



**International Union of Geodesy and Geophysics
Commission on Geophysical Risk and Sustainability**

Final Report for the IUGG 2024-2025 Grant to the Commission on Geophysical Risk and Sustainability (GRC) John LaBrecque, Chair

The IUGG is a signatory of the Kyoto Landslide Commitment of 2020 (KLC2020), a global initiative launched by the [International Consortium on Landslides \(ICL\)](#) to reduce landslide disaster risk, acting as a blueprint for 2020–2030. The GRC agreed to represent the IUGG to sustain its commitment. Following this agreement, the GRC and the International Committee for Landslides jointly submitted proposals to the IUGG Grants program for 2022-2023 and 2024-2025. Following the 2024 proposal submissions, our two organizations were each awarded \$10,000 in support of our proposals. [The ICL grant report can be viewed here.](#)

The GRC proposals for the years 2022-2025 were in support of the GeTEWS Oceania Initiative of the GRC. The Initiative is working to develop a GNSS enhanced Tsunami Early Warning System (GeTEWS) for the Pacific Island community that will also advance eighteen resolutions of the IUGG General Assemblies (**Fig.1**).

The GeTEWS Oceania Working Group, in collaboration with the Pacific Geospatial and Surveying Council (PGSC), planned a meeting of the PGSC membership in late 2024. The Working Group drafted a proposal for the implementation of the GeTEWS Oceania Initiative for presentation during the planned workshop. In early 2025, the Working Group determined that pilot projects were a more cost-efficient and effective approach to engage PGSC membership in the GeTEWS development outlined in the Working Group's proposal. The Working Group holds regular Zoom meetings to address the needs of these its projects and to support outreach efforts. The project goal is to understand the challenges of developing a GeTEWS network of networks for the broader Oceania. An important objective is to insure national capacity building to operate, maintain, and analyze the resulting data for the GeTEWS Oceania Network. The first two pilot projects are:

- **The Tonga GeTEWS Network Pilot Project:** This project is led by Viliami Folau of the Ministry of Lands and Natural Resources, Kingdom of Tonga, and Timothy Melbourne of Central Washington University (CWU), Chair of the GeTEWS Oceania Working Group. Four multi-GNSS CORS stations have been installed, with a six-station network to be completed by 2026 (**Fig. 2**). A formal agreement (TonLoa) between the Tonga Ministry of Lands, CWU, and the GRC was developed through negotiations and included presentations made to the Minister of Lands by Tim Melbourne and to the HRH Cabinet of Ministers by John LaBrecque. The agreement was recently signed by the Minister of Lands, the Chair of the GRC, and the Central Washington University. Funds of the 2024-2025 IUGG grant are assigned to the implementation of the TonLoa agreement.
- **Vanuatu Pilot Project:** Lucie Rolland of the Observatoire de la Côte d'Azur is leading a design for the GeTEWS Oceania network of networks utilizing existing



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infrastructure wherever possible. The broader network design seeks to augment existing geospatial efforts such as the Asia-Pacific Reference Frame and other environmental monitoring efforts as well as contributing to national capacity building for the Pacific Islands. The Vanuatu Pilot Project (**Fig. 3**) is an outgrowth of the design effort to build upon abandoned geodetic sites. The Vanuatu project also seeks increased data sharing of New Caledonia's Banian Network. The Vanuatu effort is supported by Virginie Durand of l'Observatoire de la Côte d'Azur. Two CORS stations will be installed in the spring of 2026 at abandoned geodetic sites.

- **Note:** Geoscience Australia has reported plans for the installation of additional GNSS CORS sites in Tonga and Vanuatu. We welcome these efforts and we encourage the streaming of all data subject to national agreements. Representatives of Geoscience Australia participate in GeTEWS Oceania working group meetings which we hope will lead to strong coordination in the GeTEWS Oceania Initiative as our efforts grow stronger.
- **Future activities:** The GRC has begun discussions with Dr. Linberger and Dr. Rumpker of the Institute of Geosciences | Seismology Group, Goethe-University Frankfurt. The intent is to open a third pilot project in the Solomon Islands. Combined, these three projects would densify the GeTEWS Network for the Southern Pacific Islands in a very tectonically active region.



