

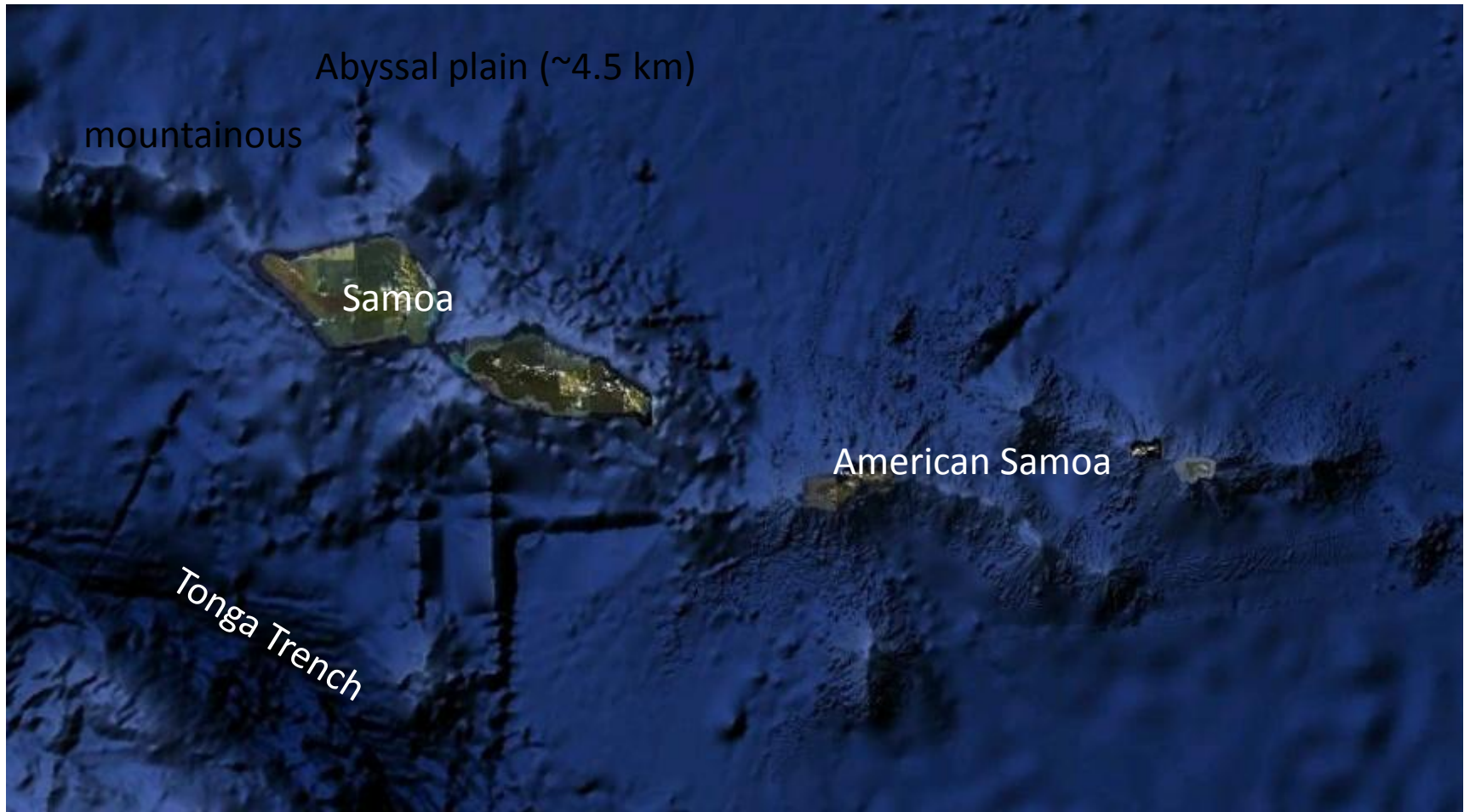
DEEP SEA MINERALS (DSM) TECHNICAL ISSUES FOR SAMOA

Ministry of Natural Resources &
Environment
Meteorology Division.

