

Appendix: Acronyms and Glossaries

Acronyms

ANGAU: Australian New Guinea Administrative Unit

AusAID (AIDAB): Australian Agency for International Development (formerly Australian International Development Assistance Bureau)

BMR: Bureau of Mineral Resources — now Geoscience Australia (GA)

CPL: Coconut Products Limited

CSIRO: Commonwealth Scientific and Industrial Research Organisation

CTBTO: Comprehensive Test Ban Treaty Organisation

DRR: disaster risk reduction

DSIR: New Zealand Department of Scientific and Industrial Research

GIS: geographic information system

GRA: Gazelle Restoration Authority

IAVCEI: International Association of Volcanology and Chemistry of the Earth's Interior

IDNDR: International Decade for Natural Disaster Reduction (United Nations)

JICA: Japan International Cooperation Agency

NDES: National Disaster Emergency Services

OCHA: Office for the Coordination of Humanitarian Affairs (United Nations)

PDC: Provincial Disaster Committee

PMGO: Port Moresby Geophysical Observatory

PMV: public motor vehicles

PNGRIS: Papua New Guinea Resource Information System

RVO: Rabaul Volcanological Observatory

USGS: United States Geological Survey

VAAC: Volcanic Ash Advisory Centre (International Volcano Watch)

VDAP (VCAT): Volcanic Disaster Assistance Program, USGS (formerly Volcanic Crisis Assistance Team)

VEI: volcanic explosivity index

VSS Project: Papua New Guinea – Australia Volcanological Service Support Project

Glossary 1: Types of Explosive Eruptions

hydrovolcanic: Explosions caused by magma encountering subsurface water and producing intense fracturing and expulsion of fragmented rocks.

peléean: The name derives from the explosive eruptions at Mount Pelée in 1902 when nuées ardentes were first described and named. Both terms are no longer volcanologically fashionable.

plinian: Paroxysmal ejections of large volumes of pyroclastic materials, at times accompanied by caldera formation. The eruptions form high-rising eruption columns and clouds. Large-volume pyroclastic flows may develop when the column collapses, including ignimbrites if pumice is abundant in the flows.

strombolian: Weak to violent ejection of pasty blebs of fluid lava, accompanied by spherical to fusiform ‘bombs’, cinders, and ash. The activity can be spectacularly incandescent at night-time. Lava flows may be formed.

surtseyan: Distinctive black bursts of pyroclastic materials in cocks’ tail or cypressoid-like patterns, and mixed with contrasting white water vapour where a subaqueous eruption breaks through the surface of the sea or lake. Base surges may explode radially outwards from the foot of the sub-aerial eruption cloud.

vulcanian: Violent ejections of solid or viscous hot volcanic fragments, at times in cauliflower- or mushroom-shaped clouds. Pyroclastic flows and lava flows are typically absent.

Glossary 2: Volcanological Terms

andesite: A generally grey volcanic rock containing 53 per cent, up to less than 62 per cent, silica (SiO₂) and forming a chemical series with basalt, dacite and rhyolite.

ash: Pieces of generally glassy volcanic rock less than 4 millimetres in diameter.

avalanche amphitheatre: A large, arcuate, or U-shaped escarpment where the flanks of a volcano have collapsed gravitationally producing debris avalanches.

basalt: A dark volcanic rock containing less than 53 per cent silica (SiO₂) and forming a chemical series with andesite, dacite and rhyolite.

base surge: Laterally propelled eruption clouds caused typically by the interaction of magma with lake water, or in the shallow water of coastal areas. They flow across the water surface away from the vent and the base of the main eruption cloud or column.

caldera: Large, generally elliptical or sub-circular surface depressions at least one–two kilometres wide, formed by the collapse of the roofs of magma reservoirs.

dacite: A generally light-greyish volcanic rock containing 62 per cent, up to less than 70 per cent, silica (SiO₂) and forming a chemical series with basalt, andesite and rhyolite.

debris avalanche: Highly mobile flows of broken rock and entrained air formed where the side of a volcano collapses and producing an avalanche amphitheatre.

Holocene: The geological epoch that began at the end of the Pleistocene, about 11,700 years ago, and which continues to the present day. Its start is commonly rounded up to about 12,000 years ago and thus to 10,000 years BC.

ignimbrite: A pumice-rich deposit or rock commonly of dacitic or rhyolitic composition produced by deposition from a pyroclastic flow.

intrusion: Rocks representing magmas that have filled and solidified in fissures, cracks, faults and other spaces beneath volcanoes, but which have not erupted from them.

lava flow: A ground-hugging stream of erupted magma and rock, commonly referred to simply as 'lava' and clearly distinguishable from pyroclastic flows.

maar: Bowl-shaped craters caused by the explosive interaction of magma with groundwater (see hydrovolcanic explosions). They typically cut deeply into the pre-eruption ground surface and may be surrounded by low-angle ramparts of pyroclastic materials.

magma: Sub-surface rock that has become molten and which either erupts from volcanoes or forms intrusions beneath them. Most magmas are technically alumina-silicate liquid and most contain at least some pre-eruption crystals.

nuée ardente: The term means 'glowing cloud' and was introduced for the block-and-ash type pyroclastic flows observed at Mont Pelée on 8 May 1902.

obsidian: A volcanic rock consisting almost entirely of natural glass.

Pleistocene: The geological epoch spanning the world's recent period of glaciations and most recently dated from about 2.6 million to about 11,700 years ago (see also Holocene).

pumice: Pieces of highly frothed volcanic rock, commonly of dacitic or rhyolitic composition, and which can float on water.

pyroclastic: Literally meaning 'fire broken' and applied to fresh magma or hot volcanic rocks that have been broken up during volcanic explosions.

pyroclastic flow: Fast-flowing, hot emulsions or 'avalanches' of pumice, ash, dust, blocks, volcanic ash, and entrained air, which tend to follow the floors of valleys during their emplacement.

pyroclastic surge: The turbulent, lower density part of a pyroclastic flow which is not so constrained by topography as is the main and denser part of the flow.

rhyolite: A volcanic rock containing 70 per cent silica (SiO_2) or more and forming a chemical series with basalt, andesite and dacite. Rhyolite ranges from black, shiny, glassy obsidian to a pale grey or white rock when crystallised.

tephra: A commonly used synonym for pyroclastic materials or pyroclastic rocks in general. The term was used originally by Aristotle.

volcanic field: Volcanic areas characterised by numerous small cones and craters rather than just one major volcano. Many of these small cones are formed by just one volcanic eruption and so are commonly called 'monogenetic'.