

SOUTH AUSTRALIA SEISMICITY REPORT 2010

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Seismicity

Earthquake activity was similar to 2009, but the largest onshore event (ML 5.0, Cleve 5th June) was larger than last year. 301 events were located by PIRSA, four greater than M 4 onshore, eleven greater than M 3. An event M 5.1 was located far south of Australia.

The Mount Barker earthquake, 16th April, was the most newsworthy event of the year. The magnitude 3.7 event was widely felt, especially in Adelaide. It was particularly deep at 26km. A focal mechanism was computed, and an isoseismal map produced. A small aftershock survey of 3 instruments was instigated, but no aftershocks were measured. The event was reported in:

Love, D. 2010 'The Mount Barker Earthquake – 16th April 2010 magnitude 3.7' Australian Earthquake Engineering Society 2010 Conference, Perth, WA

The Cleve earthquake, 5th June, was widely felt, with a few reports even in Adelaide. Four aftershock recorders were installed and a number of small events were recorded. These suggested a depth of about 20km. A preliminary focal mechanism was produced. A paper is in preparation (IUGG 2011).

Geoscience Australia carried out a short term deployment of surface instruments near Innamincka while a fracture stimulation was being carried out. The data will remain confidential for 2 years.

A magnitude 4.0 event in the far north near Lake Eyre was not felt, possibly due to the very heavy rain that was occurring at the time.

A magnitude 4.5 event 44km NE of Port Augusta, near Quorn, had a significant number of aftershocks.

A small sequence of events, largest magnitude 4.1, occurred north of Yunta.

Two events near Innamincka, and one near Olympic Dam are included in the catalogue. These events are probably related to geothermal and mining activities respectively, but not directly. There is currently no column in our publicly available catalogue to include a description.

