

Supplementary Material

Hydroacoustic Observations of Two Contrasted Seismic Swarms Along the Southwest Indian Ridge in 2018

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Table S1. List of the strongest acoustic events in swarm-1 (SL > 230 dB).

Origin Time	Latitude (°S)	Longitude (°E)	Source Level (dB)	Magnitude (mb) ^a
10 July-08h44	31.667	58.506	231.82	5.1
10 July-10h26	31.711	58.419	236.08	5.5
10 July-16h05	31.700	58.460	234.65	5.7
10 July-18h41	31.780	58.674	232.81	4.0
10 July-23h28	31.661	58.770	232.84	5.2
11 July-00h33	31.653	58.657	235.84	5.2
11 July-02h22	31.744	58.570	231.14	4.8
11 July-05h00	31.652	58.429	234.87	4.0
12 July-11h14	31.559	58.123	231.95	--
13 July-01h20	31.561	58.126	232.47	--

^a Only for events reported in the ISC catalogue.

Table S2. List of the strongest acoustic events in swarm-2 (SL > 230 dB).

Origin Time	Latitude (°S)	Longitude (°E)	Source Level (dB)	Magnitude (mb) ^a
28 September-05h56	26.736	67.789	230.41	4.9
28 September-06h21	26.924	67.758	240.33	5.5
28 September-07h06	26.929	67.741	239.14	5.6
28 September-11h01	26.764	67.773	232.28	4.6
01 October-04h07	26.806	67.284	240.08	--
01 October-04h17	26.978	67.723	234.24	--
01 October-04h21	26.905	67.869	232.76	--
01 October-07h21	26.649	67.675	232.46	5.3
01 October-16h31	26.673	67.470	230.95	--
01 October-18h16	26.613	67.603	234.03	5.7
02 October-01h22	26.392	66.887	232.10	--
04 October-13h00	26.355	67.803	230.76	--
04 October-13h06	26.397	67.912	231.07	--
05 October-17h58	26.903	67.476	238.11	--
06 October-10h36	27.012	68.024	230.84	--
11 October-00h12	26.254	68.186	230.27	--
14 October-15h44	26.651	67.512	232.38	--
14 October-04h57	26.805	67.922	240.21	--
14 October-12h32	26.603	67.457	240.79	--
14 October-12h53	26.729	68.034	239.98	--
14 October-16h18	26.711	67.931	235.57	--
15 October-08h09	26.712	67.318	230.12	--
15 October-23h34	26.567	67.518	230.20	--
18 October-22h53	26.851	67.785	237.07	4.9

^a Only for events reported in the ISC catalogue.

