of money on safety measures.



**EARTHQUAKES STRIKE** when tectonic plates mash and grind against each other. You may think Australia is safe, being in the middle of a plate, but there's been about one earthquake measuring magnitude 2.0 or greater every day in Australia during the past decade.

Western Australia is a quake hotspot, with more quakes than all the other states and territories combined. But history shows that **Adelaide has the highest risk of any capital city**. The city has suffered damage from earthquakes three times since settlement: in 1897 from a magnitude 6.5 event near Beachport, in 1902 from a magnitude 6.0 event in the gulf which caused 2 deaths, and in 1954 from a magnitude 5.5 event near Darlington. This earthquake is well remembered, occurring just before the visit of Queen Elizabeth II.

The Indo-Australian plate, on which our continent lies, is colliding with the Pacific plate in the east and the Eurasian plate to the north. When these plates move and jostle around, they get pushed on one side and pulled on the other, so stresses build up inside the plate itself. When these forces get big enough they actually break the rock, which causes vibrations in the Earth.

About every five years the pent-up stresses cause a quake of magnitude 6 or greater. If the epicentre of the quake is at a shallow depth and is under a city, it can cause terrible damage.

The regions where violent quakes occur most often are south-western WA, the Flinders Ranges in SA, and across a wide area from Tasmania to northern NSW.



## Australia's worst earthquakes

*Australia has experienced few big earthquakes, but some of them have caused great devastation. Here are the 10 most significant in recent history, ranked by cost, magnitude and damage.*

1. Newcastle, NSW (Magnitude 5.6) 28 December 1989
2. Beachport, SA (6.5) 10 May 1897
3. Meckering, WA (6.5) 14 October 1968
4. Ellalong, NSW (5.4) 6 August 1994
5. Adelaide, SA (5.5) 1 March 1954
6. Warooka, SA (6.0) 19 September 1902
7. Meeberrie, WA (6.3) 29 April 1941
8. Tennant Creek, NT (6.6) 22 January 1988
9. Kalgoorlie-Boulder, WA (5.0) 20 April 2010
10. Cadoux, WA (6.1) 2 June 1979

*Left: One of the worst damaged houses during the Adelaide 1954 earthquake.*