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Characteristics of shallow low-frequency events suggested from numerical simulations

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Recently, non-volcanic low-frequency events have been observed along plate boundaries in subduction zones of the world. It is well-known that the low-frequency events occur in the transition zones between the seismogenic zones and the stable-sliding zones, and migrate along strike direction of subduction plate boundaries. On the basis of these characteristics, some numerical simulation studies have tried to estimate the possible ranges of parameters such as frictional stability and pore-pressure, which enables us to know the preseismic change in the activity of the low-frequency events. However, characteristics of the low-frequency events occurring in the shallower part have not been clear. In this study, we perform a numerical simulation with numerous small asperities which generate low-frequency events in the shallower part of a subduction plate boundary, and try to investigate their preseismic change.

Keywords: slow earthquake, migration process, stress perturbation due to great asperity, subduction zone, rate- state dependent friction law, numerical simulation