American Samoa Collection: Multibeam Bathymetry and Backscatter Maps

2006

American Samoa Collection: Multibeam Bathymetry and Backscatter Maps

Acknowledgements:

All terrestrial Ikonos satellite imagery is from Space Imaging. All multibeam bathymetry is from the National Oceanic and Atmospheric Administration (NOAA) Pacific Island Fisheries Science Center (PIFSC) Coral Reef Ecosystem Division (CRED) an the Joint Institute for Marine and Atmospheric Research (JIMAR) with funding from NOAA's Coral Reef Conservation Program.

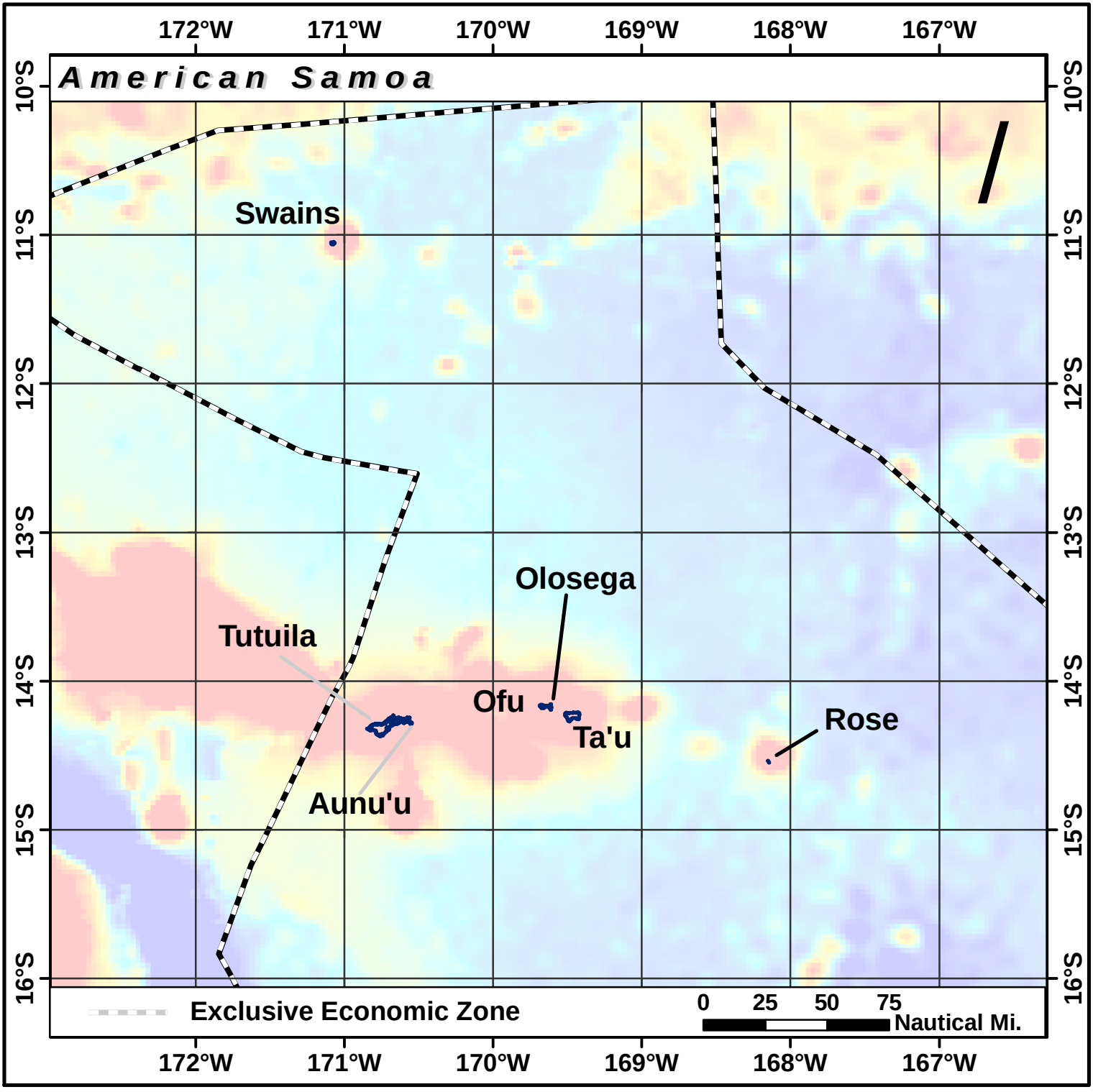
The Collection:

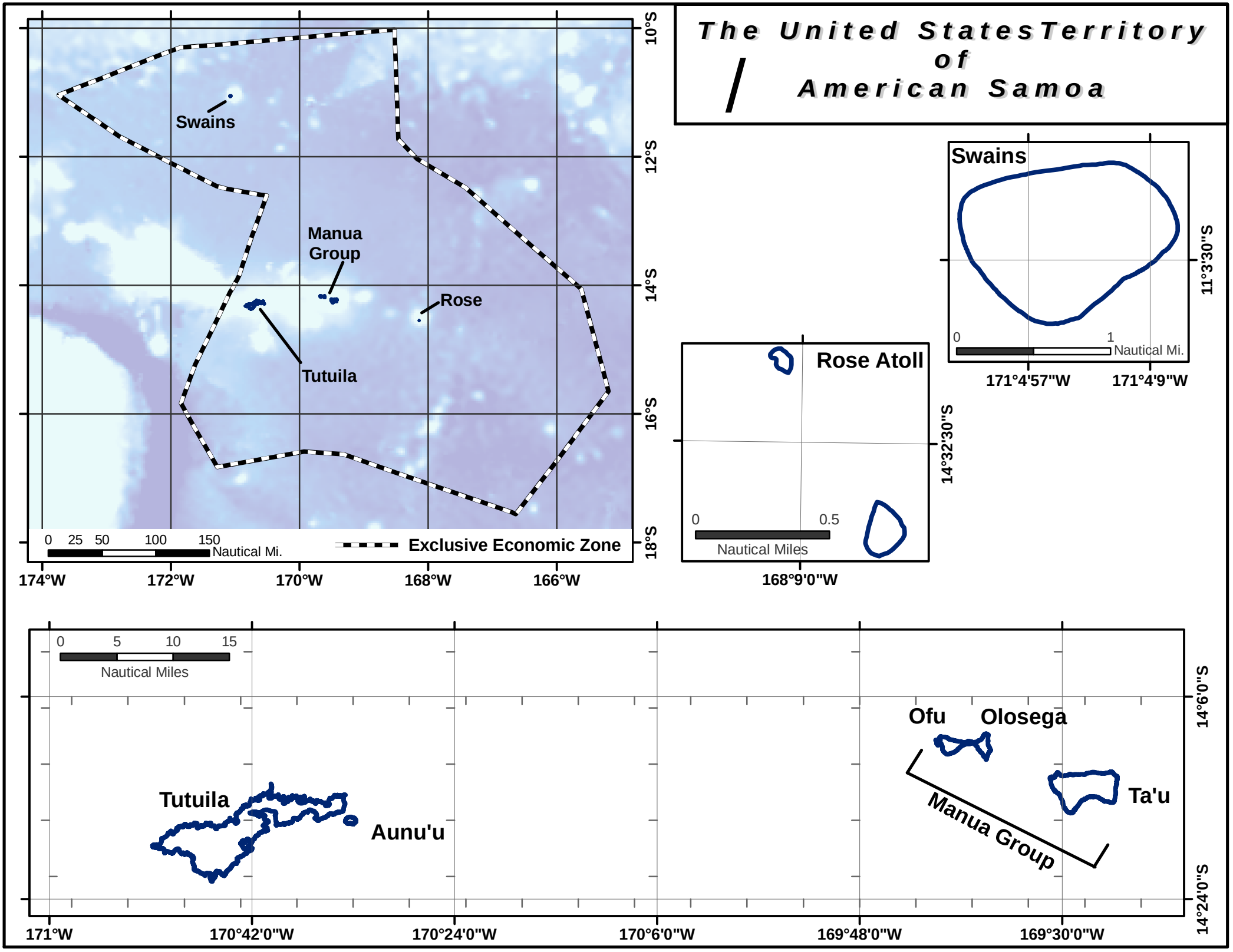
This collection of maps was made in 2006 by CRED. They include multibeam bathymetry and backscatter collected in January to March of 2004 and February to March of 2006 from the NOAA Ship Hi'ialakai and the R/V AHI. Details on the surveys, platforms and processing may be found in the metadata appendix. Some of the maps also include Ikonos satellite imagery for reference to land features.

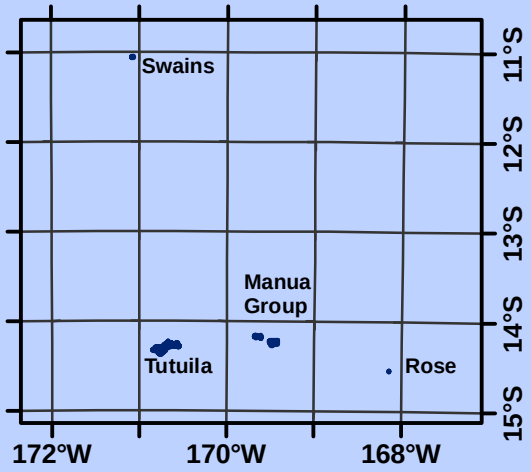
These data are not for navigation. The data were collected in support of Coral Reef Conservation Program goals to map all shallow (0-30 m) coral reefs in US Pacific waters and priority moderate (> 30 m) depth areas by 2009. The data are being used to provide bathymetric and backscatter data for previously unmapped areas; in support of ecosystem management requirements for benthic habitat mapping and location of Essential Fish Habitat; and to study the geologic features of the area.

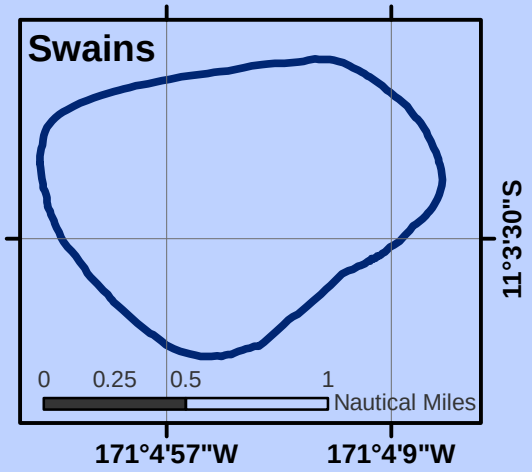
The Metadata Appendix:

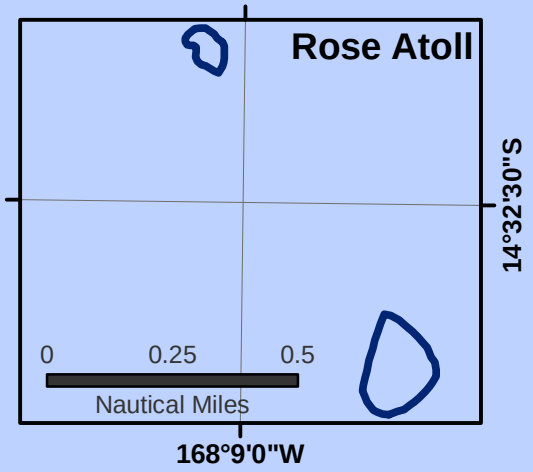
The metadata appendix includes a file for each American Samoa multibeam product that is served on the Pacific Islands Benthic Habitat Mapping Center (PIBHMC) website (http://www.soest.hawaii.edu/pibhmc/pibhmc_AmSamoa.htm). In this case, the most likely data type that users in American Samoa would download is the ASCII format. Therefore, the metadata that are included are for the ASCII products, although most of the background information and instrument/platform details are the same for any data type. Additionally, the cruise metadata for the two cruises (HI-06-02/AHI-06-02 and AHI-04-02) that visited the territory are included in the appendix.


American Samoa
172°W
171°W
170°W
169°W
168°W
167°W
10°S
11°S
12°S
13°S
14°S
15°S
16°S
Swains
Olosega
Tutuila
Ofu
Ta'u
Rose
Aunu'u
Exclusive Economic Zone
0 25 50 75
Nautical Mi.

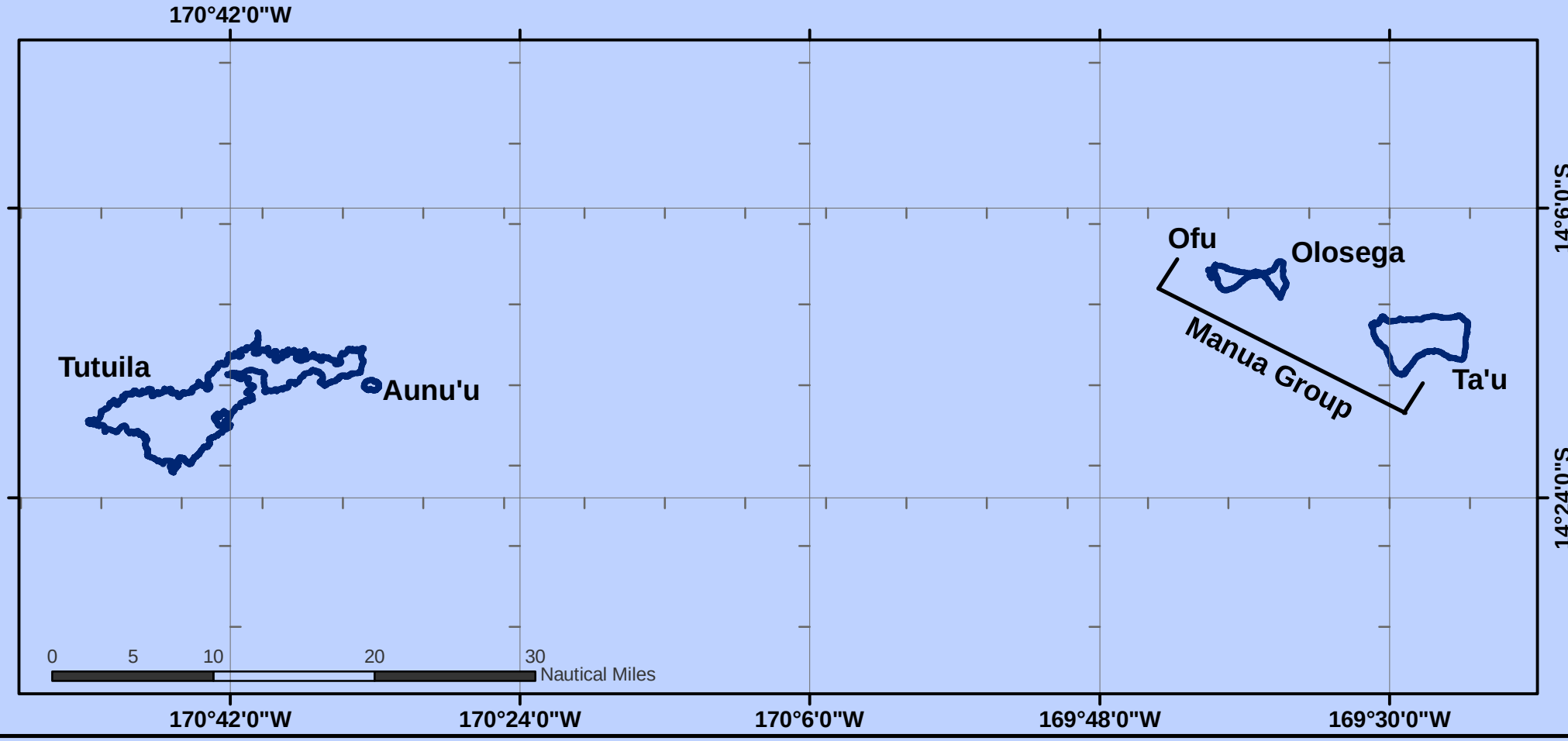

The United States Territory of American Samoa
Swains
Manua Group
Rose
Tutuila
0 25 50 100 150
Nautical Mi.
Exclusive Economic Zone
10°S
12°S
14°S
16°S
18°S
174°W
172°W
170°W
168°W
166°W
Swains
0 1
Nautical Mi.
11°3'30"S
171°4'57"W
171°4'9"W
Rose Atoll
0 0.5
Nautical Miles
14°32'30"S
168°9'0"W
0 5 10 15
Nautical Miles
Tutuila
Aunu'u
Ofu
Olosega
Ta'u
Manua Group
14°6'0"S
14°24'0"S
171°W
170°42'0"W
170°24'0"W
170°6'0"W
169°48'0"W
169°30'0"W



