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SUPPLEMENTAL MATERIAL FOR

APPLICATION OF THE STOCHASTIC FINITE FAULT MODEL IN THE STUDY OF THE SOURCE RUPTURE PROCESS OF THE Mw7.6 EARTHQUAKE IN THE NOTO PENINSULA, JAPAN ON JANUARY 1, 2024

Zhuofan Yang[1], Benyu Liu[1], Kui Liu[1]

[1] Yunnan University, School of Earth Sciences, Department of Geophysics, Yunnan Province, China

Station Code	Longitude (°)	Latitude (°)	Location	Epicentral distance
AICH09	137.39	34.66	Toyohashi	314km
AICH15	137.34	35.14	Asuke	261km
CHBH13	140.30	35.83	Narita	328km
IBRH08	140.56	36.12	Taiyo	331km
ISKH01	137.28	37.53	Suzu	4km
ISKH02	137.04	37.36	Yanagida	25km
ISKH04	136.72	37.19	Togi	59km
KNGH21	139.21	35.46	Kiyokawa	285km
KYTH07	135.75	34.90	Kumiyama	319km
MYGH10	140.89	37.94	Yamamoto	323km
SITH07	139.15	35.91	Naguri	243km
YMNH16	138.57	35.74	Kofu	226km
YMTH10	140.37	38.71	Funagata	304km

Table 1. Information of stations.

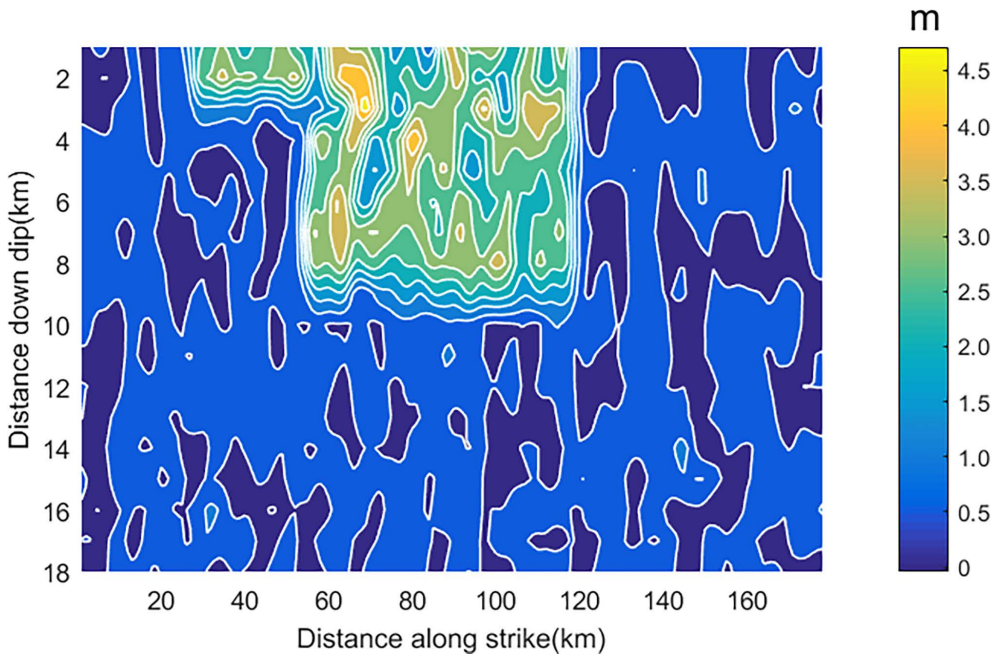

Figure 1. Contour Map of the Hybrid Slip Model.