Supplementary Figures

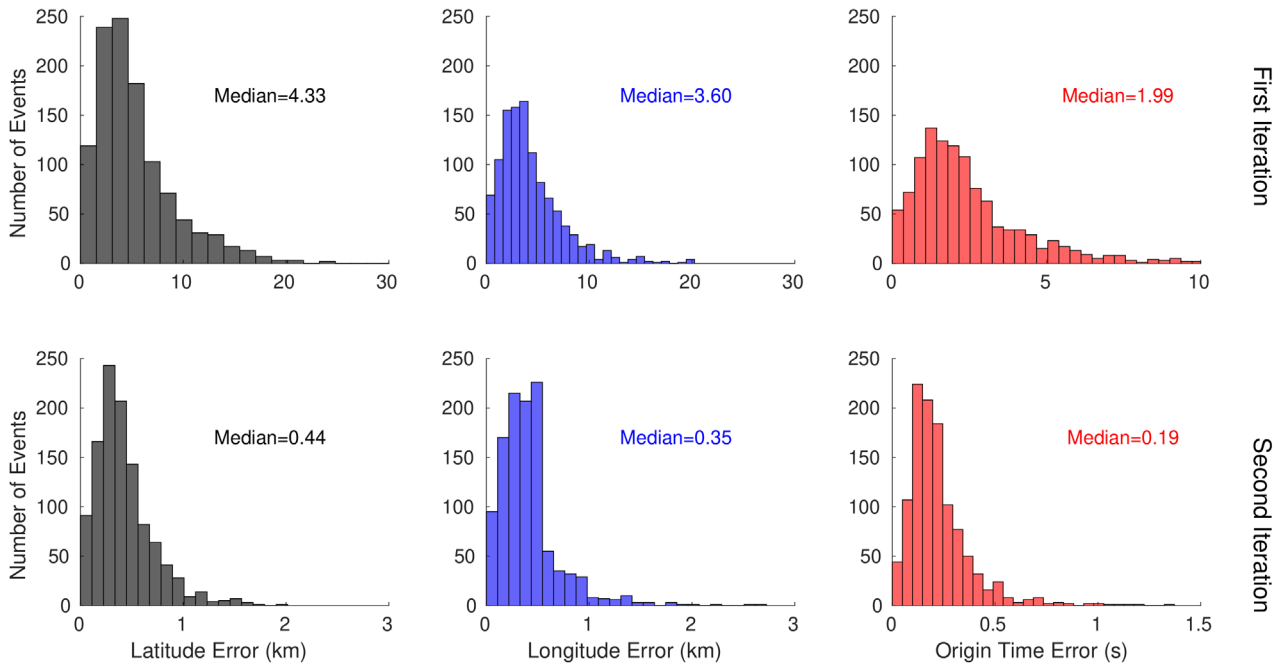


Figure S1. Improvements in the error distributions in location (latitude and longitude) and origin time for all hydroacoustic events from swarm-1 between the first iteration (initial picking, upper panel) and the second iteration (re-picking, lower panel).

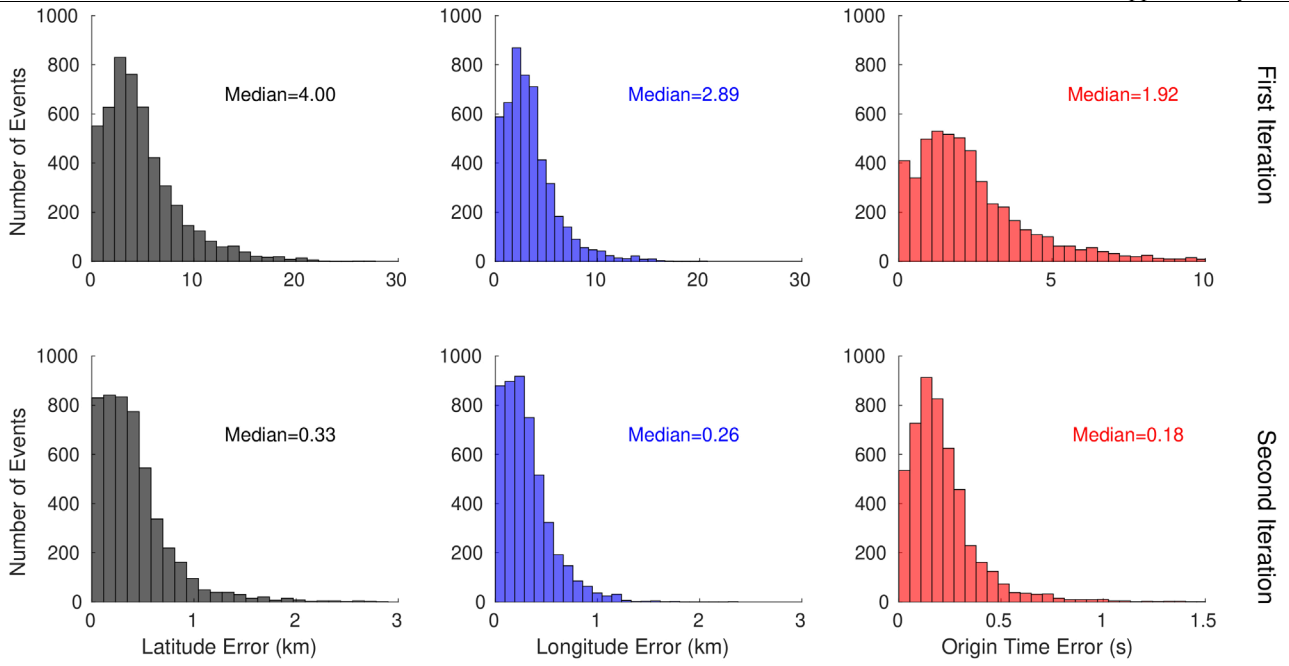


Figure S2. Improvements in the error distributions in location (latitude and longitude) and origin time for all hydroacoustic events from swarm-2 between the first iteration (initial picking, upper panel) and the second iteration (re-picking, lower panel).

