

## WÜRM GLACIATION IN THE TATRA MTS WITH COMPARISON TO THE AUSTRIAN ALPS

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Würm glaciations in the Tatra Mountains related to the last glaciation period (Vistulian) are presented on the Biała Woda valley example. In this valley the longest glacier system (ca. 12.5 km) was formed on the northern slope of the mountains. The extent of two maximal stadials: older than 60 ka BP from early Würm (WA) and younger one related to main stadial WB (ca. 20 ka BP), and lateral and terminal moraines of recessional stages were reconstructed. In the Biała Woda valley 10 stages of recession was established (BW1-BW10) and in tributary valley 7-8 stages. The chronology of recessional stages was elaborated at several crucial sites due to radiocarbon datation of lacustrine deposits and deposits from dead-ice hollow. In three valleys it was possible to distinguish moraine ridges correlated with Gschnitz and Daun Stages in the Alps. The radiocarbon data 8.300 BP from the bottom of peat bog within dead-ice hollow (at 1390 m. a.s.l.) below Morskie Oko morainic ridge, and palynological analysis give the possibility to conclude that the last glaciers in the Tatra Mountains survived until Venediger oscillation in the Austrian Alps (8,700-8,400 BP) and disappeared at the beginning of the Atlantic period when the upper timberline reached the height about 1400 m a.s.l. Present-day position of the timberline on the northern slope of the Tatra is 1550 m a.s.l. and mean annual temperature 0°C is situated at 1850 m a.s.l. An attempt to paralelize glacial stadials and recessional stages in the Tatra Mountains and in the Austrian Alps is shown in the table. The Austrian Alps chronology is based on Patzelt and Bortenschlager publication (INQUA Excursion Guide-Book, 1995). On the figure the maximal extent of stadials WA and WB at Łysa Polana site in the Biała Woda valley and two oscillations related to glacier recession BW1 and BW2 are shown. These recessional stages were also correlated with Polish Lowland chronology - Chodzież Phase (17 ka BP) and Pomerania Phase (15 ka BP). The age of Early Würmian stadials was established due to archeological data from Oblazowa Cave (Valde-Nowak, Madeyska, Nadachowski 1995). There are three Mousterian culture layers, and younger Szeletian and Gravetian layers. The main stadial WB in the cave was documented by large block deposition marking strong periglacial weathering. The main stadial in the valley in manifested by climate conditioned aggradation on the foreland of the Tatra Mountains. The series from stadial WA was deposited in the cave below Mousterian layers.