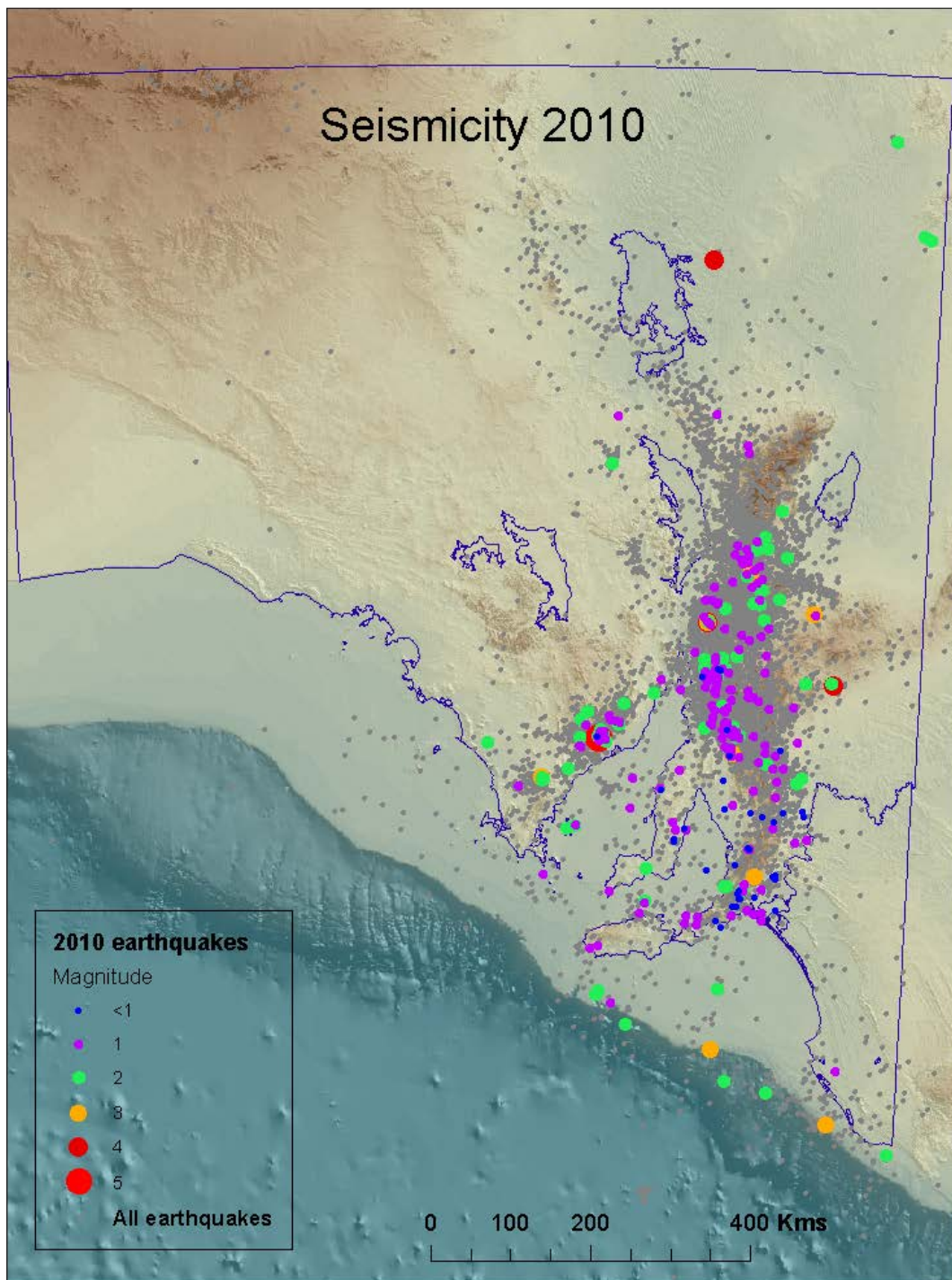
Network

There were a few changes to the network during 2010. The continuous digital signal from HTT to PIRSA was discontinued. This station now transmits continuously to GA. The analogue records at THS were discontinued, but it may be possible to get a digital signal later. Arkaroola was converted from analogue to digital in August, with funding and assistance from Beach Energy and GA. A new private operator, John Harris, opened a station at Morphett Vale which is continuously transmitting to the Australian Centre for Geomechanics, Perth. The stations at Strathalbyn STR2 was flooded twice, the second time ruining the digital recorder. It has been out of action since September.

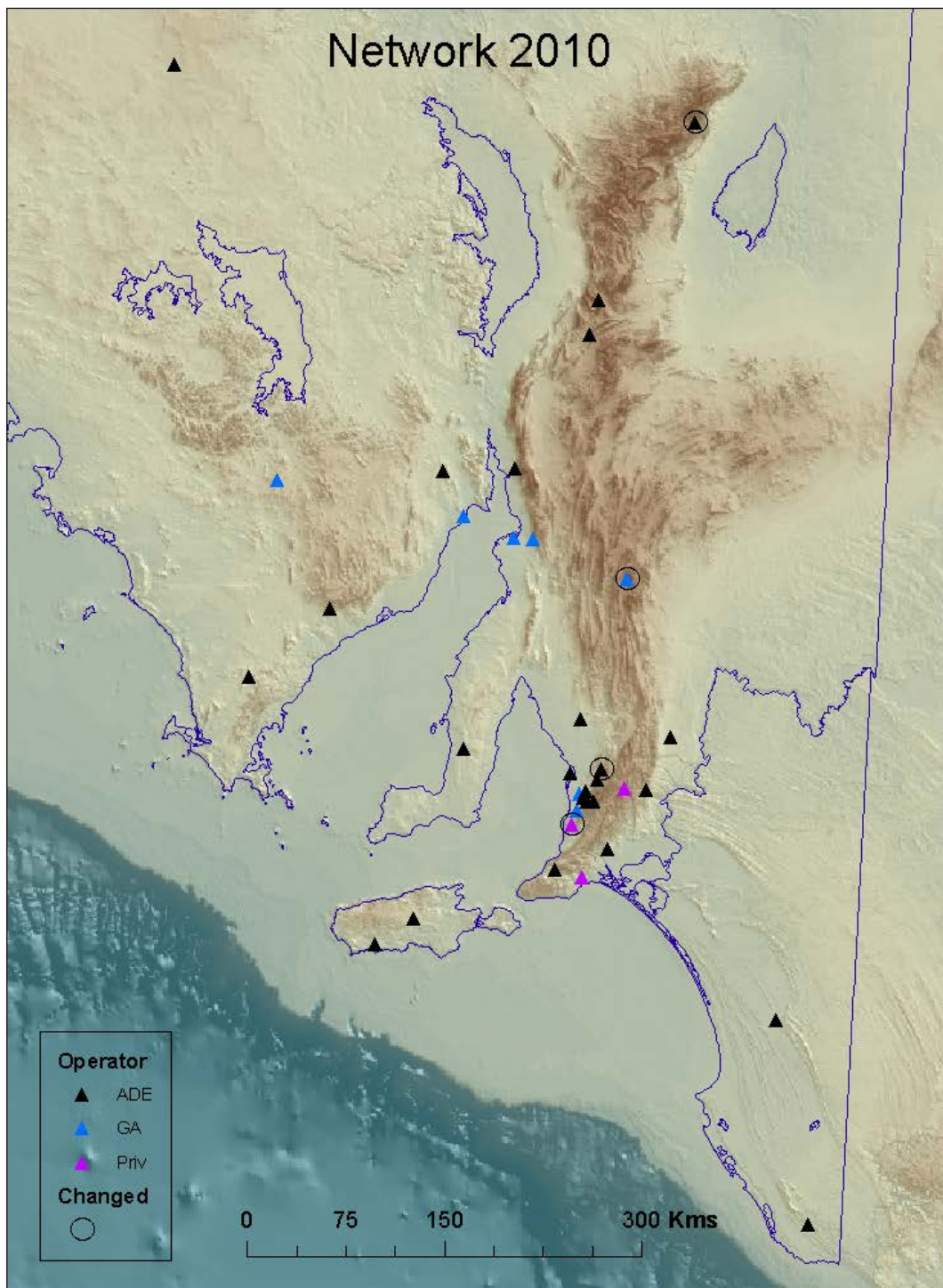
The PIRSA network now comprises 8 analogue stations, 5 dial-up stations, 11 continuous realtime stations, and 1 visit and download station (suburban). GA has 7 stations within the state, and there are 3 private stations.