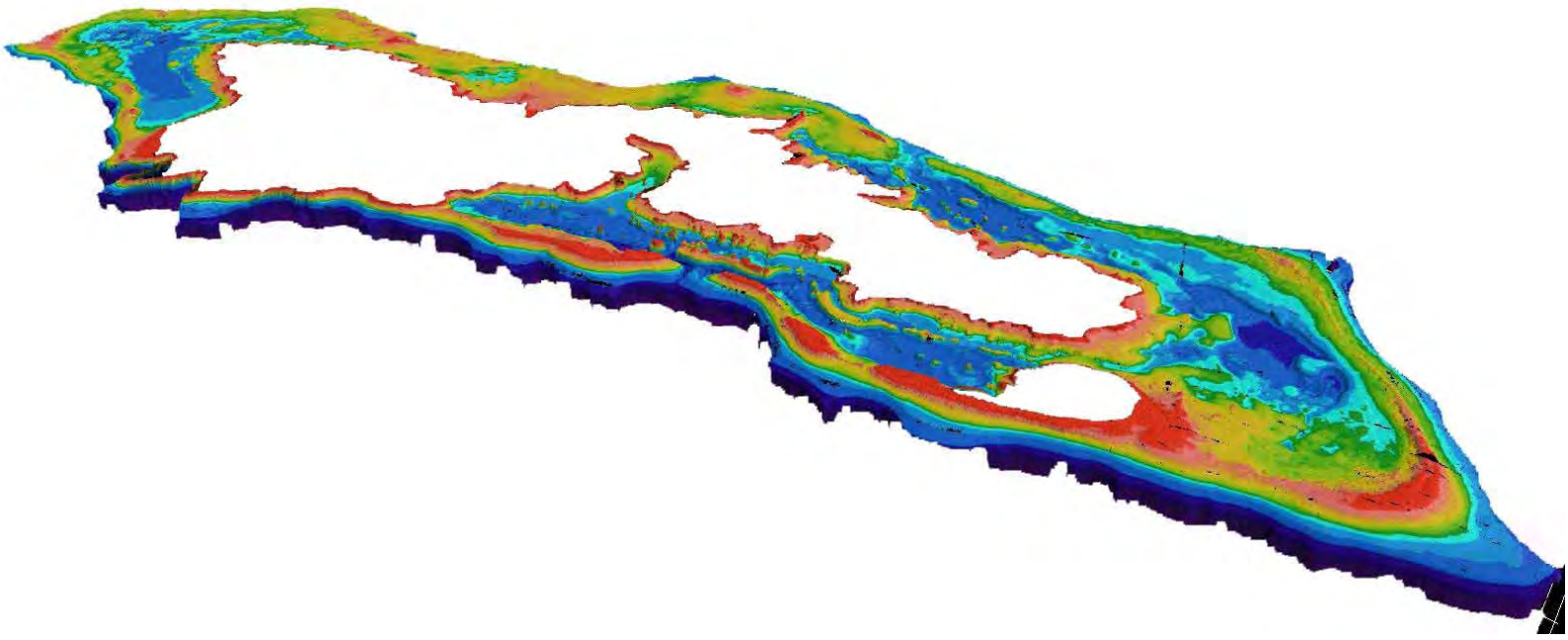


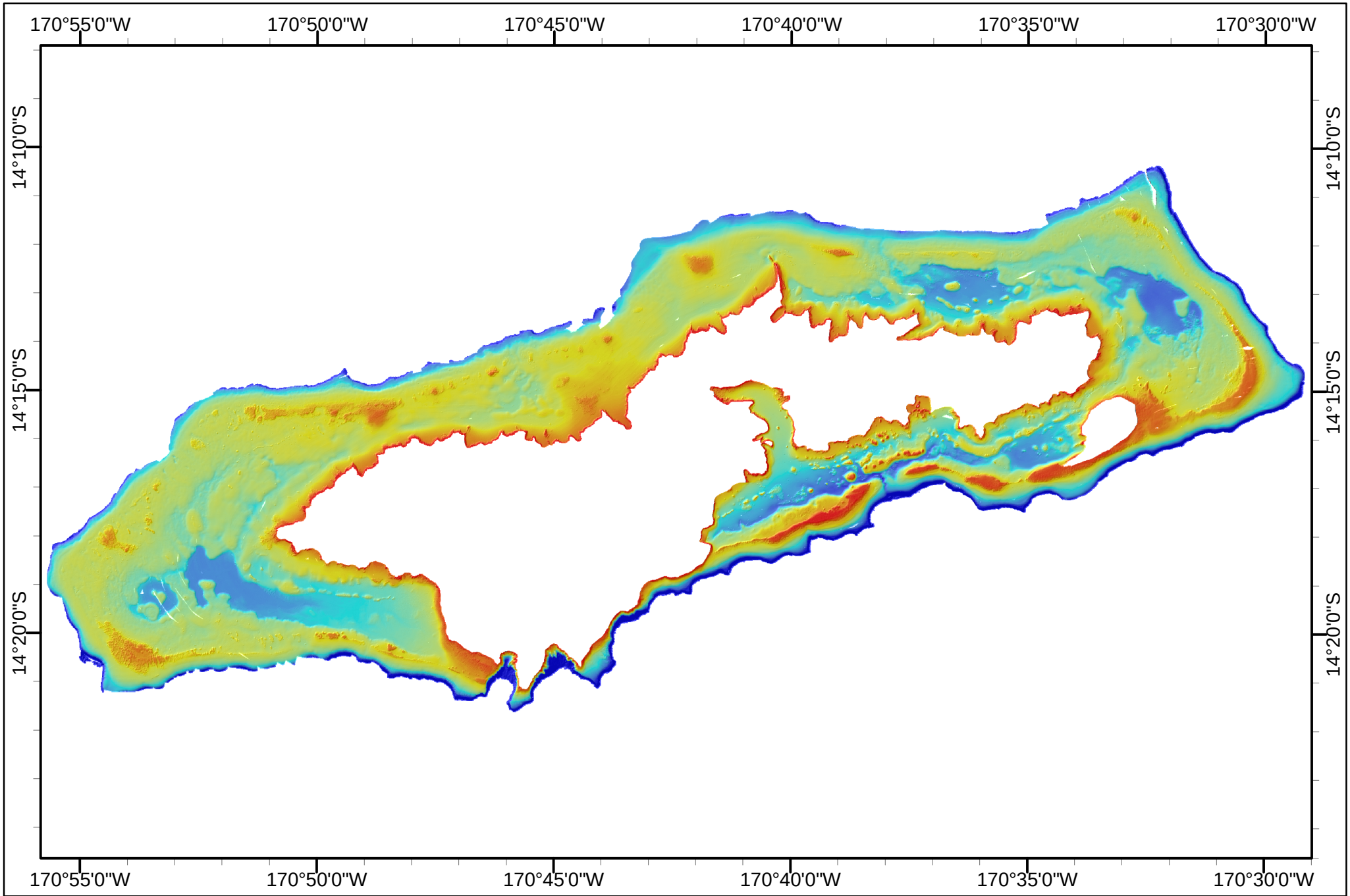


The United States Territory of American Samoa



Tutuila & Aunu'u Island





Tutuila Island Multibeam Bathymetry

5 m grid cell size

NOAA Coral Reef Ecosystem Division

Data collected aboard NOAA Ship Hiialaka'i and R/V AHI

NOT FOR NAVIGATION

Universal Transverse Mercator Projection, Zone 2S, Ellipsoid: WGS84

1

0 4 8 12 16 Km

BATHYMETRY

0 -20 -50 -80 -100 -200 -250 m

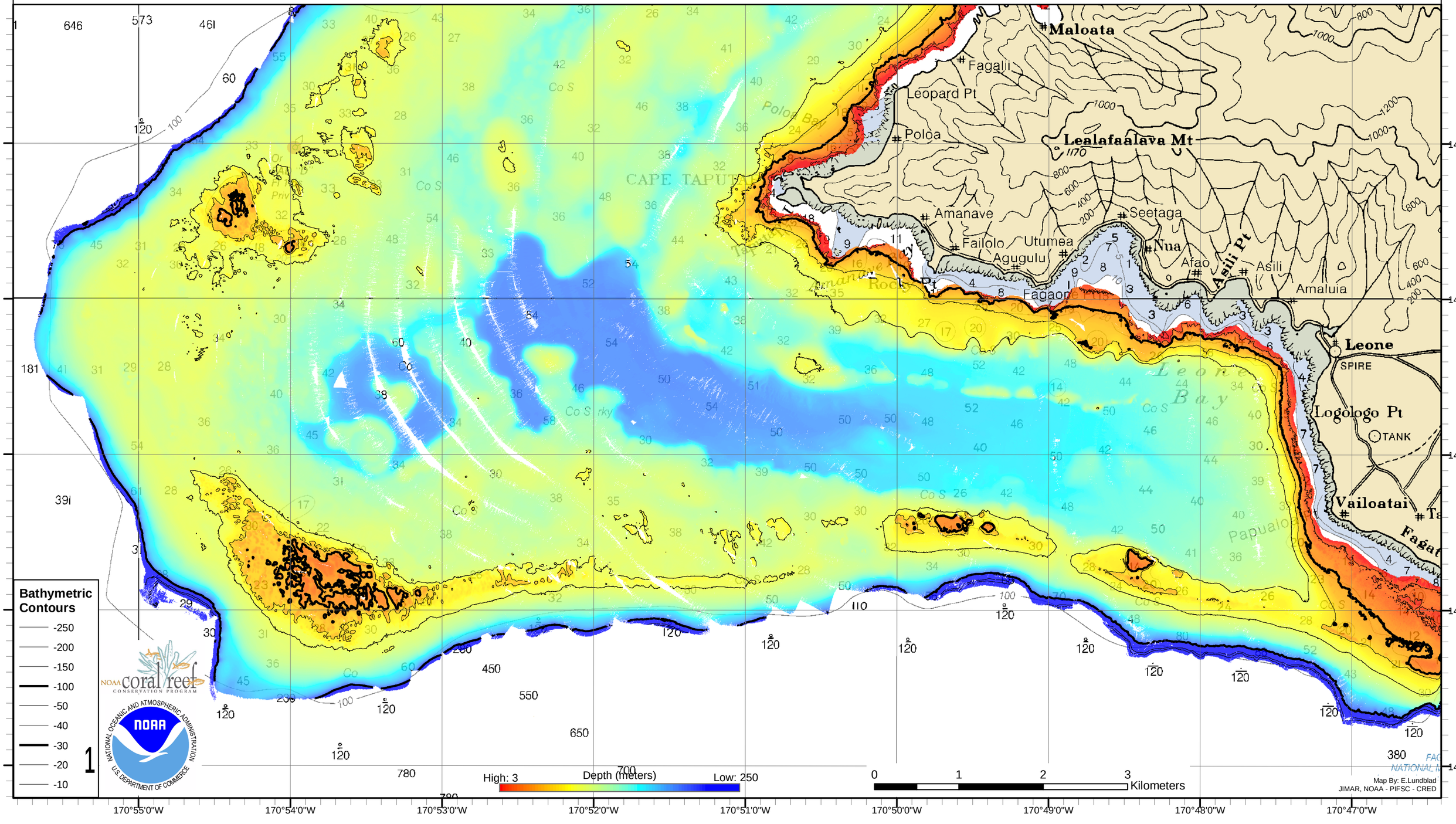
NOAA

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

U.S. DEPARTMENT OF COMMERCE

Multibeam Bathymetry, Tutuila, American Samoa

Nautical Chart Soundings in Fathoms
Map is NOT for Navigation



Bathymetric Contours

- -250
- -200
- -150
- -100
- -50
- -40
- -30
- -20
- -10

1

NOAA coral reef CONSERVATION PROGRAM

NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION U.S. DEPARTMENT OF COMMERCE

High: 3 — Depth (meters) — Low: 250

0 1 2 3 Kilometers

Map By: E.Lundblad
JIMAR, NOAA - PIFSC - CRED

Multibeam Bathymetry, Tutuila, American Samoa

Nautical Chart Soundings in Fathoms
Map is NOT for Navigation

Map By: E.Lundblad
JIMAR, NOAA - PIFSC - CRED

Bathymetric Contours

- -250
- -200
- -150
- -100
- -50
- -40
- -30
- -20
- -10

1

High: 3 — Depth (meters) — Low: 250

0 1 2 3 Kilometers 2

NOAA coral reef CONSERVATION PROGRAM

Fagamalo
Aoloautuai
Mataututele Pt
Siliaga Pt
Aasu
Maloata
Fagalii
Leopard Pt
Poloa
Milomilo Mt
1351
Lealafaalava Mt
1170
Olotele Mt
1617
Amanave
Fallolo
Agugulu
Utumea
Seetaga
Nua
Afao
Asili
Square Head
CAPE TAPUTIMU
Pola Bay

14°15'0"S
14°16'0"S
14°17'0"S
14°18'0"S
14°19'0"S

170°53'0"W
170°52'0"W
170°51'0"W
170°50'0"W
170°49'0"W
170°48'0"W
170°47'0"W
170°46'0"W
170°45'0"W

Multibeam Bathymetry, Tutuila, American Samoa

Nautical Chart Soundings in Fathoms
Map is NOT for Navigation

Map By: E.Lundblad
JIMAR, NOAA - PIFSC - CRED

Bathymetric Contours

-250
-200
-150
-100
-50
-40
-30
-20
-10

1

NOAA coral reef CONSERVATION PROGRAM

High: 3 — Depth (meters) — Low: 250

0 1 2 3 Kilometers

Pago Pago
Maugaotula Pk
Vatia
Samituutuu Pt
Alava Mt
TV TRS 1835
(Fl R Lts)
Mulilulu Pt
Maugaloa Ridge
Leloaloa
Isc R 6s 150ft
Q R 26ft
Anua
Aua
North Pioa Mt
1718
OBSTN LT
(Fl R Lt)
Fagatogo
Utulei
Tulutula Pt
TANK
Fagasa
Fl 6s 190ft 6M
Breakers Pt
Lauliituai
Craggy Pt
Masefau
Afono
Tagau Mt
830
Palapala Mt
1170
Etemuli Mt
1166
Filiae Mt
874
Amaua
Fagailua
Alofau
Cape Fogo
Cockscomb
Pago Pago Harbor
Masefau Bay
Fagaitua Bay

14°13'0"S
14°14'0"S
14°15'0"S
14°16'0"S
14°17'0"S

170°45'0"W
170°44'0"W
170°43'0"W
170°42'0"W
170°41'0"W
170°40'0"W
170°39'0"W
170°38'0"W
170°37'0"W
170°36'0"W

Multibeam Bathymetry, Tutuila, American Samoa

Nautical Chart Soundings in Fathoms
Map is NOT for Navigation

High: 3 Depth (meters) Low: 250

0 1 2 3 Kilometers

Bathymetric Contours

-250
-200
-150
-100
-50
-40
-30
-20
-10

1

Filiae Mt
Etemuli Mt
Amaua
Fagailua
Alofau
Masausi
Motusaga Pt
Sailele
Onenoa
Tula
Aoa
Olomoana Mt
Maliuga Pt
Alao
Matuli Pt
Auasi
Amouli
Masefau Bay
Papaloa
CAPE MATATULA
Or FAD "A" Fl 1.5s Priv

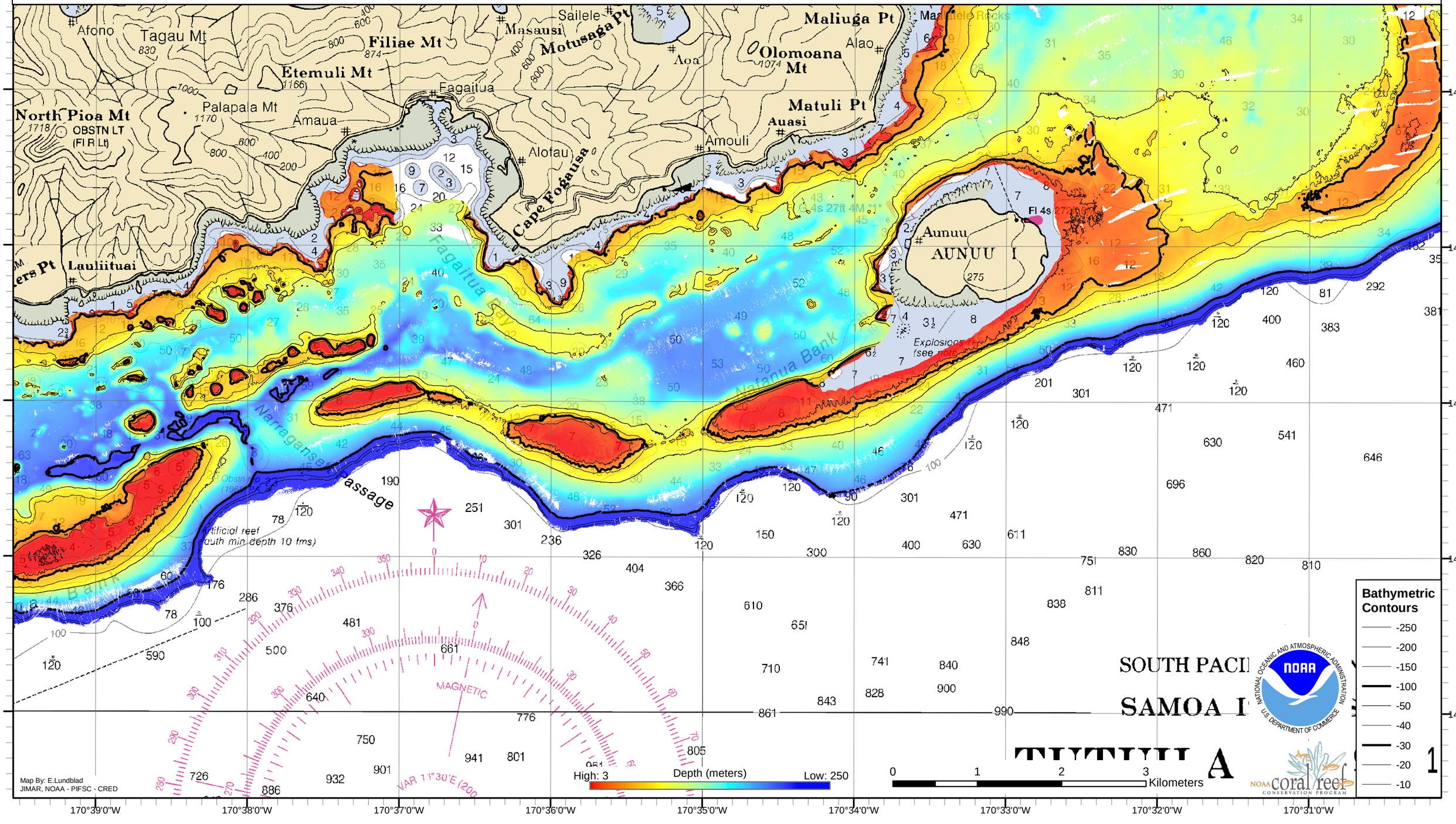
14°12'0"S
14°13'0"S
14°14'0"S
14°15'0"S
14°16'0"S

170°38'0"W
170°37'0"W
170°36'0"W
170°35'0"W
170°34'0"W
170°33'0"W
170°32'0"W
170°31'0"W
170°30'0"W
170°29'0"W

Map By: E.Lundblad
JIMAR, NOAA - PIFSC - CRED

Multibeam Bathymetry, Tutuila, American Samoa

Nautical Chart Soundings in Fathoms
Map is NOT for Navigation



Multibeam Bathymetry, Tutuila, American Samoa

Nautical Chart Soundings in Fathoms
Map is NOT for Navigation

Pago Pago
Anua
Aua
North Pioa Mt
1718
OBSTN LT
(Fl R Lt)
Palapala Mt
1170
Amaua
Alofau
Cape Fogausa
Fagatogo
Utulei
Tulutula Pt
TANK
Fagasa
Fagasa Bay
Fl 6S 190ft 6M
Breakers Pt
Lauliituai
Matafao Pk
2142
OBSTN LT
(Fl R Lt)
Taumata Mt
1415
1732
Leele Mt
Fagaalu
Niuloa Pt
Matautuloa Pt
Matuu
Faganeanea
Utulaina Pt
Fagaitua Bay
Nuuuli
Tau Mt
1266
OBSTN LT
(Fl R Lt)
Pala Lagoon
(shallow)
Avatele Passa
Pago Pago
International Airport
AERO
Rot W & G
BLDG (VORTAC)
Matautuloa Pt
Narragansett Passage
Tutuila Bank
Obstn
(1966)
(tificial reef
(uth min depth 10 fms)
MAGNETIC
VAR 11°30'E (2001)
Map By: E.Lundblad
JIMAR, NOAA - PIFSC - CRED
High: 3
Depth (meters)
Low: 250
0 0.9 1.8 2.7
Kilometers
NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE
NOAA coral reef
CONSERVATION PROGRAM

