



Modern and Late Holocene flash floods in the Silesian Upland (Southern Poland) detected from transformation of periglacial valleys: case study near Kromolów

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Abstract: The examined area is located in southern Poland in the Silesian Upland. This northern Upper Silesia region is in the headwaters of the Warta river, a tributary of the Oder river. Some dry, fluvio-denudational valleys (dells) form a drainage pattern around Kromolów, which is a part of Zawiercie City. These dells, which were formed in periglacial conditions of the Pleistocene, are relict forms very typical of the Polish Uplands. These Pleistocene valleys were rejuvenated during the Holocene. A good example of this type of relief transformation is a small dry valley located near center of Kromolów. The first-phase of headward erosion reached upper section of this valley in the Subatlantic as documented by radiocarbon dating of a buried soil (2570 ± 80 BP, cal. 847-428 BC) preserved on the old valley bottom (terrace). Archaeological data from Archaeological Map of Poland (AZP) do not confirm Prehistoric settlement in the study area. Incision of the valley floor could not be attributed to anthropogenic deforestation as the first settlements occurred within the last few hundred years. However the absence of older archaeological sites might be caused by intensive soil erosion which could have destroyed them. Large scale soil erosion is confirmed by thick (about 3 m) series of deposits with fragments of 17-18 c. pottery accumulated in the middle section of the valley. Some members with fining upward sequence could be distinguished in this series. Then the older valley floor of trough was first covered with sediments of flash floods and subsequently cut by an ephemeral stream. Erosion to a depth of 3-4 meters and a length of almost 800 meters occurred in the middle section. This accumulation and incision was associated with flash floods which were the main morphogenetic factor of transformation of this valley type during the Holocene.

Keywords: periglacial valley, flash floods, relief, sediments, Subatlantic

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