Velocity structure of uppermost mantle around source regions of deep low-frequency earthquakes

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Source areas of deep low-frequency earthquakes around Moho discontinuity are categorized into volcanic and non-volcanic areas. When we include areas related to volcanoes of Tertiary, most of activities are located in volcanic areas. Activities of deep low-frequency earthquakes are observed also beneath Osaka Bay, southern Kyoto Prefecture, and some regions in Kinki district, where volcanic activities are not seen. We investigate characteristics of uppermost mantle velocity structure around source regions of volcanic and non-volcanic deep low-frequency earthquakes.

Slant low-velocity structures are recognized beneath the volcanic front in Tohoku district (Hasegawa *et al.*). Source regions of deep low-frequency earthquakes are distributed at the top of the slant low-velocity structure.

Similar slant low-velocity structures are recognized in Chubu district. But several sheet-like structures are seen beneath Chubu district. Slant low-velocity structure of Tohoku district become unclear around the north of Kanto district in east-west cross section. Another slant low-velocity structure appears in northern Nagano Pref, which is seen to keep up to Mt. Asama, and to diverge around Mt. Yatsugatake and Mt. Yakedake. Beneath Mt. Fuji, low-velocity structure seems to continue to lower part of the Philippine Sea plate. At the same time, steep low-velocity structure is recognized around Izu Peninsula. The origin of those low-velocity sheets are not fully understood yet.

High-velocity is observed around source areas of non-volcanic deep low-frequency earthquakes in Kinki district. It is considered that source mechanism of the activity is similar to that in volcanic areas in some points(Katsumata and Kamaya, 2003), and extrapolated temperature profile indicates that the Philippine Sea plate would cross solidus beneath the source areas of the activity. Whereas some upwelling may related to the activities, the material or mechanism would be different from those in volcanic areas.

We used seismic data from the National Research Institute for Earth Science and Disaster Prevention, Hokkaido University, Hirosaki University, Tohoku University, University of Tokyo, Nagoya University, Kyoto University, Kochi University, Kyushu University, Kagoshima University, the National Institute of Advanced Industrial Science and Technology, Tokyo metropolitan government, Shizuoka prefectural government, Kanagawa prefectural government, the City of Yokohama, the Japan Marine Science and Technology Center, and the Japan Meteorological Agency.