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| Remote Sensing to deliver Government Forestry Objectives |
| New Zealand faces a critical challenge in meeting its climate targets under the Paris Accord, with current projections indicating a significant shortfall in greenhouse gas emissions reduction. Without intervention, New Zealand will have to buy carbon credits on the international market to close this gap, and forestry removal have a role to play in meeting this target. Te Uru Rākau- New Zealand Forest Service (TUR-NZFS) is utilising remote sensing technology to mitigate climate change and deal with the devastating effects.Te Uru Rākau- New Zealand Forest Service plays an important role in delivering this priority by administering New Zealand's Forestry Emissions Trading Scheme (ETS). The opportunity of utilising remote sensing technologies to support Forestry ETS process improvement and understanding of forest removals is a key research goal. The application of remote sensing will not only support ETS administration there are other applications such as rapid assessment of impacts and risk during adverse events. The Maximising Forest Carbon Research Programme is exploring new technologies to measure forest carbon stocks more efficiently and cost-effectively. The programme recently completed a proof-of-concept trialling LiDAR remote sensing within the current Forestry ETS framework. Forestry ETS participants with ≥100 hectares are required to take field measurements to generate participant-specific carbon yield tables, used for emissions returns to determine a participant’s unit entitlement. One of the big issues with these field measurements is getting the right resources on the ground to measure forest plots. We are researching the ability of LiDAR to capture this data instead, as a cost-effective alternative to the current methodology, because many forestry companies already use LiDAR to estimate forest stocks. Alongside this research, reviewing satellite LiDAR products for carbon measurement capabilities is another TUR-NZFS research priority. Following the extreme weather events of 2023, TUR-NZFS has used remote sensing to assist in response and sector recovery. In the initial response, we used Sentinel 2 imagery to assess silt deposition for scoping government recovery packages. We also used Planet Imagery to rapidly assess forest grant schemes for cyclone damage. Finding new gullies, which are notoriously difficult to reforest, is another priority for TUR-NZFS. Utilising imagery gathered for the cyclone event we are updating the mapping of gully erosion in Gisborne. Previous gully digitisation exercises for Gisborne commissioned by MPI were carried out for with imagery from 1957, 1997 and 2017, and now, post cyclone Gabrielle imagery is used to digitise all gullies showing signs of active erosion in the region.  Remote sensing technology holds immense potential for advancing forest carbon measurements in New Zealand. By improving our ability to monitor carbon stocks, we can develop better informed policy, improve the measurements used in developing the default carbon yield tables (for forests under 100ha), provide evidence of the impact of enhance forest management practices on removals, assist forest recovery in face of adverse events, and further contribute to our climate change mitigation goals.  |