starts when one fault element has a slip rate larger than 0.1 m/s and stops when the slip rate of all the elements slip drops below 0.01 m/s.

We additionally simulate SEAS on each individual isolated fault included in the Southern and Central Apennines networks to determine their reference behaviour in the absence of stress interactions with other faults. These simulations use the same parametrization as the full fault network simulations described above.

3.2 Fault network and seismic cycle characteristics

To quantify the effect of across-strike faults, we compute an across-strike interaction index (AI) for each fault i as:

$$AI_i = \sum_{j\neq i}\frac{1}{s_{ij}} \qquad (1)$$

where j are the indices of other across-strike faults, s_{ij} is the across-strike separation between fault i and fault j (see Appendix C for a detailed definition of the separation between faults). The inverse weighting $\frac{1}{s_{ij}}$ ensures that faults that are closer contribute more to the index than those farther away. Faults with a larger number of across-strike interactions have a higher across-strike interaction index. We focus on across-strike density since previous work (Rodriguez Piced … d that across-strike interactions dominate over along-strike interactions at comparab …

We request a revision of Equation (3) defining the normalized number of partial ruptures Np'.

To characterise the con … es, we compute three metrics: the coefficient of variation of recurrence times of indi … normalised number of partial ruptures (N_p') and the coefficient of variation of rupture le …

CV_{Tr} is calculated as:

$$CV_{T_r} = \frac{std(T_r)}{mean(T_r)} \qquad (2)$$

where T_r is the distribution of time intervals between consecutive events on the same fault. $CV_{Tr} = 0$ indicates strictly periodic seismic cycles; $0<CV_{Tr}<0.5$, strongly periodic; $0.5\leq CV_{Tr}\leq 1$, weakly periodic; $CV_{Tr} = 1$ indicates that event timing is random and independent of other events; and $CV_{Tr} > 1$ implies event clustering (Boschi et al., 1995).

Np' is calculated as:

$$N_p' = \cancel{\frac{N_p}{N\,(W_S/L_\infty)}}\ \frac{N_p}{N}\sqrt{\frac{L_\infty}{W_S}} \qquad (3)$$

where N_p is the number of partial ruptures, N the total number of events for each fault, W_s the seismogenic width and L_∞ the nucleation length (Eq. A5) introduced by Rubin and Ampuero (2005).

CV_{RL}' is calculated as:

