Three-dimensional P-wave anisotropic velocity structure of the Japan islands

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The body-wave travel times are affected not only by lateral heterogeneity of seismic wave velocity but also by seismic anisotropy.   We have developed a travel-time inversion method to retrieve three-dimensional variations of isotropic and anisotropic velocity structure from first P-arrival time data, assuming that the seismic anisotropy is caused by weak hexagonal anisotropy of which c-axes (hexagonal symmetry axes) are horizontally distributed in the earth.

In order to investigate three-dimensional variations of isotropic and anisotropic velocities beneath the whole Japan islands, the Japan islands arc is divided into six regions by taking into account subduction style of oceanic slab, tectonics and geological features.   In each district, we estimate the three-dimensional velocity structure, analyzing the P-arrival time data from local earthquakes by our travel-time inversion method.   In this presentation, we compile the three-dimensional structures and discuss features of the isotropic and anisotropic velocity structure beneath the whole Japan islands.