

# A verification test of the b-value model for moderate earthquakes in the Kanto region of central Japan

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In the Kanto region, decreases in b-values before earthquakes with magnitudes larger than 5.5 have already been reported. The change in b-value is defined as the difference in the long-term average and -term average of the earthquake magnitude, and a hazard function of moderately large earthquakes has been proposed (the b-value model). This model was constructed based on earthquakes that occurred between 1982 and 1999, and its effectiveness was shown in retrospective analysis. The verification test is being undertaken based on earthquakes observed after January 2000 in order to evaluate the effectiveness of the model as independent data. A decrease in the b-value was observed for the earthquake on June 3, 2000, and it increased the log-likelihood of the b-value model by 1.3 larger than the Poisson model, which supports the validity of the b-value model. Although 16 targets were observed for the 18-year model period, only one target has been observed for the four years since the start of the verification. Therefore, verifications in as wide a range as possible are encouraged based on the current data. Though the accuracy of the b-value change might become worse, we will attempt to promote the verification test by expanding the study volume and lowering the target cutoff magnitude. When two other targets are added, the difference in the log-likelihood also increases to 3.6. In this case, the log-likelihood difference per event is about 1.2, and it is larger than that of the model period. Lowering the cutoff magnitude increased the difference in the log-likelihood to 2.5. Both verifications lead to a more reliable result, of supporting the b-value model over the previous case.