

Geographical development of the central part of Niigata Plain

Yukiko Hiramatsu[1], Tsuyoshi Uda[2]

[1] Environmental Science, Niigata Univ, [2] Environmental Sci., Niigata Univ.

The Niigata Plain is one of distinguishable larger coastal ones in Japan with 160km in NE-SW direction and 50km width in NW-SE. From the geographical aspects this Plain is divided into two parts; the northeast part is characterized by a development of alluvial fans, whereas the southwest part is occupied by backmarshes and lakes which were reclaimed from the later of 18th century to the middle of 20th. The studied area locates at the boundary between these parts.

Although Niigata Old Dune Reserch Group(1974,1979) and Tanaka et al.(1996) clarified the constitution and geographical characteristics of the coastal seif dunes, the other microreliefs have been remained with less information.

The studied area is subdivided into four regions according to the microgeographical characteristics. The first region is where develop three major arrays of coastal seif dunes (seif I, seif II, and seif III), which gradually become younger from the inland of the Plain to the coast. The seif I shows a linear arrangement at the towns of Toyosaka and Kameda, but at the area between them an arrangement shows obscurely. The seif II lays continuously in the eastern area of lower stream of the Shinano River. The seif III is cut off by the channel of Shinano River, but not by that of Agano River. The recent mouth of Agano River is the Matsugasaki channel which was artificially dug in 1730 and was expanded by the great flood in the next thaw season.

The second region is where develop a lot of meander loop superposing mutually. The more western meander loop, not only the radius of curvature become shorter but also younger than the eastern meander. Therefore, the channel of Agano River had gradually changed from east to west. In the third region, there develops a composite alluvial fan. The higher fan uplifted due to an action of the Muramatsu active fault (Takahama et al.,1980). A remarkable braided channel of Haide River is observed on the lower fan. In the last region, the vast backmarsh stretches along the Shinano and Nakanokuchi Rivers from Shirone city to Niitsu. Though a lot of lake and pond had scattered until the middle of 18 century, they were reclaimed thoroughly until the middle of last century.

An archaeological site in situ is a good indicator of time. The prehistoric sites are situated on the seif I of the first region and on the higher alluvial fan of fourth region, so that it is clarified that these microreliefs had been formed until that time. In the earlier ancient period, a few site made inroads into the Plain as a regression with the climatic cooling, and then a drainage of wetland was caused. A number of the site increased abruptly in the Plain because that the manorial development was prospering in the later ancient period.

However, a sudden interruption of development took place in the 13 century, so that a number of the site in the Plain decreased markedly. It would be considered that almost site was submerged under the transgressive sea water during the medieval warming. Since the 15 century a number of the site became increased again, especially remarkable progress is recognized around the meander loop of Agano River. It would be considered to response against the beginning of the Little Ice Age. Heavy snowing and long spell of rainy weather frequently caused great flood, the channel shifted one after another towards west, and then, the location of site also expanded towards west. Because that there was no site in the region of backmarsh and lakes until the middle of modern period, they had been remained as a place to be difficult to live in.