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On the depth-dependent stress accumulation for earthquake generation process

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Dynamic rupture simulation of an earthquake mostly aims at a characteristic event, which may rupture the entire seismogenic zone of a fault system, perhaps reaching the ground surface. However, hazardous earthquakes sometimes occur along a part of the depths of a fault. Many questions arise why only this particular depth does rupture and whether the surrounding part remains hazardous. Previously, Aochi (GJI, 2018) has considered a depth-dependent stress accumulation for emphasizing the difference of reverse and normal faults under the hypothesis that stress is sufficiently and uniformly charged at all depths. We probably need to revise this hypothesis and the partially charged fault along depth would be more suitable for explaining the given question. By developing the previous simulations by Aochi (GJI, 2018), we carry out numerical simulations for demonstrating the importance of the depth-dependent stress accumulation.