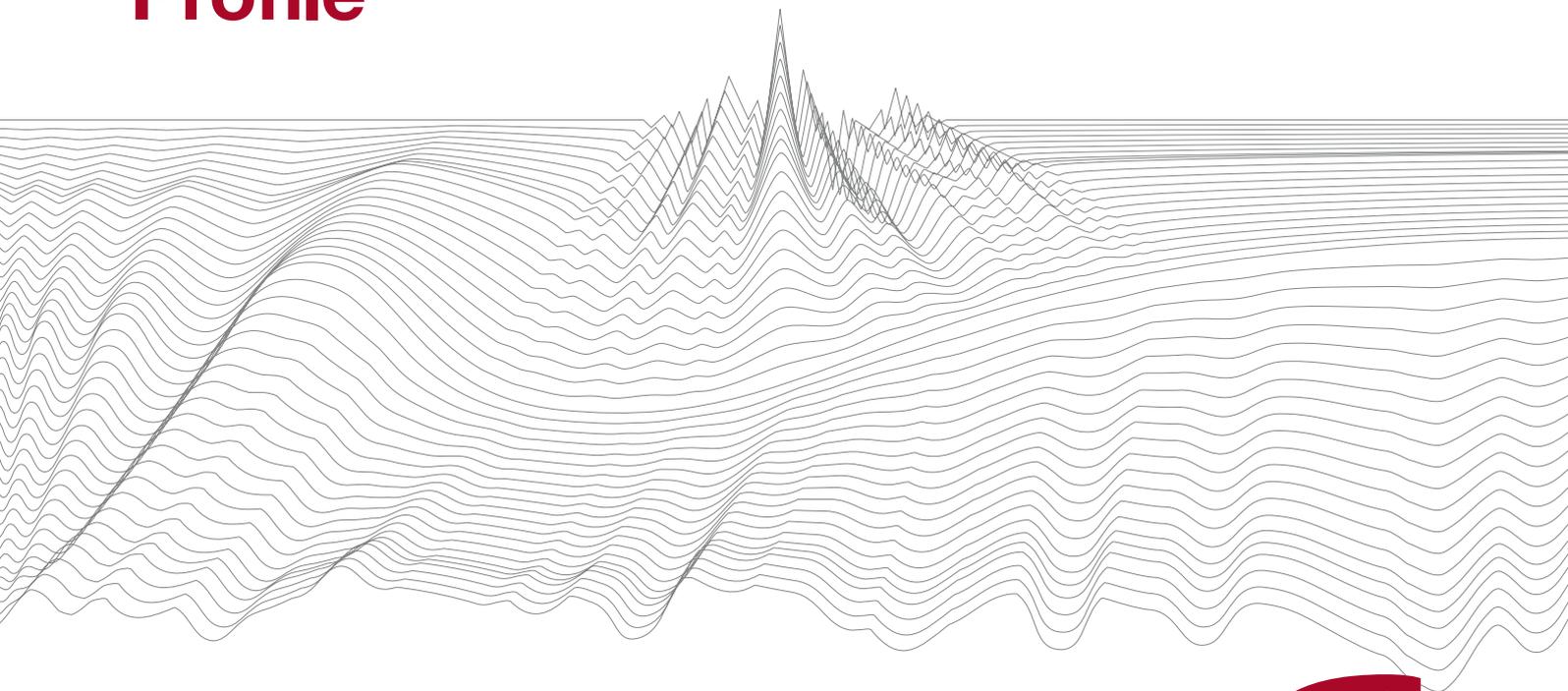