Bathymetric Contours

-250
-200
-150
-100
-50
-40
-30
-20
-10

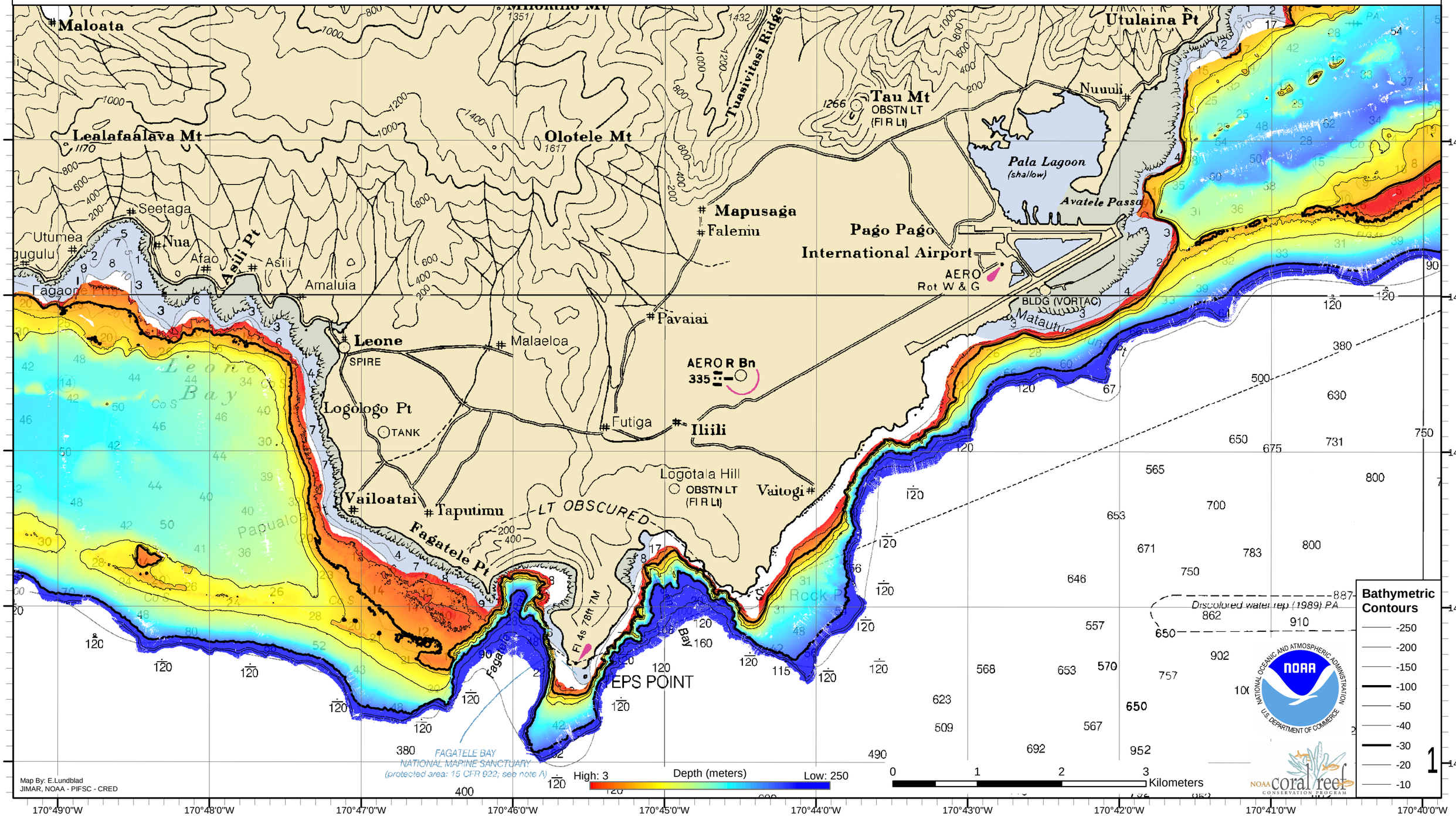
1

14°16'0"S
14°17'0"S
14°18'0"S
14°19'0"S
14°20'0"S

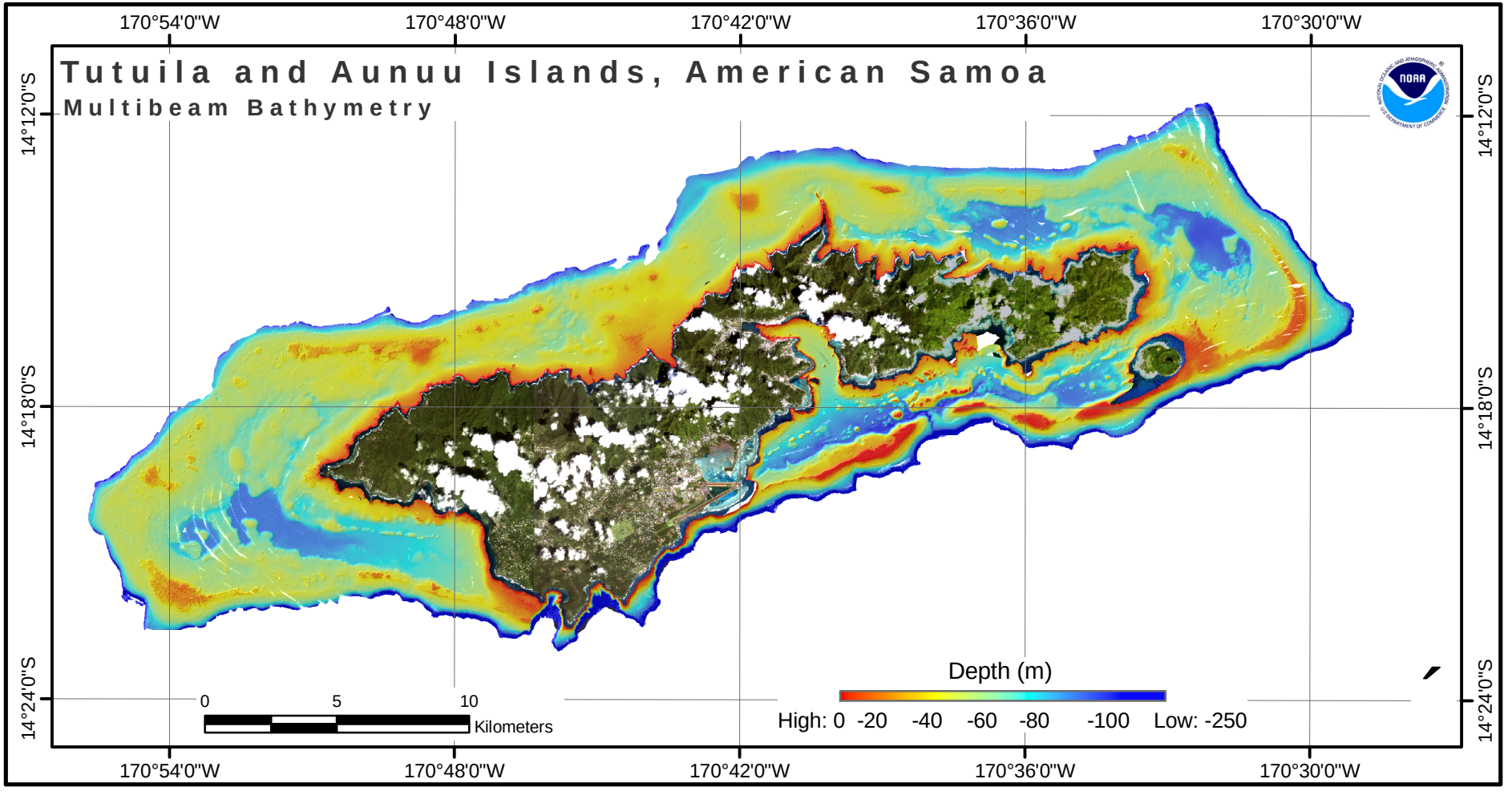
170°44'0"W
170°43'0"W
170°42'0"W
170°41'0"W
170°40'0"W
170°39'0"W
170°38'0"W
170°37'0"W
170°36'0"W

Multibeam Bathymetry, Tutuila, American Samoa

Nautical Chart Soundings in Fathoms
Map is NOT for Navigation

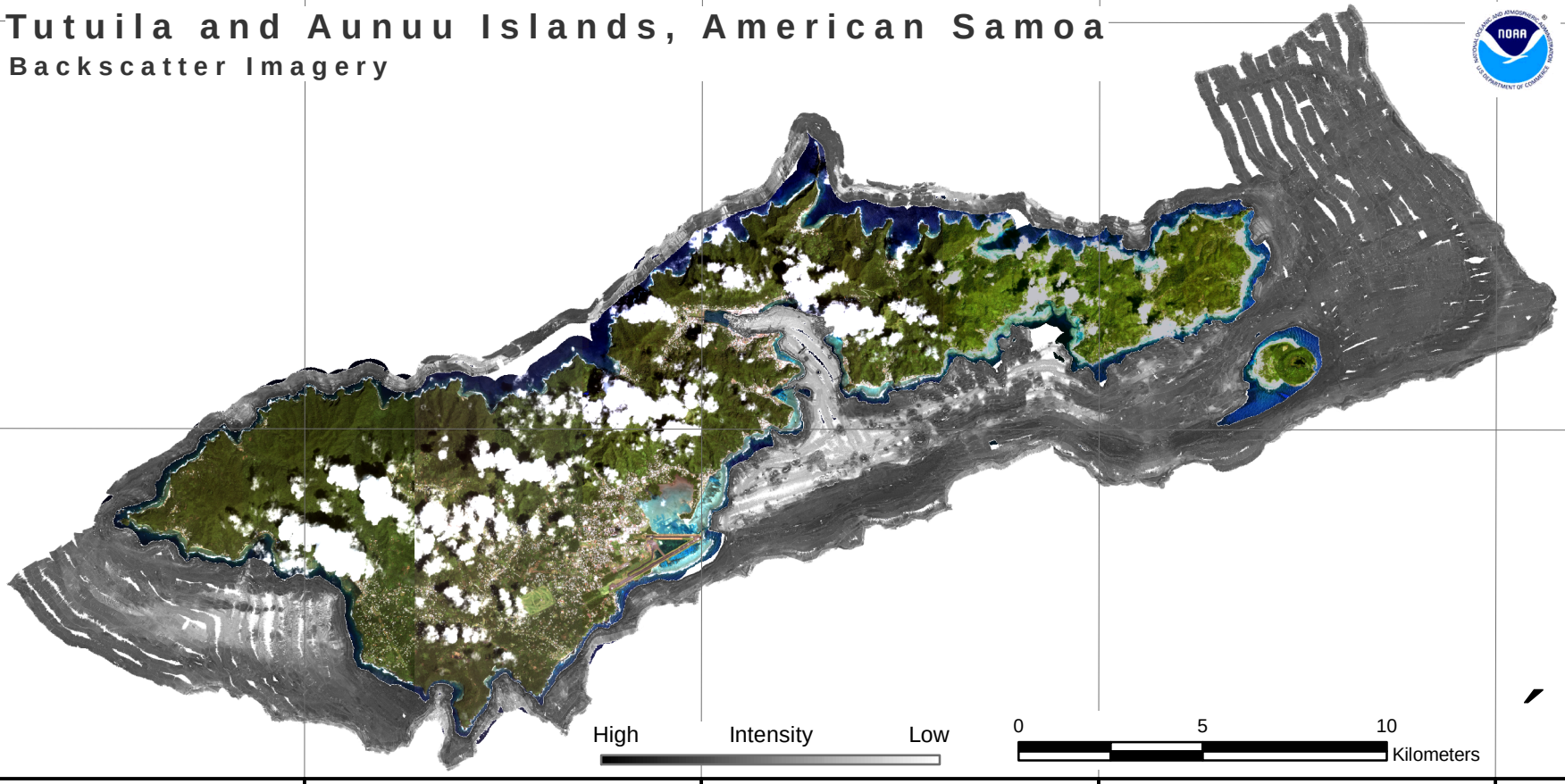


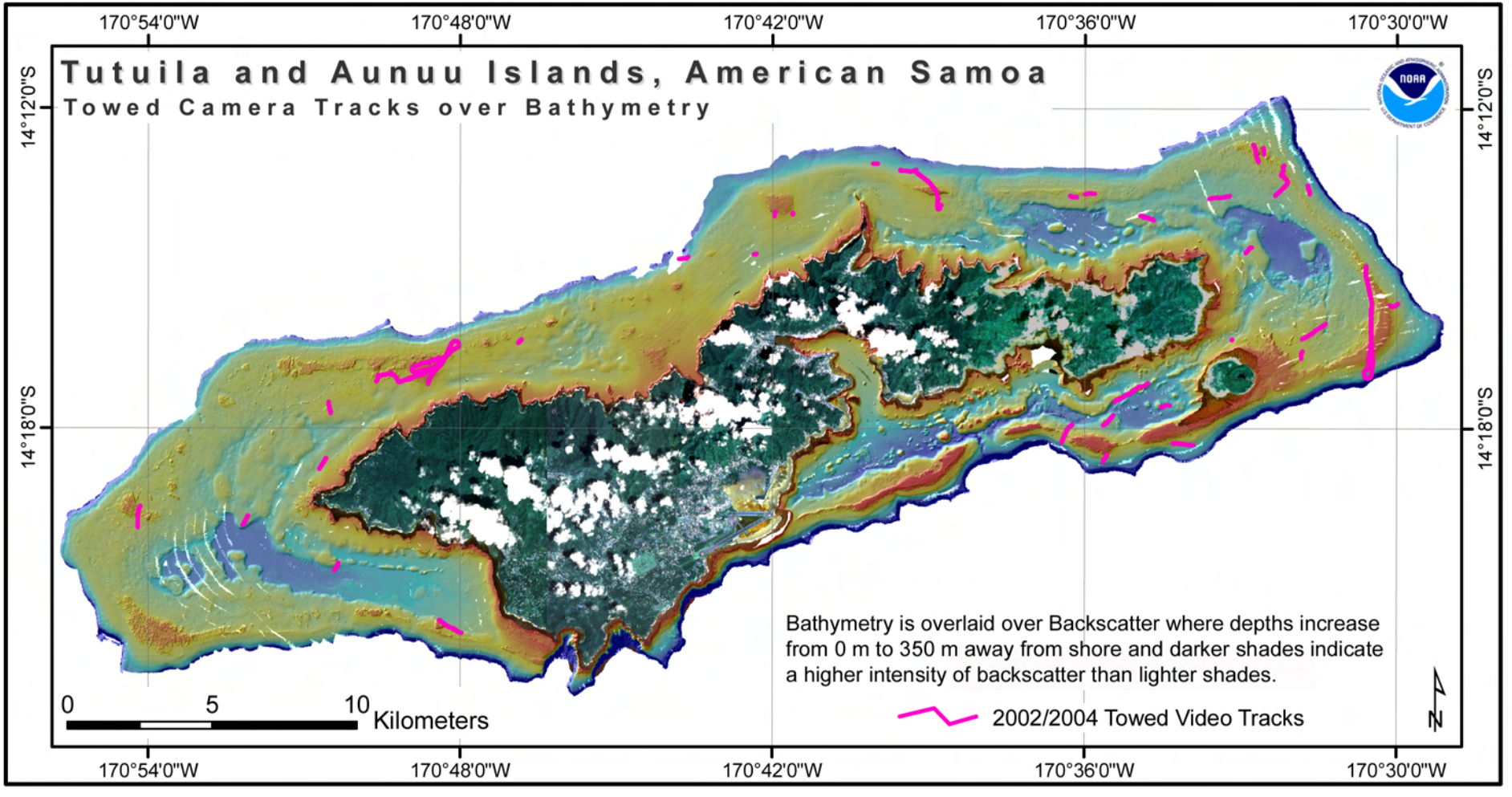
Map By: E.Lundblad
JIMAR, NOAA - PIFSC - CRED

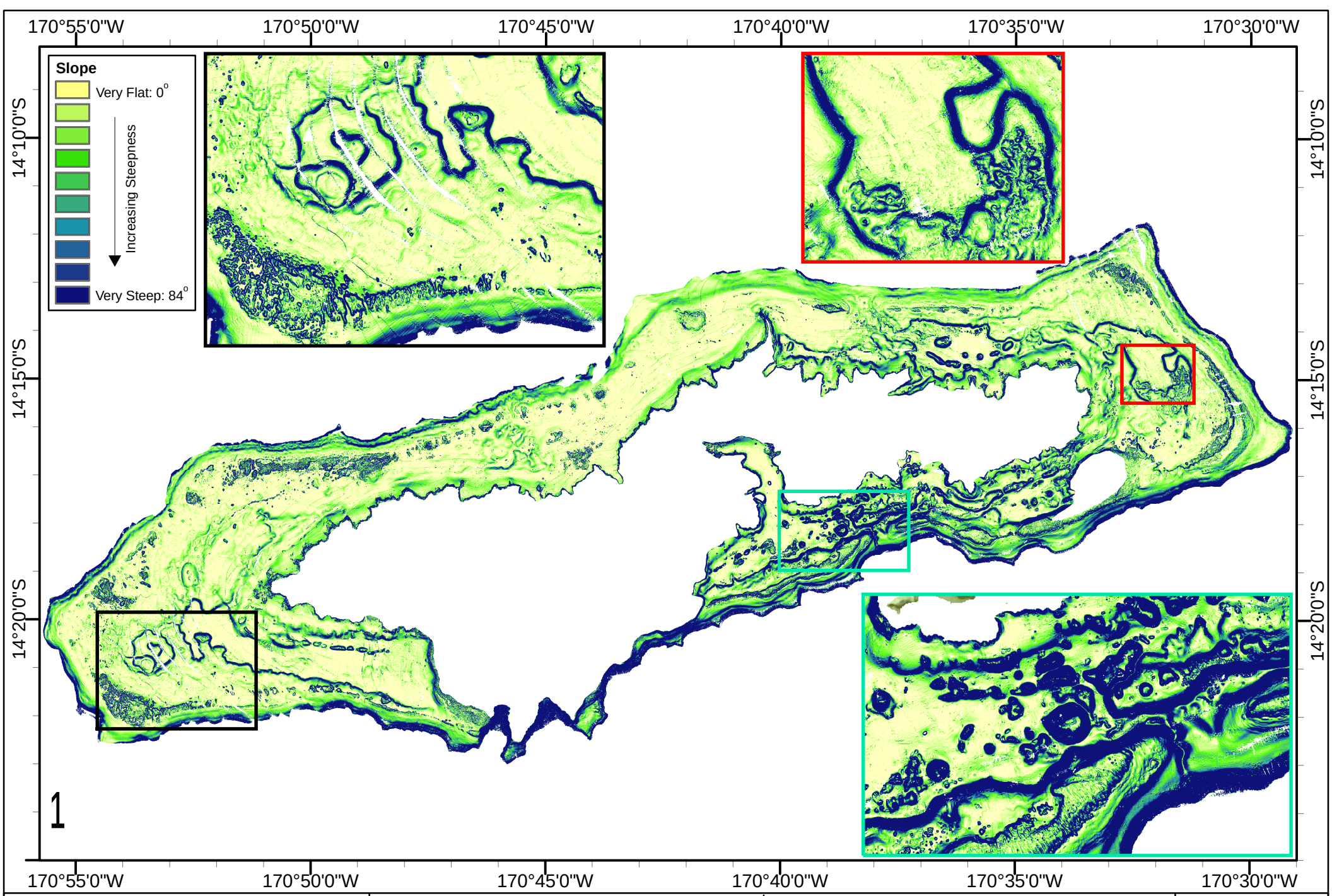

Tutuila and Aunuu Islands, American Samoa
Multibeam Bathymetry
170°54'0"W
170°48'0"W
170°42'0"W
170°36'0"W
170°30'0"W
14°12'0"S
14°18'0"S
14°24'0"S
0
5
10
Kilometers
Depth (m)
High: 0 -20 -40 -60 -80 -100 Low: -250

Tutuila and Aunuu Islands, American Samoa

Backscatter Imagery




Tutuila and Aunuu Islands, American Samoa
Towed Camera Tracks over Bathymetry
170°54'0"W
170°48'0"W
170°42'0"W
170°36'0"W
170°30'0"W
14°12'0"S
14°18'0"S
0
5
10
Kilometers
Bathymetry is overlaid over Backscatter where depths increase from 0 m to 350 m away from shore and darker shades indicate a higher intensity of backscatter than lighter shades.
2002/2004 Towed Video Tracks
N



Tutuila Island Slope

5 m grid cell size
NOAA Coral Reef Ecosystem Division
Pacific Islands Benthic Habitat Mapping Center

