J164-P024 **Room: Poster Session Hall** **Time: May 25**

Characteristics of the Moho transition zone (MTZ) - 1: Seismic reflection images and their interpretation

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JOGMEC(Japan Oil, Gas and Metals national Corporation) carried out high resolution MCS (Multi-Channel Seismic) surveys from 1987 to 2001 for evaluating the potential of natural resources in the ultra deep sea; Ogasawara Plateau, Shikoku Basin, and western Philippine Basin. The total length of the survey lines was 26,864 km. To evaluate the seismic character around the crust/mantle boundary, we interpreted several data out of the MCS reflection survey. Here, we describe how the seismic character of Moho discontinuity (Moho) changes within each area. We also compare/discuss the structure and heterogeneity of the oceanic crust (Kasahara et al., 2008).

Previous researches define the Moho as the crust-mantle boundary associated with an discontinuously increase in P-wave velocity (Vp); the boundary's upper part Vp= 5.6 km/s, and the lower part Vp= 7.8 km/s; e.g. Utsu 1984, Kennett et al. 2001). If the velocity-and-density significantly changes at the Moho, high-amplitude and continuous reflection will be expected to occur uniformly. However, recent geophysical data associated with long record-length does not necessarily show the feature presented above. For example,

1) Moho does not appear partially beneath plateaus and seamounts, or their surroundings. Although it is necessary to take bathymetry and P-wave raypaths into consideration, an example from Ogasawara plateau shows local discontinuity along the Moho with respect to large bathymetric features. In the seismic line D00-1, the northern side of Ogasawara plateau shows horizontally discontinuous reflections along the Moho. On the other hand, the southern side of Ogasawara plateau, seismic line D00-3, shows relatively continuous reflections along the Moho over 220 km.

2) The depth of Moho increases toward the center of seamounts and the Ogasawara plateau; whereas, it is relatively constant (depth= ~6km + the water column) across Shikoku basin and west Philippine Basin. The morphology of Moho does not necessarily meet isostatic balance (in other words, the Moho is not always a mirror image of the bathymetry).

3) The continuity and morphology of Moho are not similar in spite of being overlain by flat bathymetry and A-Ref (a horizon at the upper boundary of oceanic basalt). After considering the P-wave velocity model, the Moho associated with more than 2 km of topographic relief (from the peak to trough) is sufficient to compare within the seismic lines from the three areas.

4) Reflection from the Moho does not occur in the west of Ogasawara ridge and beneath Ogasawara trench. In the case of Ogasawara trough, it has remarkably thick sedimentary layers (~5 km) in the shallow region which may cause the seismic wave to attenuate or scatter. Future consideration needs to be inquired along these features.

It is necessary to solve the data acquisition problem (the need of longer streamer and larger signal source) when taking reflection amplitude into consideration for better understanding in the seismic character of Moho. Although, profiles from the Ogasawara plateau show variations in the seismic character of Moho, and those data were obtained by equivalent data acquisition. Large seamount and ridges, areas associated with rough bathymetry and A-Ref, and changes in Vp at the Moho transition may also affect the appearance and continuity of Moho.

Results from seismic reflection, Vp analysis, and its experiential interpretation needs more support to further understand the physical character around the Moho; such as, the waveform simulation (Tsuruga et al., this session) which adopted the petrology model. The characteristics of seismic reflection with velocity-and-density structure models with the continuity/discontinuity of Moho, presented in this study greatly contribute to the further understand of crust formation associated with the petrological and seismological Moho (Kasahara et al., this session).