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Geomorphology of the deglaciaded Eglinton Valley,
Fiordland: new insights into the origin of hummocky
terrain

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Abstract

The distribution and types of landforms within deglaciated valleys provide information on past processes and indicate the potential for future changes and associated hazards. This study is the first to characterise the landform assemblages within Eglinton Valley, Fiordland, New Zealand, and develop a model for the post-glacial evolution of the valley. In particular, it assesses the origins of hummocky topography on the valley floor which, like in many other parts of the world, have previously been interpreted to be glacial in origin.

Geomorphic field mapping, GPR, sedimentology (clast and agglomerate identification), and a novel terrestrial cosmogenic nuclide dating (TCND) method of extracting meteoric ^{10}Be from pyroxene minerals were utilised to reconstruct the geomorphology of the valley during the Holocene.

Glacial deposits were confirmed at Knobs Flat and Eglinton Flat while RA deposits were conclusively found at Knobs Flat, Deer Flat, and adjacent to Lake Malvora. Eglinton Valley has been completely blocked on (a minimum of) three separate occasions, forming a large lake each time, with only Lake Gunn and a few minor swamps and lakes (e.g. Lake Malvora) remaining today. Relative age dating evidence suggests the first lake was formed by the large Deer Flat RA, the next formed due to the extensive Wesley Creek alluvial fan, and the youngest, Lake Gunn, as a result of the Lake Gunn Landslide ~ 7.6 kyrs BP. TCND was uncompleted due to lab contamination at the final step, however, the methods attempted here appeared to yield promising results.

The Eglinton Valley has been sculpted by glacial, mass movement, and fluvial processes. This work advances the knowledge of the processes responsible for the hummocky terrain found throughout Eglinton Valley, and adds to the currently limited pool of research into the reinterpretation of hummocky deposits within deglaciated valleys in a global and New Zealand context.

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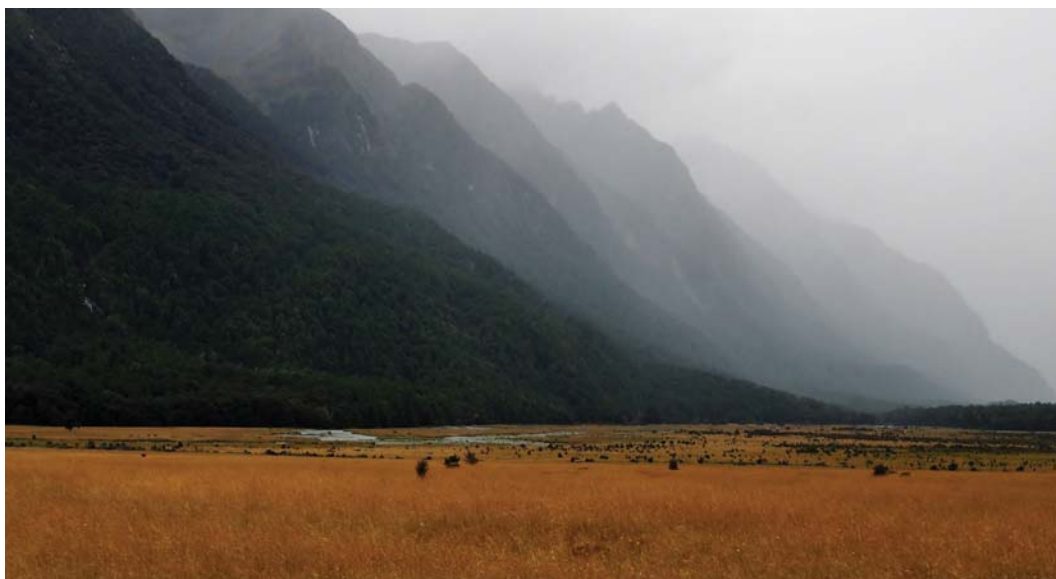
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“Let us try to recognise the precious nature of each day.” Dalai Lama XIV.

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