

## Use of a remote-controlled jet boat to survey bathymetry at the terminus of a lake-calving glacier: Tasman Glacier, New Zealand

Heather Purdie<sup>1</sup>, Paul Bealing<sup>1</sup>, Emily Tidey<sup>2</sup>

<sup>1</sup>Department of Geography, University of Canterbury, Private Bag 4800, Christchurch, 8140, New Zealand.

<sup>2</sup>School of Surveying, Otago University, PO Box 56, Dunedin, 9054, New Zealand

Global glacier recession is increasing the number of glaciers that terminate in proglacial lakes, yet knowledge about the processes that drive ice-berg calving are still poorly understood. This knowledge-gap is in part due to the challenges in obtaining good data sets in a highly dynamic and dangerous environment. We are using emerging remote technologies in the form of a remote controlled jet boat to conduct bathymetric surveys on Taman Lake in the immediate vicinity of the actively calving terminal face. Our UC Jettec boat is equipped with a dual frequency sonar (50hz/200-hz) and a Trimble R8 RTK-GNSS. The boat is also equipped with real time telemetry which streams NMEA data to a remote laptop running Trimble Hydropro. A long range first person viewer camera enables out of line of sight operation. Results show that part of the glacier terminus now terminates in water that is 200 m deep, and the sub-aqueous 'ice-ramp', associated with large unpredictable calving events is currently small and localised.