



U-Th/He dating of a rapid incision denudation event induced by lake overspill, the Skagit River Gorge, Northern North Cascades Range, Washington.

T. Simon-Labric (1-2), C. Teyssier (1), M. Cosca (1), G. Brocard (1), P. van der Beek (2)

(1) Institut de géologie et paléontologie, Faculté des géosciences et de l'environnement, Université de Lausanne, Lausanne, Switzerland, (2) LGCA, Université Joseph Fourier, Grenoble, France (thibaud.simon-labric@unil.ch / Fax : +41 692 43 05 / Phone: + 41 21 692 44 45)

The Skagit River is a major transverse river developed within the Cascades mountains in Washington State, USA. Riedels *et al.* (2007) proposed that erosion by successive Cordilleran Ice Sheets and their meltwater modified drainage patterns in the northern North Cascade Range.

Advancing and retreating ice dammed the northward drainage and formed proglacial lakes which eventually breached and drained across longitudinal. The 2 kilometers deep, Skagit River gorge is regarded as the product of such recent re-arrangement of the drainage. To test this hypothesis, we use the U-Th/He dating method. We present and compare age distributions along two vertical profiles, one along the older, pre-glaciation valley of the Skagit River, and the other along the latter Skagit River Gorge. If indeed the Skagit Valley is a recent feature formed during the glaciations, differences in isotherms depletion between the already existing older valley and the not yet formed Skagit River should produce a distinctive age-elevation distribution between the valleys.

The catastrophic re-arrangements are widespread in glacierized mountain ranges, but they had been very difficult to study so far, since most of the geological clues of such rearrangements are removed by subsequent glacial erosion. Our ultimate goal is

to demonstrate that the U-Th/He technique offers news opportunities for dating and studying such events.