



What happens after and during deglaciation? Some insight from observations at the largest glacier in Austria

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Pasterze Glacier is the largest glacier in Austria and the Eastern Alps. The glacier is located at the foot of Mt. Großglockner (3798 m a.s.l.), the highest peak in Austria, and is accessible rather easily by a high alpine road ending above the main glacier tongue. At present, the glacier covers an area of about 17 km², has a length of 8.3 km, a maximum ice thickness of about 190 m and is characterized by two unequally sized glacier tongues. The main glacier tongue is c.4 km long and heavily covered by debris. Since the end of the Little Ice Age (LIA) at around AD 1850 this glacier receded by 2.1 km. During the last c.160 years the main glacier tongue lowered by some 250 m on average. The glacier surface flow velocity decreased substantially, i.e. for example by 32% between the time periods 2003-2006 and 2006-2009. Glacier recession revealed large areas of previously ice-buried bedrock as well as minerogenic and biogenic sediments. In this contribution we present a compendium of research results based on several projects related to pure proglacial but also paraglacial processes and landforms in the vicinity of the present glacier. We will discuss (a) rock slope adjustment processes and its causes influencing for instance the supraglacial debris cover of the main glacier tongue substantially, (b) landform dynamics in the outwash plain and adjacent slopes close to the present glacier terminus, (c) the role of dead-ice for the proglacial landsystem, (d) formation and rapid enlargement of rock outcrops within the ice-fall, and (e) related natural hazard aspects. A further aspect discussed here – which is rather particular for Pasterze Glacier – is the (e) biogenic material (peat lumps and wood fragments) which has been found in recently deglaciated terrain. This material provides valuable insight into past ecological, glaciological and climatological conditions. Further rapid back- and downwasting of this glacier is very likely due to lack of ice replenishment. The glacier tongue is going to become a huge dead ice body in the near future leaving a highly unstable paraglacial landscape behind.