

Description of Additional Supplementary Files

File Name: Supplementary Movie 1

Description: (top) Movie of year 1~4 of slip rate snapshots from the uniform model. Color shows logarithmic slip rate ($m \cdot s^{-1}$). Blue: $V < V_{pl}$ (locked); green: $V \sim V_{pl}$ (creeping around plate loading rate); yellow: slow-slip; white-red: tremor (seismic, $V > 10000 V_{pl}$). (bottom) Time series of corresponding global maximum slip rate in logarithmic scale showing two major ETS episodes.

File Name: Supplementary Movie 2

Description: Similar to Movie 1 from the bi-modular model: 3 years slip rate history of two major ETS and about 15 deep ETS episodes.

File Name: Supplementary Movie 3

Description: Similar to Movie 1 from the linear model: 3 years slip rate history of a hierarchy of ETS with various sizes.

File Name: Supplementary Movie 4

Description: Similar to Movie 1 from the linear model but with more frequent outputs over 10 years (year 30 to 40).