



# Supplementary Material: Imaging the Western Edge of the Aegean Shear Zone: The South Evia 2022-2023 Seismic Sequence

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Origin	Lon	Lat	Depth	RMS	nPhases	Gap	expX	expY	expZ
2022-11-29 04:32:37.074601	24.267763	38.243880	11.00	0.337	121	28.6	-0.20	0.43	11.00
2022-11-29 20:06:39.492512	24.254921	38.256702	7.99	0.374	129	36.4	0.43	0.74	7.99
2023-04-22 08:38:03.867146	24.238366	38.270460	7.70	0.283	72	67.4	-1.01	2.27	7.70

**Table S1** Hypocenter solutions of the three greatest events, relied mostly on the manual seismic phases provided by the National Observatory of Athens (NOA) and the NonLinLoc code (Lomax et al., 2000). RMS: root-mean-square of residuals at maximum likelihood or expectation hypocenter, nPhases: number of readings used for location, Gap: maximum azimuth gap in degrees between stations used for location, expX expY expZ: expectation values of PDF for x, y and z relative to geographic origin in kilometers

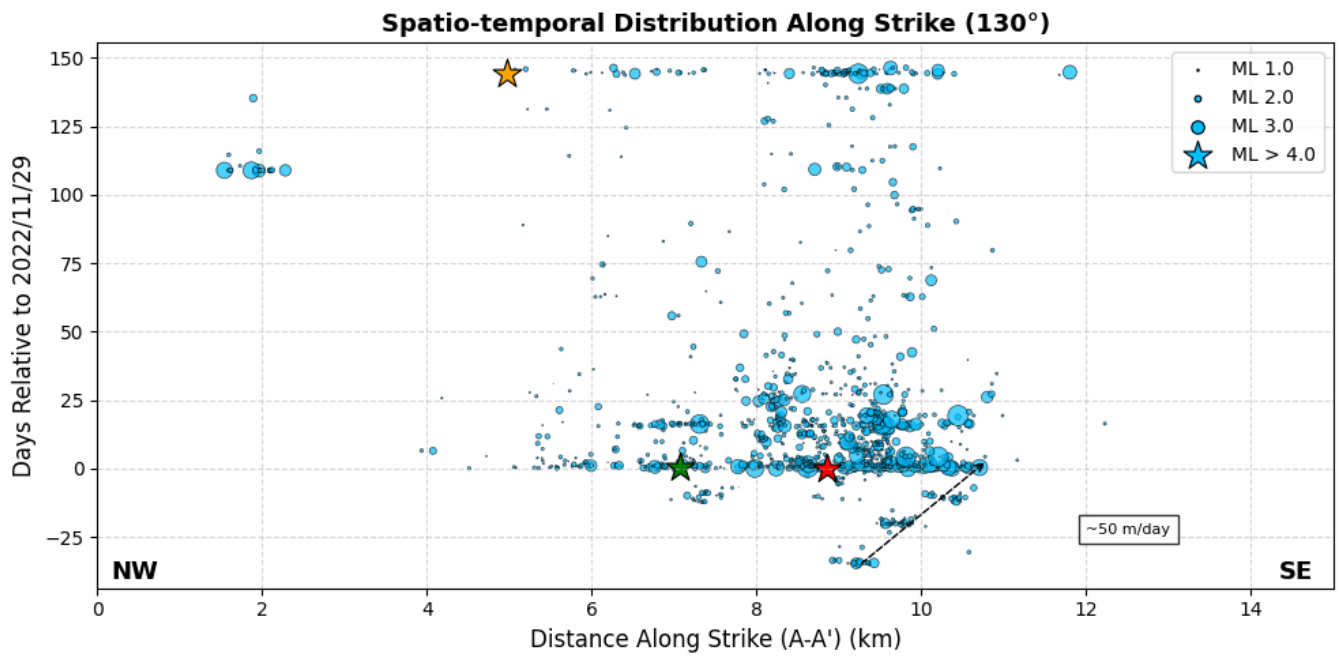
Catalogue	No of Events	Mc	b
NOA	912	1.8	0.809 +- 0.032
Detected-Located	5838	0.9	0.833 +- 0.012
WCC Relocated	1893	1.4	0.853 +- 0.025

**Table S2** Number of detected events, Magnitude of completeness  $M_c$  for Local Magnitude ( $M_L$ ) and b-values for NOA and the detected/located and WCC relocated catalogs of this study.

