Uplift Processes of Mountain Ranges in the Northeast Japan Arc

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In the terrestrial area of the Northeast Japan Arc, one of the most typical island arcs on Earth, N-S trending uplift ranges and subsided basins form topographic rows parallel to the arc and trench. The tectonic processes of two remarkable uplift ranges, i.e. the Dewa Hills in the inner arc and the Ou Backbone Range in which the volcanic front is situated, can be summarized as follows.

The Ou Backbone Range, which had uplifted before the Latest Miocene accompanying the acidic volcanism, gradually changed to an uplift block bordered by reverse faults which occurred at its western or eastern margin in the age from the early Pliocene to the Early Pleistocene. In the middle Mid-Pleistocene, thrust-front migration took place and the range had reached almost the same height as that at present.

In the early Pliocene, the Kitayuri Thrusts System which forms the boundary between the Dewa Hills and the Lowland along the Japan Sea Coast came to exist. It resulted in the regional uplift of the hills, the development of several sedimentary basins in the hills, and the occurrence of N-S trending faults and folds. Thus, both the uplifted and subsided areas were concurrent in the hills in the time from the early Pliocene to the Mid-Pleistocene. In contrast, they have grown as a single uplift zone restricted at its western fringe by the thrusts system until the present, and the sedimentary basins disappeared and the faulting and folding ceased in the middle Mid-Pleistocene in the hills.