

InSAR Scientist



To undertake scientific research in the field of Geodesy, specifically related to detecting ground surface deformation and surface change due to tectonic and other processes using InSAR and other geodetic techniques, and to develop remote sensing for assessment of surface change following natural disasters and as a result of the changing climate. The InSAR Scientist will apply research outcomes to commercial activities undertaken by GNS Science of behalf of its client base both within New Zealand and overseas.

Reports to:	Geodynamics Team Leader
Department:	Earth Structure and Processes
Group:	Science and Commercial Operations
Employment Type:	Permanent
Location:	Avalon
Direct reports:	Nil
Budget:	Nil
Career Path:	Research
Job Family:	Research
Career Step:	Scientist 1 / Scientist 2
Date:	November 2024

Position priorities and responsibilities

Scientific Research

- Undertake research in the field of Geodesy and its application to tectonic, climate change and landslide processes.
- Knowledge of and experience in using techniques to analyse and model InSAR and other geodetic datasets.
- Support in the planning of research directions and the development of proposals for new research funding in Geodetic applications to climate change and tectonics.
- Promote and progress Geodetic research in active collaboration within geological, geotechnical and geophysical research and commercial sectors within New Zealand and, where applicable, overseas.
- Assist with operational activities including: the management Geodetic datasets; and participate in teams responding to extreme events.
- Communicating scientific research through authorship or co-authorship of scientific publications, papers or reports.

Commercial

- Provide professional advice and undertake consulting work for clients as required, completing reports to agreed scope, timeframe, and budget.

Projects

- Undertake projects for your manager, as and when required.

Responsibilities of all staff

- Comply with all GNS Science policies and procedures.
- Contribute to making GNS Science a healthy and safe place to work by complying with the responsibilities and accountabilities outlined in the Health and Safety Management System Framework.

The responsibilities of this position will change over time to respond to changing needs. The incumbent will need the flexibility to adapt and develop as the company and its environment evolves.

Key working relationships

Internal:

- Geodynamics Team, other GNS Science teams.

External:

- Ministry of Business Innovation and Employment (MBIE), Earthquake Commission (EQC), Department of Conservation (DoC), Consultants, Universities, Regional Councils and Territorial Local Authorities.

Person specification

Skills, knowledge and attributes

- Excellent written and verbal communication skills, with experience in report writing.
- Proficient use of Linux and software packages for analysis and modelling of geodetic datasets.
- Good technical knowledge of InSAR processing workflows with GAMMA and/or ISCE and derivation of timeseries products.
- Experience using Geodetic analysis and modelling
- A demonstrated ability to analyse data and write reports and papers on the results.
- Problem solving skills.
- Flexible and adaptable team player.
- Good time management and organisational skills.

Experience

Essential:

- Experience in interpreting InSAR and other data to understand earth deformation processes.

Desirable:

- Experience working with persistent scatterer datasets

- Three years' (post PhD) work experience, in geodesy research and/or consulting.
- Experience with processing and interpreting InSAR data.
- Demonstrated ability to prepare successful proposals for research and consultancy funding.
- A willingness to work with Iwi/Māori groups and organisations to build relationships with the aim of facilitating Māori development.

Qualifications

Essential:

- A PhD specialising in the use of InSAR Geodesy preferably with experience working with persistent scatterer technique.

Other requirements

Essential:

- Advanced skills in Linux and geodetic dataset analysis and modeling software.
- Proficiency in Matlab and/or Python for data processing and analysis.
- Strong technical knowledge of InSAR processing workflows; experience with GAMMA and ISCE processing tools is highly desirable.

Performance dimensions

At a high level, GNS Science recognises six **performance dimensions**: three relate to technical capability, one relates to leadership (if applicable) and two relate to the way we work. Below are the general expectations that are the minimum standards expected of all staff. There are also expectations that specifically relate to the career step associated with the role; you can find these on GNS Online.

Technical capabilities

Scope, complexity and innovation

- Enduring commitment to maintaining and developing skills and knowledge in area of expertise.
- Both the ability and desire to apply appropriate rigour, principles and practices to deliver quality work in a cost-effective manner.
- Acts in a manner that conveys high personal and professional standards.
- Open to coaching and feedback – incorporates suggestions to find better ways of doing things (to improve own and GNS Science performance).

Contribution to GNS Science / profession

- Establishes and maintains effective and collaborative working relationships – with colleagues and external individuals and groups.
- Both the ability and commitment to work in a culturally responsive and inclusive manner; respecting and valuing the diverse perspectives of individuals and groups.
- Takes an interest in early career colleagues, graduates and students – provides coaching and/or mentoring as appropriate. Supports initiatives to promote science careers.
- Prevents harm to self and others by carrying out duties safely and responsibly.

Delivery of work

- The ability and commitment to deliver pieces of work and projects on time to required quality, cost and benefit parameters.

- The application of appropriate project management rigour, principles and practices to delivering quality projects in a cost-effective manner

Behavioural expectations

Manaakitanga – we do the right thing

Champions a positive working culture. Works and interacts with colleagues, external partners, stakeholders and customers in a way that is consistent with our values:

- We are **CONNECTED** in our purpose; with each other, with partners and stakeholders and with our communities.
- We are **INSPIRED** by our work to explore, challenge, innovate and aim higher.
- We are **EMPOWERED** to be our best – valued for our differences, encouraged to contribute and enabled to grow and develop.

Bicultural commitment

- As a Crown Research Institute, GNS Science is committed to partnering with iwi/hapū and Māori communities and agencies to achieve their science aspirations.
- We do this in a way that is culturally appropriate (**tikanga**) and honours Māori and non-Māori worldviews (**te ao**).

These expectations are intended to support and guide the development of individual staff.