

Relation of a seismic scatterers and geologic structure in southern part of Boso Peninsula, Japan

Tomonori Kawamura[1], Takehiro Minawa[2], Tanio Ito[3], Takahiro Miyauchi[4], Shigeyuki Suda[5], Takeshi Ikawa[6]

[1] ERI, [2] Grad.School Sci.& Tech.,Chiba Univ., [3] Dept. Earth Sciences, Fac. Sci., Chiba Univ., [4] Earth Sci.,Chiba Univ., [5] R&D Department, JGI Inc., [6] JGI

In the southern part of Boso Peninsula, the Mineoka belt which is composed of basaltic and ultramafic rocks and estimated as a past plate boundary, is cropping out trending east-west as a narrow zone. The Miocene to Pliocene accretionary complex (Hota formation and Miura formation) are distributed Southern side of Mineoka belt.

On May, 2000, we carried out a seismic reflection survey to reveal the geologic structure in the Mineoka belt and the accretionary complex (Minawa et al. 2001). On the seismic section, the southern margin of the Mineoka Group is marked by south dipping reflectors in the northern part. In the southern part of the section, the Hota Group (Takatsuru and Nabuto Formations) is characterized by abundant north-dipping reflectors. On the contrary, the Furubo Formation located between the Mineoka Group and Takatsuru-Nabuto Formations shows few reflectors.

In this study, we process by scattering wave analysis to reveal the difference of lithology of the Takatsuru and Nabuto Formations and the Furubo Formation. we assumed an isotropic scattering model, and processed by Kurashimo(1998)'s method. We applied a semblance analysis to estimate the distribution of seismic scatterers. The semblance coefficient at a particular point in the profile is related to the magnitude of scattering at that point. A high semblance coefficient implies effective excitation of scattered waves.

The result of scattering wave analysis that demonstrated, the Takatsuru and Nabuto Formations which are reflective in this seismic reflection profile corresponds to low scattering parts. The Furubo Formation which is not reflective in the CMP reflection profile corresponds to high scattering parts. The difference in the magnitude of scattering is closely related to the lithology of the formations. Namely, the Furubo Formation, which shows the large magnitude of scattering consist of sedimentary rocks with Mineoka-origin basalt blocks. On the other hand, Takatsuru and Nabuto Formations consist of only sedimentary rocks. Thus the result of scattering wave analysis successfully provided the information about lithologic nature of strata.

