Supporting Information for "Modeling Multi-Scale Deformation Cycles in Subduction Zones with a Continuum Visco-Elastic-Brittle Framework"

Véronique Dansereau [1], Nikolai Shapiro[1], Michel Campillo[1], Jérôme Weiss[1]

[1]Institut des Sciences de la Terre, Université Grenoble Alpes, CNRS (5275), Grenoble, France

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1. Captions for Movie S1

Introduction The movie provided as Supporting Information is an animation of the numerical model simulation results that supplements the description of the model mechanical response provided in section 5.1. The simulation is ran with a specific set of model parameters, but the main features of this mechanical response are also observed over a range of parameter values.

Movie S1.

Animation of the numerical simulation results obtained using the following model mechanical parameters: $\text{De}_0 = 0.001$, $T_h = 10^{-5}$, $\tilde{\Delta}t = 10^{-10}$, $\alpha = 4$, $\delta d = 0.1$, and corresponding to the snapshots and time series presented in figure 5, described in section 5.1. The upper panel represents the temporal evolution of the field of level of damage, d (in logarithmic scale) and the lower panel, the corresponding temporal evolution of the macro-

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scopic shear stress, calculated by integrating the shear stress on the entire top boundary of the domain (black curve) and of the macroscopic damage increment, calculated as in equation (17) (grey curve).