



Reconstruction of historical logging in the area of the Styrian Erzberg, Austria, and the geomorphic consequences

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The natural resources of the northern Styria region were utilized since around 4.000 BC. Logs and charcoal were used as an energy source to produce salt, copper and iron. Since the early 8th century a continuous ore-mining tradition has been documented for the Erzberg. In the beginning of the 13th century the iron production increased remarkably, causing an escalating charcoal demand that has subsequently increased continuously. Virgin woodland areas were logged primarily for charcoal production but also for new pastures and arable land. The massive charcoal demand, which was covered by clear cutting of vast forest areas, expired abruptly in the late 19th century, when fossil coal was used instead of charcoal. The historical land use practices in northern Styria, predominantly large-scale clear cutting, had considerable effects on the vegetation cover, the hydrological cycle and geomorphic processes. The connection between deforestation and natural hazards was recognized first in the middle of the 19th century in historical notes and documents.

Historical literature contains notations that allow to intense logging periods to be spatiotemporally differentiated. The completeness of entries given and a detailed depiction of the historic forest conditions divided into precise lots is possible with the forest descriptions and instructions from the 17th to the 19th century. Quantitative reconstruction of the historic forest condition of small catchments since about the beginning of the 17th century will be attempted. Periods of intense land use and periods of recovery and regrowth will thus be distinguished. To examine the effects of historic logging on geomorphic activity, the sediments located near the outlets of these catchments will be probed by core drilling and hand-dug exposures. Since some charcoal production took place in these catchments, the drilling cores and exposures can be expected to yield dateable samples of charcoal and wood.

Absolute dating of some layers will lead to a relative dating of the drilling cores and exposures. The combination of dated sediment layers and the reconstructed logging activity will enable an estimation of geomorphic responses to historical logging in the northern Styria region.