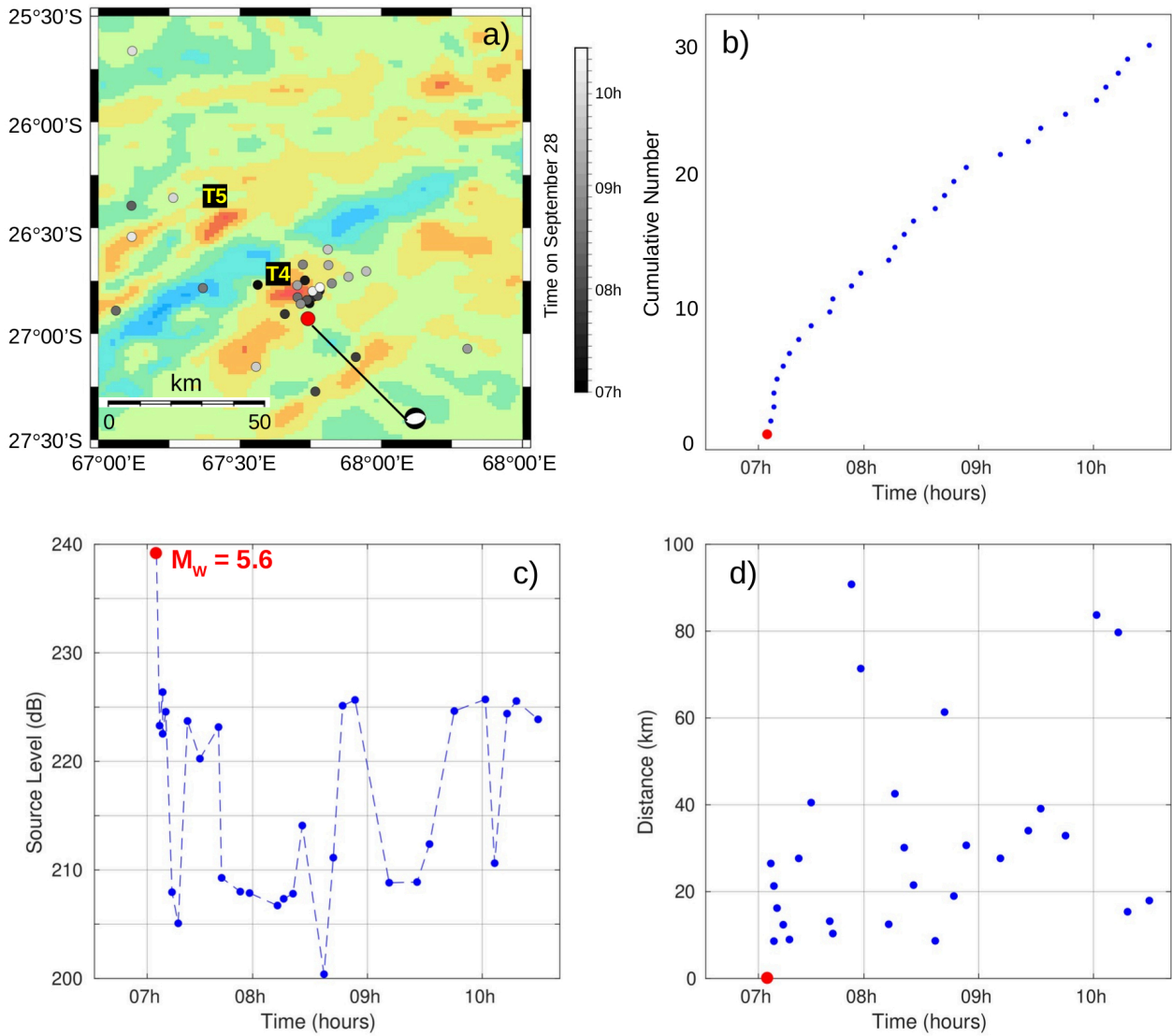


Figure S3. **a)** Location of the events that occurred after a $M_w=5.6$ normal faulting event on 28 September, 2018 (red dot). T4 and T5 denotes the seamounts. Events are plotted according to their origin time (in gray colorscale). **b)** Cumulative Number of events after mainshock (red dot). **c)** Source Level of events shown in **a)**. **d)** Distance of events from the mainshock vs time. These distributions do not resemble to a classical tectonic mainshock-aftershocks sequence.