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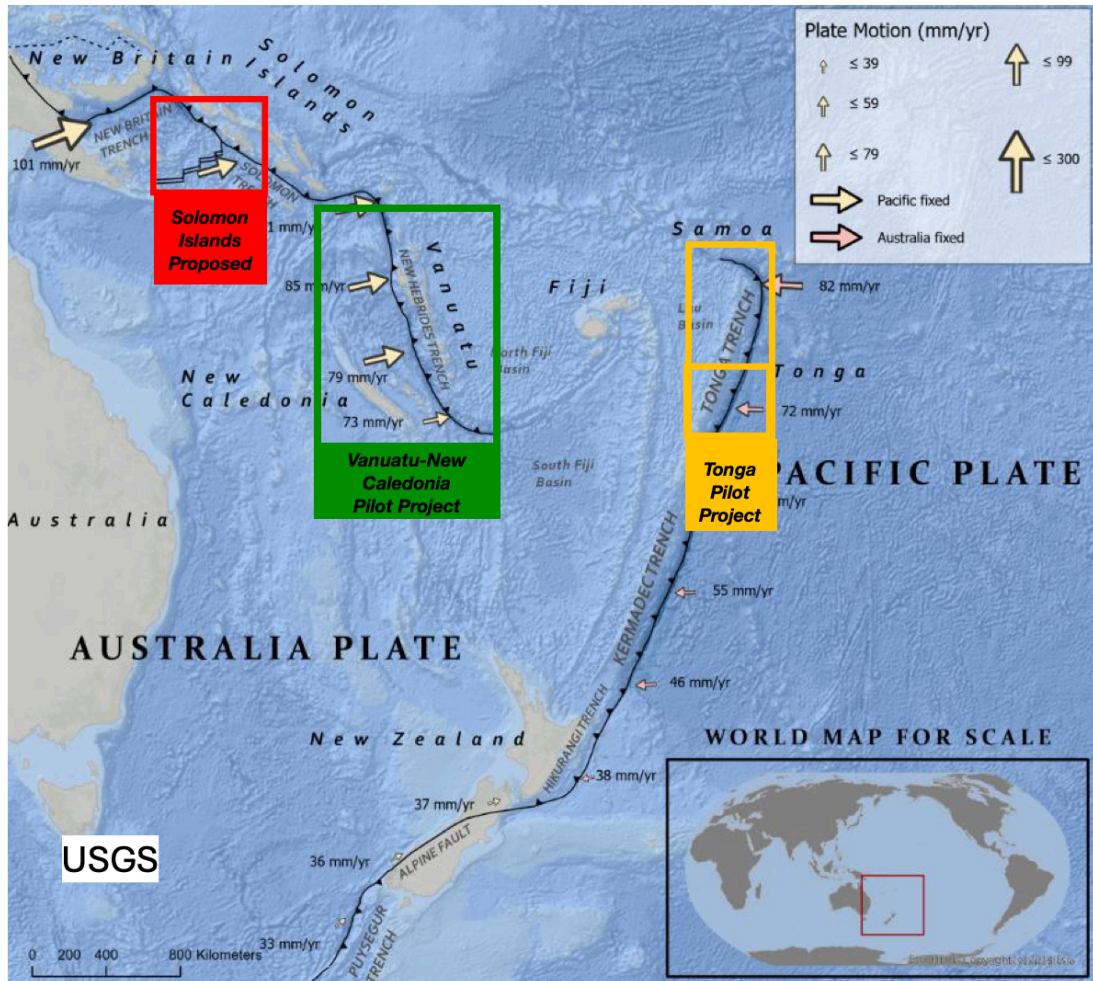


Fig 1: Tectonic map of the southwest Pacific displays the two GeTEWS Oceania Pilot Projects (Tonga (Yellow), Vanuatu-New Caledonia (Green) and the proposed Solomon Islands project). These three projects with existing networks would will enable GNSS monitoring of tsunamogenic volcanic and seismic activity.

