



Climate change and economic development in the Alps during the Middle Ages and Early Modern Period

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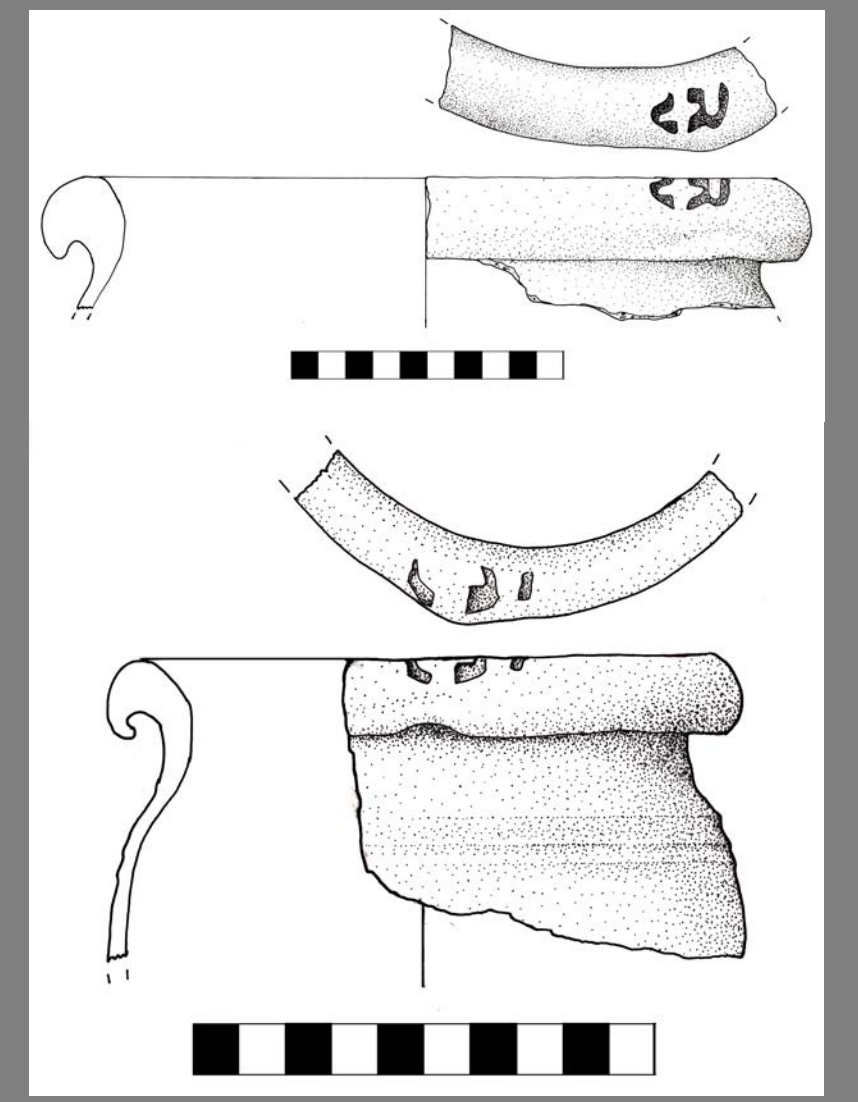
Introduction: Since prehistoric times communities settled in the Alps engaged in agriculture, husbandry and equally in the exploitation of the mineral resources, such as gold deposits. Life and economics were adapted to the marginal Alpine landscape but also to different climatic conditions. Climate research has shown that extended periods of high temperatures occurred in the high and late Middle Ages (950-1350). In the late Middle Ages and the Modern Period, extended periods of continuously low temperatures occurred between 1450 and 1860.

Gold-mining: An Area of approximately 50km of gold deposits stretches over the Tauern region, located between 2000 and 2500m contour. The mining conditions in this area were difficult, but the occurrence of lead deposits was a big advantage for the gold mining industry, since lead is an important component of the smelting process. The written sources and archaeological record show that the deposits were exploited from the 14th century until the end of the 16th century. Peasants, craftsmen, tradesmen and various authorities were involved in the complex economic processes at various levels. The mining process was conducted in the high Alpine region, the different melting workshops were situated in high valleys between 1200 and 1300m contour, resp. on 860m contour. In order to sustain mining throughout the year it was necessary to assure the continuous supply of the people working in the mines with food, clothes, tools and work materials. The transport of the ore and the sustenance had to overcome a 1700m difference in altitude.



Above: Bad Hofgastein, Erzweise, two mining sites with a mine-worker's building (residence and working site) and a border pathway to the tunnels (so-called Schneekragen); the stark areas derive from mine dumps; 15th – 16th century (Photo: Cl. Theune).

Right: Weißpriach, Oberhüttensattel, Alpine cabin with two rooms, one marked by red dots; 14th – 19th century (Photo: Cl. Theune).



Bad Hofgastein, Angertal, 3 melting ovens for gold ore and ceramics (so-called Passauer Ware); 15th – 16th century (Photo: Cl. Theune; drawing: K. Misterek)

Transhumance and husbandry: Pastures located on altitudes as high as 2000m were used for husbandry, where cattle, sheep and pig were herded during the short summer period and dairy production was conducted. Excavations have confirmed medieval transhumance in the Alps on various altitudes and various times, starting from the 12th century. Changes in the intensity can be observed through the times. Most of the dates prove husbandry in the 14th to 15/16th centuries. The archaeological and archaeo-botanical record further suggest that the Alpine husbandry was interrupted, or ceased at the end of the 16th century, presumably as a result of the changes in temperature.



Conclusion: It can be stated that the communities have continued using the marginal Alpine landscape although the climate had deteriorated in the 15th century and in the 16th century. The decline of the gold mining at the end of the 16th century is probably a result from over-exploitation, as written reports indicate. The Alpine husbandry and a lot of Alpine cabins came back in the 17th century.