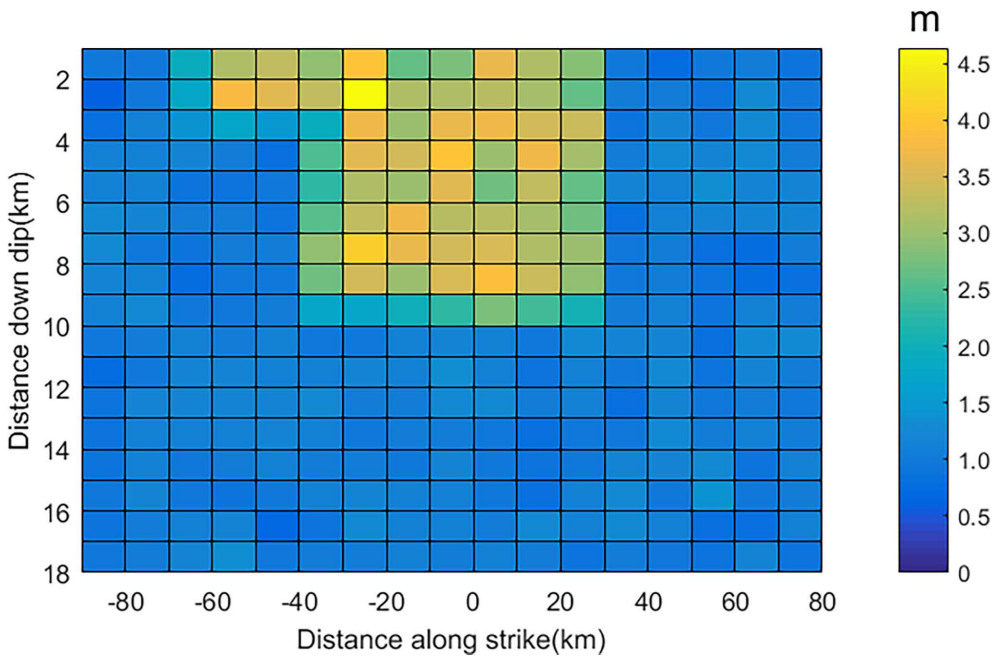

Figure 2. Hybrid Slip Model with the same sub-fault size (10 km × 10 km) as the Automatic Inversion Code settings.

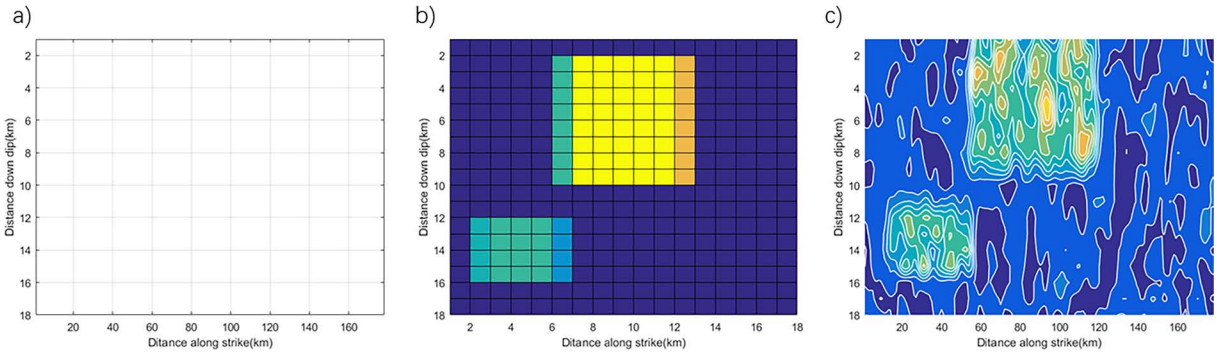

Figure 3. Example of the Hybrid Slip Model Establishment Process. (a) Schematic diagram of fault scale size, where the global source parameters (area, length, width) of the fault plane are determined based on the moment magnitude using a semi-empirical relationship. (b) Position and size of the largest asperity and other asperities on the fault plane, where local source parameters are determined using semi-empirical relationships between global source parameters and various asperities (all, largest, others) parameters (area, length, width, average slip value, central coordinates, spatial corner wavenumber). The positions and sizes of other asperities are randomly distributed under boundary condition constraints. (c) Hybrid slip model after adding randomness: based on diagram b, uniform random distribution values are assigned within the largest asperity and other asperities. A Fourier transform is applied to the wavenumber domain, where the two-dimensional slip spectrum function (k2 slip model) with random phases is superimposed. Finally, the inverse Fourier transform is used to obtain the hybrid slip model in the spatial domain.