Supplement of

Topographic stresses affect stress changes caused by megathrust earthquakes and condition aftershock seismicity in forearcs: Insights from mechanical models and the Tohoku-Oki and Maule earthquakes

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- Figs. S1 and S2

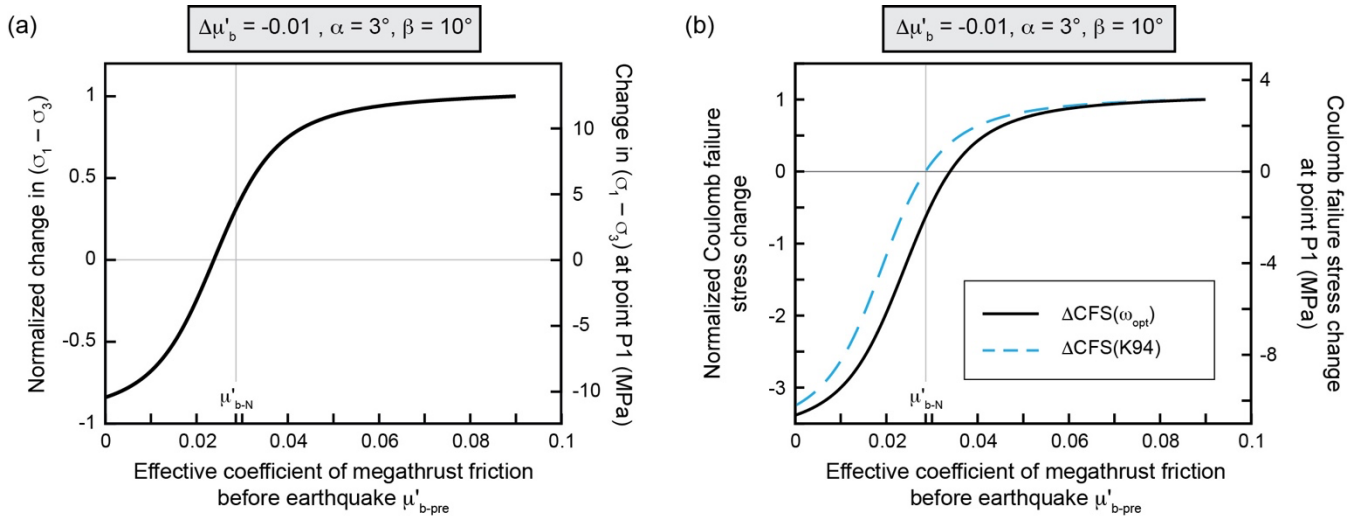

Figure S1: Stress changes due to a negative megathrust stress drop. The stress drop is given in terms of the change in effective coefficient of megathrust friction $\Delta\mu'_b$, with $\Delta\mu'_b$ = -0.01. Solutions for the reference wedge model discussed in the main text. (a) Change in differential stress ($\sigma_1 - \sigma_3$). Left ordinate shows the change in ($\sigma_1 - \sigma_3$) normalized to the maximum change in ($\sigma_1 - \sigma_3$). Right ordinate shows the change in ($\sigma_1 - \sigma_3$) at point P1 located at 75 km distance from the wedge tip and at 10 km depth. (b) Coulomb failure stress change as function of $\Delta\mu'_b$. Black solid lines indicate $\Delta CFS(\omega_{opt})$ values, blue dashed lines indicate conventional $\Delta CFS(K94)$ values following King et al. (1994). Left ordinate shows the Coulomb failure stress change normalized to the maximum $\Delta CFS(\omega_{opt})$ value. Right ordinate indicates the Coulomb failure stress change at point P1 located at 75 km distance from the wedge tip and at 10 km depth. Compare Figs. 3 and 5 in the main text.

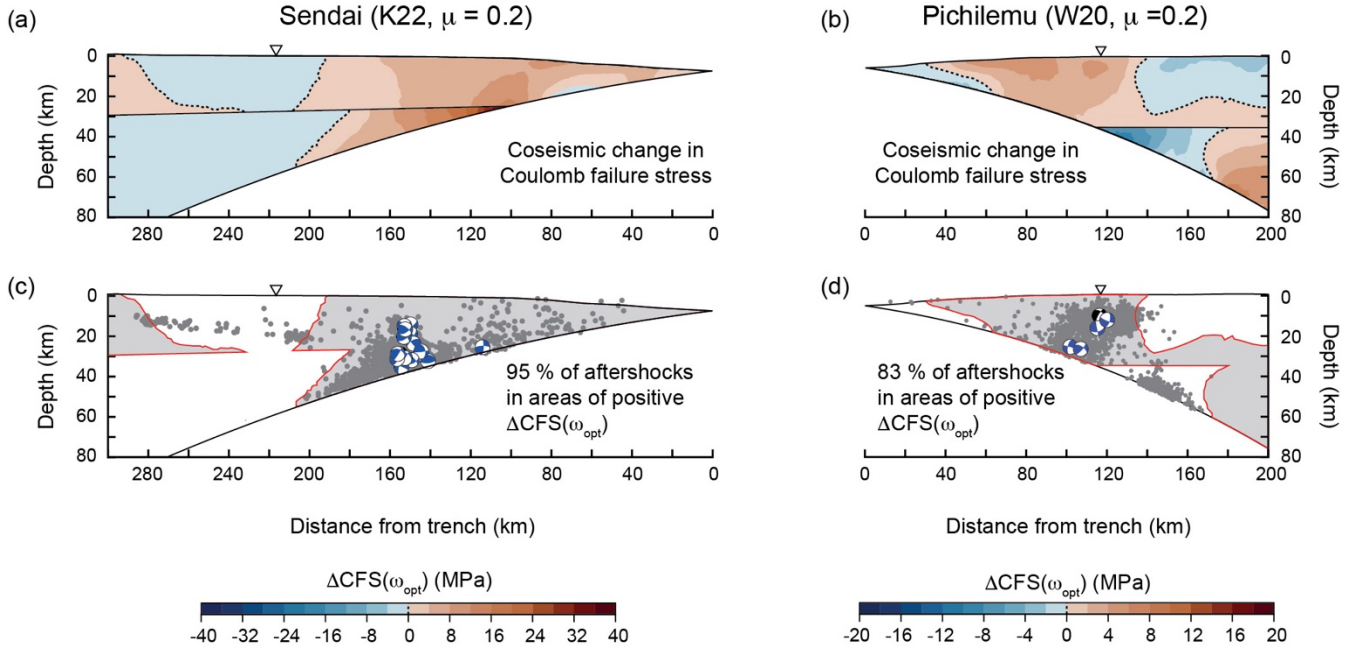

Figure S2: Supplementary Coulomb failure stress models for the Sendai cross section, Japan, (left) and the Pichilemu cross section, Chile (right). (a) Coulomb failure stress change $\Delta CFS(\omega_{opt})$ obtained for the stress-drop model of Kubota et al. (2022) (K22) and coefficient of friction μ = 0.2. (b) $\Delta CFS(\omega_{opt})$ obtained for the stress-drop model of Wang et al. (2020) (W20) and coefficient of friction μ = 0.2.