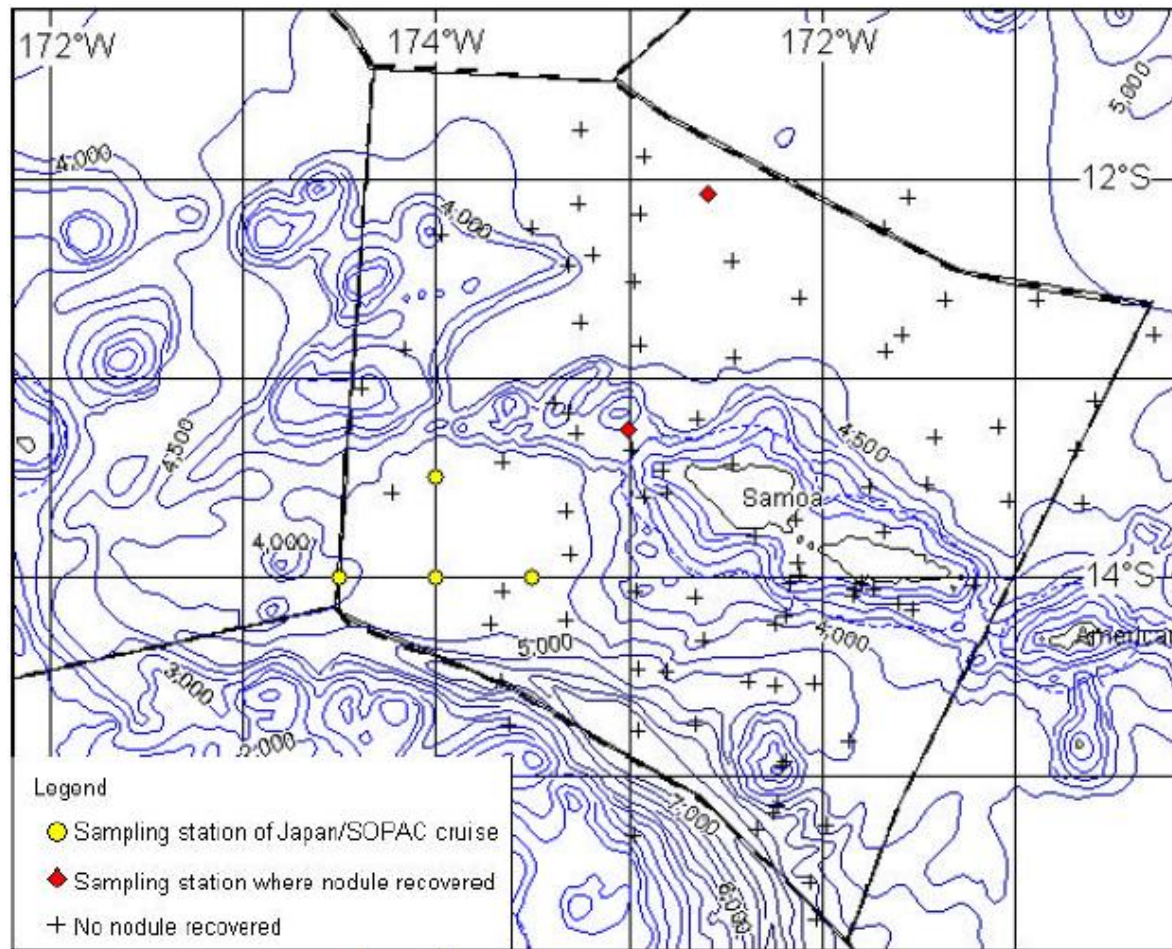
DSM

- Definition of Mineral
 - (For Practical Purposes) – It includes sand and gravel, precious metals, hydrocarbons and phosphates. (SOPAC Misc rept 117, 1991)
 - Naturally occurring substance that is formed through processes where rocks are formed and/or transformed (see info brochure 2).
- Our EEZ is the smallest in the region (our neighbours are Tokelau, Am Samoa, Tonga, Wallis & Futuna).
- Water depth in EEZ= 4600 -4800 m
- Island age ~ 5 Ma (Lonsdale 1975)