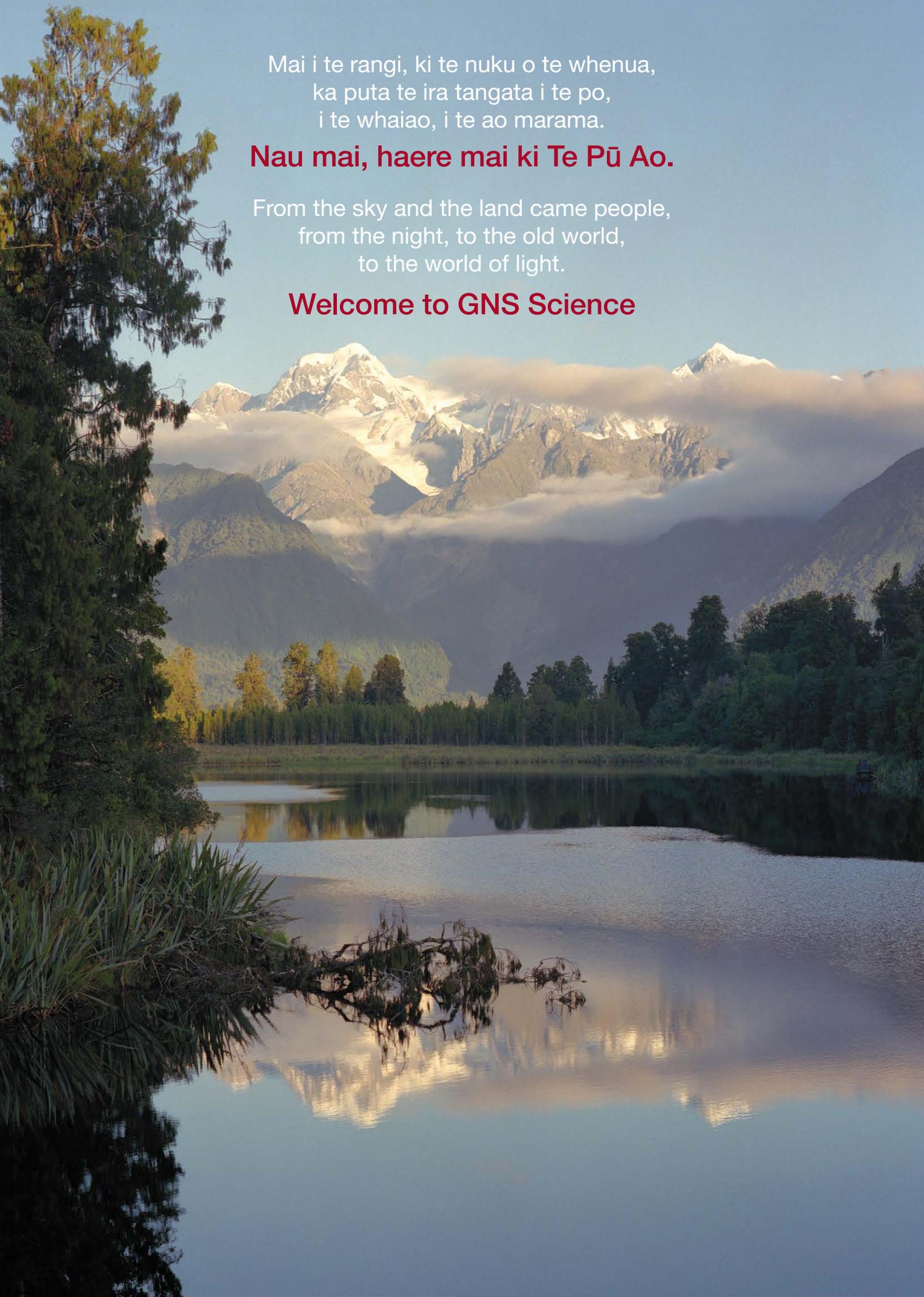