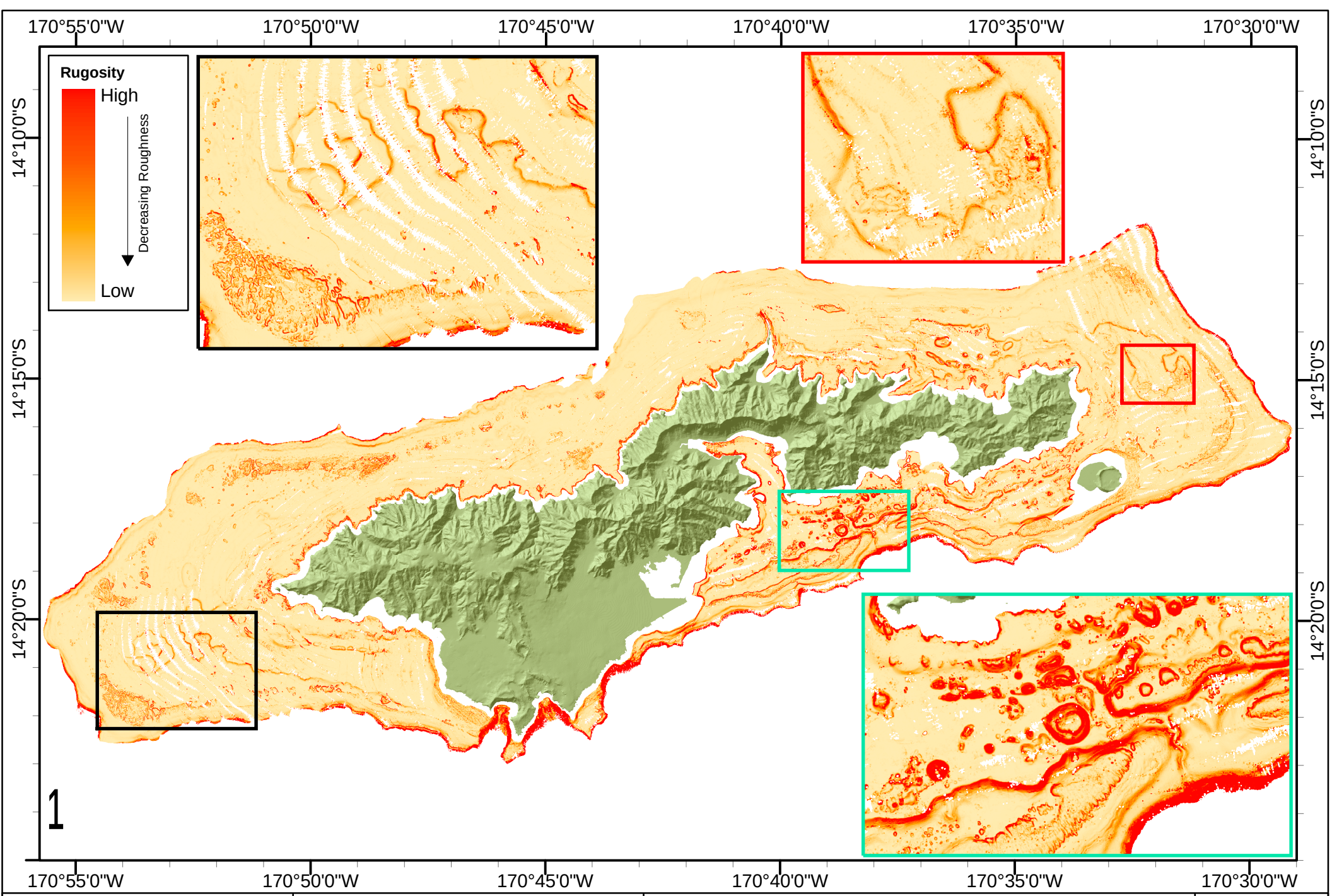
NOT FOR NAVIGATION

Universal Transverse Mercator Projection
Zone 2S, Ellipsoid: WGS84

0 3 6 9 12 Km

Slope, derived from multibeam bathymetry collected aboard NOAA Ship Hiialaka'i and R/V AHI, is the degree of change in elevation between neighboring cells derived with the ArcGIS Spatial Analyst extension.

NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE



Tutuila Island Rugosity

5 m grid cell size

NOAA Coral Reef Ecosystem Division
Pacific Islands Benthic Habitat Mapping Center

NOT FOR NAVIGATION

Universal Transverse Mercator Projection
Zone 2S, Ellipsoid: WGS84

Km

0 3 6 9 12

Rugosity is derived from multibeam bathymetry, collected aboard NOAA Ship Hiialaka'i and R/V AHI, using the Benthic Terrain Modeler with rugosity methods by Jeff Jenness (2003). Cell values for rugosity reflect the surface area and (surface area) / (planimetric area) ratio for the area contained within that cell's boundaries. They provide indices of topographic roughness & convolutedness.

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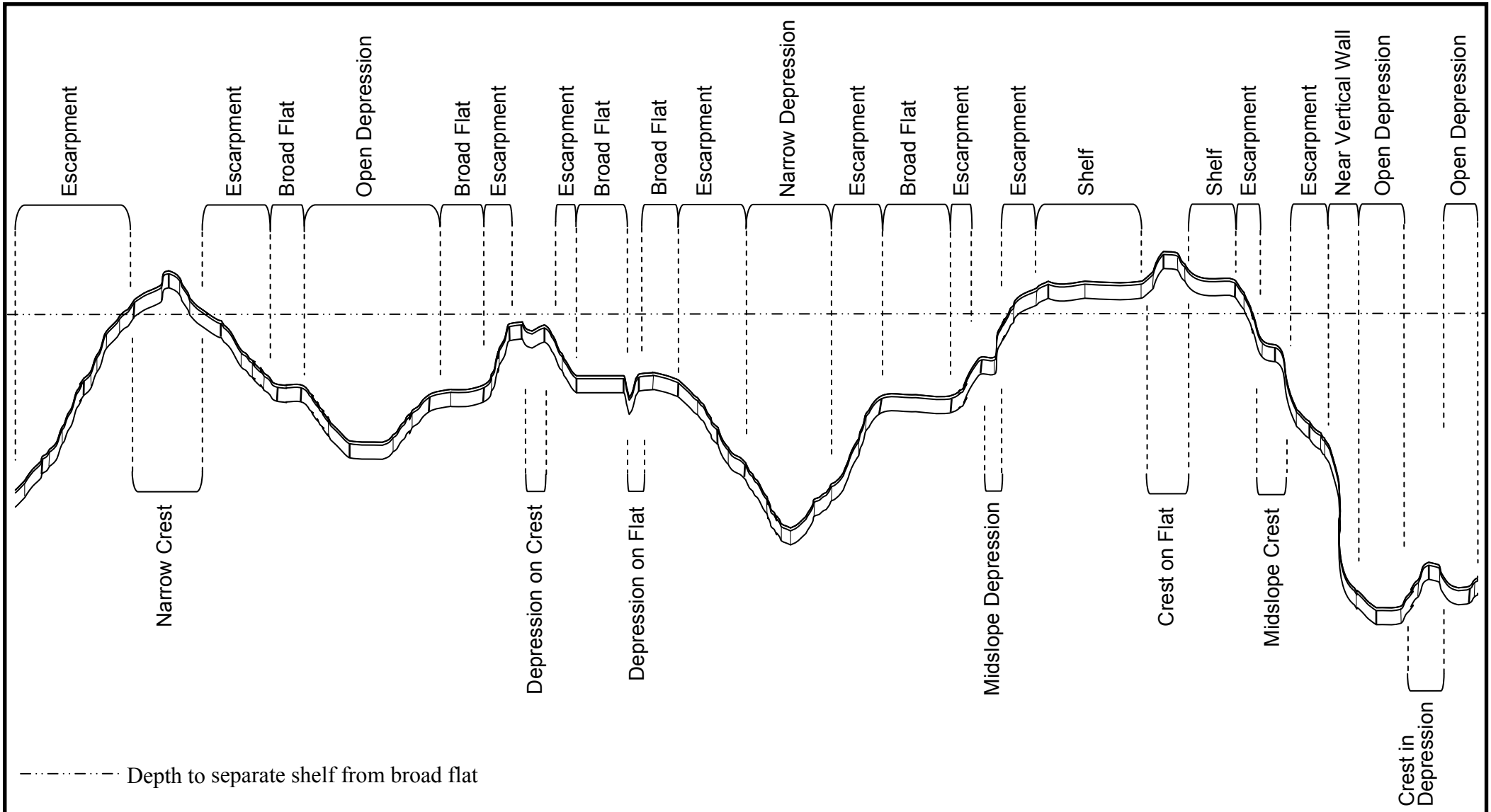
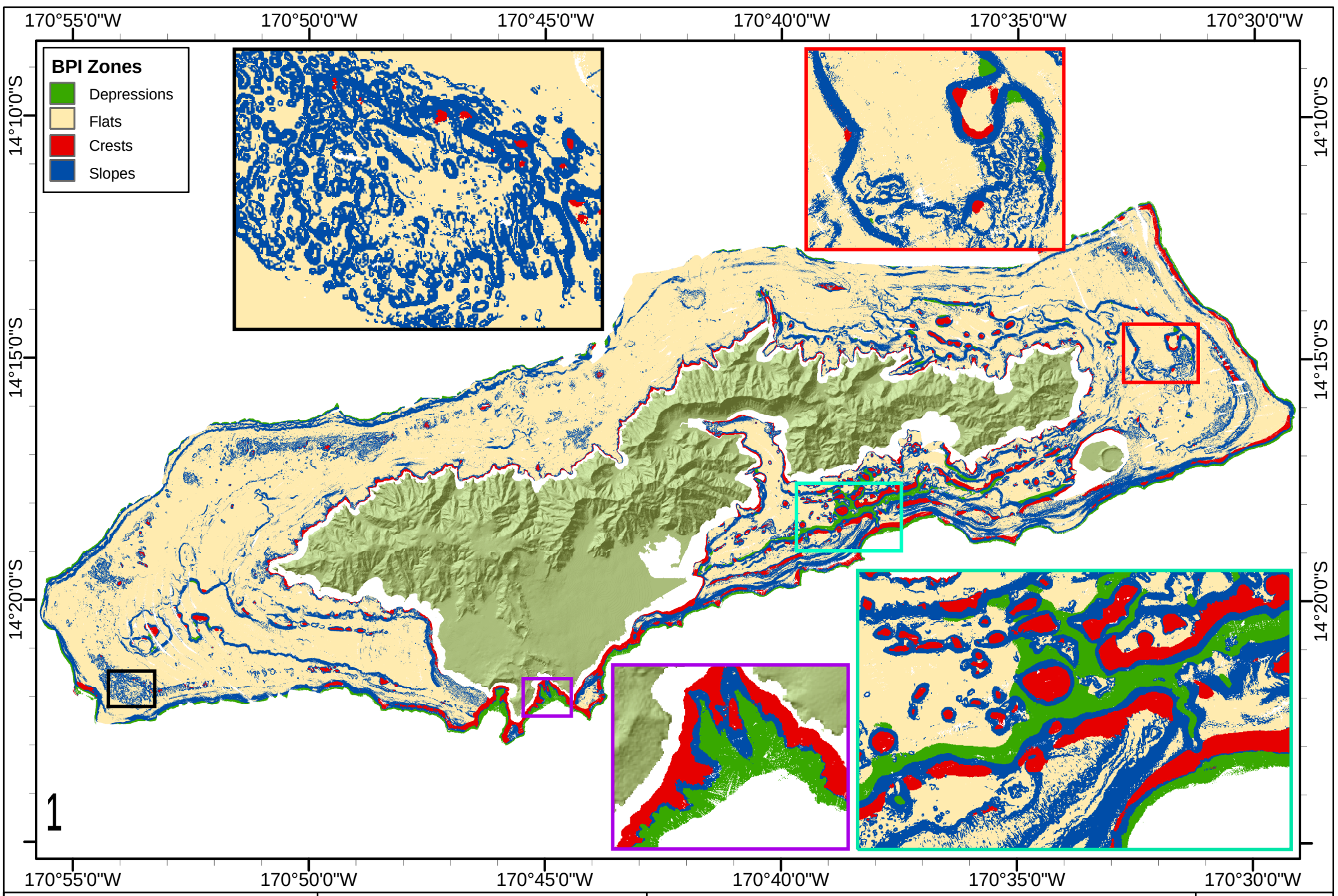
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE



Bathymetric Position Index (BPI) Structures: Thirteen classes are included in the characterization. This profile is a visual example of what a random, sample piece of seafloor may look like when characterized by a BPI Structure analysis. It is not intended to represent the seafloor from any particular point (e.g. as if extending from the reef flat near a shoreline).



Tutuila Island BPI Zones

5 m grid cell size

NOAA Coral Reef Ecosystem Division

Pacific Islands Benthic Habitat Mapping Center

NOT FOR NAVIGATION

Universal Transverse Mercator Projection
Zone 2S, Ellipsoid: WGS84

0 2 4 6 8 Km

Bathymetric Position Index (BPI) Zones are derived from a focal mean analysis on bathymetry and slope. After testing 5 experimental scales, the BPI with scalefactor 250 was chosen based on distance across predicted reef structures as seen in the bathymetry (also after Lundblad et al. 2006). Two ranges of slope defined flats and slopes: $x < 5$ and $5 < x < 70$.

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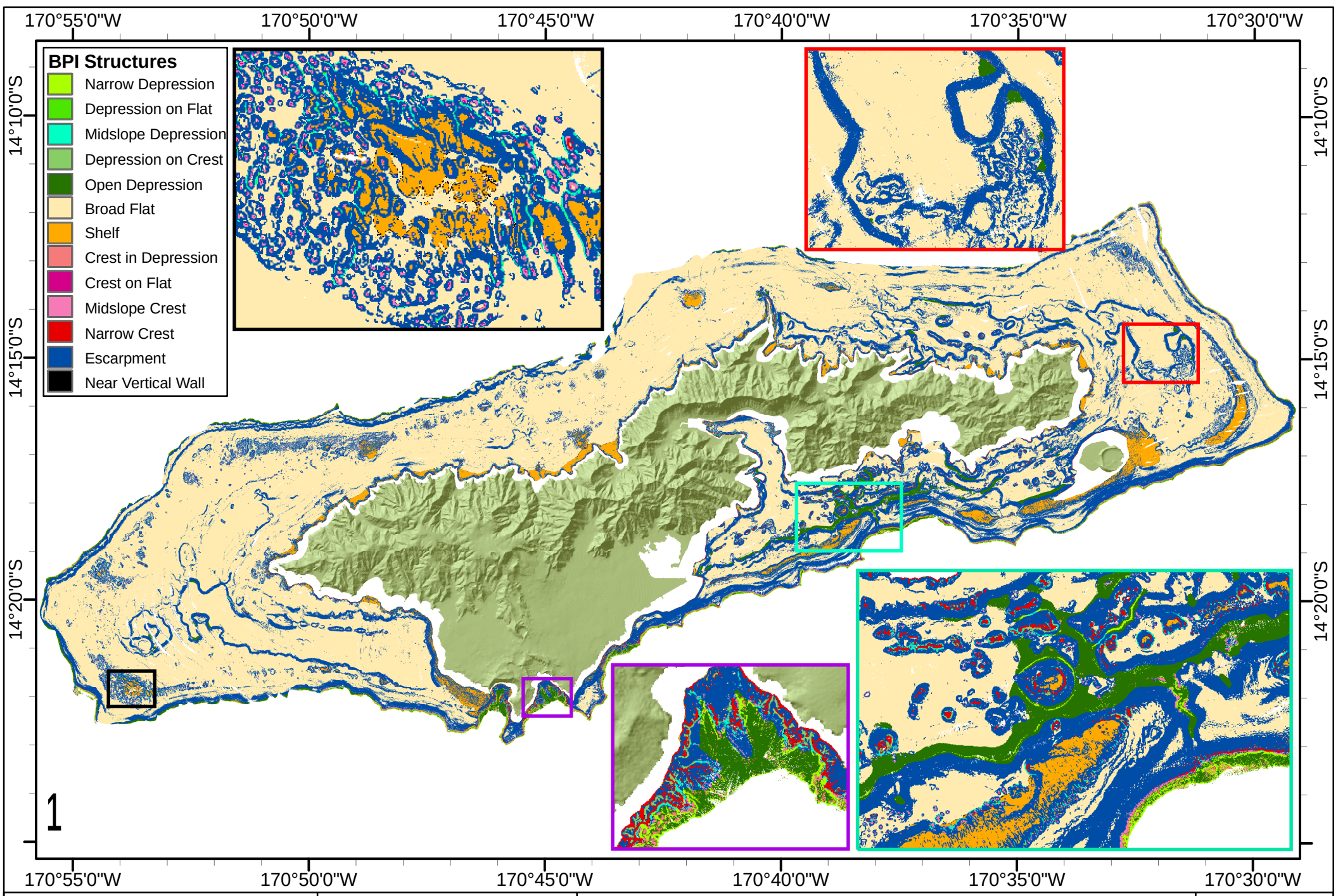
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE



Tutuila Island BPI Structures

5 m grid cell size

NOAA Coral Reef Ecosystem Division

Pacific Islands Benthic Habitat Mapping Center

NOT FOR NAVIGATION

Universal Transverse Mercator
Projection Zone 2S,
Ellipsoid: WGS84

0 2 4 6 8 Km

Bathymetric Position Index (BPI) Structures are derived from two scales of a focal mean analysis on bathymetry; slope; and depth. After testing 10 experimental combinations, the two scales of BPI (20 & 250) were chosen based on distance across predicted reef structures as seen in the bathymetry (also after Lundblad et al. 2006). Three ranges of slope defined flats, slopes, and near vertical: $x < 5$; $5 < x < 70$; $x > 70$. Depth alone, in this case, is added only to separate flat structures into shelf (<30 m) and broad flat (>30 m) environments (depths based on SCUBA limits).

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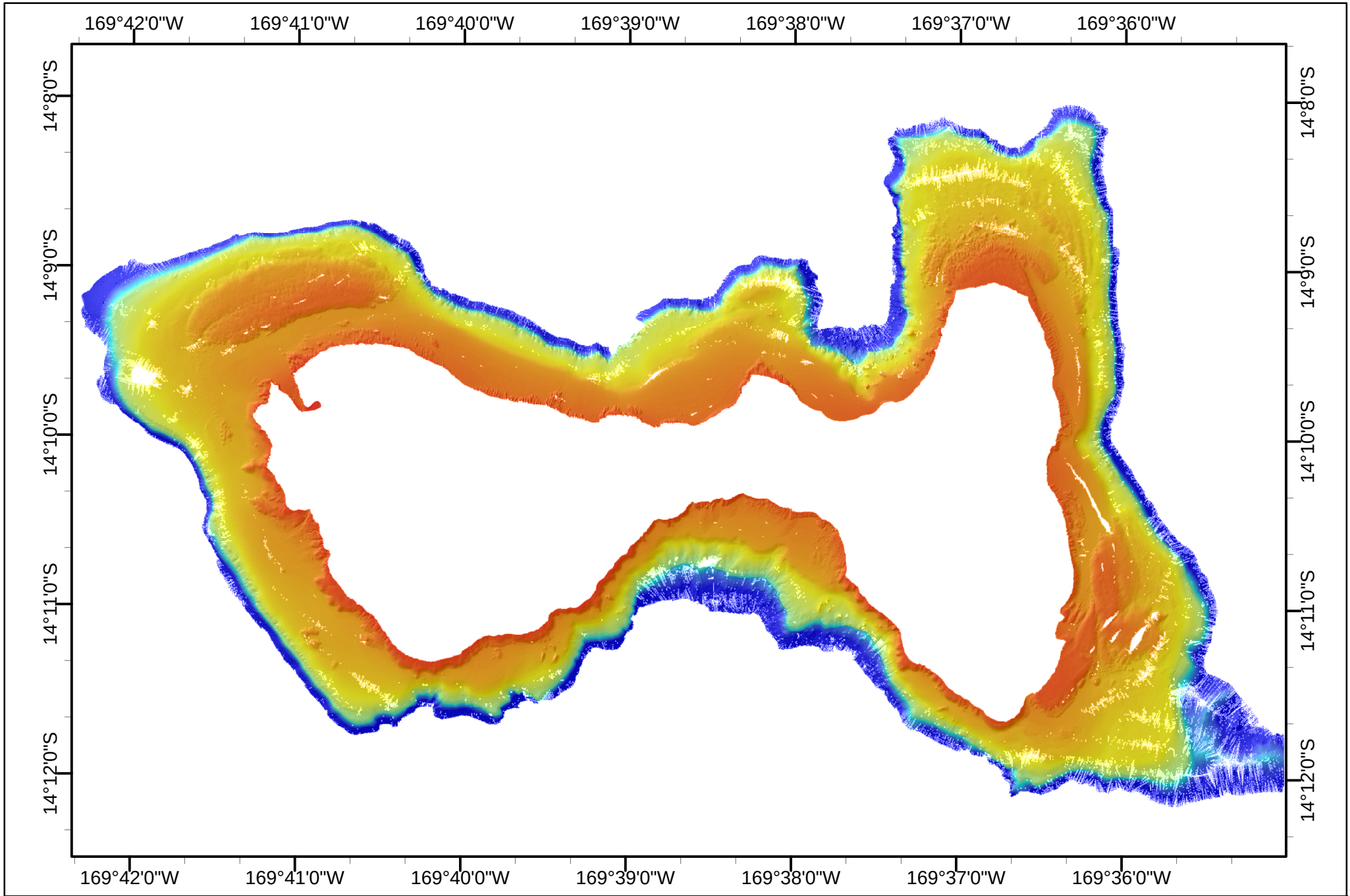
U.S. DEPARTMENT OF COMMERCE

