



Geomorphic process and vegetation diversity in the active riverbed and the floodplain in the Kamikochi valley, central Japan

H. Shimazu

Japan (shimazu@ris.ac.jp)

The Kamikochi valley is located in a mountainous area in central Japan. The R. Azusa in this valley is a braided river with floodplains. Dense riparian forests cover the floodplains and fragmented small pioneer plant patches and isolated old pioneer trees are distributed in the active riverbed. This study aims to discuss the relationships between geomorphic processes of the river and vegetation diversity. Yearly mapping of the riverbed micro-landforms revealed that channel migrations and landform changes in the active riverbed occurs once every one or several years during a bankfull flood in the rainy season. Germination ages of riparian trees using a dendrochronological technique, their established layers and landform structure were examined to reconstruct floodplain dynamics.

Major channel migrations destroyed the riparian forest repeatedly and the recent event occurred about 100 years ago. This caused a longitudinal zonal structure of the riparian forest vegetation, elm-fir forest, mature pioneer forest and young pioneer forests. The young pioneer forest is located alongside the present riverbed. The mature pioneer forest lies between the older elm-fir forests. The pioneer plants germinated simultaneously on the abandoned channel after channel migration. These trees became the mature pioneer forest. Ditches and lobes including boulders are found in the floodplain. The ditches extend parallel to the direction of the present and former channels. The lobes are distributed alongside them. Younger trees under the canopy grow on the lobes in the inner part of the floodplain. These young trees and lobes show that dominant sedimentation process in the floodplain is not lateral flooding, but longitudinal flooding. Sediments from the present channel flew downward through the ditches and were overflowed on the floodplain. This process destroyed the vegetation in and alongside the ditches causing vegetation diversity in the inner part of the riparian forest.

Several species of willows such as *Salix arbutifolia* occur in the patches and as isolated trees in the active riverbed. The braided channel migration in the active riverbed causes destruction and/or size reduction of the pioneer patches. After that willows germinated again in bars and/or island in the active riverbed. If a little seedling willow patch remains not to be destroyed for several years, it becomes a grown pioneer patch, finally old isolated trees. Therefore the patches in various age and size classes are found in the active riverbed. These destructions and re-establishments of vegetation caused by the geomorphic processes create the vegetation diversity in the active riverbed and the floodplain in the Kamikochi valley.