Table 1. Multiple-source parameters for the 2019 Xiulin earthquake.

No.	Source duration (s)	Start time (s)	M_0 (Nm)	E_S (Nm)	E_S/M_0	$\Delta\sigma_s$ (MPa)	M_w
1	2.80	0.50	6.92×10^{17}	5.69×10^{12}	8.22×10^{-6}	2.11	5.82
2	2.10	2.95	1.51×10^{18}	6.33×10^{13}	4.22×10^{-5}	10.88	6.05
3	1.70	6.25	7.90×10^{17}	3.31×10^{13}	4.19×10^{-5}	10.77	5.86
Total			3.00×10^{18}	1.02×10^{14}	3.40×10^{-5}	8.82*	6.25

*This is a weighted average stress drop ($\Delta\sigma_s$), calculated by $\Delta\sigma_s = \frac{\sum_{i=1}\Delta\sigma_{si}M_{0i}}{\sum_{i=1}M_{0i}}$, where $\Delta\sigma_{si}$ and M_{0i} are, respectively, the static stress drop and seismic moment for the *i*th sub-event (cf. Kanamori and Heaton, 2000).

Table 2. Comparison of source parameters for the 2018 Hualien and 2019 Xiulin earthquakes.

Source parameter	Event	
	2018 M_L 6.2 (M_W 6.4) Hualien earthquake[a]	2019 M_L 6.3 (M_W 6.1) Xiulin earthquake
Seismic moment (Nm)	6.48×10^{18}	3.00×10^{18}
Moment magnitude (M_W)	6.47	6.25
Fault plane solutions[b]	216°/56°/26°	217°/61°/81°
(strike/dip/slip)	111°/69°/144°	55°/30°/105°
Source duration (s)	10.9	7.37 (7.95)[c]
Rupture length (km)	20.3	11.5
Rupture velocity (Vr in km/s)	1.85	1.56
Rupture direction[d]	207°	5°
Rise time (s)	2.52	—
Static stress drop ($\Delta\sigma_s$ in MPa)[e]	5.08 (3.94)	8.82 (7.94)
$\Delta\sigma_s Vr^3$ (MPa·km^3/s^3)[f]	32.16 (24.95)	33.48 (30.14)
Slip-weakening model	overshoot	overshoot

[a]Source parameters for the 2018 Hualien earthquake are taken from Hwang (2018) and Hwang et al. (2019, 2020, 2022).

[b]Fault plane solutions for the 2018 and 2019 events are from the CWB and BATS, respectively.

[c]Number in parentheses indicates the source duration estimated from the STF.

[d]Rupture direction is measured clockwise from the north.

[e]Numbers in parentheses denote the static stress drops estimated by the rupture area.

[f]The product of $\Delta\sigma_s Vr^3$ is proposed to be 29.3 MPa·km^3/s^3 by Hwang et al. (2020). Numbers in parentheses indicate that the $\Delta\sigma_s Vr^3$ values are determined by the rupture area.