Procedures

There were no procedural changes during 2010. Jennette Brown filled in for four months while Alison Wallace was on long service leave.



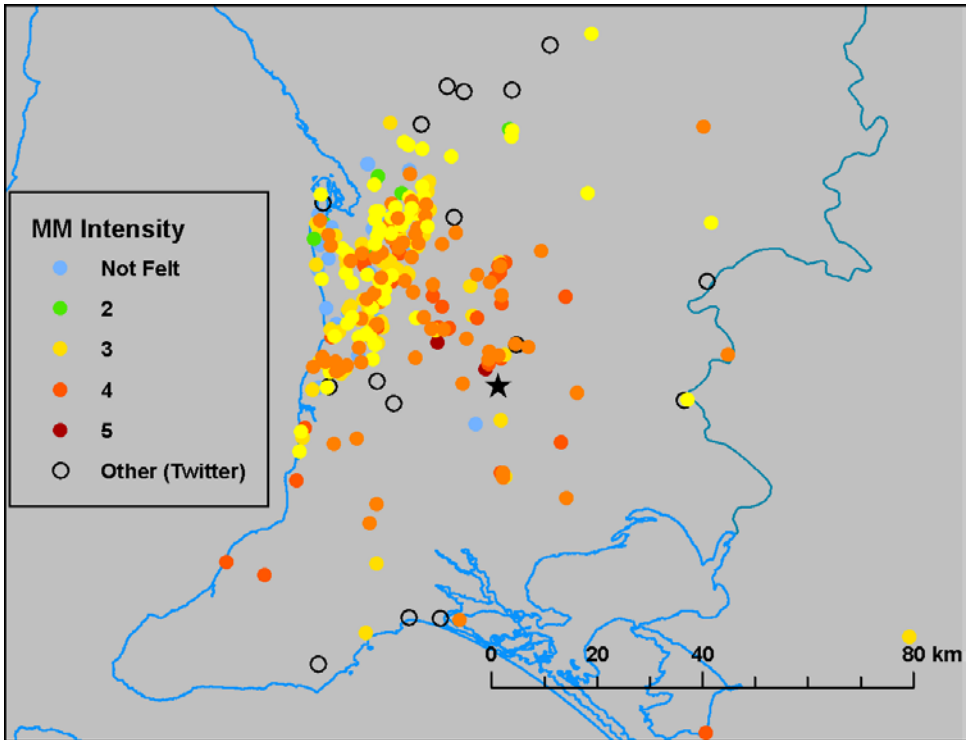
Seismicity for 2010 shown in colour, and the complete list of earthquakes (from 1840) shown in grey.



