

Soil Science 2018: Anthropogenic changes in water storage in peat deposit in intramountain Orawa-Nowy Targ basin (western Carpathians)- Adam Lajczak- Pedagogical University of Cracow

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Abstract

The purpose of the presentation is to assess the size of adjustments in water storage in peat deposit within the Orawa-Nowy Targ Basin (643 km²) off the western Carpathians (European mountain range), inspired with the aid of using human activity for the reason that center a while until 2015. The basin is included with the aid of using fluvio-glacial deposits wealthy in groundwater and stores huge quantities of water in full-size peatbogs, specially raised bogs. The peatbogs arise on the altitude from 592 to 770 m a.s.l. (metres above sea level) for the reason that center a while the peatbogs on this basin had been degraded with the aid of using human effect, especially because of peat exploitation and drainage with the aid of using dense community of ditches. After 1990 shrinkage of the restrict of peatbog domes bogged down or maybe stopped and draining ditches aren't wiped clean which reasons growing irrigation of post-peat regions. Contemporary restrict of person peatbogs and their elements (i.e. decreased domes, post-peat regions, remoted peat patches) within the basin changed into decided primarily based totally on statistics from aerial laser scanning LiDAR (Light Detection and Ranging) and moreover from peatbog mapping.

Former restrict of peatbogs changed into assessed on the idea of ancient maps (18th-twentieth centuries) and mapping of remnants of peat deposit. Using drilling methods, the thickness of peat deposit changed into measured inside every peatbog within the duration from August to October (rather dry deposit). In order to decide the quantity of water in peat, 4 raised bogs and 4 fens, assumed as consultant for the location studied, had been sampled in 2008-2015 from May to October (each months). Using Kopecky's cells (0.25 dm³), 540 peat samples had been taken on the profile intensity each 50 cm, which had been the bases to calculate capillary ability of peat in quantity model P_w [%]. Water sources in peatbogs each contemporary and people probably current earlier than the start of the extensive human effect

within the basin had been anticipated primarily based totally on the right quantity of peat deposits and values of capillary water quantity of peat P_w [%]. Finally, maximal quantity of water which can be saved in domes (now in residual domes and post-peat regions) and fens changed into anticipated.

In the beyond probably general quantity of water which could have been completely saved in fens within the basin changed into anticipated to 32 million m³, and within the raised bog domes 139 million m³ (collectively 171 million m³). Total quantity of water that is presently saved in fens within the basin is anticipated to 15.1 million m³, in raised bog domes to 45.2 million m³, and in post-peat regions to 2.1 million m³ (general quantity of water is 62.4 million m³). In relation to the entire location of the basin, the index of water retention of peatbogs reaches 10 cm and on the give up of the center a while this index changed into possibly 27 cm. The fastest rate of water loss in peats occurred 50-150 years ago.

Recent Publications 1. Raczkowska Z et al. (2012) Recent Landform Evolution within the Polish Carpathians. In Recent Landform Evolution: The Carpatho-Balkan-Dynaric Region. Springer Geography. Pages:47-101. Doi:10.1007/978-94-007-2448-8_5. 2. Lajczak A (2012) Water flow and chemical denudation in the higher Skawica River flysch catchment, western Carpathian Mountains. *Zeitschrift für Geomorphologie, Supplementary Issue*. 56(1):69-86. Doi:10.1127/0372-8854/2012/S-00073. 3. Lajczak A (2013) Changes in Raised Bog Relief During the Holocene. Case observe: Polish Carpathian Mountains. In *Soil Processes and Current Trends in Quality Assessment*. IntechOpen. Pages:337-363. Doi:10.5772/54988. 4. Lajczak A et al. (2014) Contemporary geomorphic techniques within the Polish Carpathians beneath converting human effect. *Episodes*. 37(1):21-32. 5. Lajczak A (2014) Changes in flood chance impacted with the aid of using river training. Case observe of piedmont segment of the Vistula river. *Annals of*

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Warsaw University of Life Sciences?? Land Reclamation.
46(four):55-73. Doi:10.1515/sggw-2015-0006.

The paper provides pastime of modern geomorphic approaches withinside the Polish Carpathians, contemplating human effect on remedy transformation withinside the beyond numerous centuries. Land sliding withinside the flysch Carpathians is a most important method in slope transformation, posing the maximum critical risk to man, each withinside the mountains and the foothills. On the alternative hand, wrong housing on slopes initiates mass movements, often with catastrophic consequences. Land use modifications, mainly deforestation, have during the last 2 hundred years fostered extensive slope wash and linear erosion, with this gambling an essential position in shaping foothill remedy. Following modifications in land use and channel law initiated at the start of the 20th century, an inclination to river mattress deepening prevails. Moreover, floods, and now no longer handiest excessive instances, retain to pose a risk to man, with their results better with the aid of using housing in floodplain areas. A tendency consisting withinside the discount of arable land and a growth in grassland and wooded area, located during the last decades, will cause a slow quandary of slope-wash and wind erosion in addition to a simultaneous growth in linear erosion on slopes and river mattress deepening.

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