Ofu & Olosega Islands



Ofu and Olosega Islands Multibeam Bathymetry

5 m grid cell size

NOAA Coral Reef Ecosystem Division

Data collected aboard R/V Acoustic Habitat Investigator (AHI)

NOT FOR NAVIGATION

1

Universal Transverse Mercator Projection, Zone 2S, Ellipsoid: WGS84

0 1 2 3 4 5 Km

BATHYMETRY

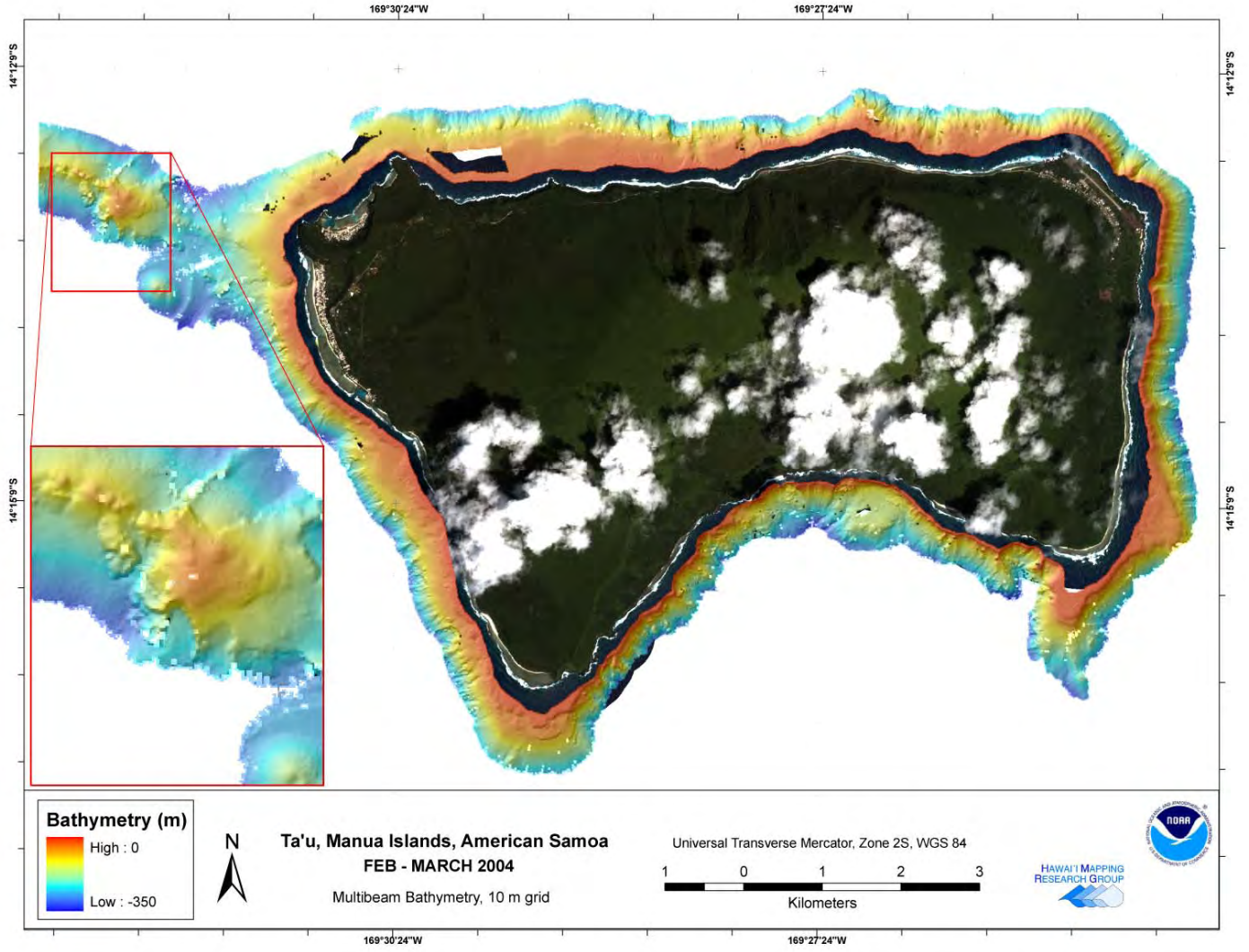
0 -50 -100 -150 -250 -300 m

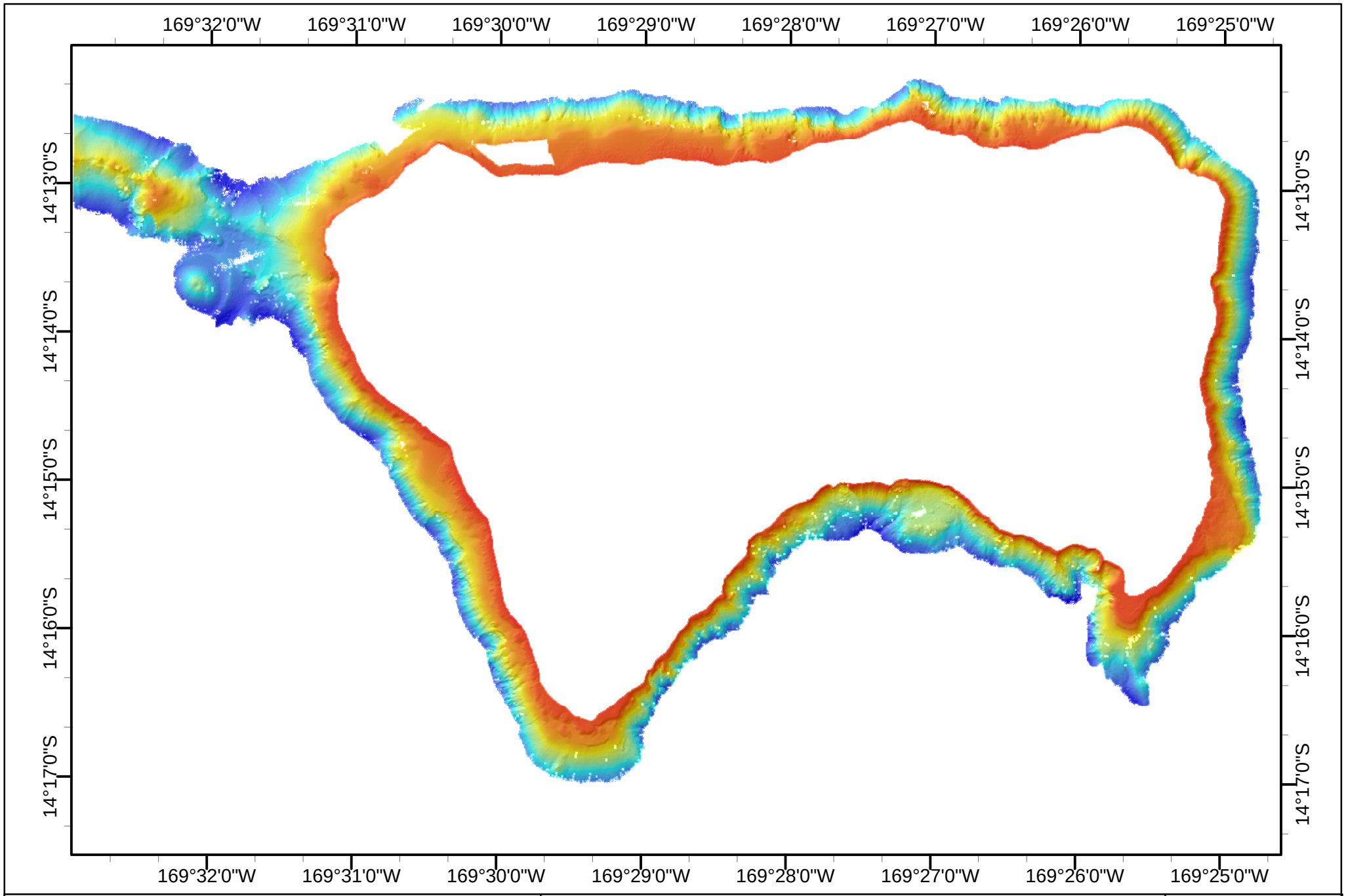
NOAA

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

U.S. DEPARTMENT OF COMMERCE

Ta'u Island


169°30'24"W
169°27'24"W
14°12'9"S
14°15'9"S
Bathymetry (m)
High : 0
Low : -350
N
Ta'u, Manua Islands, American Samoa
FEB - MARCH 2004
Multibeam Bathymetry, 10 m grid
Universal Transverse Mercator, Zone 2S, WGS 84
1 0 1 2 3
Kilometers
HAWAI'I MAPPING RESEARCH GROUP
NOAA



Ta'u Island Multibeam Bathymetry

10 m grid cell size

NOAA Coral Reef Ecosystem Division

Data collected aboard R/V Acoustic Habitat Investigator (AHI)

NOT FOR NAVIGATION

1

Universal Transverse Mercator Projection, Zone 2S, Ellipsoid: WGS84

Km

0 1 2 3 4 5

BATHYMETRY

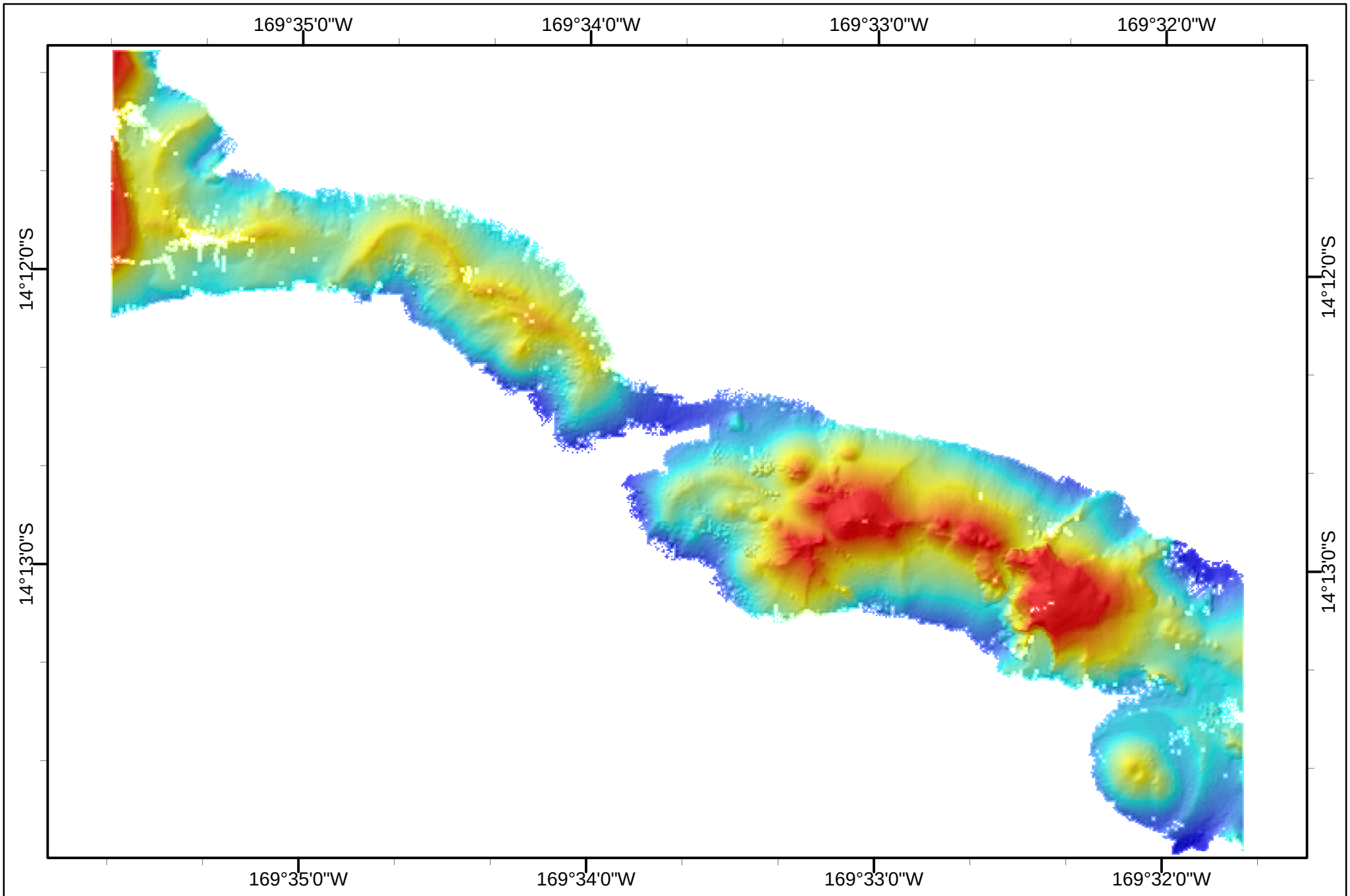
m

0 -50 -100 -150 -200 -250 -350

NOAA

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

U.S. DEPARTMENT OF COMMERCE



Ta'u (west of) Multibeam Bathymetry

10 m grid cell size

NOAA Coral Reef Ecosystem Division

Data collected aboard R/V Acoustic Habitat Investigator (AHI)

