Observations of time series of temperature fluctuations under the topographical undulation modified convection

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It has been well recognized that D" layer is chemically separated from the above mantle and has large lateral variations in the thickness. We already showed that the lateral undulation of D" layer will control the pattern of mantle convection (Namiki & Kurita, Wakusei Kagakukai 1997). In this study, we developed measurements of time series of temperature fluctuations to explore the effects of topographical undulations to the convective state. Temperature data suggest that the topographical undulations reduce the convective activity in the regime of time dependent convection. On the other hand in the regime of plume dominant convection, the existence of topographical undulations enhances the activity of convection.