Seabed geomorphology of the Cook Islands

1:3,000,000 scale

Jarvis Basin
Manihiki Basin
Manihiki Plateau
Danger Island Troughs
Manihiki Plateau
Penrhyn island
Rakahanga island
Manihiki island
Pukapuka island
Nassau island
Suwarrow island
Manihiki Scarp
Rakahanga Rifts
Penryhn Basin
Penryhn Basin
Samoa-Niue Basin
Samoa-Niue Basin
Palmerston island
Aitutaki island
Manuae island
Mitiaro island
Atiu island
Mauke island
Rarotonga island
Mangaia island
Southern Cooks Basin
A
A'
B
B'
C
C'
C''
C'''

0 100 200 400
Kilometers

N

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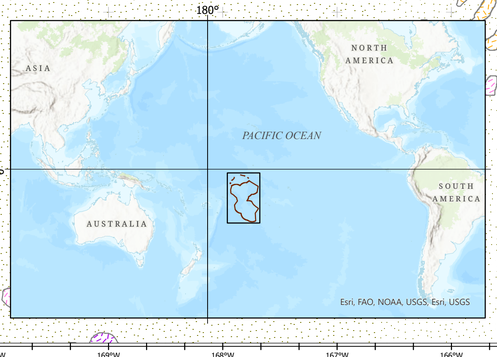
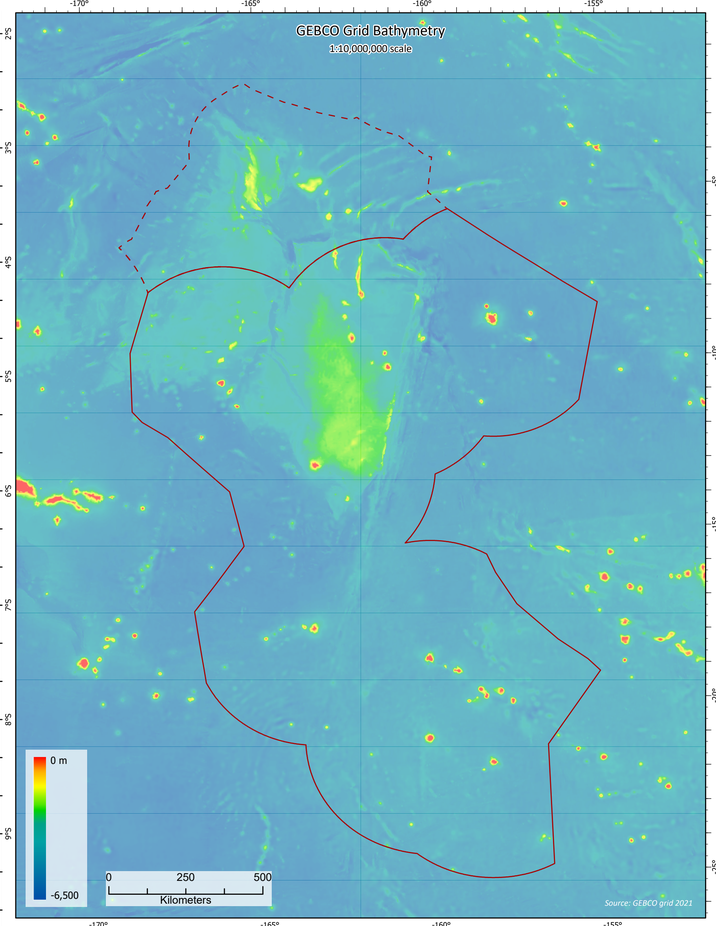
Seabed Minerals Authority, September 2023, rev1.1

Geographic coordinate system: WGS 1984
Projected coordinate system: Lambert Azimuthal Equal Area
Central Meridian: -161.0000
Latitude of Origin: -16.0000

