Metadata Report

Project Name

Mount Ruapehu Summit Region and Rangataua Flows, New Zealand 2021

Summary

Lava flows carry a destructive power, and studies on past eruptions are necessary for improved hazard assessments. As part of a PhD project focused on improving our knowledge of the frequency and magnitude of postglacial lava flow eruptions, the Resilience to Nature's Challenges program, in a collaboration with the University of Canterbury and GNS Science, funded the acquisition of this high-resolution airborne lidar dataset, which was collected by the Waterways Centre for Freshwater Management (University of Canterbury).

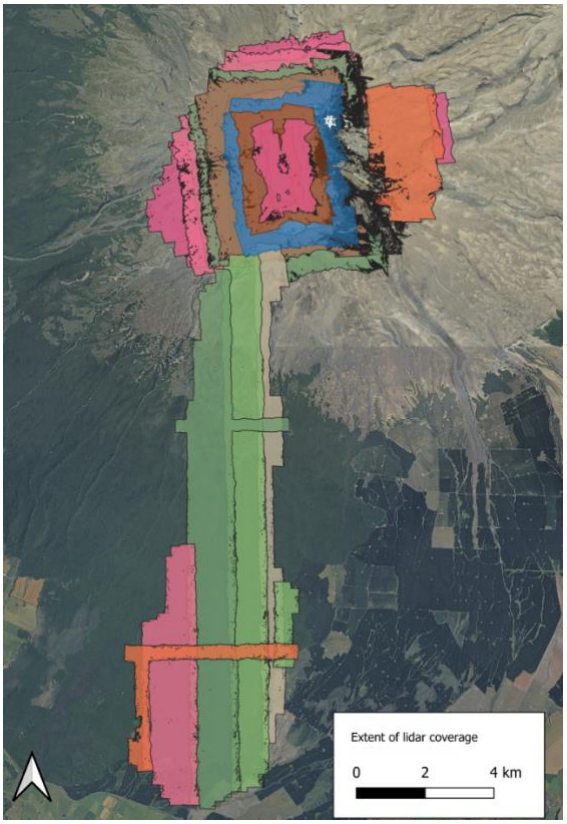

Figure 1 Original survey, 14Th May 2021, coloured by flightlines. Note the gaps in the NE part of the survey.

This dataset has been collected to obtain DSMs covering the summit region of Mt Ruapehu (Aotearoa New Zealand), as well as a large lava flow towards the south of the volcano, which is densely vegetated. These DSMs allowed the identification of distinct lava flows, many of which were dated using cosmogenic ^{3}He and paleomagnetism, and the estimation of lava flow volumes, leading to an improved understanding of the eruption rate variation at Ruapehu during the last 20,000 years.

The data were collected in two separate surveys; an initial survey on the 14th of May 2021 that covered most of the region but missed a significant area on the eastern flanks of Ruapehu Maunga. A second survey, on the 2nd of November 2021 attempted to infill areas missed by the original survey. The data is not classified and includes a significant amount of noise. It is provided as-is, with no additional processing or validation.

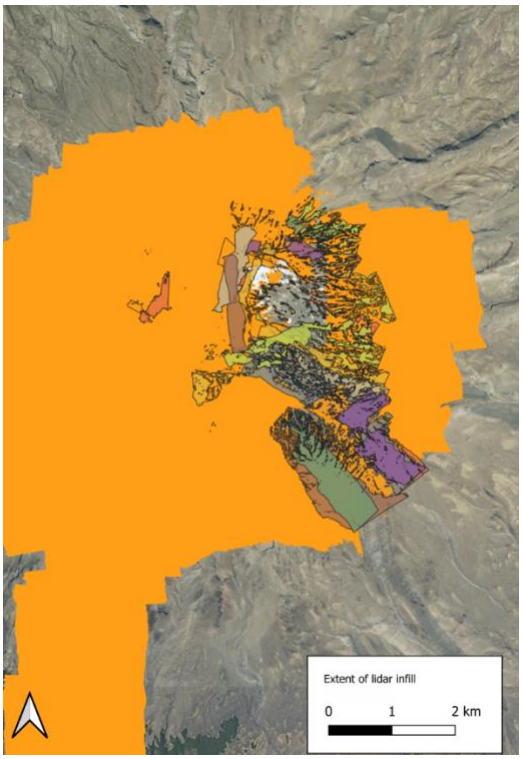

Figure 2 Infill survey, 2nd November 2021

Personnel

- PI(s): Pedro Doll, Ben M. Kennedy, Graham S. Leonard, Dougal B. Townsend.
- Field staff: James Brasington

Site Information

- Site description: Summit area of Ruapehu volcano (radius c. 4 km), and Rangataua flows (southern flanks, 15 km long, 3 km wide)
- Site location (GPS cords and/or map): 39° 17’ S 175° 34’ W
- Site conditions: Thin (<10cm) snow layer

Survey Results

- Equipment used: Riegl VUX-240; scan frequency 1200-1800 kHz; wavelength 1550 nm; maximum scan angle 63° (colourized) to 75°
- GPS solutions: Applanix INS (an AP50)
- Collection methods: Airborne (helicopter-mounted)

Products

- Date of dataset collection:
    - Survey1: May 14th 2021
    - Survey2: November 2nd 2021
- Coordinate system of datasets: New Zealand Transversal Mercator 2000, NZVD2016
- Horizontal Accuracy: <10 cm
- Vertical Accuracy: 2-5 cm
- Data formats: LAZ