

## Investigation of seismic properties of Hashirimizu area of Yokosuka based on microtremor observations

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### 1. Introduction

Microtremor observation is carried out in the Hashirimizu area, in order to investigate the seismic properties of this area. Ratio of horizontal to vertical spectra of the microtremor (H/V spectral ratio) is used for analyses, which is useful for speculation of seismic properties on the ground surface, because it may be hardly affected by the artificial tremor due to human activities (Nakamura, 1988).

### 2. Observation

Microtremor observations are carried out at more than 40 points in the Hashirimizu area (about 2km x 2km), Yokosuka, Kanagawa Prefecture during December, 2002 to February, 2003. In each point, microtremor is recorded for around 15 minutes using Guralp CMG-40T broadband seismometer and Keyence NR-2000 recorder.

### 3. Analysis

H/V spectral ratios for each sampling points are calculated for four sets of 20 seconds data excluding artificial tremors such as vibrations due to automobiles and average of them are used for the analyses.

### 4. Results

Characteristics of the H/V spectral ratios obtained in this study are categorized into three types as follows:

Type A: to have a strong peak in 2-5Hz

Type B: flat H/V spectral ratio having the value around unity

Type C: to have broad and weak peak ranging 1-10Hz

### 5. Discussion

In the geological map by Etoh et al. (1998), the Hashirimizu area consists of the Miura Group (Late Miocene - Late Pliocene), the Sagami Group (Middle - Late Pleistocene), the alluvial plains, and the reclaimed coastal land. These show good agreement to the area classified by the type of the spectral ratio in the above. Areas that have Type A spectral ratio pattern correspond to that covered by the Loam. Type B area corresponds to the Miura group which is older than the other formations and type C is characterized by the younger alluvial plains and reclaimed land. However, all the points do not completely agree with the geological map. This may be caused by that the microtremor is influenced by the information at the deeper part which may be different from that of the geological surface map.

### 6. Conclusion

The method using H/V spectral ratio is very simple but the results show good agreement with those obtained by the geological survey. Although theoretical aspect of this method has not established yet, the high quality and efficient investigation of the seismic properties will be available, if the other method, such as geological survey and boring, is taken together.