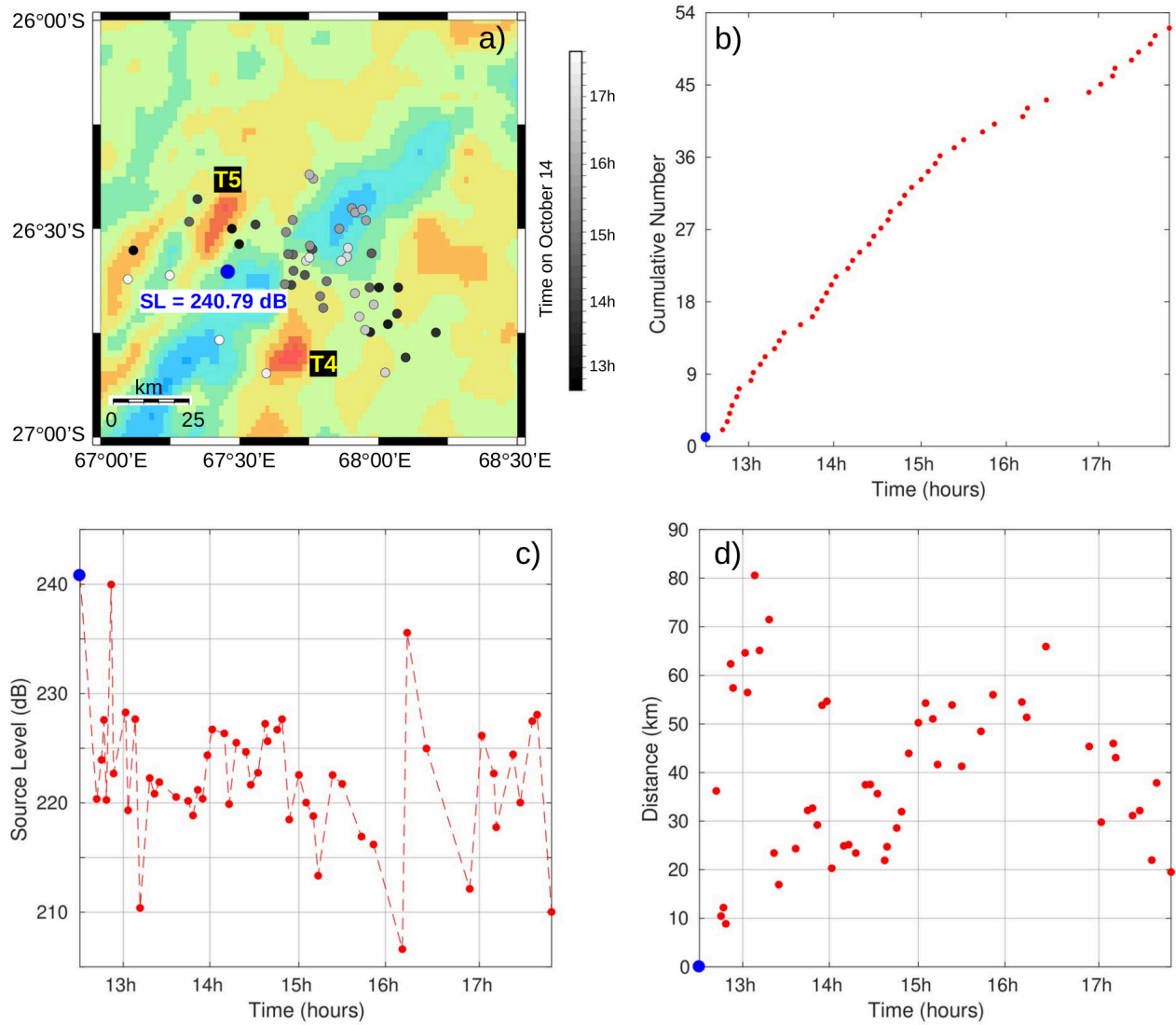


Figure S4. **a)** Location of the events that occurred after a strong event on 14 October, 2018 (SL = 240.79 dB; blue dot). T4 and T5 denotes the seamounts. Events are plotted according to their origin time (in gray colorscale). **b)** Cumulative Number of events after the 240.79 dB event. **c)** Source Level of events shown in a). **d)** Distance of events from the 240.79 dB event vs time. These distributions do not resemble to a classical tectonic mainshock-aftershocks sequence.

