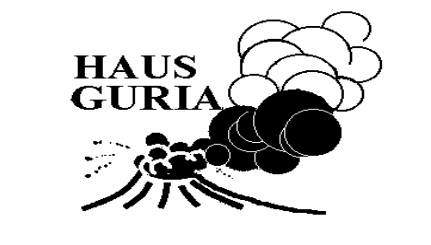


RABAUL VOLCANO OBSERVATORY (RVO)

RVO is one of three branches within the Division of Geohazards Management of the newly created Department of Mineral Policy and Geohazards Management. The other two branches are the Geophysical Observatory and the Geotechnical & Hydrogeological Survey located in Port Moresby. This new department is the remnant department of the Department of Mining.

RVO MISSION STATEMENT

To study and monitor volcanoes in PNG effectively so that early warnings of volcanic eruptions can be provided to authorities, and to work in partnership with these authorities and with communities to promote awareness of volcanic hazards and risks so that the communities become self reliant.

BRIEF HISTORY OF RVO

1937	The disastrous eruptions at Vulcan and Tavurvur in 1937. The Mandated Territory of New Guinea Administration center was evacuated temporarily to Kokopo.
1939	Dr C.E. Stehn and Dr W.G. Woolnough recommended to the Australian Government the establishment of a Volcano Observatory at Rabaul.
1940	RVO was established on Observatory Ridge (current site) for the first time.
1942-45	Second World War – Japanese Navy occupied Rabaul. A young Japanese seismologist, Dr. Takashi Kizawa, established a new observatory at Sulphur Creek. Allied bombings destroyed the Sulphur Creek Observatory and the original buildings on Observatory Ridge.
1950	RVO re-established on Observatory Ridge by the Australian Government.
1951	Disastrous eruption at Mount Lamington volcano prompted wider observatory operations across what was then the Territory of Papua New Guinea.
1975	Papua New Guinea gained Independence: the Australian Government transferred the running of RVO to the new nation of Papua New Guinea.

1994 Much of Rabaul Town was destroyed by eruptions at Tavurvur and Vulcan. Restoration of key monitoring equipment by the United States Geological Survey.

1996 Beginning of a major investment by the Australian Government in upgrading the national PNG Volcanological Service based at RVO.

KEY RESULT AREAS

- Volcano monitoring and eruption forecasting
- Risk and hazard mapping and assessment on volcanoes
- Geological and geophysical studies of volcanoes
- Community awareness and preparedness on volcanic hazards
- Provision of advice and information on volcanological matters
- Provision of assistance for volcanic disaster plans

VOLCANOES IN PNG

Papua New Guinea has 16 active and at least 28 potentially active or 'dormant' volcanoes which are a potential danger to the lives of about a quarter of a million people living in a total area of 16, 000 km^2 (Figure 1).

Of the 16 active volcanoes, 6 of them are classified as high-risk volcanoes. High-risk in the sense that a) they have had explosive eruptions in the past and have the potential of repeating these eruptions in future b) there are now a lot of people living around these volcanoes and c) there are economic activities located near these volcanoes such as Palm Oil plantations, logging industries, Sawmills, cocoa and copra plantations etc. The 6 high-risk volcanoes in Papua New Guinea are Rabaul in ENB, Ulawun and Pago in WNB, Karkar and Manam in Madang, and Mount Lamington in Oro.

MONITORING

Due to resource limitations only 9 of the 16 active volcanoes in PNG are currently monitored and none of the 'potentially active' ones have equipment installed on them or are under surveillance. The 9 active volcanoes monitored either instrumentally or equipped with an HF radio are Mount Bagana on Bougainville (HF radio only), Rabaul in ENB (instrumental/HF radio), Ulawun, Pago, Garbuna, & Langila in WNB (instrumental/HF radio), Manam in Madang (instrumental/HF radio), Lamington in Oro Province (instrumental/HF radio), and Esa'ala in Milne Bay (HF radio only). Karkar is not monitored due to vandalism of monitoring equipment on the island extending back to the early 1990s.

