

Signature and significance of Late Quaternary sedimentary events in glacial lakes and fjords

E. CHAPRON^{1*}, D. ARIZTEGUI², S. MULSOW³, G. VILLAROSA⁴, P. LAJEUNESSE⁵, M. DEBRET¹, N. WALDMANN⁶

¹ Institut des Sciences de la Terre d'Orléans, UMR 6113 CNRS-Université d'Orléans, France (*correspondence: emmanuel.chapron@univ-orleans.fr)

² Section des Sciences de la Terre, Université de Genève, Switzerland (Daniel.Ariztegui@terre.unige.ch)

³ Instituto Geociencias, Universidad Austral de Chile, Valdivia, Chile (sandormulsow@uach.cl)

⁴ Grupo de Estudio Ambientales, INIBIOMA, CONICET-Universidad Nacional del Comahue, Bariloche, Argentina (gustavov@crub.uncoma.edu.ar)

⁵ Centre d'Etudes Nordiques, Département de Géographie, Université de Laval, Québec, Canada (Patrick.Lajeunesse@ggr.ulaval.ca)

⁶ Department of Earth Science, University of Bergen, Norway (Nicolas.Waldmann@geo.uib.no)

Glacial lakes and fjords are deep basins generally characterized by high to very high sedimentation rates since the last deglaciation and can thus provide key natural archives of past environmental changes within mountain ranges and at coastal regions. Sedimentation in these basins is in particular sensitive to climate change (sea level changes, glacier fluctuations) and to the geodynamic setting (e.g. earthquake ground accelerations, co-seismic movements, volcanic eruptions). Understanding the evolution of clastic sedimentation processes (ie. development of homo-, meso- and hyper-pycnal flood events, gravity reworking phenomena, tephra layers distributions) and related sediment depocenters is not only essential to optimise the selection of coring sites but also to evaluate the sediment stability.

In these glacial basins the combination of Quaternary outcrops, multibeam bathymetry, seismic reflection profiling and multiproxy studies of sediment cores is particularly useful to identify dominating sedimentary processes and large-scale sedimentary events. Based on selected examples from the Alps (Lake Le Bourget, France), Patagonia (Reloncavi fjord, Chile; lakes Frias and Nahuel Huapi, Argentina), western Norway (Lake Stryn) and Kerguelen Islands (Baie de la Table fjord, TAAF) we will compare the signature and the source area of historical and prehistorical sub aquatic sedimentary events either related to earthquakes (mass wasting deposit, seiche deposit, mega turbidite), volcanic eruptions (tephra layers) or glacier fluctuations in the catchment area (flood deposits, mass wasting deposits).