



Regional geomorphology

- volcanic knoll** Probable volcanic edifices <math>< 1000</math> m, found on plains and plateaux. Often form chains at a wide variety of orientations including the Hawaiian - Emperor orientation. Often grade into Volcanic Rises (see below). Mapped as singular (usually circular) and compound forms.
- seamount** Probable volcanic edifices >1000 m, found on plains and plateaux. Often form chains at a wide variety of orientations including the Hawaiian - Emperor orientation. Often grade into Volcanic Rises (see below). Mapped as singular (usually circular) and compound forms.
- island seamount** Seamounts that breach the sea-surface.
- volcanic ridge** Typically elongate rises of probable volcanic origin. Merge into seamounts, especially compound forms. Some rises are very extensive e.g. Boudeuse at the eastern limit of the Penrhyn Basin. Typically elongate rises of probable tectonic origin. All located along the NE and SE edges of the Manihiki Plateau, as well as along the fault zone to the SSW.
- tectonic ridge** Tonga Trench defined by extensive parallel fractures especially on the oceanic plate side, while the accretionary wedge is more irregular. Depth can be several km relative to adjacent plains.
- trench** Narrow/elongate and usually aligned areas 500-1000 m deep. Found in both plains and plateaux.
- trough** Restricted areas of abyssal plains characterised by slightly greater depth (100-300 m) than adjacent plains.
- plateau** Extensive areas of seafloor elevated (500-2,000 m) relative to the plains. No evidence of abyssal hills (all units are very likely all part of the much older Manihiki Plateau) which is known to have significant sediment cover (in some places ~1km). Some parts of the plateau have more knolls than other parts, not known if this due to later volcanic activity or different amounts of sediment cover.
- Aitutaki Passage** The Aitutaki Passage is more subtle than the mapped lows and is in effect Abyssal Plain.
- abyssal plain low** Restricted areas of abyssal plains characterised by slightly greater depth (100-300 m) than adjacent plains.
- abyssal plain** Generally areas with limited relief except for volcanic hill traces and small knolls. Typically presented as "basins" bound by major features such as transform fracture zones, plateaux and volcanic rises.
- fault** Breaks in the seabed bathymetry either against the plateaux, at a high angle to prevailing abyssal hill traces, or more often of too great a magnitude to be abyssal hills.
- volcanic chain** Interrupted alignments of seamounts and knolls.
- EEZ** Exclusive economic zone
- nodules** nodules

16-159 geology - mostly from 15 kHz multibeam and 3.5 kHz narrow-beam sub bottom profiler

- fracture zone edge
- abyssal hill slope
- abyssal hill slope
- sample site
- sample site
- exclusive economic zone of the Cook Islands
- knolls
- knolls-compound
- volcanic rise
- clay-ooze "type 1"
- clay-ooze "type 2"
- clay-ooze "type 3"

western limit of Rakahanga Rifts
north-northwest facing
south-southeast facing
JICSR
JICA/MMAJ
of the Cook Islands
singular volcanic knolls or groups of singular knolls
edifices comprised of superposed volcanic knolls
raised area of abyssal plain (~200 m)
brown clays, subordinate siliceous ooze and ferromanganese precipitates; medium backscatter reflectance
brown clays, subordinate siliceous ooze and ferromanganese precipitates; with low backscatter reflectance and ~10 m acoustically transparent upper layer
brown clays, subordinate siliceous ooze and ferromanganese precipitates; likely impermeable brown clays and possible FeMn crusts; with high backscatter reflectance

Table of Mineral Resource Estimate Results
Source: RSC (2023) Cook Islands polymetallic nodule deposit, Dunedin, New Zealand.

Classification	Cut-off (kg/m ²)	Abundance (M)	Volume (M)	Metal Grade (%)				
		(wet)	(net)	Co	Cu	Fe	Mn	Ni
Indicated	5	26.7	304	0.50	0.15	18.5	15.4	0.25
Inferred	5	14	6,400	0.4	0.2	17	16	0.4
Global	5	14.4	6,700	0.44	0.21	17.4	15.8	0.37

Notes:
1. The Mineral Resource is reported in accordance with the JORC Code (2012).
2. The Mineral Resource is contained within the Cook Islands Exclusive Economic Zone.
3. Mineral Resources have been rounded to reflect their confidence. Some totals do not add up exactly due to rounding.
4. Abundance is the wet weight (kilograms) of polymetallic nodules per square metre.
5. Dry tonnages were not estimated, free moisture levels (i.e. not water of crystallisation) vary but are in the order of 30% on a wet basis.