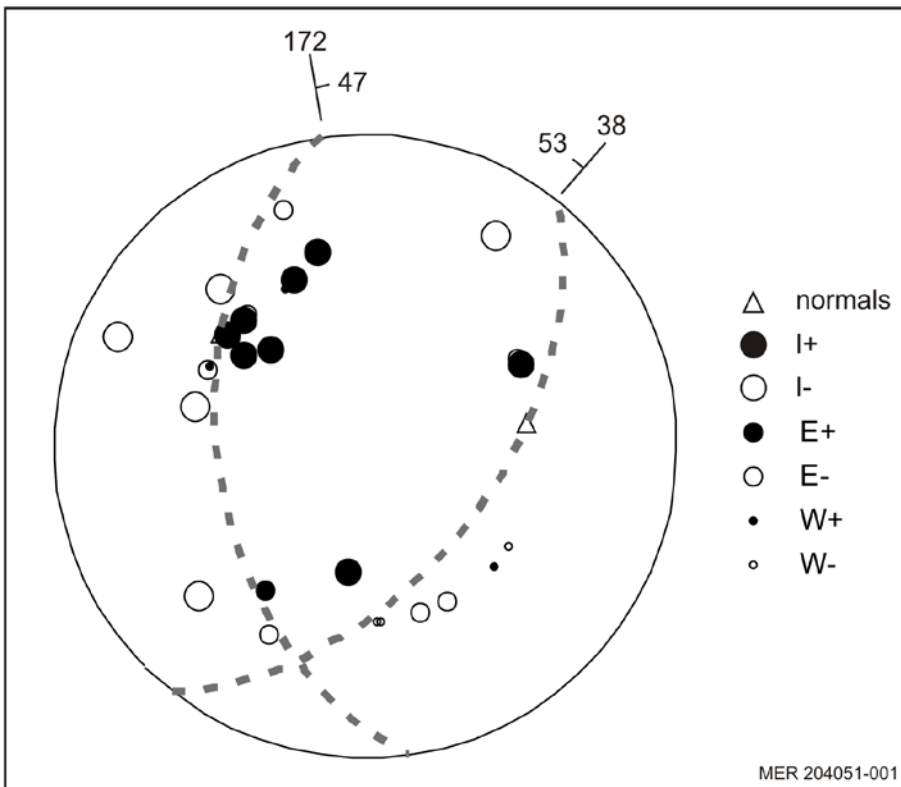
South Australian seismographs in 2010, with changes circled.

Date	Time		Long	Lat	Depth		Mag	MMI	Acc A-F	Stns
	UT				km	Place				
2010-01-02	1300		136.763	-36.449	22.3	KINGSCOTE 118KM SW	2.9		C	21
2010-01-04	0554		138.556	-37.434	24.3	BEACHPORT 130KM W	2.7		E	14
2010-02-03	0502		138.098	-28.157	7.6	OODNADATTA 270KM E	4.0		D	23
2010-03-11	0758		138.364	-37.074	9.7	PARNDANA 173KM SE	3.0		C	22
2010-03-28	1431		137.151	-36.823	16.8	S OF KANGAROO ISLAND	2.9		D	18
2010-04-05	1123		125.498	-41.762		SOUTH OF AUSTRALIA	5.1			
2010-04-16	1357		138.880	-35.109	26.4	MT BARKER 6KM SE	3.8	5	C	30
2010-05-10	1132		135.950	-34.073	4.8	CUMMINS 30KM NE	2.5		C	17
2010-05-27	1108		139.476	-33.992	15.0	CLARE 81KM E	2.7		D	18
2010-06-05	2147		136.719	-33.589	22.4	CLEVE 24 KM NE	5.0		C	24
2010-06-07	1230		140.758	-27.811	4.0	INNAMINKA	2.7		B	6
2010-06-22	2041		138.537	-32.641	13.5	PETERBOROUGH 46KM NW	2.8		C	20
2010-07-15	1826		138.694	-31.698	18.9	HAWKER 33KM NE	3.5	3	C	21
2010-07-26	2057		138.851	-31.885	11.4	HAWKER 40KM E	2.6		D	9
2010-07-28	0346		139.166	-31.498	9.6	CURNAMONA HS 40KM NW	2.8		E	11
2010-07-30	2129		138.149	-32.253	19.1	PORT AUGUSTA 44KM NE	4.5	5	C	21
2010-07-30	2229		138.149	-32.253	19.1	PORT AUGUSTA 44KM NE	2.7		D	13
2010-07-30	2246		138.149	-32.253	19.1	PORT AUGUSTA 44KM NE	2.7		D	13
2010-07-30	2327		136.740	-33.580	20.1	CLEVE 26KM NE	2.7		C	15
2010-07-30	2112		138.149	-32.253	19.1	PORT AUGUSTA 44KM NE	2.5		D	13
2010-07-30	2124		138.149	-32.253	19.1	PORT AUGUSTA 44KM NE	2.5		D	14
2010-07-31	0246		138.149	-32.253	19.1	PORT AUGUSTA 44KM NE	3.0		C	14
2010-07-31	1656		136.822	-30.483	0.0	OLYMPIC DAM	2.5		D	7
2010-09-19	2211		138.817	-31.884	4.1	HAWKER 37KM E	2.6		D	11
2010-10-08	1053		138.537	-33.731	13.2	CLARE 14KM NW	3.1	3	C	26
2010-10-10	0230		139.852	-32.913	5.4	PETERBOROUGH 96KM E	4.1		C	27
2010-10-23	0340		135.957	-34.040	3.7	CUMMINS 33KM NE	3.0		C	19
2010-11-09	1920		140.030	-37.873	13.1	BEACHPORT 43KM S	3.1		D	17
2010-11-13	1936		138.753	-31.429	12.3	HAWKER 60KM NE	2.8		C	18
2010-11-14	1629		140.353	-26.758	28.9	INNAMINCKA 115KM NE	2.9		E	12
2010-11-18	0400		137.379	-35.423	11.9	KINGSCOTE 33KM NW	2.8		C	20
2010-11-29	2008		139.564	-32.120	8.6	YUNTA 51KM N	3.9		D	20
2010-12-03	0040		135.964	-34.066	5.8	CUMMINS 31KM NE	2.7		C	17

