Prior distribution of b-value in Gutenberg-Richter formula for the aftershock sequence

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We tried to estimate the prior distribution of the b-value in Gutenberg-Richter formula for aftershock sequences in and around Japan by using the maximum likelihood method, supposing that the b-value follows the distribution of Gamma(phi,zeta). The mean of prior distribution of the b-value was determined to be 0.99 with accuracy. However, the variance of the distribution was estimated at 0.033 with large error. We need a lot of sequences consisting of many events as phi, about 30, or more to determine the accurate variance of b-value.