Estimate of the crustal shortening and slip rate in late Quaternary in adjacent areas of Teshio fault zone.

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The Teshio fault zone is known as the active fault which is distributed around the Sarobetsu Field in the most northern part of Hokkaido Japan. Teshio active fault zone extend for about 40 km north to south trend along the shore line. However, it is thought of the possibility to become equal to or more than 100 km length because of the active fault trace extend for marine zone. It expects that this area is dominated by the structure exercise by the compression stress to the east to west direction. To grasp the past crust deformation is important when reviewing a future. In this releasing, it reports a result, dividing into two areas. One is north part of the fault zone: Rebun Is., Nasappu Cape to Soya Cape. Another is south part of the fault zone Teuri Is., Yagishiri Island. to Haboro.

The result of air photo analysis we made geomorphologic map. Each islands have four level marine terraces. In Rebun island we could not get characteristic tephra, so we could not determine the emergence age of these terraces. Therefore, we quoted Ueki(2000). In Teuri island we find sandy layer include tephra glass. It is possible to assume that this glass is Spfa-1 by the measurement of the curving percentage. We contrasted III of Teuri island at the oxygen isotope stage 5e. The speed of the vertical deformation which based on the oxygen isotope stage 5e terrace became 0.13-0.25 mm/yr. by the Rebun island, the Teuri island became 0.08-0.23 mm/yr. and the Yagishiri island became a result, 0.12-0.15mm/yr.

We executed a simulation by dislocation model and compared a computation result and actual landform. According to the distribution of the active fault we decide 40km length. and the bottom tip of the fault is 8 km and upper end is 1 km. Then, it made the slip quantity of the fault 50 m, it changes the angle of the fault and it did the simulation of the transformation of the surface deformation. As a result, when the angle of the fault was 20 degrees, it resulted in oftenest agreeing with the displacement quantity of the vertical direction on the terrace surface. As a result of the simulation of the dislocation model, in adjacent areas of the Teshio fault zone, the crustal shortening is estimated to be 50 m in 130000 year. When converting to the average displacement speed, it becomes 0.38mm/yr. Any result quantifies the fault zone exercise of only one fault. Therefore, the addition must be done about the confirmed trace. It computes roughly, the slip rate is the order of 10 -1th power mm/yr is expected.