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# GNS Science

## Profile





Mai i te rangi, ki te nuku o te whenua,  
ka puta te ira tangata i te po,  
i te whaiao, i te ao marama.

**Nau mai, haere mai ki Te Pū Ao.**

From the sky and the land came people,  
from the night, to the old world,  
to the world of light.

**Welcome to GNS Science**

**GNS Science is the New Zealand research organisation that focuses on geological resources, environmental isotopes, industrial ion-beam technologies and natural hazards.**



Since 1865 we have demonstrated scientific excellence in a country that straddles two tectonic plates, where earthquakes were first associated with geological faulting, and whose first Nobel Laureate, Ernest Rutherford, saw that radioactive isotopes could be used for geological dating.

Today, we continue these investigations, from the atomic to the planetary scale. These activities are expressed through our Māori name, Te Pū Ao, which means “the foundation, origin, and source of the world”. We apply this science to create wealth, to protect the environment and to improve the safety of people.

## Staffing and revenue

We have over 380 staff located in Wellington (75%), Taupo (20%), and Dunedin (5%).

Our revenue is generated from:

- direct government grants for research (approximately 35%)
- contestable public-good research contracts (15-20%)
- technology transfer via consultancy, product development and analytical services for the private sector and for central and local government (30-35%)
- monitoring geological hazards for the Earthquake Commission (10-15%)

## Scope and governance

We operate as a limited liability company owned by the New Zealand government, with an independent Board of Directors. This unique structure allows us to:

- focus on strategically important science at a national level
- engage in the full spectrum of science from basic research through to product development and consultancy services
- undertake work for both the public and private sectors
- operate internationally as well as within New Zealand
- have autonomy and self-determination

Each year we invest the bulk of our tax-paid profit in scientific equipment and infrastructure. This ensures our capabilities keep pace with or lead international standards.

# Knowledge of our world...

**Planet Earth is held together by gravity, is heated internally by radioactive elements and externally by solar radiation. Gravity and heat drive plate tectonics and the processes that generate geological resources and climate change.**

## Earth's endowments

Through research, we discover and understand the natural endowments of the Earth's crust, including:

- rocks and fossils
- biodiversity and the geological record of climate history
- minerals and groundwater
- earthquakes, volcanoes, landslides and tsunami
- hydrocarbons and geothermal energy
- extremophile bacteria and archaea
- gravitational and electromagnetic fields
- natural isotopes and radiation
- industrial isotopes and nanotechnology.

## National facilities

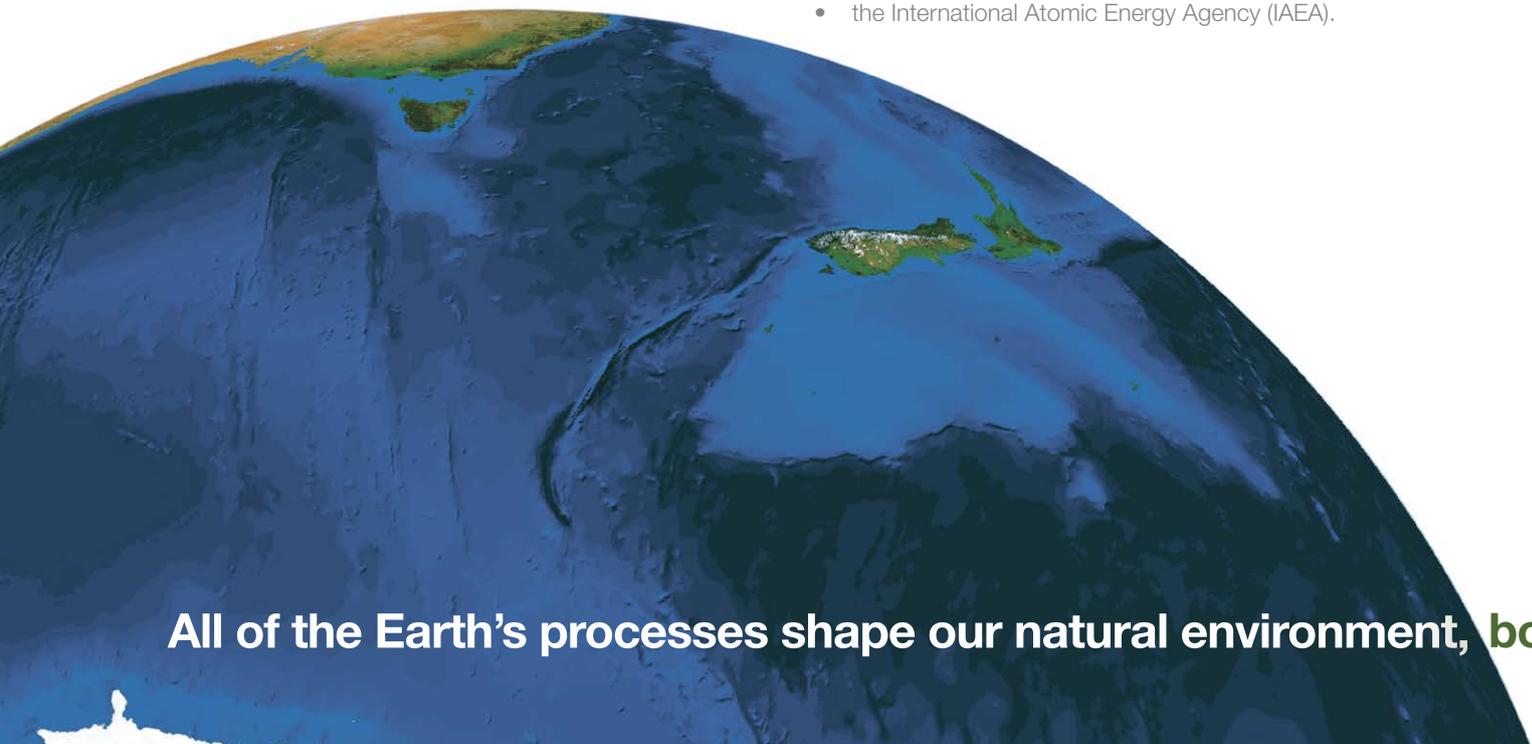
We operate New Zealand's national facilities for earth and isotope science, which include:

