

Climate science is critical to New Zealand's response to climate change

We are already experiencing an increase in the frequency and severity of climate-related events. Back-to-back climate disruptions such as tropical cyclones, droughts and marine heatwaves are having significant social, environmental and economic costs on the country. Climate science is vital if the country is to have the information needed to adapt to climate change, but the current absence of a clear research investment strategy risks the country's capacity to provide this information.

Evaluating climate risks in New Zealand fundamentally relies on robust understanding of the climate system, and the insights into mean climate change and climate extremes generated by climate scientists are needed now more than ever. This information is critical to resilience and adaptation planning across New Zealand's environment, economy, and society; from agricultural adaptation pathways, to community engagement on coastal retreat, long-term planning for water security or electricity generation, the quality of this information relies on a healthy domestic climate science sector. Without renewed and strategic support, we risk losing the ability to generate and provide the information New Zealand needs to plan for climate change.

New Zealand scientists are known as global leaders in monitoring, understanding, and projecting climate change and the impacts of climate change on our people and terrestrial and marine environments. This is built on decades of innovation in observational technology, monitoring programmes, and advanced modelling with a regional focus from Antarctica to the Pacific Islands. This expertise helps us to interpret and understand what changes to the global climate system mean for us and provides reciprocal access to technology and science otherwise not available to New Zealand.

Climate science and the provision of that science to society require strategic organization and stable resourcing. The current state of the climate science enterprise in New Zealand is sustained through sporadic and issue-specific funding, without central leadership or a strategic body. Larger research programmes such as the Deep South Challenge and Endeavour projects (e.g. Mā te Haumaru o Te Wai focused on flooding, Whakahura focused on extreme events, and the Moana Project looking at marine heatwaves) have offered some stability and have fostered collaboration and effective coordination and science communication for particular research areas, but these programmes are all coming to an end in the next 18 months.

All countries are facing enormous climate challenges, and we are presently losing current and future science leaders to higher paid and more stable positions overseas. It has taken many years to build this capability, and it will be very difficult, if not impossible, to rebuild it in the timeframe needed if it is lost.

Urgent action is required to ensure New Zealand has the capacity to deliver the climate data and information needed to inform adaptation, and should include:

- Development, resourcing, and implementation of a strategy to coordinate research, training, communication and investment across the climate science sector (academic, private, and local and central government), such as a "World Climate Research Programme for New Zealand";
- Provision of dedicated climate information services, including observational data products and climate modelling output, for the public good.

About this document: This document emerged from a small meeting of climate scientists, whose expertise span areas of climate modeling and related observational fields, hosted by the Deep South Challenge. The group represents a sub section of New Zealand's wider climate research enterprise, and includes members of academic, Crown, and other research institutions at a range of career stages.

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