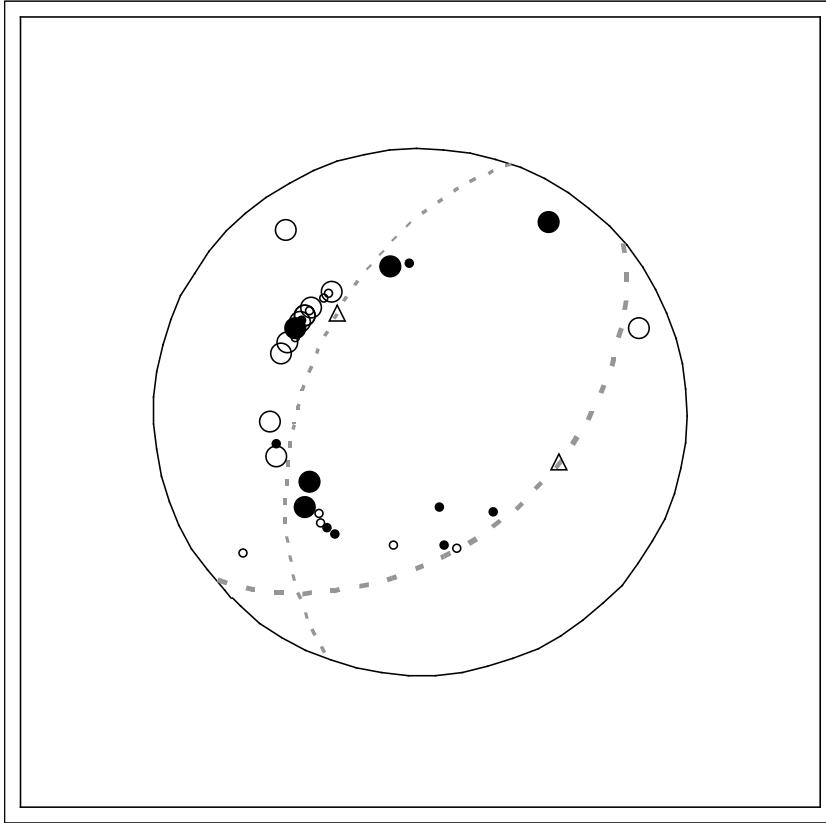
Table of events of magnitude 2.5 or greater located by PIRSA



Intensity values recorded for the Mt Barker earthquake.



Focal mechanism (upper hemisphere) for the Mt Barker (2010-04-16) earthquake.



Preliminary focal mechanism (upper hemisphere) for the Cleve 2010-06-05 event