# Anisotropy of elastic wave velocities in serpentinite schists – A possible cause of seismic reflectors

# Tohru Watanabe[1]; Hiroaki Kasami[2]

[1] Dept. Earth Sciences, Toyama Univ.; [2] Earth Sci., Toyama Univ.

Serpentinites play an important role in circulation of water in subduction zones. Mapping their distribution is essential to good understanding of subduction processes. The subducted oceanic crust releases water and hydrate peridotites in the wedge mantle to form serpentinite bodies (e.g., Iwamori, 2000). They are subducted along the slab to the depth of 600C, and then dehydrate and release water to the wedge mantle above. In order to detect serperntinite bodies overlying the slab by seismological methods, we have investigated the elastic wave velocities of serpentinite schists. Serpentinite bodies overlying the slab are expected to undergo strong deformation.

We have made measurements of elastic wave velocities of sertentinite schists, which were sampled in Hida outer-belt (Toyama, Niigata and Nagano prefectures), and found strong anisotropy. The compressional-wave velocity Vp normal to the foliation is 3.5-5.1 km/s. It is lower than Vp parallel to the foliation by 25-50%. Photomicrograph shows that most of antigorite crystals are aligned parallel to the foliation. This should be the cause of strong anisotropy. We will show the detail of specimens and measurements in our poster in this session.

The foliation in a serpentinite body should be formed parallel to the plane of the slab. The lowest compressional-wave velocity is expected in the direction normal to the slab. The difference in the acoustic impedance will be around 50% between a serpentinite body and mantle peridotites above. We thus propose that a serpentinite body be characterized as a strong seismic reflector.