

## Seismic velocity structure at Off Ibaraki, using ocean bottom seismometers

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### 1. Introduction

It is known that many earthquakes about M7 occur repeatedly at Off Ibaraki with recurrence time of 20 yr. The adjacent areas of seismic areas have no seismic events. The difference of coupling on plate boundary is related to the difference of structure at and around plate boundary. To investigate the structure of this area, we conducted a seismic refraction survey using ocean bottom seismometers (OBSs) and artificial sources. From the survey, Okubo et al. (2007) revealed seismic velocity structure at the 1938 seismic area. This study shows seismic velocity structure at the repeated seismic area, and compares structures of the seismic and non-seismic areas.

### 2. Observation and analysis

A seismic refraction survey was conducted at Off Ibaraki, September to October, 2006, using R/V Hakuho and R/V Kaiko No.5. We set three lines; line A is perpendicular to trench axis, line B is on the 1938 seismic area, parallel to trench axis, and line C is on the repeated seismic area and the adjacent non-seismic areas, parallel to trench axis. This study analyzed the data on the line C. The line C has 150km long, 15 OBSs. Four 25l air guns were shot with 150m interval.

In analysis, we model 2D structure using first arrivals by the progressive model development method (Sato and Kennett, 2000). Then, we refine the model using later arrivals (Sato, 2007).

### 3. Results

Shallow structure coincides with the bathymetric feature. At the plate boundary, lower crust layer in the overriding plate has lateral heterogeneity. Central part has high velocity and south and north parts have low velocity. The velocity of north part is consistent with the velocity derived by Miura et al. (2003). Large earthquakes occur repeatedly at the central part, and no large earthquakes occur at the north and south margins. So, our results may relate to seismic coupling of this area.