Geophysical Research Abstracts
Vol. 15, EGU2013-4169, 2013
EGU General Assembly 2013

The Vatn landslide, Skagafjördur, northern Iceland: evidence of an early Holocene paraglacial crisis and impact on further slope development

Armelle Decaulne (1,7), Denis Mercier (2,7,3), Etienne Cossart (4,7), Thierry Feuillet (2,7), Helgi P. Jónsson (5), and Þorsteinn Sæmundsson (6)

(1) CNRS Laboratoire Géolittomer-UMR 6554 LETG, France (armelle.decaulne@univ-nantes.fr), (2) Université de Nantes, CNRS Laboratoire Géolittomer-UMR 6554 LETG, France (denis.mercier@univ-nantes.fr), (thierry.feuillet@univ-nantes.fr), (3) Institut Universitaire de France, (4) Université Paris 1, Laboratoire PRODIG, France (etienne.cossart@univ-paris1.fr), (5) Northwest Iceland Comprehensive College, Sauðárkrókur, Iceland (helgipall@fnv.is), (6) Natural Research Centre of NW Iceland, Sauðárkrókur, Iceland (steini@nnv.is), (7) CNRS - GDR 3062 "Mutations polaires", Besançon, France

The Vatn landslide is of modest size (estimated to 830,000 m3), and the deposit exhibits poor spatial dispersion and longitudinal runout. Its location in the Skagafjördur fjord, Northern Iceland (65°57,337'N, 19°23,900'W), evidences slope post-glacial development in the area.
The interest of this landslide is found lower contact: the downslope part of the landslide deposit bumps on a stripe of raised beach, trapping a flat area at its northernmost boundary. The contact between the slide and the beach is open by a deep anthropogenic ditch.
Analysis of (i) stratigraphic sections along the ditch, (ii) log section openings in the flat area at the slide contact and (iii) onto the slide deposit, offer numerous dating elements. Lower pits are rich in organic material and tephra layers (the oldest one, H4, is dated to 4,260 cal. BP), while the upper pit revealed little accumulation over the slide deposit surface, exhibiting only tephra layers separated by poor organic units.
The combination of radiometric method and geochemical analysis of the tephra layers results in a good time constrain for the landslide occurrence, before 9070±86 cal. BP and 8677±181 cal. BP (oldest tree remnants).
Such results reinforce the hypothesis of a major paraglacial geomorphologic crisis at the early Holocene time, leading to numerous slope failures following the last glacial maximum retreat (Mercier et al., in press, The Holocene). The presence of the raised beach at the lower contact with the landslide seems to indicate an occurrence later than 11,000-11,400 cal. BP (intrapolated age of the raised beaches located at 22-31 m a.s.l.), and suggests that isostatic rebound is a relevant triggering factor (Cossart et al, in press, Earth Surface Processes and Landforms).
The lower pit section encompasses the full Holocene period, exhibiting a succession of organic layers and a very poor accumulation in minerogenic material. Those 2 m (i) document the palaeoenvironmental settings throughout the Holocene with potentialities for palynology and diatoms analyses; (ii) shows the decoupling of slope processes triggered in the rockwall upper part from the lower slope, as during the last ca. 10,000 years, no minerogenic material was archived below the landslide deposit.