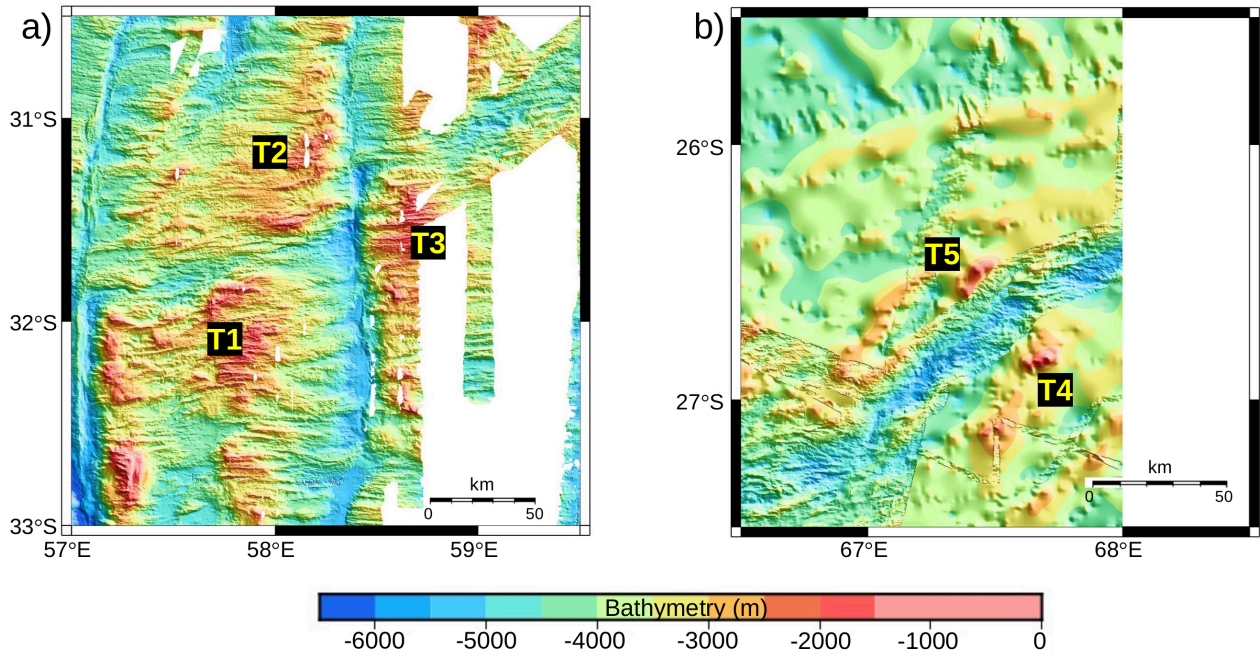


Figure S5. Detailed bathymetric maps of the swarm areas: **a)** For swarm-1; T1, T2 and T3 are three main local seamounts. **b)** For swarm-2; T4 and T5 shows two local seamounts on either side of the rift valley. Bathymetric grids are from [32].

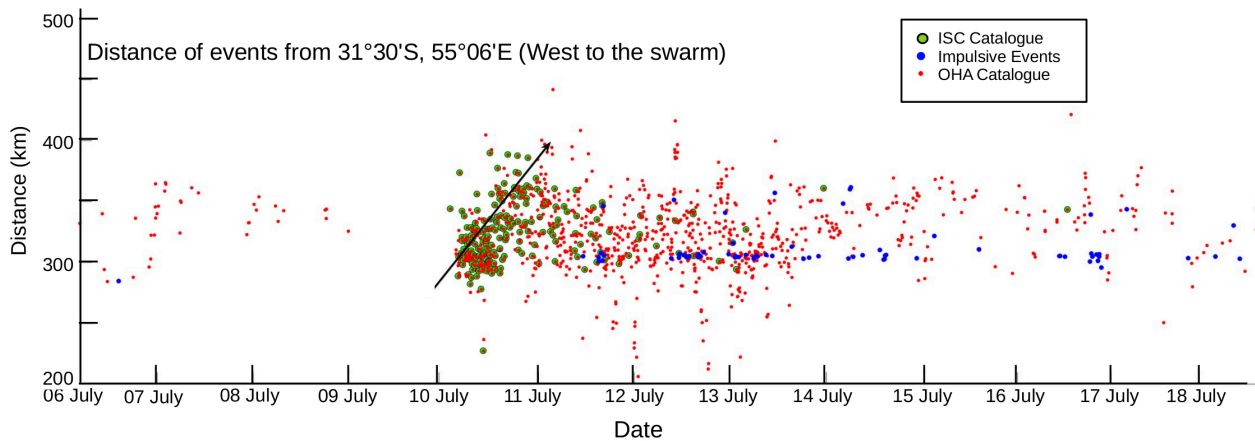


Figure S6. Distance of all hydroacoustic events of swarm-1 relative to an arbitrary reference point set at West (31°30'S, 55°06'E) from the center of swarm. All dots are hydroacoustic events (red); among them, blue dots are impulsive events and green outlines events reported in ISC catalogue. The black arrow shows the initial eastward direction of propagation of events.