NOT FOR NAVIGATION

Universal Transverse Mercator Projection, Zone 2S, Ellipsoid: WGS84

1

0 1 2 3 Km

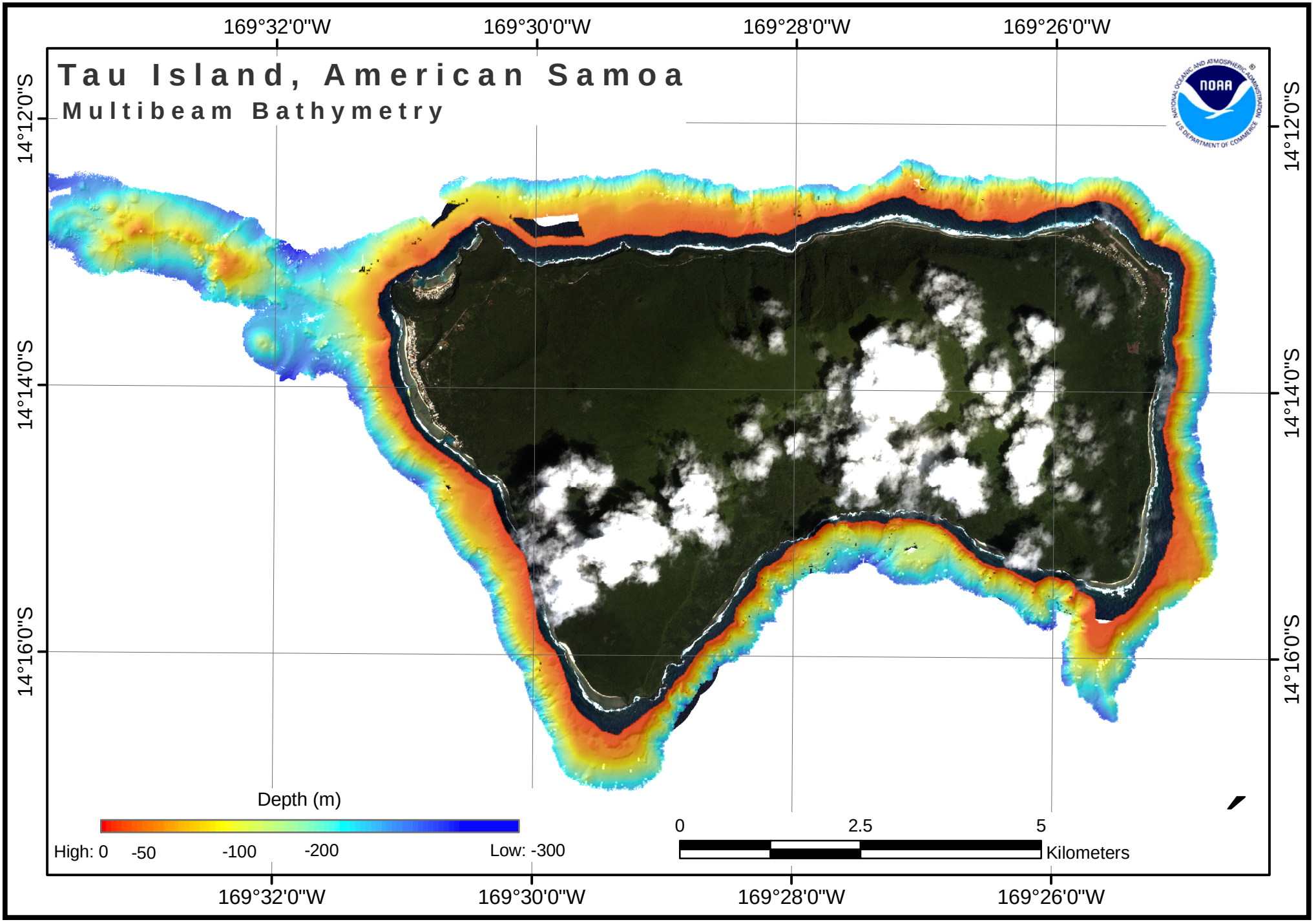
BATHYMETRY

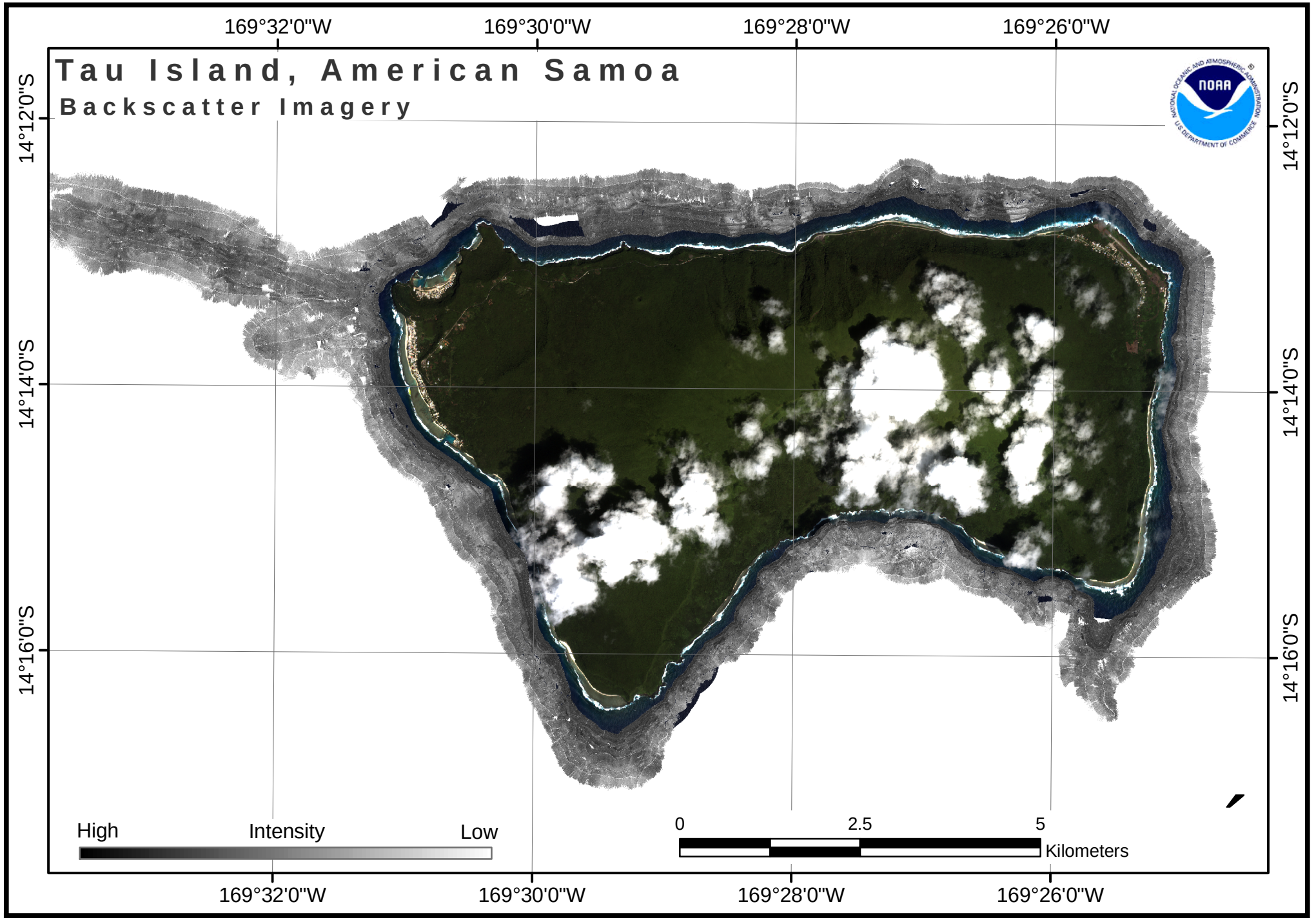
-38 -100 -150 -200 -250 -300 -350 m

NOAA

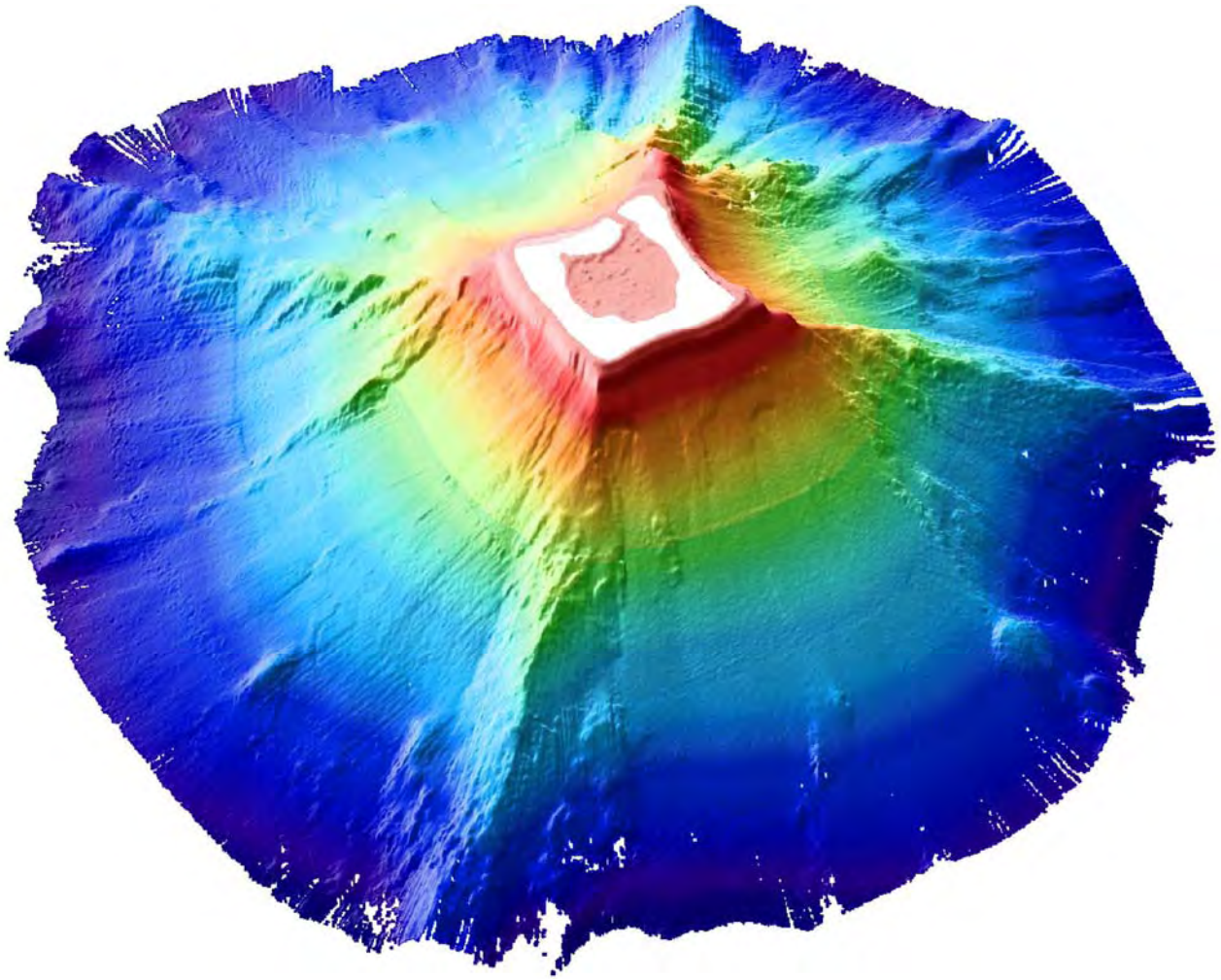
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

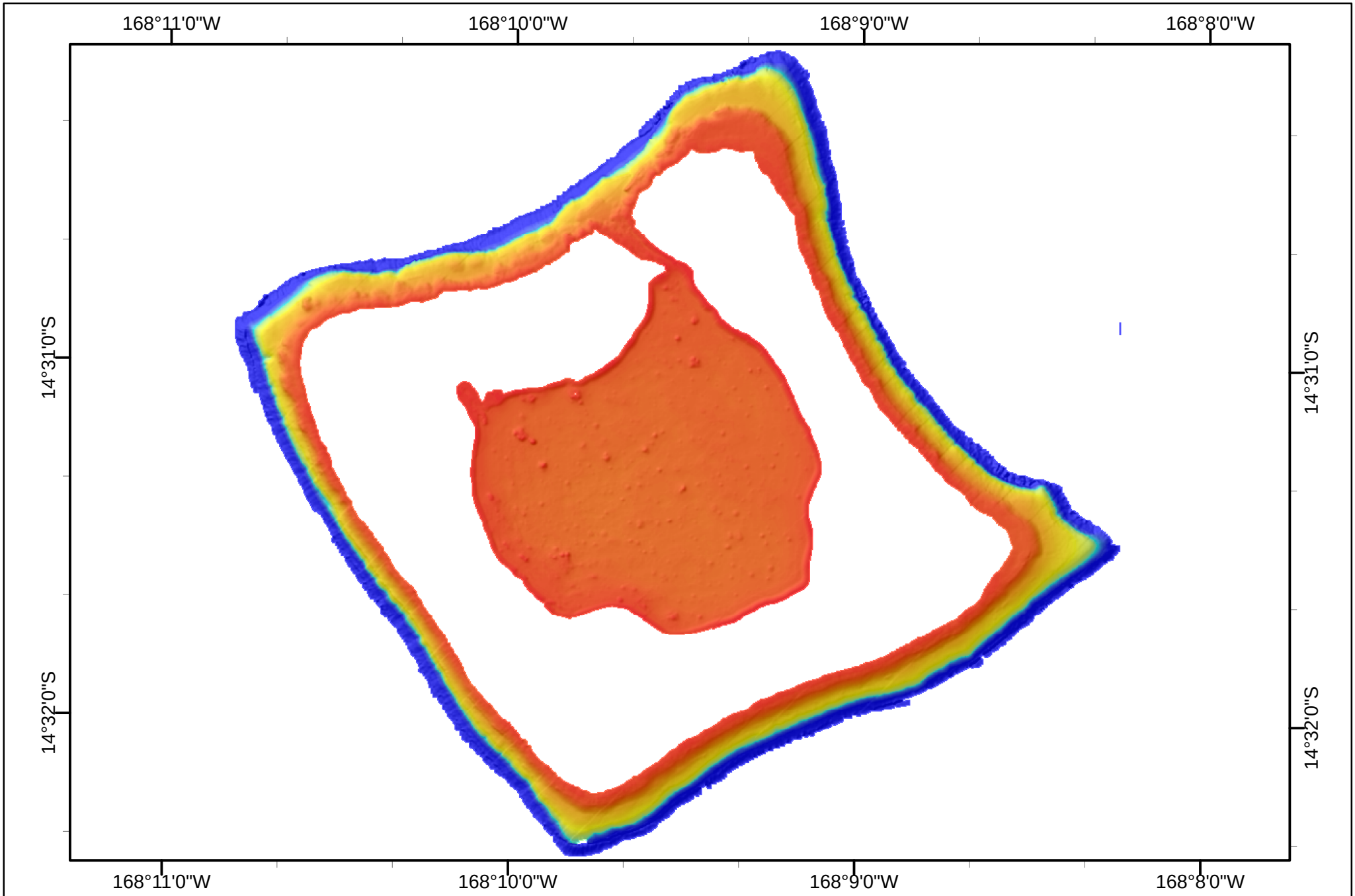
U.S. DEPARTMENT OF COMMERCE


Tau Island, American Samoa
Multibeam Bathymetry
169°32'0"W
169°30'0"W
169°28'0"W
169°26'0"W
14°12'0"S
14°14'0"S
14°16'0"S
Depth (m)
High: 0
-50
-100
-200
Low: -300
0
2.5
5
Kilometers


Tau Island, American Samoa
Backscatter Imagery
169°32'0"W
169°30'0"W
169°28'0"W
169°26'0"W
14°12'0"S
14°14'0"S
14°16'0"S
High
Intensity
Low
0
2.5
5
Kilometers

Rose Atoll





Rose Atoll Multibeam Bathymetry

5 m grid cell size

NOAA Coral Reef Ecosystem Division

Data collected aboard R/V Acoustic Habitat Investigator (AHI)

NOT FOR NAVIGATION

Universal Transverse Mercator Projection, Zone 2S, Ellipsoid: WGS84

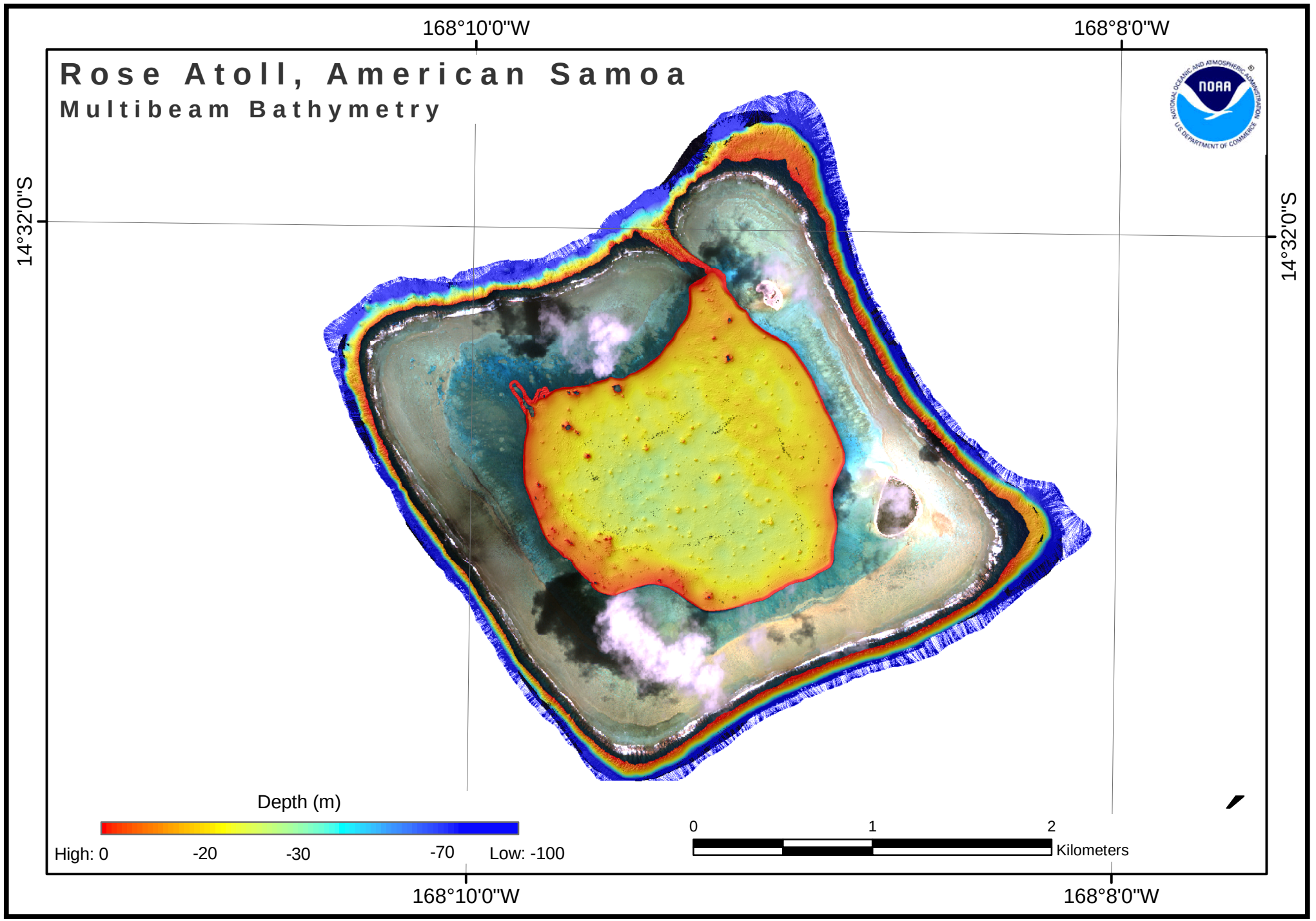
1

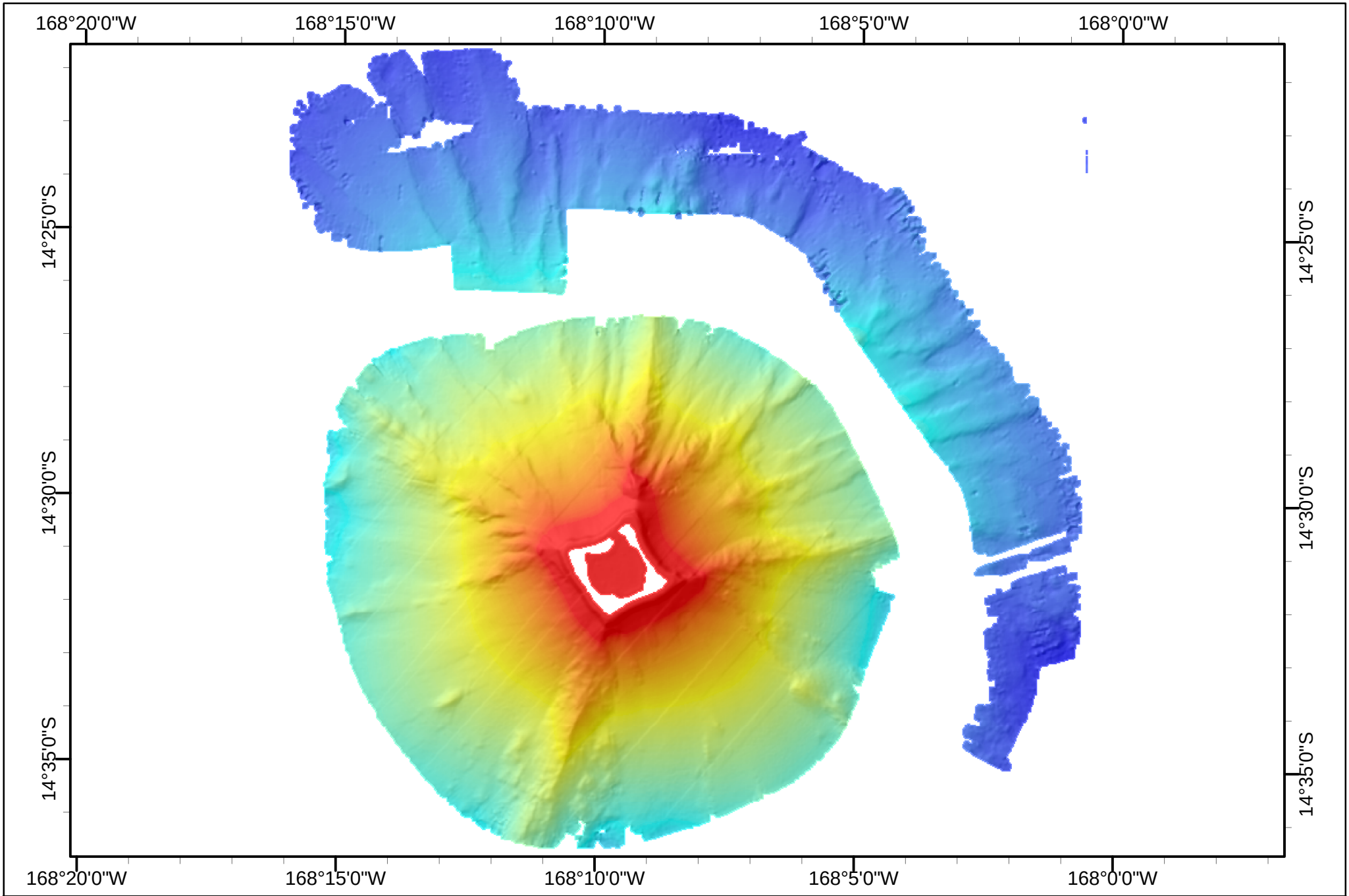
0 0.5 1 1.5 2 2.5 Km

BATHYMETRY

0-10 -50 -100 -200 -300 m

NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION U.S. DEPARTMENT OF COMMERCE


Rose Atoll, American Samoa
Multibeam Bathymetry
168°10'0"W
168°8'0"W
14°32'0"S
Depth (m)
High: 0
-20
-30
-70
Low: -100
0
1
2
Kilometers



