



Laboratoire de Glaciologie et Géophysique de l'Environnement

Séminaire

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salle L. LLiboutry, LGGE

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The changing height of Aoraki/Mt Cook, New Zealand

In 1882, Rev. W. Green and his climbing party were the first to come near the summit of Aoraki/Mt Cook, the highest peak of New Zealand. This iconic landmark has a significant cultural value to Māori as it is considered to be the physical manifestation of Aoraki, the most sacred ancestor of Ngāi Tahu. Based on a barometric measurement, Green estimated that they had reached 3755m, only 9m lower than the summit height of 3764 m established in 1881 by surveyor G. Roberts. This remained the official height of Aoraki/Mt Cook until December 14th 1991, when a major rock avalanche affected the top of the mountain which was subsequently re-measured by photogrammetry to reach 3754 m. A new survey combining GPS measurements from the top of the ice cap obtained on November, 23rd 2013 and a new photogrammetric model of the peak assessed the current height as reaching 3724m. The analysis of photos of the top edge of Aoraki/Mt Cook captured a few days after the rock fall in 1991 revealed that the summit was still covered by a thick ice layer. This remnant of the former ice cap has now thinned, thus explaining the observed reduction in height. This illustrates how the morphology of ice caps on high mountains can undergo a progressive but relatively rapid change to accommodate sustainably a modification of the geometry of the underlying rock.

