

## Construction of Fine-scale 3D P-wave Anisotropic Velocity Structure of Southwest Japan Arc

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We have reported three-dimensional (3D) P-wave anisotropic velocity structure of the whole Japan islands (Ishise and Oda, 2005). The anisotropic structure showed absorbing relationships between seismic anisotropy and tectonics and dynamics of the Earth's interior. However, the resolution of the velocity structure is not fine enough to discuss the regional tectonics and dynamics (e.g., subduction zones). Therefore, we have recently started to construct higher-resolution 3D P-wave anisotropic velocity structure using JMA unified seismological data in order to discuss on dynamics and tectonics of the Japanese subduction zone in detail. In this presentation, we show a fine-scale tomography image of P-wave anisotropic velocity in southwest Japan (Kyushu, Chugoku and Shikoku, and Kii Peninsula) obtained by using P-wave anisotropic tomography method (Ishise and Oda, 2008: PEPI).

The resultant fine-scale tomography images are consistent with our previous study in general, however, some clear regional variations are revealed both in direction and intensity of the P-wave anisotropy. The findings offer new insight into our understanding of seismic anisotropy. For example, the regional variation in the crustal anisotropy image implies alternative mechanisms of the anisotropy as follows. In the previous study, we interpreted the crust anisotropy characterized by E-W anisotropy as alignment of micro-cracks induced by tectonic stress, because the spatial distribution of the anisotropy showed large-scale trend such as tectonic stress of the Japan islands arc. In this study, on the other hand, the E-W anisotropy dominantly localized in the middle Shikoku and Kii Peninsula characterized by zonal arrangement of geologic boundaries. The coincidence between the geological trend and directional trend of the anisotropy suggests that the E-W crust anisotropy is caused by large-scale geological structure. In addition, looking closely into the E-W anisotropy region, we found that the Sanbagawa belt has particularly strong anisotropy in the area. Considering that the Sanbagawa belt is composed of crystalline schist characterized by foliation and lamination, it is likely that the microstructure of the rock-forming crystal controls the variation of the anisotropy intensity in micro-scale. In this presentation, we discuss the regional variation of mantle and slab anisotropy as well as the crust anisotropy.