Seismic Observations of Fiji

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1. National Seismic Network

Seismograph stations have been operating in Fiji since 1913 but were used by a number of organizations for geological research. Mineral Resources Department started its monitoring using seismographs in 1976, following the installation of the two stations in Vunikawai and Suva.

In 1980 the first seismograph network was established, in the installation of seventeen seismograph stations. These stations then became inactive in the late 90's because of the difficulty in searching for spare parts which has become phased out and also the high maintenance cost of these stations.

In 2003, the VHF system was replaced by the VSAT telemetry system in which it consists of 3 stations distributed across Fiji. The introduction of the VSAT monitoring system marks the change of analogue data to digital. The 3 station network then started to face problems in terms of power and construction failures and also technical support. This leads to the upgrading projects for the network in 2006. The upgrade involves the relocation of some of the existing stations, new VSAT transmission equipments, technical training, new hypocenter auto locating software, earthquake email notifications and change of the satellite band from Ku to C and the installation of the 3 additional stations.

Currently the network consists of 6 VSAT and 2 VHF stations. The upgrade has really extended the monitoring capacity of the Fiji network and also contributes to the rapidness of the dissemination of earthquake information and bulletin to the general public and relevant organizations.

2. Fiji Network Upgrade

The Seismology Section's through JICA funding and assistance has recently upgraded the Fiji Seismic Network, in which 3 additional stations named Lakeba, Dogotuki and Tailevu were added to the network. The upgrading works also includes the joint seismic network between Fiji and Tonga. This allows the Fiji observatory to have access to the Tonga observatory data and vice versa for accurate determination of earthquake hypocenters between the two regions. To eliminate problems faced by the existing stations, the Taveuni, Kadavu and Yasawa station were relocated. Gel batteries were purchased to replace the normal batteries and additional solar panels were installed. Broadband seismometers replace the short period sensors. These joint network operations involved a change in the satellite band used by the Fiji network, from Ku to C-band (Tonga Network satellite band) Also new software were introduced to autolocate events and also to provide us with earthquake information. Training were being conducted by engineer from Nanometrics and also technical expert from JICA in terms of vsat peripherals installation and seismic data analysis.

Tremendous efforts have been carried out by the technical expert from Nanometrics in Canada, JICA experts together with technical officers, Seismology Section, Fiji.

3. Upgrade Outcome

The upgrade has been a great benefit to the Fiji monitoring system as it now has a stable network and also the enhancing of earthquake monitoring and analysis. Fiji' access to data provided by the Tonga stations and vice versa.

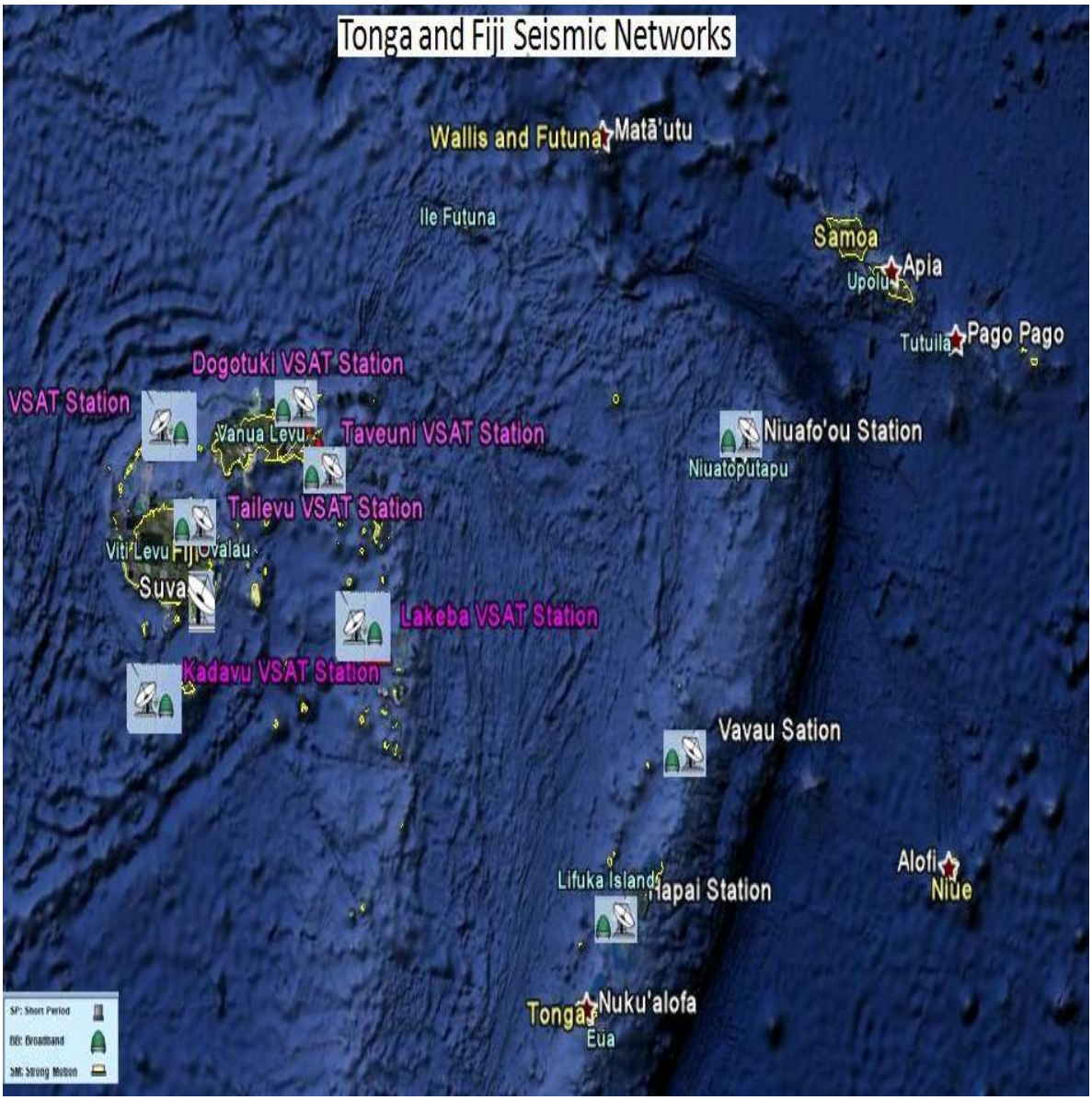

Figure 1. National seismic network and the Tonga Seismic Network