

Collision structure beneath the Hidaka Mountains deduced from observations with ocean bottom seismometers and land stations

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In the south of Hokkaido region, Japan, the Kuril arc is considered to collide with the northeast Japan arc. Arc-arc collisions are important process for the growth from an island-arc crust to a new continental crust. Such a collision results in building the Hidaka Mountains and is related to large earthquakes occurrence such as the Urakawa-Oki earthquake of magnitude M7.1 on March 21, 1982. It is important to image the three-dimensional structure of crust and uppermost mantle in order to clarify the collision tectonics and understand the mechanism of large earthquakes occurrence. Seismic tomography methods are effective tools to obtain the 3-D structure for both regional and global scales. Here we present results from a tomographic inversion of seismic travel time data. A distinct low-velocity zone is detected from the western side to the central part of the Hidaka Mountains. This is considered to be the crust of the northeast Japan arc. In the eastern side of them, we find the lower crust of the Kuril arc is delaminated by the collision and at the tip of the lower part the 1982 Urakawa-Oki earthquake occurred.