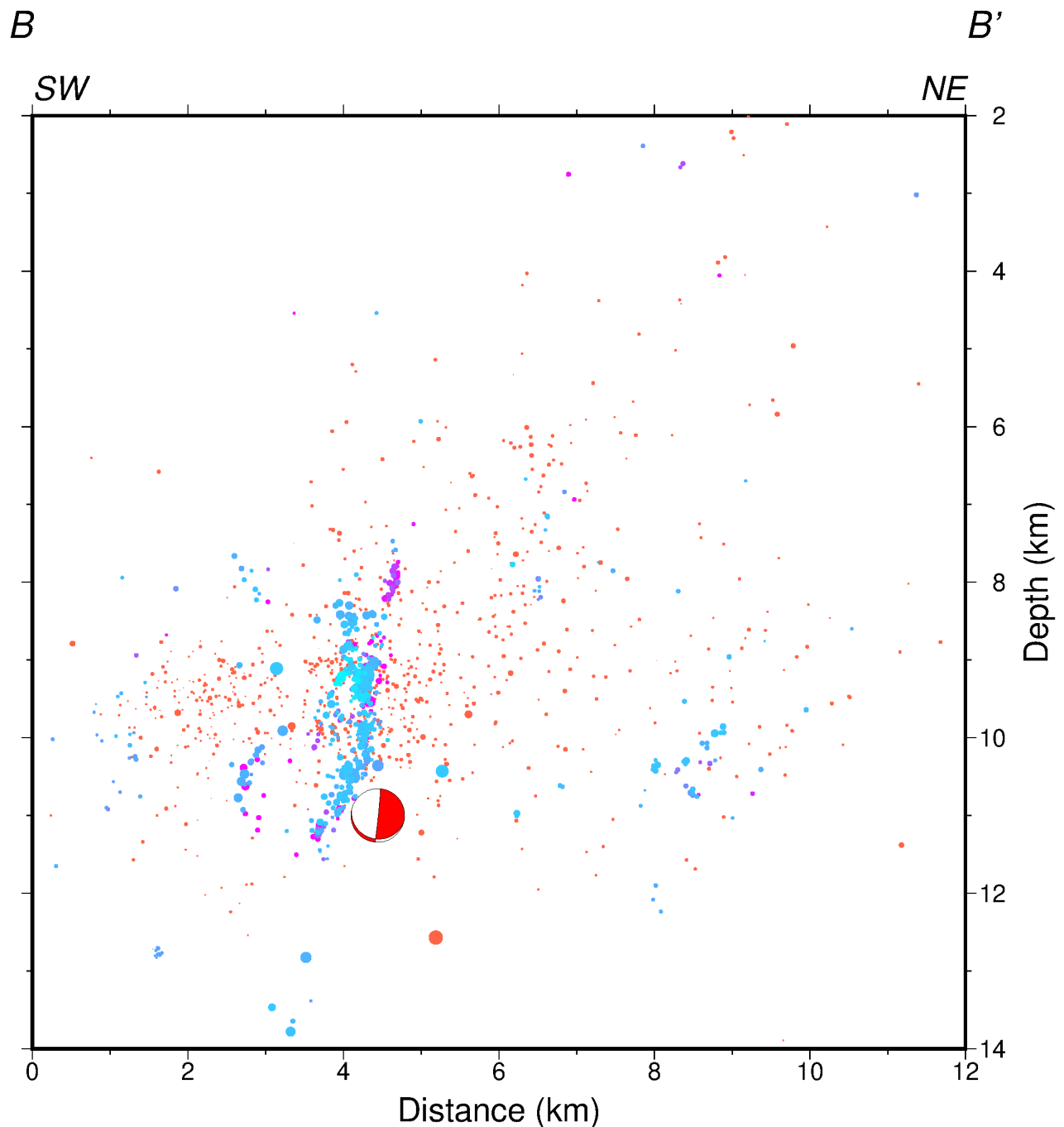
Origin	Lon	Lat	Depth	Strike	Dip	Rake	Mw	DC(%)	No. Stations	Quality
2022-11-29 04:32:34.84	24.267763	38.243880	11	134	84	-12	4.6	74	10	A2
2022-11-29 20:06:38.33	24.254921	38.256702	8	134	88	-6	4.8	88	15	A1
2022-12-03 10:51:41.91	24.261336	38.245642	8	302	84	-16	3.8	59	9	A2
2022-12-14 15:28:47.40	24.265623	38.243689	11	311	88	7	4.3	90	14	A1
2022-12-18 12:11:01.37	24.261450	38.245626	9	125	84	-7	4.0	37	7	A3
2022-12-26 04:33:43.15	24.256380	38.236650	9	131	87	-3	3.8	49	9	A3
2023-04-22 08:38:03.26	24.238366	38.270460	8	130	85	-7	4.5	91	9	A1
2023-04-22 11:18:02.90	24.293100	38.227700	9	137	81	-13	3.7	87	5	A1

**Table S3** Moment tensor solution using Gisola (Triantafyllis et al., 2021). Overall quality factor based on Scognamiglio et al. (2009)

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**Figure S1** Spatio-temporal distribution of epicenters along strike (130°). Red and green stars indicate the location of the two largest events of the sequence on the 29th of November 2022. The orange star marks the Mw-4.5 aftershock on April 22, 2023.



**Figure S2** SW-NE vertical cross-section with orthogonal orientation to the strike of the main fault. Relocated 2022-2023 earthquakes are colored based on days since November 29th, 2022, sized proportionally to their local magnitude. Hypocenters in light red are those detected events not relocated with WCC. The moment tensor solution for Mw 4.6 04:32 UTC event is plotted in red. The width of the cross-sections is 1 km, respectively.

## References

- Lomax, A., Virieux, J., Volant, P., and Berge, C. Probabilistic earthquake location in 3D and layered models: Introduction of a Metropolis-Gibbs method and comparison with linear locations. In Thurber, C. H. and Rabinowitz, N., editors, *Advances in Seismic Event Location*, pages 101–134. Kluwer, Amsterdam, 2000. doi: 10.1007/978-94-015-9536-0<sub>5</sub>.
- Scognamiglio, L., Tinti, E., and Michelini, A. Real-Time Determination of Seismic Moment Tensor for the Italian Region. *Bulletin of the Seismological Society of America*, 99:2223–2242, 2009. doi: 10.1785/0120080104.
- Triantafyllis, N., Venetis, I. E., Fountoulakis, I., Pikoulis, E., Sokos, E., and Evangelidis, C. P. Gisola: A High-Performance Computing Application for Real-Time Moment Tensor Inversion. *Seismological Research Letters*, 2021. doi: 10.1785/0220210153.