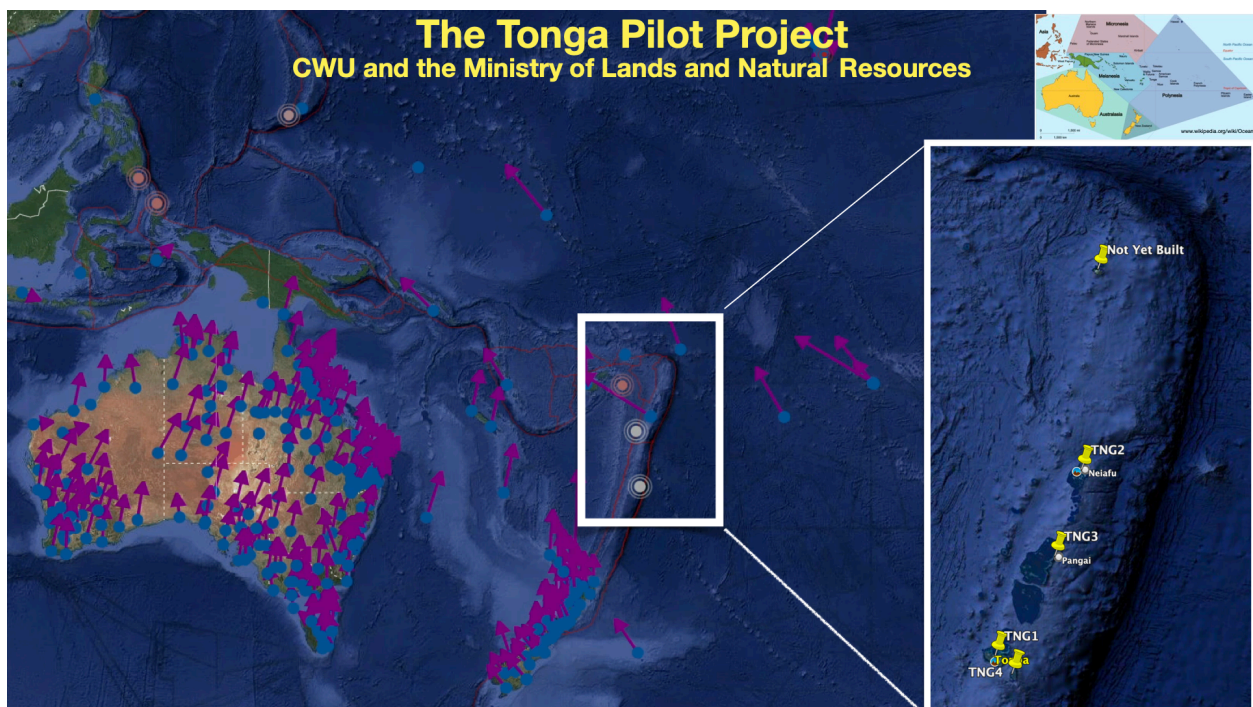


Figure 2: The map displays in purple the real-time GNSS streams for the Oceania region provided by Central Washington University. Note the paucity of operating stations within the northern region of Oceania. The five new GNSS CORS stations being developed by the Tonga pilot project of the GeTEWS Oceania Initiative are identified within the mapped inset. Four of the five stations are installed and operating. The fifth and sixth stations will be installed in 2026. The sixth station location is to be determined. Capacity building by improving the reliability of the streamed data and the availability of the data to Oceania agencies through local agency involvement are the primary objectives of the Tonga pilot project.

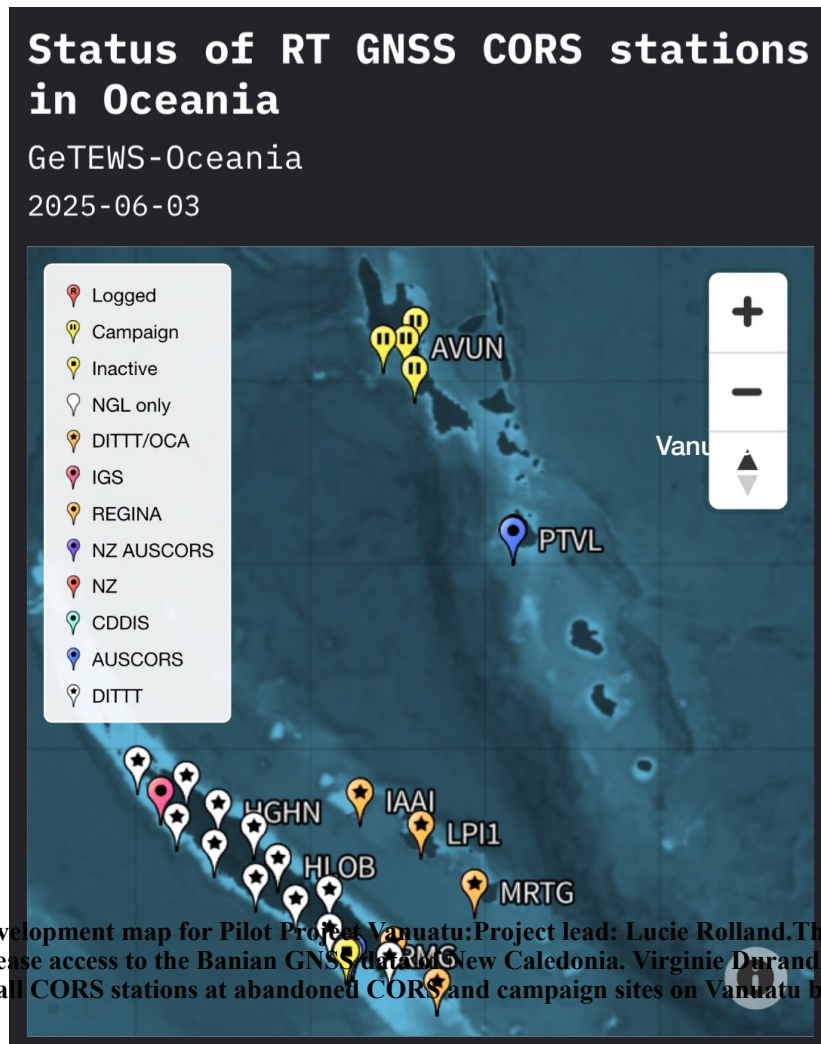


Figure 3: Development map for Pilot Project Vanuatu: Project lead: Lucie Rolland. The project seeks to increase access to the Banian GNSS data in New Caledonia. Virginie Durand will lead effort to install CORS stations at abandoned CORS and campaign sites on Vanuatu beginning Spring 2026.