Rose Atoll Multibeam Bathymetry

40 m grid cell size

NOAA Coral Reef Ecosystem Division

Data collected aboard NOAA Ship Hiialaka'i and R/V AHI

NOT FOR NAVIGATION

Universal Transverse Mercator Projection, Zone 2S, Ellipsoid: WGS84

1

0 4 8 12 16 Km

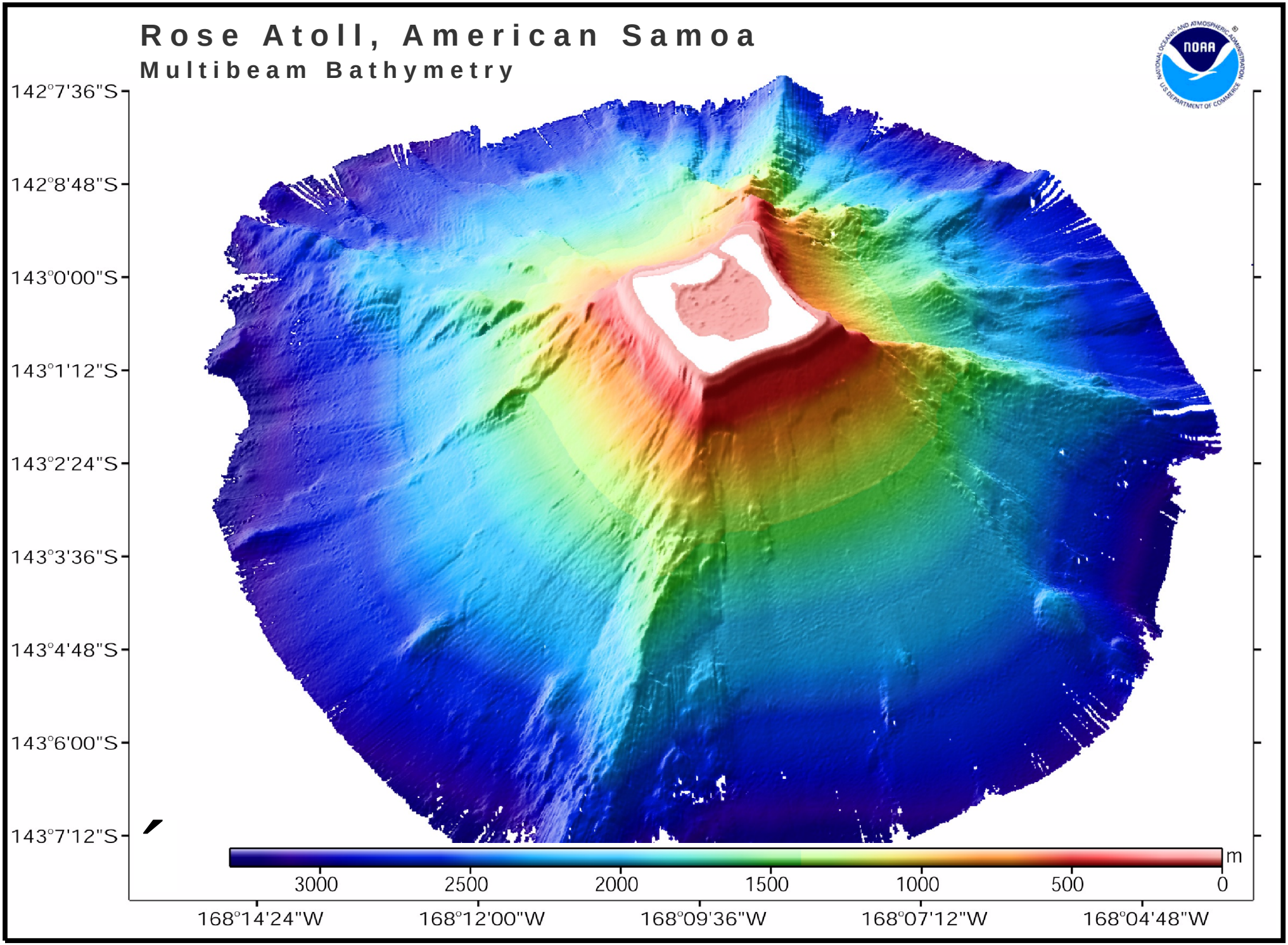
BATHYMETRY

0 -500 -1000 -2000 -3000 -4000 -4700 m

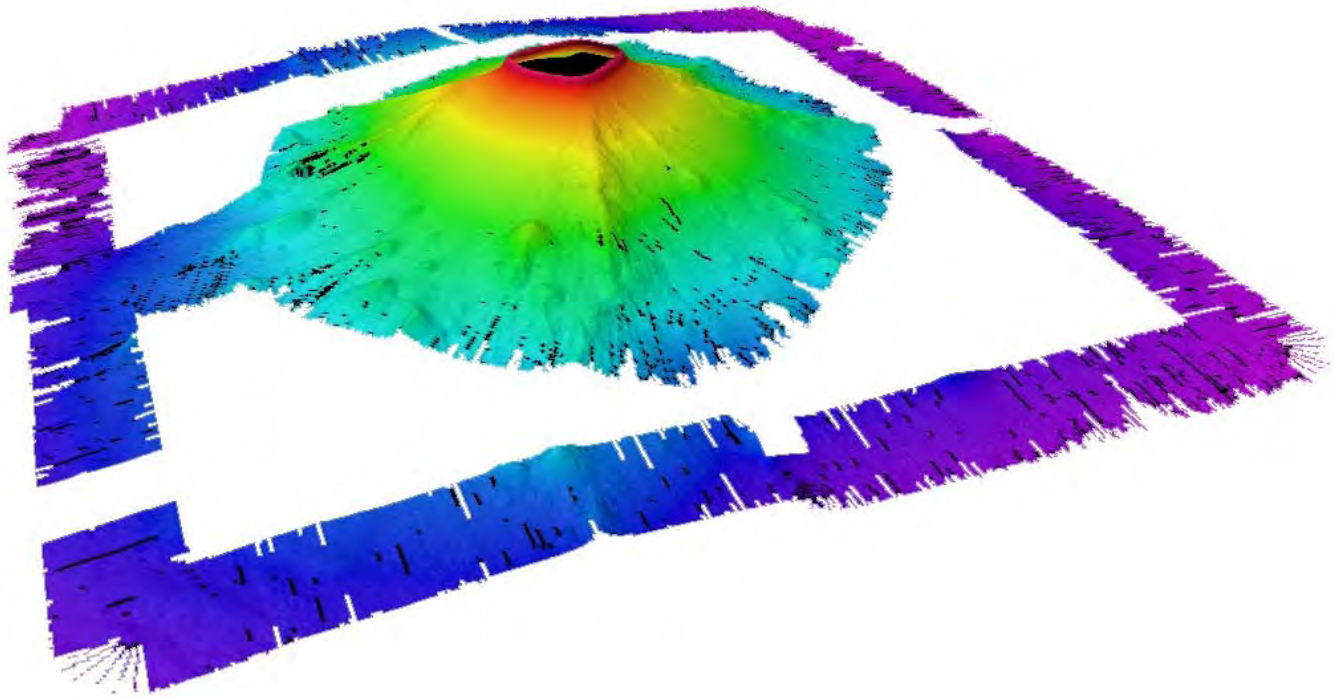
NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION U.S. DEPARTMENT OF COMMERCE

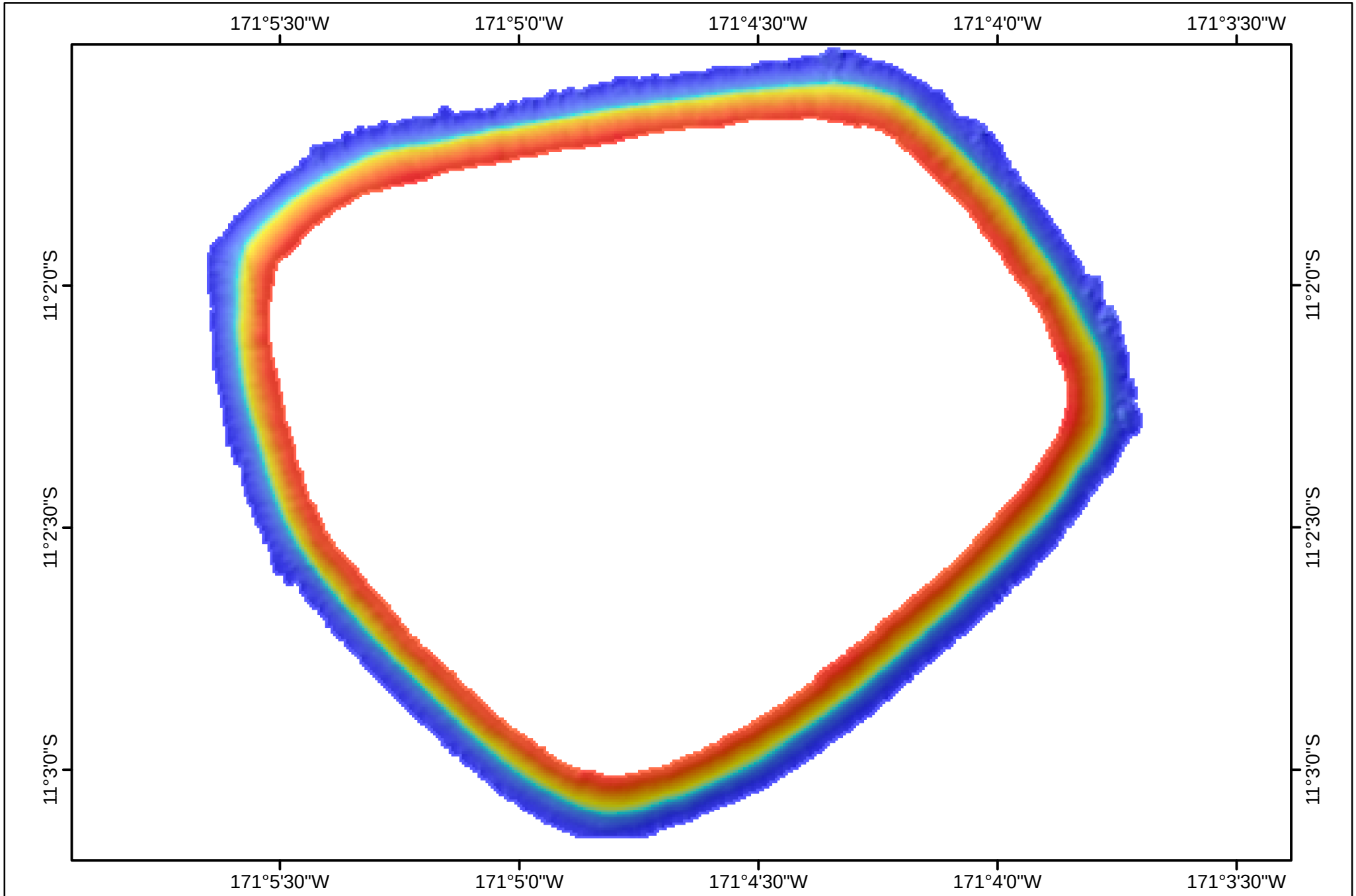
Rose Atoll, American Samoa

Multibeam Bathymetry



Swain's Island





Swains Island Multibeam Bathymetry

10 m grid cell size

NOAA Coral Reef Ecosystem Division

Data collected aboard NOAA Ship Hiialaka'i and R/V AHI

NOT FOR NAVIGATION

Universal Transverse Mercator Projection, Zone 2S, Ellipsoid: WGS84

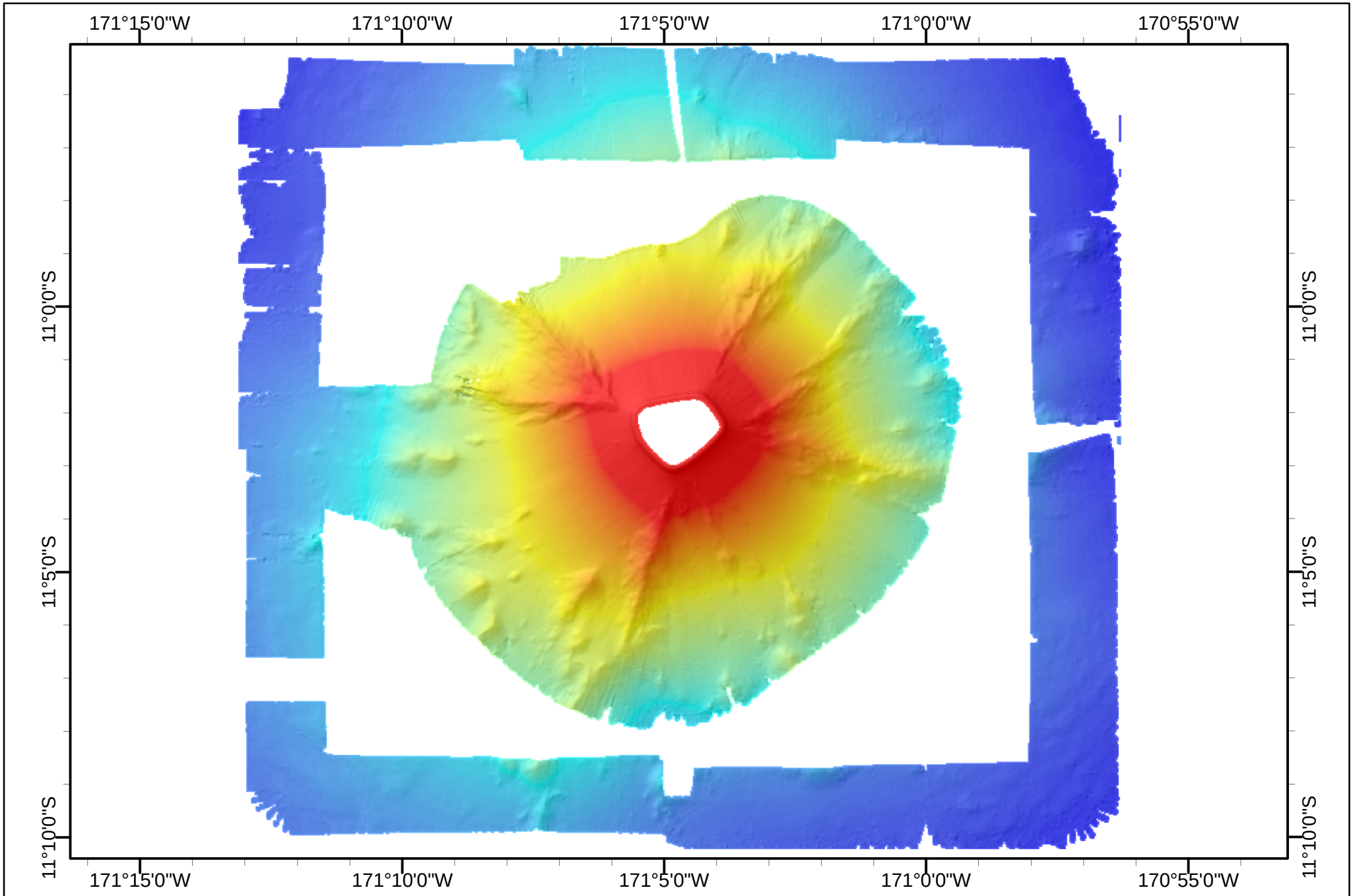
1

0 0.5 1 1.5 Km

BATHYMETRY

0 -50 -100 -200 -250 -300 m

NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION U.S. DEPARTMENT OF COMMERCE



