

## A new detection method for very low-frequency earthquakes in southwest Japan

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Very low-frequency earthquakes (VLF) have been detected along with deep non-volcanic tremors in southwest Japan (Ito et al., 2007, 2009; Takeo et al., 2010). In these studies, it has been shown that the fault strike and dip angles of VLF events reflect the upper surface geometry of the subducting Philippine Sea plate and the slip angles are consistent with the motion of the subducting plate. These studies, however, simply applied methods of grid moment-tensor analysis for ordinary earthquakes to the VLF detection, so that a considerable number of small VLF events might be missed. In this study, we have developed a new method specialized to the detection of VLF events. In this method, VLF events are assumed to occur at grid points on the subducting Philippine Sea plate interface, having source mechanisms predetermined from the subducting plate surface geometry and the plate motion. By using this method, it is expected that we are able to detect smaller VLF events missed in the previous analyses. To evaluate availability of our method, we conducted numerical simulations in which we analyzed synthetic waveforms calculated using the observed VLF source parameters. As a result, our method was able to detect VLF events at the nearest grid points in most cases, indicating availability of our method to the VLF detection. In the presentation we will show the result of real data analysis.

Keywords: very low-frequency earthquake, slow earthquake, grid MT method, automatic detection