Triple collision of Kurile and Northern Honsyu crusts and Pacific Plate beneath the southern Hidaka Mountains, Hokkaido, Japan.

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Concentrated high seismicity region beneath the Hidaka Mountains is inferred as a result of triple collision among Kurile crust, Northern Honsyu crust and subducting Pacific Plate. The crustal structure of the Hidaka Mountains was deduced by refraction, reflection explorations and inversion analyses. The crust of the Kurile forearc is collided with northern Honsyu crust, with delamination structure. The structure suggests that the crust of the Northern Honsyu and lower crust of the Kurile are bending downward and reach to the surface of the Pacific plate which subducted beneath Hidaka Mountains, in the depth of 50 km.

Concentrated high seismicity region beneath the Hidaka Mountains is inferred as a result of triple collision among Kurile crust, Northern Honsyu crust and subducting Pacific Plate. The crustal structure of the Hidaka Mountains was deduced by refraction, reflection explorations and inversion analyses. The crust of the Kurile forearc is collided with northern Honsyu crust, with delamination structure. The structure suggests that the crust of the Northern Honsyu and lower crust of the Kurile are bending downward and reach to the surface of the Pacific plate which subducted beneath Hidaka Mountains, in the depth of 50 km. The seismicity map shows that beneath the southern Hidaka Mountains, highly concentrated activity exists in the depth of 40-60 km, in a narrow region corresponding to the crustal collision region. The focal mechanisms shows that no systematic orientation of the compressional and dilatational stress axes, and appearance of the fault types. Contrast to this narrow region, in the wide region around southern Hokkaido except for the collision zone, the low-angle reverse fault type with northwest-southeast compression axis are predominant for the earthquake which occurred in the depth range between 0 and 70 km.