

## Abstract:

The investigated area is located in the Western part of the Outer Carpathians in Gorce Mts. It is underlain by flysch deposits represented by the Krynica and Bystrica subunits of the Magura Nappe. In this dissertation geological structure of terrain is presented in text as well as on the geological and tectonic maps and on the geomorphological sketch. In the lithostratigraphic succession of the Krynica Subunit four formations are identified: the Szczawnica Fm. (Campanian–Palaeocene) that consists of thin- and medium-bedded sandstones and shales interbedded by a few thick-bedded sandstone complexes; the Zarzecze Fm. (Early Eocene) developed as thin-bedded turbidites with containing thick-bedded sandstone complex of the Krynica Member; the Magura Formation (Early Eocene–Oligocene) dominated by thick-bedded sandstones, which consists of three members: the Piwniczna Sandstone Mbr, the Kowaniec Mbr and the Poprad Sandstone Mbr. The youngest lithostratigraphic unit is the Malcov Fm. (Oligocene–Early Miocene) represented by thin- and medium-bedded shale-sandstone turbidites intercalated with single layers or packages of thick-bedded sandstones with the Waksmund Sandstone Mbr (Early Miocene) at the top. The Bystrica Subunit is outcropping in the northern part of studied area and is represented here by the Magura Formation (Middle Eocene–Oligocene). The above lithostratigraphic units were deposited in the southern part of the Magura Basin by turbidity currents that derived detrital material from the south. The source area was an emergent ridge that bounded the Magura Basin from the south. In the Miocene these strata formed the Magura Nappe that was folded, cut by faults, and thrust to the north over more external Outer Carpathian nappes. In the investigated area the largest folds are: the Rdzawka–Obidowa Anticline, the Sieniawa Syncline and the Pyzówka Anticline. Other folds have small amplitudes and only local significance. The faults, different in length and amplitude, form groups that occupy specific parts of the Gorce Mountains. In the western and north-western part of the study area NNW-SSE and NNE-SSW orientations of faults dominate, and in the south-eastern part dominate NNW-SSE and NE-SW orientations. The most important tectonic dislocations are the Waksmund – Ponice Fault Zone, Borek Fault and Lepietnica Fault. Within the Krynica Subunit two thrust sheets were identified: the Turbacz Thrust Sheet and the Kudłoń Thrust Sheet, both thrust over the Bystrica Subunit. In the studied area Distinct relationship between geology and morphology of the terrain was observed in the studied area. It is usually expressed by the main mountain ridges following the thick-bedded sandstone complexes and extending parallel to the axes of main folds. Latitudinal valleys are often linked with extensions of the thin-bedded turbidite complexes, while oblique and perpendicular parts of valleys usually run in accordance with orientation of faults. Ordered system of step-like morphological forms is very often observed on slopes of the mountain ridges. These steps are formed by more resistant thick-bedded sandstone layers and extended parallel to them. Landslides different in shape and size are abundant in the Gorce. Their origin is often related to the lithology of the underlying flysch deposits, as well as to fault and joint systems. Rock tors occur in large numbers and their origin is related to lithology, weathering processes and occasionally formation of landslides. Their largest biggest concentration was noticed on the northern slopes of the Kudłoń ridge. In general, the high-resolution digital elevation model contributed significantly the progress of this geological and geomorphological research.

**Key words:** Gorce Mts, Magura Nappe, Krynica and Bystrica Subunit, stratigraphy, lithology, tectonics, geomorphology, high-resolution DEM