

Evolution of river valleys' related to past climatic changes in Lithuania

Dvareckas V., Gaigalas A. Vilnius University, Vilnius, Lithuania

Fluvial landforms of Lithuania's topography are closely related to deglaciation, melting and retreat of the Last Scandinavian ice sheet (Nemunas glaciation) related to Late Pleistocene and Holocene climatic changes. This is confirmed especially by the study of the geomorphologic structure of modern river valleys which are 15 000 years old. They were gradually formed behind the retreating ice sheet and draining ice - dammed lakes. It should be noted that the ancient river valleys with the maximum number of terraces located in South-East Lithuania were formed in prefrontal and frontal parts of the Grūda (Brandenburg, Bologoe) and Baltic (Pomeranian, Vepsovo) ice sheets belonging to the Nemunas glaciation. Therefore the presence of 7 - 13 terraces above the floodplain is a characteristic of river valleys in South Lithuania. Terraces V and IV were formed before the Oldest Dryas (cold climate), whereas terrace III was produced during the Bølling (warm climate) and Older Dryas (cold climate). Terrace II was formed during the Allerød (warm climate) and Younger Dryas (cold climate). The substantial climatic amelioration during the Holocene (warm climate) has led to slower geomorphological processes. Only the narrow terrace I (3 - 5 m) was formed above the floodplain. Moving northwards and following the retreating glacier, the number of terraces in the river valleys declines. This can be linked to the dynamics of deglaciation, stages and phases of waning ice sheet, climatic conditions, hydrology, the distribution and drainage of periglacial lakes, neotectonic movements, fluctuation of water level in the Baltic Sea, the lithologic substratum, vegetation and other factors.