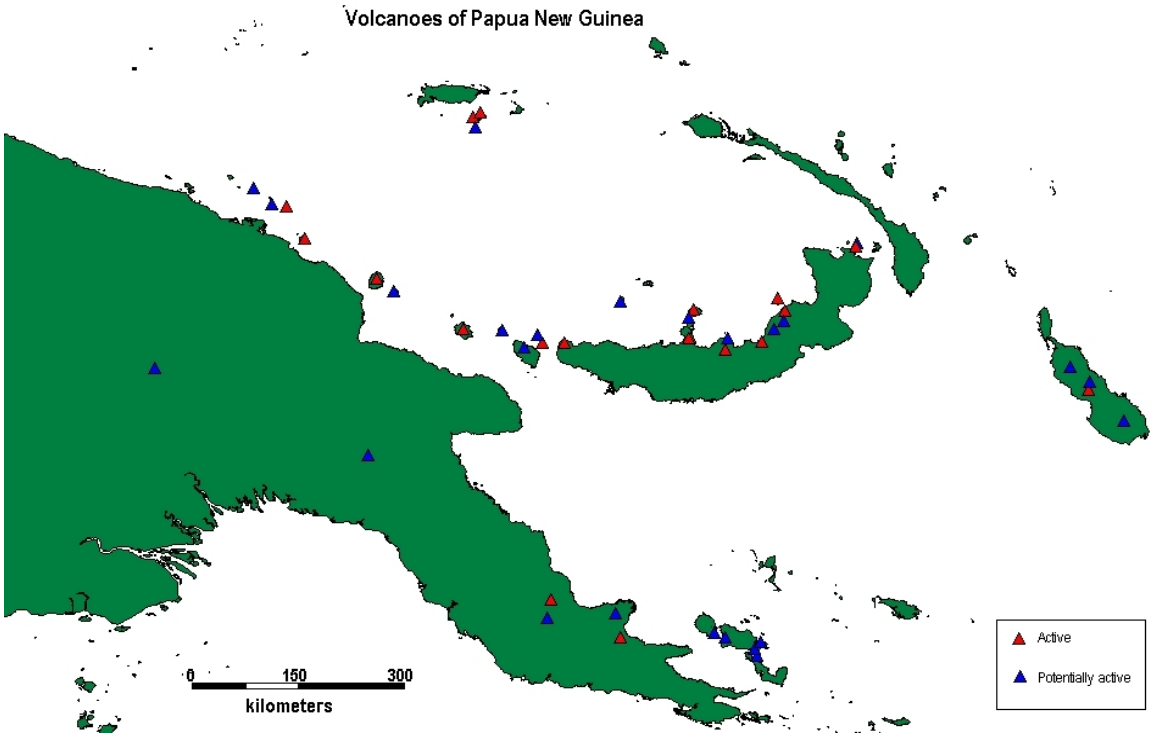


Fig. 1 – Volcanoes in PNG

After the 1994 eruption at Rabaul, the AusAID funded Volcanological Service Support Project inconjuction with the United States Geological Survey enabled monitoring around Rabaul and from outstations at Ulawun, Pago, Manam, and Lamington to be transmitted to the HUB system at RVO. Hence Rabaul, Ulawun, Pago, Manam, and Lamington volcanoes are now being monitored on a real-time basis.

TASKS CARRIED OUT BEFORE, DURING, AND AFTER AN ERUPTION/UNREST

Listed below are activities that RVO perform before, during, and after an eruption or a seismic unrest.

BEFORE

- Monitor volcano through seismicity, ground deformation, temperature measurements.
- Carry out geological mapping to determine eruptive history.
- Identify risk areas through hazard mapping.
- Construct evacuation plan for communities at risk.
- Conduct volcano awareness programs to authorities and communities at risk. Information given includes explanation of volcanic hazards, hazard maps, evacuation plan, advise on safe areas to occupy, what to do prior and during an eruption, explanation of alert levels (Fig. 2).

DURING

- Continue monitoring to keep tract of status of erupting volcano.
- Issue volcano situation report on status of activity to all stakeholders including relevant government authorities, business houses, NGO's and the aviation industry.
- Provide briefings to Provincial Disaster Committee, Private businesses, and NGO's.
- Conduct awareness programs to the affected community. Information given includes status of volcanic activity.

AFTER

- Continue monitoring
- Chairman of Provincial Disaster Committee will declare whether it is safe to return to affected areas after consultation with RVO.
- Continue to issue situation reports
- Conduct awareness programs

MITIGATION

"Prevention is better than cure"

The following are steps we can take to make living safer around a volcano.

1. Villages and establishments like schools, aid posts, hospitals and businesses must be built in safe areas, away from the main hazard zones.

2. Plantations, other developments and infrastructure should be established at safe distances away from the volcano.

3. Always obey instructions and make preparations for evacuation at times of high level of alert warning.

4. Know where you should go during evacuation or at times of volcanic eruptions.

WHAT TO DO AT THE TIME OF DISASTER:

1. The first rule is: **DO NOT PANIC.**

2. Follow instructions from the authorities.

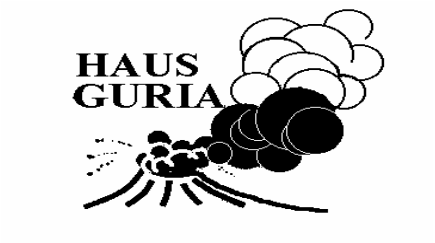
3. Go to safe areas or pick-up points where you can get help from authorities if needed.

4. Stay in a group such as a village group or church group where you have a leader like a councilor or church leader.

BELOW IS AN EXAMPLE OF A 'VOLCANO, STAGES OF ALERT' CHART. THESE CAN VARY SLIGHTLY FROM VOLCANO TO VOLCANO – FIG.2

VOLCANO STAGES OF ALERT WARNING & COLOUR CODE

VOLCANO ACTIVITY	RISK LEVEL	LEVEL OF ALERT COLOUR CODE	ACTION
Vents releasing and there may be some gery ash components. Low seismic activity. No eruption but maybe possible in the future.	LOW	STAGE 1	Review and update emergency plans. Public announcements. Mock exercise.
Increased seismicity. Felt earthquakes at long intervals. Small scale ash eruptions commence. Some booming/roaring and rumbling noises. Seismicity may increase without any eruption.	MODERATE	STAGE 2	Intensify public announcements. Provincial Disaster Committee (PDC) to conduct regular meetings to discuss contingency and evacuation plans. Relocation of non-essential equipments and personal effects to safe areas.
Eruption developing into moderate eruption affecting upper slopes of volcano and down wind areas. Seismicity constitutes continuous tremors. Booming/roaring and rumbling noises.	HIGH	STAGE 3	Frequent PDC meetings to layout procedures for activation of evacuation plan. Constant public announcements on status of eruption. Compulsory evacuation of Priority areas first.
Moderate eruption in progress and looks irrevisible.	DANGER WITHIN 10 KM RADIUS FROM THE VOLCANO	STAGE 4	Evacuation is compulsory for every one. Transit centers in place for relocation of affected people.



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