

## Change in the Y value observed in the seismic activity around focal regions of large and moderate earthquakes

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Yin (1993) and Yin et al. (1994) showed that Load-Unload Response Ratio (Y value) increased before large and moderate earthquakes in China and California. The Y value is defined as the ratio between summation of seismic energy to the exponent of 1/2 or 1/3 of earthquakes that occurred during the period when the tidal force works in favor of the fault movement and that of earthquakes that occurred in the period when the tidal force works against the fault motion. We ourselves found that the Y value had got a large value before the 1995 southern Hyogo Prefecture earthquake (Hosono et al., 1996). We think, however, that in order to maintain that the Y value analysis is practically useful in the prediction of earthquake, it is necessary to show that significant increase of the Y value is observed only before occurrence of large earthquakes and to present some objective criteria to select the region of the analysis or to relate the region of the analysis to the magnitude and location of the aimed earthquake. As for the latter problem, if we take the region where seismic quiescence has appeared we can assign the spatial extent of the analysis clearly. Further, by combining the seismic quiescence and increase of the Y value as well as other observations such as changes of the b value and ground water level, we can expect to improve the precision of the earthquake prediction and deepen our understanding about the preparatory process proceeding around the focus of earthquake. Having these thoughts in mind, we performed the Y value analysis for seismic activities in the regions where precursory quiescence appeared before the 2000 western Tottori earthquake (M7.3) and the 1999 northern Shiga Prefecture earthquake (M4.9) and found that the Y value had increased significantly during several months preceding both earthquakes.