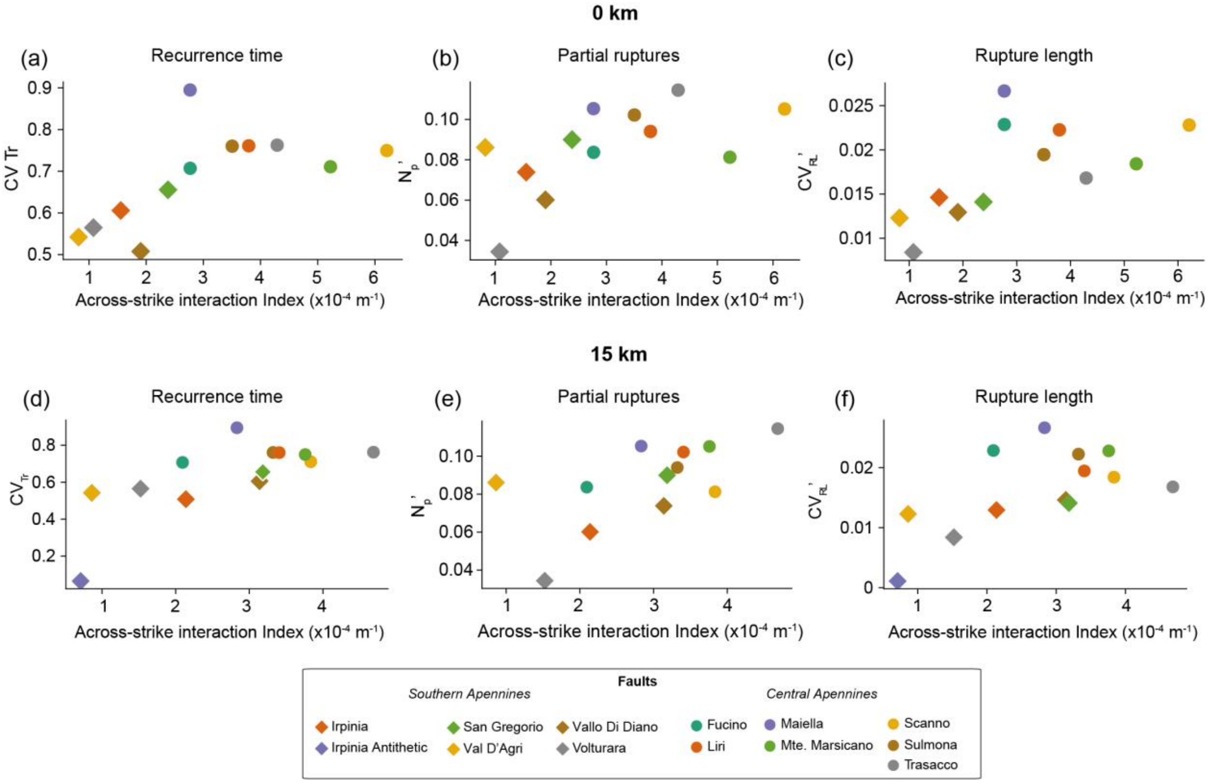

Figure F1: relationships between fault network geometry, described by the across-strike interaction index (AI), and (a-b) coefficient of variation of recurrence times (CV_{Tr}), (b-c) number of partial ruptures (N_p') and (d-e) coefficient of variation of rupture lengths (CV_{rl}') for faults in the Southern and Central Apennines. AI index corresponds to a depth of (a,d,e) 0 km and (b,d,f) 15 km.

Table F1: Leave-one-out Spearman's correlation coefficients (mean, standard deviation, minimum, maximum) for relationship between across-strike interaction index (taken at 0 km, 7.5km and 15km) and coefficient of variation of recurrence times (CV_{Tr}), number of partial ruptures (N_p') and coefficient of variation of rupture lengths (CV_{rl}') for faults in the Southern and Central Apennines

Depth (km)	metric	Mean ρ	Std ρ	Min ρ	Max ρ
Southern Apennines + Central Apennines					
0	CV_{Tr}	0.72	0.05	0.64	0.85
	N_p'	0.~~46~~55	0.08	0.~~34~~42	0.~~58~~73
	CV_{rl}'	0.50	0.09	0.37	0.67
7.5	CV_{Tr}	0.84	0.03	0.80	0.90
	N_p'	0.~~73~~68	0.~~05~~06	0.~~68~~59	0.~~85~~82
	CV_{rl}'	0.71	0.06	0.64	0.78

15	CV_{Tr}	0.70	0.06	0.62	0.81
	N_p'	0.~~69~~57	0.~~06~~08	0.~~65~~49	0.~~85~~75
	CV_{rl}'	0.66	0.07	0.57	0.75
Southern Apennines only					
0	CV_{Tr}	0.82	0.13	0.70	1.00
	N_p'	~~-~~0.~~08~~40	0.~~50~~42	-0.~~40~~2	1.00~~0.80~~
	CV_{rl}'	0.87	0.05	0.80	0.90
7.5	CV_{Tr}	0.40	0.42	-0.20	1.00
	N_p'	0.~~04~~28	0.~~54~~44	-0.~~20~~40	0.80~~1.00~~
	CV_{rl}'	0.56	0.17	0.40	0.80
15	CV_{Tr}	0.65	0.23	0.40	1.00
	N_p'	0.~~04~~28	0.~~54~~44	-0.~~20~~40	~~1.00~~0.80
	CV_{rl}'	0.75	0.10	0.60	0.90
Central Apennines only					
0	CV_{Tr}	0.09	0.28	-0.43	0.43
	N_p'	0.~~00~~25	0.~~24~~27	-0.~~37~~20	0.~~31~~66
	CV_{rl}'	-0.84	0.06	-0.94	-0.77
7.5	CV_{Tr}	-0.27	0.25	-0.71	0.14
	N_p'	0.~~13~~35	0.~~22~~23	-0.~~09~~26	0.~~60~~26
	CV_{rl}'	-0.56	0.20	-0.89	-0.31
15	CV_{Tr}	0.18	0.27	-0.31	0.54
	N_p'	-0.~~31~~07	0.~~18~~23	-0.~~09~~26	0.~~60~~26
	CV_{rl}'	-0.70	0.12	-0.89	-0.54