Distribution of uplift rates of the last 100ky along the Shiribeshi-Toshibetu River, South-west Hokkaido, and its significance

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INTRODUCTION

We studied uplift along the Shiribeshi-Toshibetu River, located in the southern part of Hokkaido, to evaluate the tectonic long-term stability of geological environment for the last 100ky in Hokkaido, Japan.

In this area, there are two predominant structural trends of NW-SE and N-S. The former, preceding the later, is formed before Pliocene (e.g., Yahata, 1989). In addition, the predominant trend of the topographic feature is NW-SE; on the other hand, that of the active faults is N-S. MIS5e marine terrace is well distributed in seaside area, but is not uniform. Elevation of MIS5e former shoreline around mountain area tends to be higher than that of the plains part (Koike and Machida, 2001).

METHOD

At first, we investigated distribution of marine/river terrace through the use of aerial photographs. After that, we surveyed stratigraphy of terrace at the sites. The uplift for the last 100ky was estimated basically by the altitude of marine terrace formed in stage 5e in the coastal area (FS method). In the inland area, the uplift rate was estimated by the relative height between the two river terraces that had been formed in the same climate condition and different age, i.e. glacial age (stage 2-stage 6, TT method) and interglacial age (present-stage 5e, FS' method), proposed by Yoshiyama and Yanagida (1995).

RESULTS and DISCUSSION

The uplift for the last 100ky is estimated as follows: Near the seaside area, uplift is estimated to 44-60m. However, the marine terrace correlated to MIS5e by Koike and Machida (2001) is possibly correlated to MIS7, because this terrace is well dissected. In this case, uplift is calculated to 26-28m. In the downstream area, uplift is estimated to about 25m by the FS' method. In the midstream area, we obtained TT values of 25-40m, and TT values are slightly larger toward to the upstream.

After Koike and Machida (2001), uplift for the last 100ky of neighboring areas is larger than that of our study area. Therefore, our data indicate that low-uplift area distributed along the NW-SE topographic trend, which is cut by the N-S one. It suggested that tectonic stress around this area is change after MIS5e.

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