Samoa Island Chain



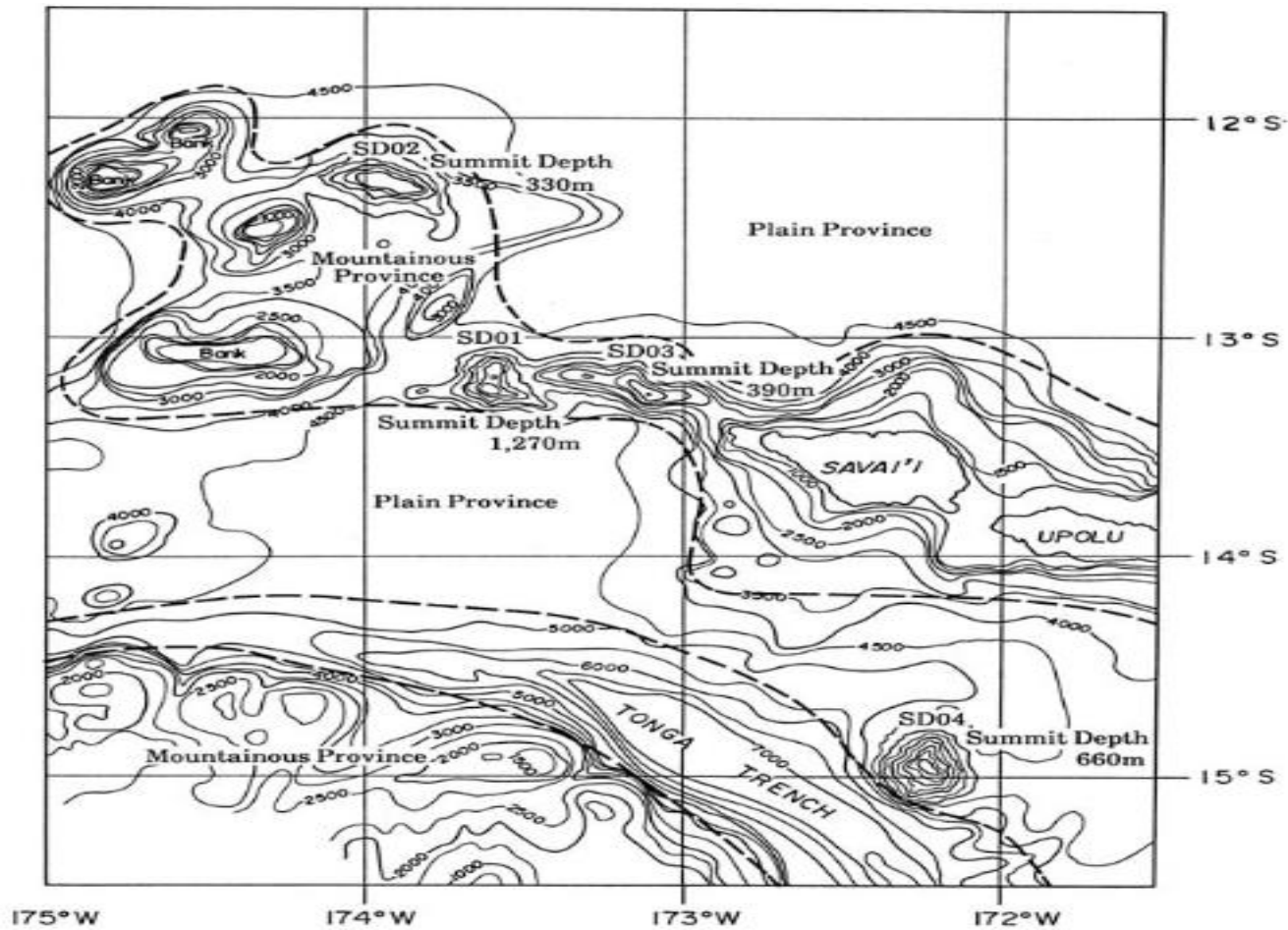
Samoa's Exclusive Economic Zone (EEZ)



Exploration History

- Started in the late 1970s
 - Assessing the potential for, Manganese Nodules, Phosphate, Precious Coral and Cobalt-rich Crusts.
 - 1990s – sampling of Mn Nodules and seafloor photography as well as CRC investigation were carried out by Japan-SOPAC survey.
 - The 4 sea mounts surveyed were SD01, SD02, SD03 and SD04.

Sea Mounts



Summary of previous offshore minerals exploration in Samoa

Research Vessel and Year of Survey	Survey Area	Surveyed Commodity
RV Coriolis (1977)	Samoa's EEZ	Manganese Nodules
R. V. Machias (1979)	Pasco Bank West of Savaii, and shallow bank northeast of Pasco Bank	Precious coral, Phosphate
R. V. Machias (1979)	Assau and Salelologa Harbours	Nearshore sediment deposits for construction and landfill
R. V. Machias (1979)	South (to the Tonga Trench) and west of Upolu and Savaii	Precious Coral, Manganese Nodules/crust, Phosphate
R. V. Machias (1980)	Deeper flanks of the Samoa Island slope	Precious coral
R. V. Moana Wave (1987)	Machias Seamount, southern coast and western tip of Savaii;	Cobalt-rich Crusts, metalliferous sediments, hydrothermal vents
R. V. Hakurei Maru 2 (1990)	Sea area of Upolu and Savaii Islands	Manganese Nodules, Cobalt-rich Crusts

Average Grade of the 4 sea mounts

- Co = .41%
- Ni = .23%
- Cu = .08%
- Mn = 17.96%
- Fe = 20.42%
- In comparison with other places in the region its low in grade.

Summary of facts

Seamounts	Inferred Resources (tonnes)	Metal Resources (tonnes)		
		Co	Ni	Cu
SD01	881,000	2,909	1,763	705
SD02	914,000	4,387	2,376	822
SD03	211,000	864	484	147
SD04	14,000	-	-	9
Total	2,020,000	8,160	4,623	1,683

- conditions for the growth of Mn nodules are recognised but the occurrence of turbidite sediments inhibits nodule formation.
- thin crust due to young age of substrate
- Thickness and grade is lower compared to other discoveries in the region.

Faafetai