- GeoNet, the nation's network for monitoring earthquakes, volcanoes, tsunami, landslides and tectonic deformation
- the Natural Hazards Research Platform
- the National Isotope Centre
- the National Groundwater Monitoring Programme
- geological and geophysical maps and databases
- paleontology and petrology collections.

## Collaborators

We work with many other research organisations to assemble the best science teams. These include:

- other New Zealand research institutes and universities
- Australian agencies (eg Geoscience Australia, CSIRO, CO2CRC, ANSTO)
- European research institutes (eg Ifremer in France, and IFM-GEOMAR and GFZ Potsdam in Germany)
- United States research centres (eg USGS, NOAA, WHOI, SCEC, IRIS, University of Hawaii)
- institutes in the Asian region (eg UGM in Indonesia, KIGAM in Korea, and VAST in Vietnam)
- the International Atomic Energy Agency (IAEA).



**All of the Earth's processes shape our natural environment, both**

# ...for wealth and security

**We apply our research to product development, consultancy and analytical services in a diverse range of areas.**

## Energy and minerals

Our data processing and interpretation increase resource security and economic benefit from the development and diversification of New Zealand's oil, gas, geothermal energy and minerals industries. This work encompasses on-shore and off-shore minerals, gas hydrates, geobiological resources and carbon capture and storage.

## Groundwater

Our data and modelling improve the sustainable management of, and increase economic returns from, groundwater resources. This work includes modelling of aquifers and policy advice for environmental monitoring agencies.

## Isotopes and ion-beams

Our isotope and ion beam technologies create value for New Zealand industry and help to protect our environment. These technologies include radiocarbon dating, tracing environmental processes, ion beam implantation, air particulate analysis, and non-invasive scanning for industry using x-rays and gamma rays.

## Hazards and risk

Our research and advice increase New Zealand's resilience to natural hazards and reduce risk from earthquakes, volcanoes, landslides, and tsunamis. This work includes natural hazard assessment and risk modelling, earthquake engineering, policy and planning advice to local government, and improving public awareness and preparedness.

## Engineered infrastructure

Our research in geotechnical engineering underpins New Zealand's transport and energy infrastructure. This includes buildings, roads, bridges, rail networks, hydro-electric facilities, gas pipelines, and other major infrastructure.

