

Design of a broadband accelerometer for the observation of slow earthquakes

DEGUCHI, Takehiro^{1*}, ARAYA, Akito¹

¹ERI, Univ. Tokyo

Slow earthquakes, which include LFEs, VLFs, Short-term or Long-term SSEs, have a scaling law (Ide et al, 2007) that the moments of them are proportional to their duration. Certain types of slow earthquakes with the characteristic duration of about 10 seconds and about 10^3 to 10^4 seconds can be predicted to exist by the scaling law, but have not been measured yet. It is difficult to observe those with the characteristic duration of 10 seconds because of microseisms caused by the oceanic waves. On the other hand, with a certain device, it becomes possible to observe those of 10^3 to 10^4 [s] duration. We have considered building equipment intended to be used for observing them. The calculated spectrum of the acceleration or strain of the ground caused by them is compared with that of the noise of equipment and the natural ground motion and we estimate feasibility of detection. Moreover, it is difficult with conventional equipment and methods, so we suggest the new methods of observations matching with the characteristics of slow earthquakes. Then we propose a design of a broadband accelerometer optimized to the methods.

Keywords: accelerometer, slow earthquake