This thesis analyses the glacier fluctuations in New Zealand since late Pliocen until today (2017) and evaluates GLOFs (Glacier Lake Outburst Floods) hazards from all proglacial lakes of New Zealand. Background research of a wide range of scientific sources was used to describe New Zealand glacier fluctuations during the last ~2.6 Ma, uncover local climatic and tectonic specifics, describe uneven behaviour of different glacier types and summarise current knowledge about climatological forcings to New Zealand glaciers. Compared to the timing of glaciations in the Norther Hemisphere, an earlier onset of LGM (Last Glacial Maximum) and LIA (Little Ice Age) was recorded in New Zealand. A dramatic glacier advance of short- to medium-response time glaciers was recorded between 1983 and 1999. This advance was caused by changes of atmospheric and oceanic circulation patterns around New Zealand.

A detailed study of the past events revealed that really few events were recorded in New Zealand history. While englacial outburst floods are relatively common from Franz Josef Glacier, no moraine dam rupture and only two GLOFs from a proglacial lake were recorded in New Zealand history. Inventory of proglacial lakes of New Zealand completed from remote sensing data was done to further evaluate the hazards of GLOFs. 25 proglacial lakes were located in two highly glaciated regions: Mt Aspiring area and Mt Cook area and their geomorphic properties were described.

New qualitative method assessing the GLOFs hazards was presented to capture local specifics. First, the possible GLOF triggers were evaluated, followed by the assessment of dam stability. The most hazardous lakes are Volta Lake in Mt Aspiring area, and La Perouse Lake and Lyell Lake in Mt Cook area. Risk assessment revealed there are no permanent settlements in the probable flood paths, but several roads, hiking tracks and backcountry huts or shelters are threatened by a potential GLOF. A further, more detailed assessment was recommended for the most hazardous lakes.