Supplement to the reply to CC2: sensitivity of the results to the magnitude scale

Reply to Dr. R. Das on egusphere-2026-5171. The Mwg scale of Das et al. (2025) is Mwg = log10 M0 / 1.36 − 12.68 (M0 in dyn cm); for the GCMT convention (Mw = 2/3 (log10 M0 − 16.1)) this is Mwg = 1.103 Mw − 0.84, so that Mwg < Mw by 0.22 at Mw 6.0, 0.12 at Mw 7.0 and 0.04 at Mw 7.8. Every variant re-runs the complete pipeline (source model, cumulative ΔCFS, position-versus-mechanism comparison, pseudo-prospective skill test).

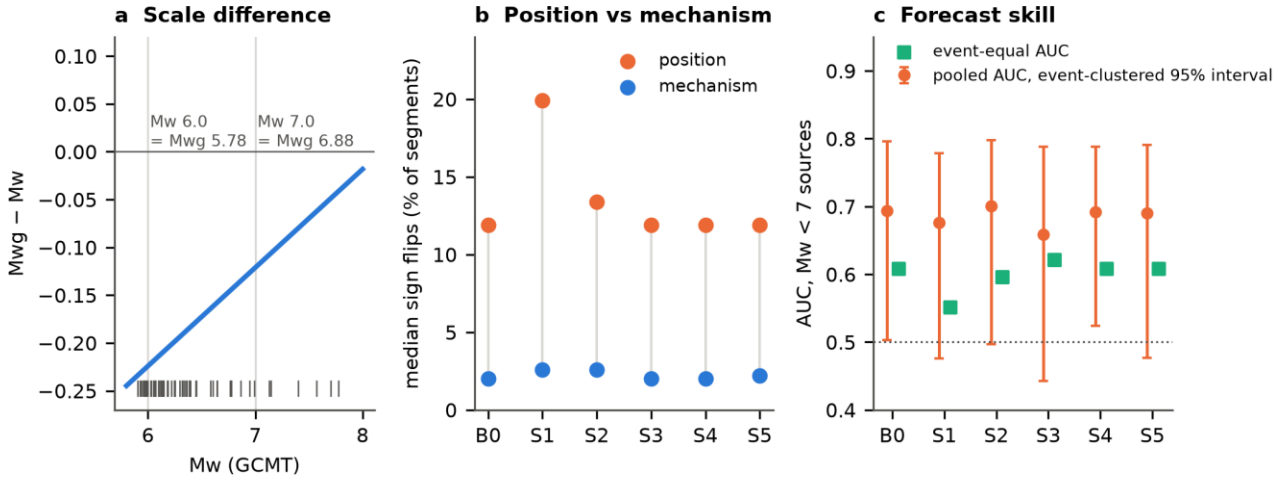


Figure S1. (a) Difference between the Das scale (Mwg) and Mw as a function of Mw; ticks at the bottom mark the GCMT events with Mw ≥ 5.9. (b) Median fraction of receiver segments whose ΔCFS changes sign under the position and the mechanism perturbation, for the baseline (B0) and the five variants S1–S5 defined under Table S1. (c) Pooled AUC for Mw < 7 sources with the event-clustered 95% interval and the event-equal AUC; the dotted line is 0.5.

Table S1. Results of the baseline and five magnitude-scale variants.

Quantity	B0 baseline (re-run)	S1 Mwg geometry	S2 Mwg selection (31 events)	S3 catalogue Mc = Mwg 2.5	S4 Mw ≥ 5.9 (55 events)	S5 Mw ≥ 6.1 (39 events)
Source events (Mw ≥ 6 or equivalent)	46	46	31	46	55	39
Events testable for position vs mechanism	27	30	24	27	27	26
Median sign flips, position (%)	11.9	19.9	13.4	11.9	11.9	11.9
Median sign flips, mechanism (%)	2.0	2.6	2.6	2.0	2.0	2.2
Events where position flips more signs	20/27	23/30	18/24	20/27	20/27	19/26
Events where position changes ΔCFS more	24/27	27/30	21/24	24/27	24/27	23/26
Wilcoxon p (flips, two-sided)	5.4e-04	7.4e-05	8.8e-04	5.4e-04	5.4e-04	9.2e-04
Median rupture length (km)	24.9	20.0	25.8	24.9	24.2	26.5
Median mean slip (m)	0.59	0.84	0.97	0.59	0.51	0.63
Pooled AUC, Mw < 7	0.694	0.676	0.701	0.659	0.692	0.690
event-clustered 95% interval	[0.50, 0.80]	[0.48, 0.78]	[0.50, 0.80]	[0.44, 0.79]	[0.52, 0.79]	[0.48, 0.79]
event-clustered p	0.057	0.085	0.049	0.120	0.031	0.069
Event-equal AUC	0.608	0.551	0.596	0.621	0.608	0.608
Distance-stratified AUC	0.646	0.625	0.648	0.628	0.652	0.641
Screening gain in AUC	+0.016	+0.021	+0.019	+0.026	+0.016	+0.017

paired bootstrap 95% interval	[-0.001, +0.046]	[-0.001, +0.069]	[-0.005, +0.079]	[-0.005, +0.064]	[-0.000, +0.043]	[-0.002, +0.045]
one-sided p	0.035	0.030	0.071	0.042	0.029	0.040
ΔCFS map vs baseline: Spearman / sign agreement (%)	–	0.975 / 99.4	0.955 / 98.0	1.000 / 100.0	0.985 / 99.9	0.992 / 99.4

Variants. Baseline: the pipeline of the manuscript, re-run end to end. Mwg geometry: Wells and Coppersmith (1994) rupture length and width evaluated at Mwg computed from the GCMT scalar moment; slip remains M0/(μA). Mwg selection: events with Mwg ≥ 6.0 (equivalent to Mw ≥ 6.20) and Mwg geometry. Catalogue Mc = Mwg 2.5: completeness threshold of the seismicity catalogue in the skill test raised from Mw 2.5 to Mw 3.06 (the Mw equivalent of Mwg 2.5). Thresholds: event selection at Mw ≥ 5.9 and Mw ≥ 6.1, which brackets the offset of ±0.1 of the correction of Matsu'ura (2025).