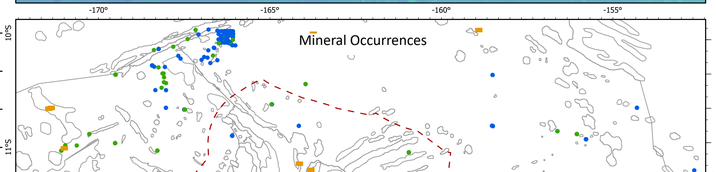


GEBCO Grid Bathymetry

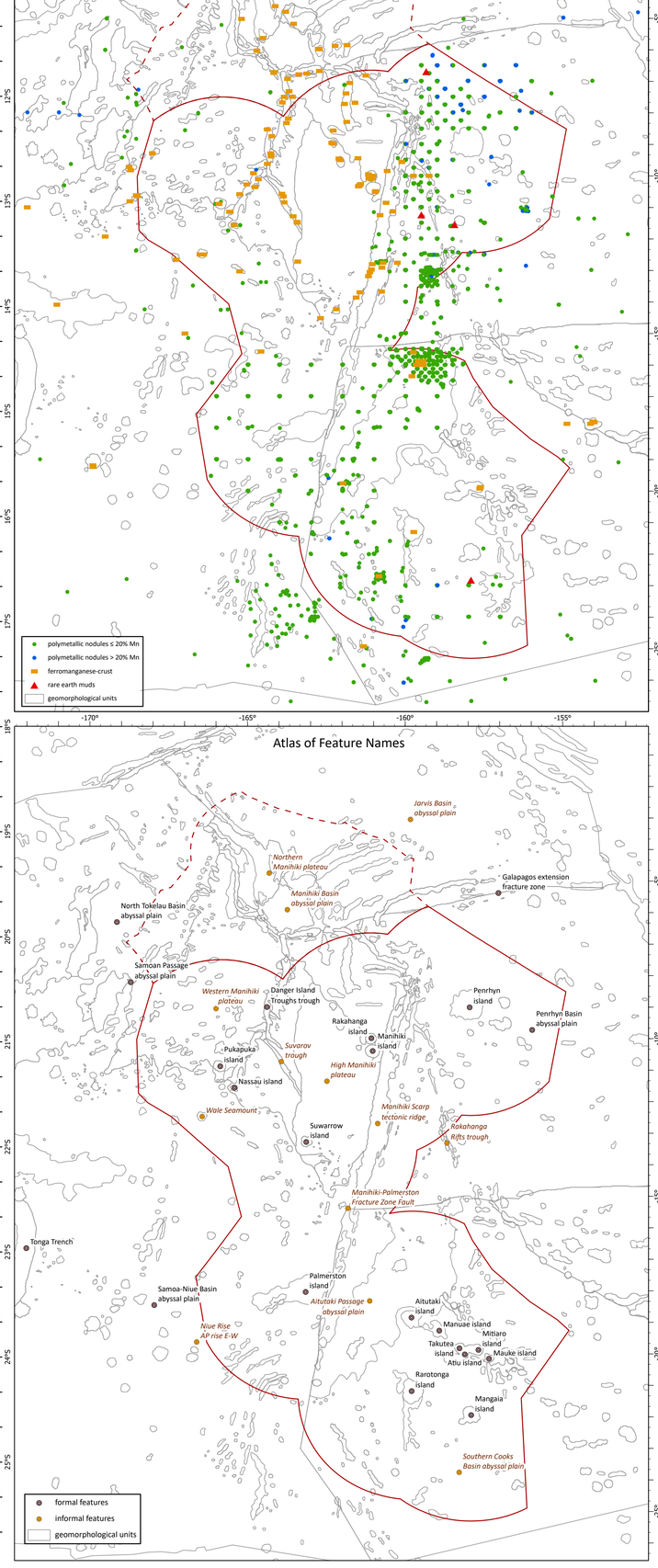
1:10,000,000 scale



Mineral Occurrences

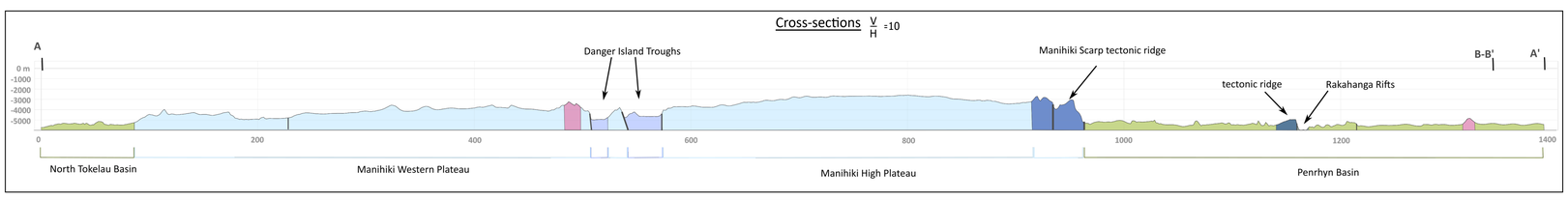


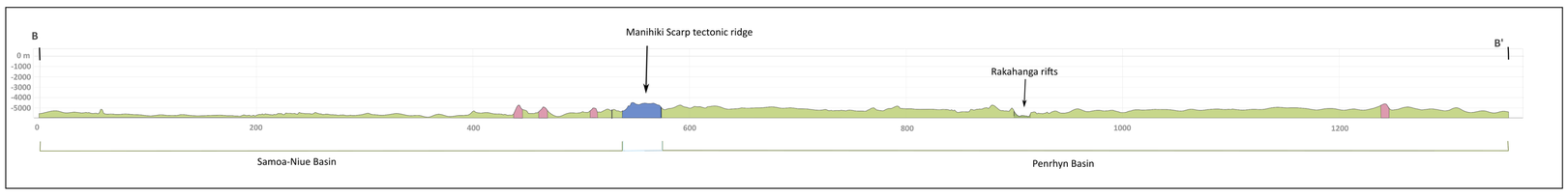
Atlas of Feature Names

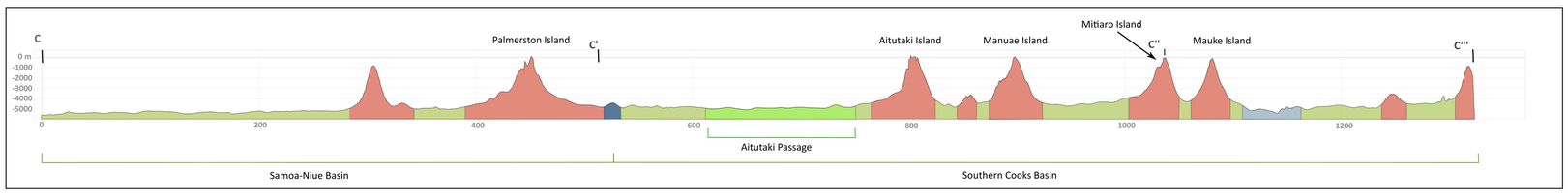


abyssal plain	Generally areas with limited range in relief except for abyssal hill traces and small knolls. Typically presented as "basins" bound by major features such as transform fracture zones, plateaux and volcanic rises	seamount	Probable volcanic edifices >1000 m above surrounding seafloor. Often from chains at a wide variety of orientations including the Hawaiian – Emperor orientation. Often grade into volcanic rises. Mapped as singular (usually semi-circular) and compound forms.	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.	trough	Narrow/elongate and often aligned areas 500-1000 m deeper than adjacent plateau or plain.	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.
abyssal plain low	Restricted areas of abyssal plains characterised by slightly greater depth (100-300 m) than adjacent plains.	seamount with island	Seamounts that breach the sea-surface.	tectonic ridge	Typically elongate rises of probable tectonic origin. Mostlly located along the NE and SE edges of the Manihiki Plateau, as well as along the fault zone to the SSW of the plateau.	trench	Regional inset map only. Tonga Trench defined by extensive parallel fractures especially on the oceanic plate side, while the accretionary wedge to the west is more irregular. Depth can be several km relative to adjacent plains.	volcanic chain	Interrupted alignments of seamounts and knolls.
Aitutaki Passage	A subtly deeper area of abyssal plain thought to control polymetallic nodule mineralisation.	volcanic ridge	Typically elongate rises of probable volcanic origin. Merge into compound forms of seamounts.			cross-section	location of the cross-sections below	islands	of the Cook Islands
volcanic knoll	Probable volcanic edifices <1000 m above surrounding seafloor. Found as singular (usually semi-circular) and compound forms.					abyssal hill trace	Example abyssal hill orientations from the parts of the GEBCO grid composed from MBES data. Can be difficult to separate from other types of sub-parallel faults in certain locations.	exclusive economic zone	of the Cook Islands
								extended continental shelf	under application by the Cook Islands

Cross-sections V/H =10







abyssal plains | Manihiki Plateau | Aitutaki Passage | tectonic ridge | seamount | knoll | rifts/troughs

Regional Geomorphological Setting