## Land use and climate change

Our advice based upon understanding of the geology and past climates of New Zealand, the Ross Dependency and Antarctica contributes nationally and globally to policy and decision-making in the areas of land-use planning, climate modelling, and the mitigation of climate-change.



## Private sector clients

- oil and gas exploration companies
- geothermal energy exploration and operating companies
- hydroelectricity operating companies
- onshore and offshore minerals exploration industry
- meat, dairy, wool, timber and horticulture industries
- biotechnology industry
- insurance and reinsurance companies
- engineers, developers and infrastructure companies
- non-governmental aid and development organisations

## Public sector clients

- central and local government in New Zealand
- overseas government agencies
- public aid and development agencies
- research organisations and museums

**enhancing and threatening our social and economic development.**

# Pride in our people...

**85% of our staff are directly involved in science. Our strength comes from our ability to integrate their various discipline areas within one organisation.**



## Research culture

Our research and management teams are built around the 60% of our science staff with postgraduate degrees. We recruit globally with some 25 nationalities represented on our staff, and we therefore know we have the best people for our research programmes.

## Commercial acumen

For each consultancy project, we assemble the balance of skills and experience needed to ensure the client receives quality for the value of the contract. A large proportion of our staff have overseas experience and this gives them the additional skills required for international assignments.

## Professional output

Our scientists publish in scientific and professional journals. They also present their research results at national and international scientific conferences, and to industry groups and policy advisors. These activities ensure that our results are used by the relevant sectors.

## Staff skills

- Geology
- Geophysics
- Geochemistry
- Geobiology
- Environmental biology
- Radiation physics
- Isotope physics
- Nanotechnology
- Earthquake engineering
- Geotechnical engineering
- Social sciences
- Mathematics
- Data management and visualisation
- Information technology

**He aha te mea nui i te ao?  
What is most important in the world?**

# ...sharing their knowledge

**In addition to scientific publication and commercial consultancy, we make our scientific knowledge accessible to general audiences through various channels.**



## Schools

Our educational outreach specialises in supporting science teachers through material related to the curriculum, hosting visits from school groups, and arranging visits to schools.

## Postgraduate education

We contribute to the university sector with many staff holding adjunct positions, by supervising over 100 graduate students, and by funding about 30 scholarships each year.

## News media

In addition to distributing our own media releases, we respond promptly to media enquiries, provide expert commentary, and offer assistance with background stories.

## Popular publications

We contribute to a variety of popular publications in conjunction with national and international publishing houses.

## Exhibitions

We exhibit aspects of our work in museums, and help to ensure the authenticity of their science exhibitions. We also tour sponsored exhibitions in New Zealand.

## Guest speakers

Our staff are frequently invited to speak to community and professional groups in New Zealand and overseas about topical issues, new discoveries and their own specialities.

## Websites

Our principal website, [www.gns.cri.nz](http://www.gns.cri.nz), provides detailed information about our organisation, including: research, products, consultancy and analytical services, photo library, and support for science teachers and schools.

The GeoNet website, [www.geonet.org.nz](http://www.geonet.org.nz), provides real-time information on earthquakes, volcanoes, landslides, tsunami and tectonic deformation. This information is freely available to the public and to researchers world-wide.

**He tangata, he tangata, he tangata  
It is people, people, people**

## Discover more:

To know more about GNS Science, or to download other brochures about our work, please visit

[www.gns.cri.nz](http://www.gns.cri.nz)

or call us on

**+64 4 570 1444**

or email us at

**info@gns.cri.nz**

### Principal Location

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PO Box 30368  
Lower Hutt 5040  
New Zealand  
T +64-4-570 1444  
F +64-4-570 4600

### Other Locations

National Isotope Centre  
30 Gracefield Road  
Lower Hutt 5010  
PO Box 31312  
Lower Hutt 5040  
New Zealand  
T +64-4-570 1444  
F +64-4-570 4657

Dunedin Research Centre  
764 Cumberland Street  
Dunedin 9016  
Private Bag 1930  
Dunedin 9054  
New Zealand  
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F +64-3-477 5232

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