Swains Island Multibeam Bathymetry

40 m grid cell size

NOAA Coral Reef Ecosystem Division

Data collected aboard NOAA Ship Hiialaka'i and R/V AHI

NOT FOR NAVIGATION

Universal Transverse Mercator Projection, Zone 2S, Ellipsoid: WGS84

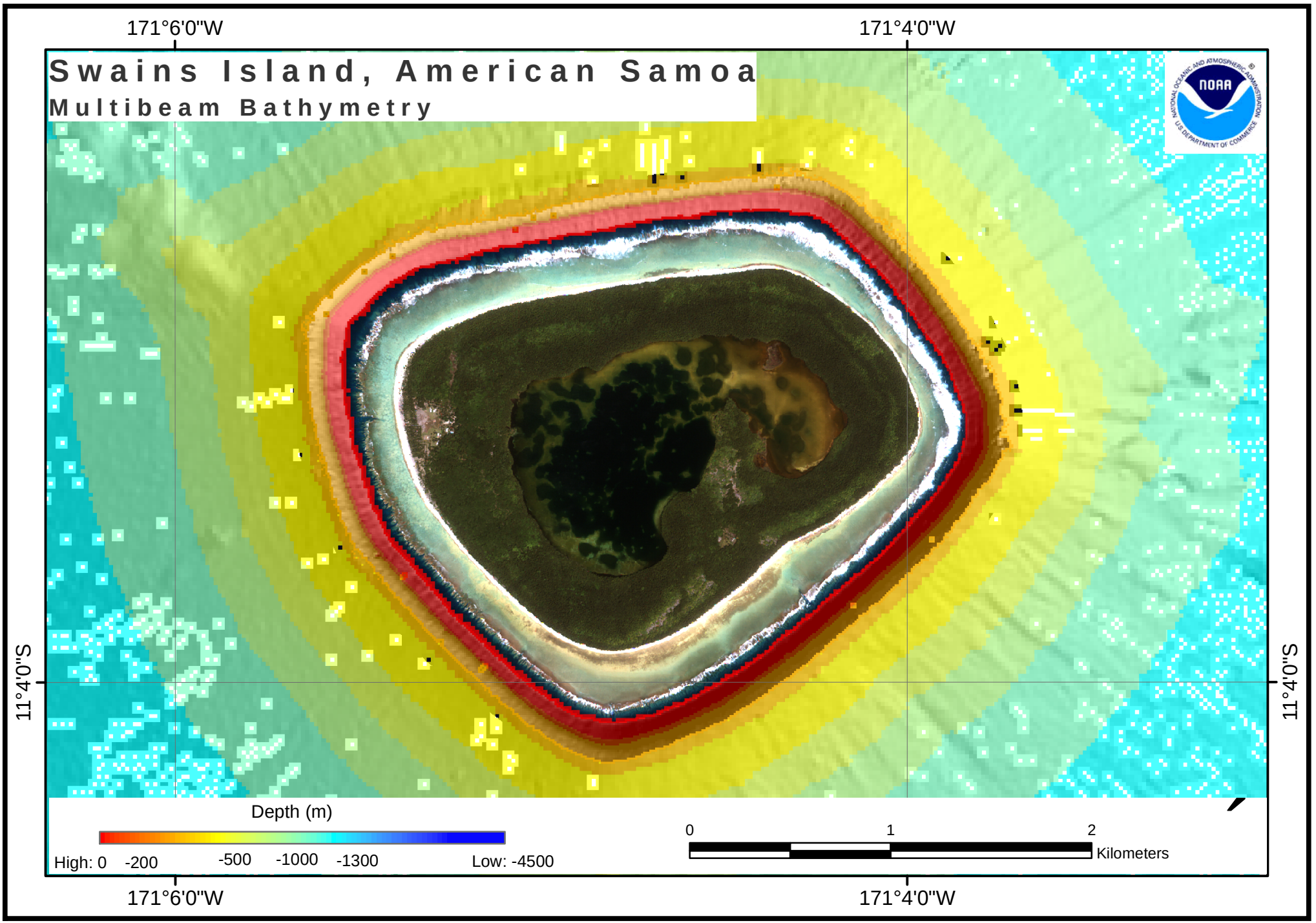
1

0 4 8 12 16 Km

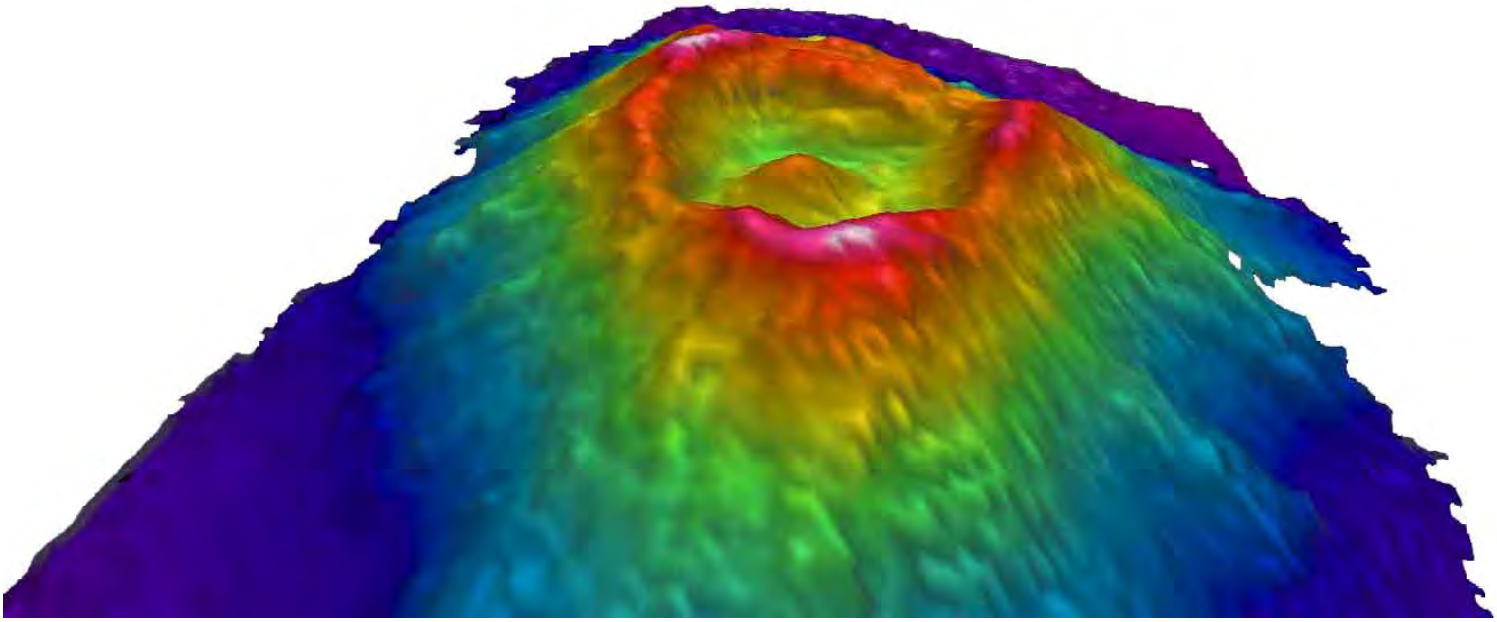
BATHYMETRY

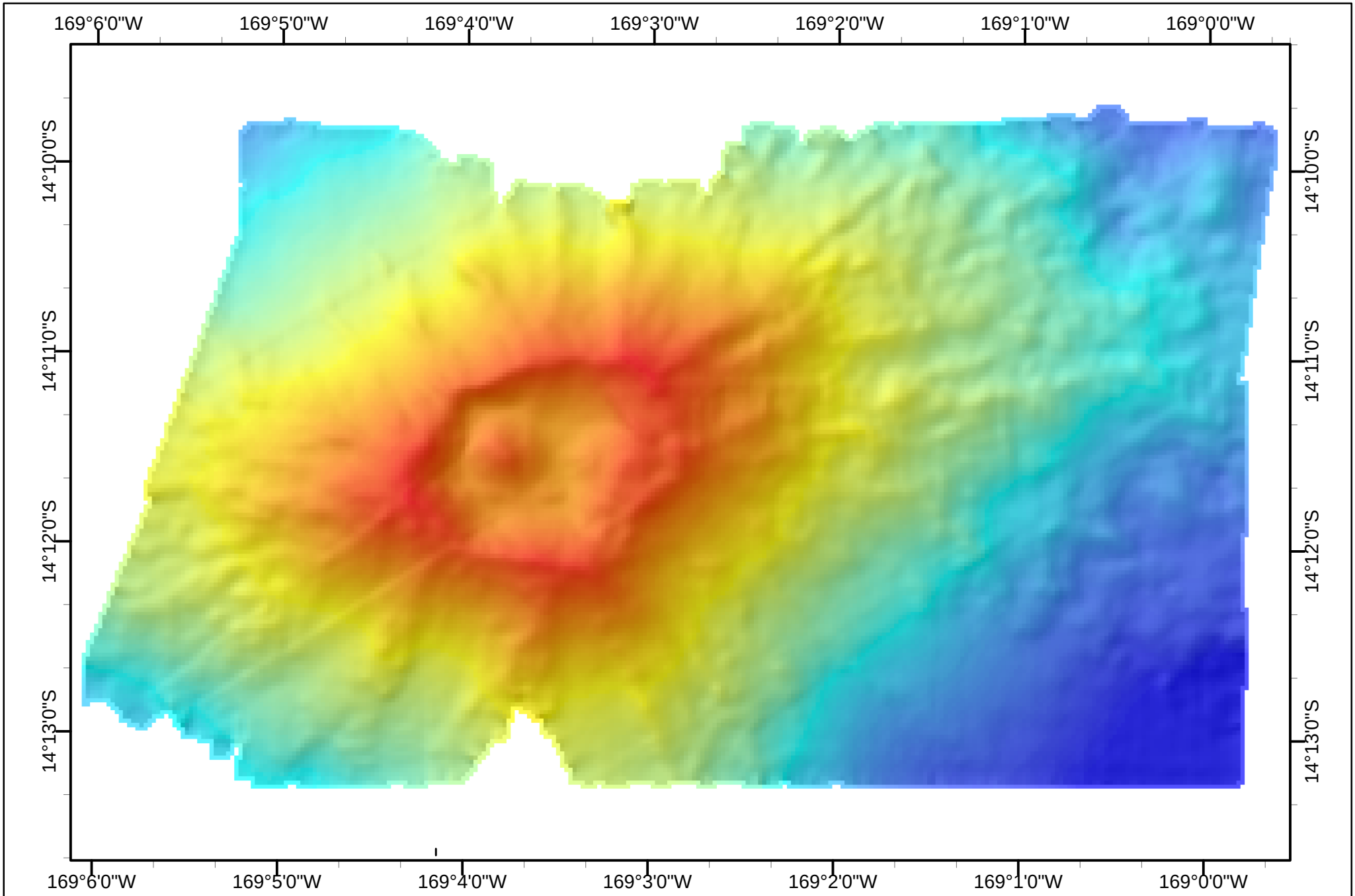
0 -1000 -3000 -4000 -4500 -4800 m

NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION U.S. DEPARTMENT OF COMMERCE


Swains Island, American Samoa
Multibeam Bathymetry
171°6'0"W
171°4'0"W
11°4'0"S
Depth (m)
High: 0
-200
-500
-1000
-1300
Low: -4500
0
1
2
Kilometers

Vailulu'u Seamount





Vailulu'u Seamount Multibeam Bathymetry

40 m grid cell size

NOAA Coral Reef Ecosystem Division

Data collected aboard NOAA Ship Hiialaka'i

NOT FOR NAVIGATION

Universal Transverse Mercator Projection, Zone 2S, Ellipsoid: WGS84

1

0 1 2 3 4 5 Km

BATHYMETRY

-590 -800 -1000 -1500 -2000 -2500 -3000 m

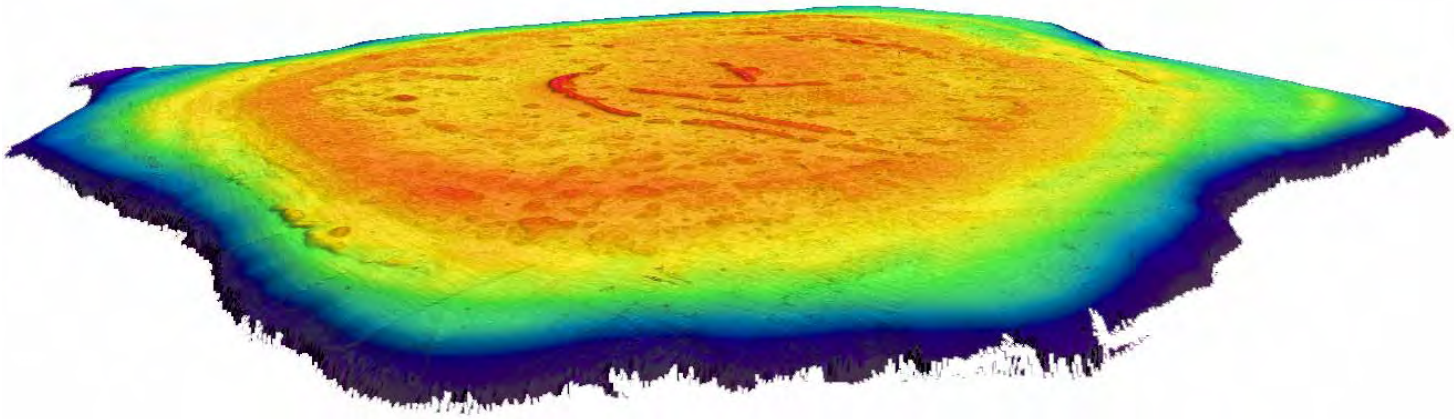
NOAA

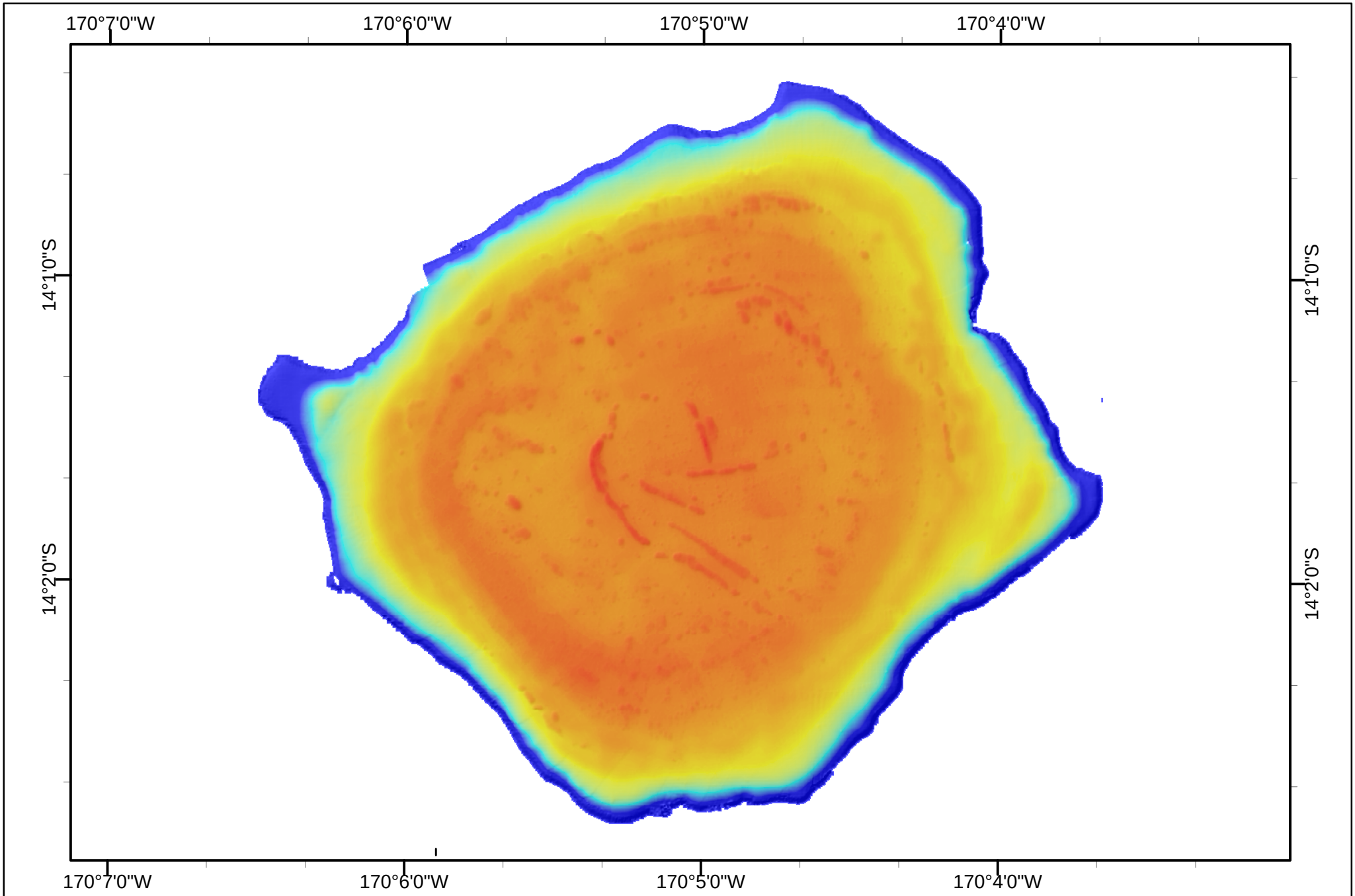
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

U.S. DEPARTMENT OF COMMERCE

Northeast Bank

(Muli)





Northeast Bank Multibeam Bathymetry

5 m grid cell size

NOAA Coral Reef Ecosystem Division

Data collected aboard NOAA Ship Hiialaka'i and R/V AHI

NOT FOR NAVIGATION

Universal Transverse Mercator Projection, Zone 2S, Ellipsoid: WGS84

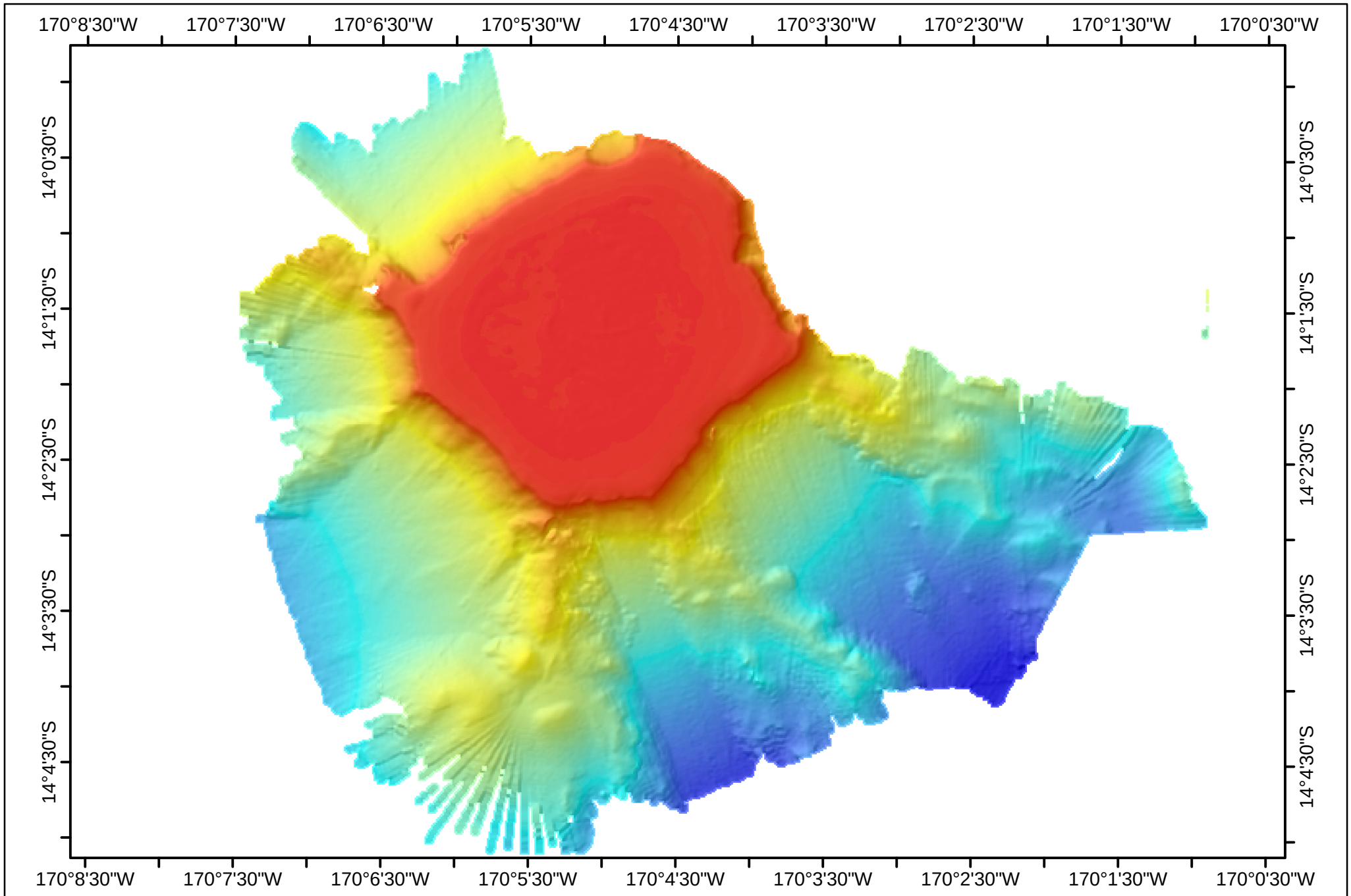
1

0 1 2 3 Km

BATHYMETRY

-50 -60 -70 -80 -100 -150 m

NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION U.S. DEPARTMENT OF COMMERCE



Northeast Bank Multibeam Bathymetry

20 m grid cell size

NOAA Coral Reef Ecosystem Division

Data collected aboard NOAA Ship Hiialaka'i

NOT FOR NAVIGATION

Universal Transverse Mercator Projection, Zone 2S, Ellipsoid: WGS84

1

0 2 4 6 Km

BATHYMETRY

-50 -100 -500 -1000 -1500 -1820 m

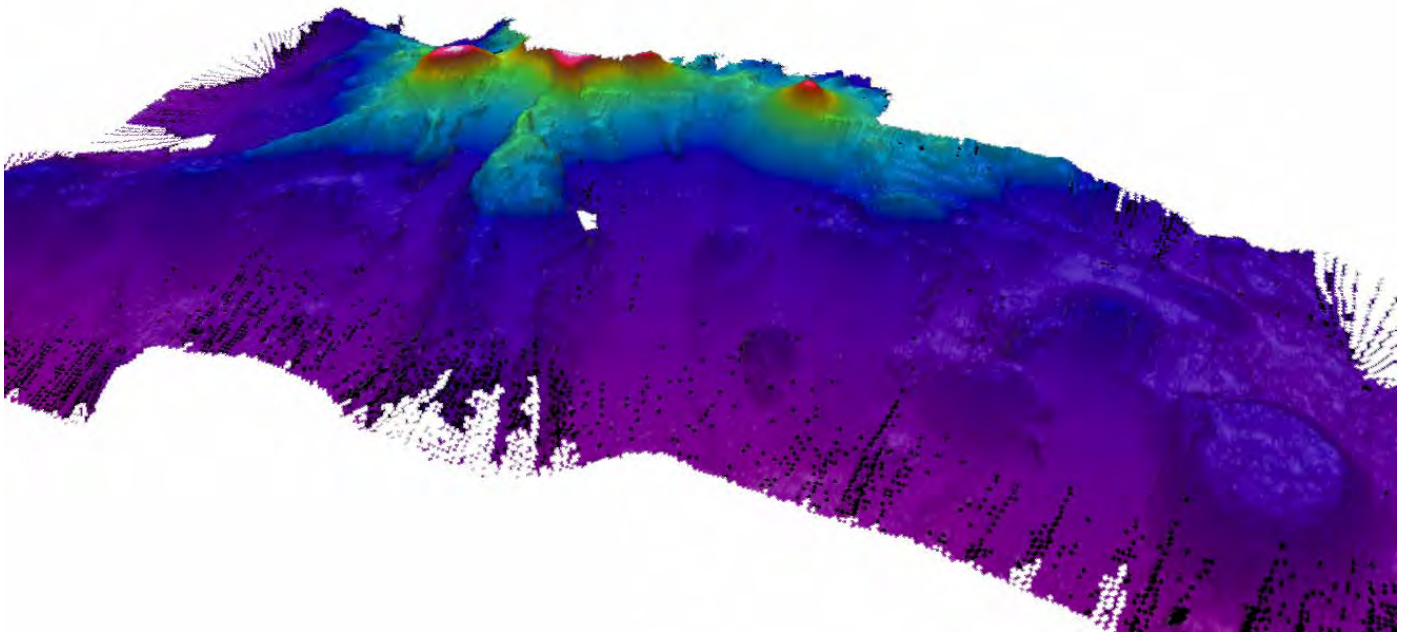
NOAA

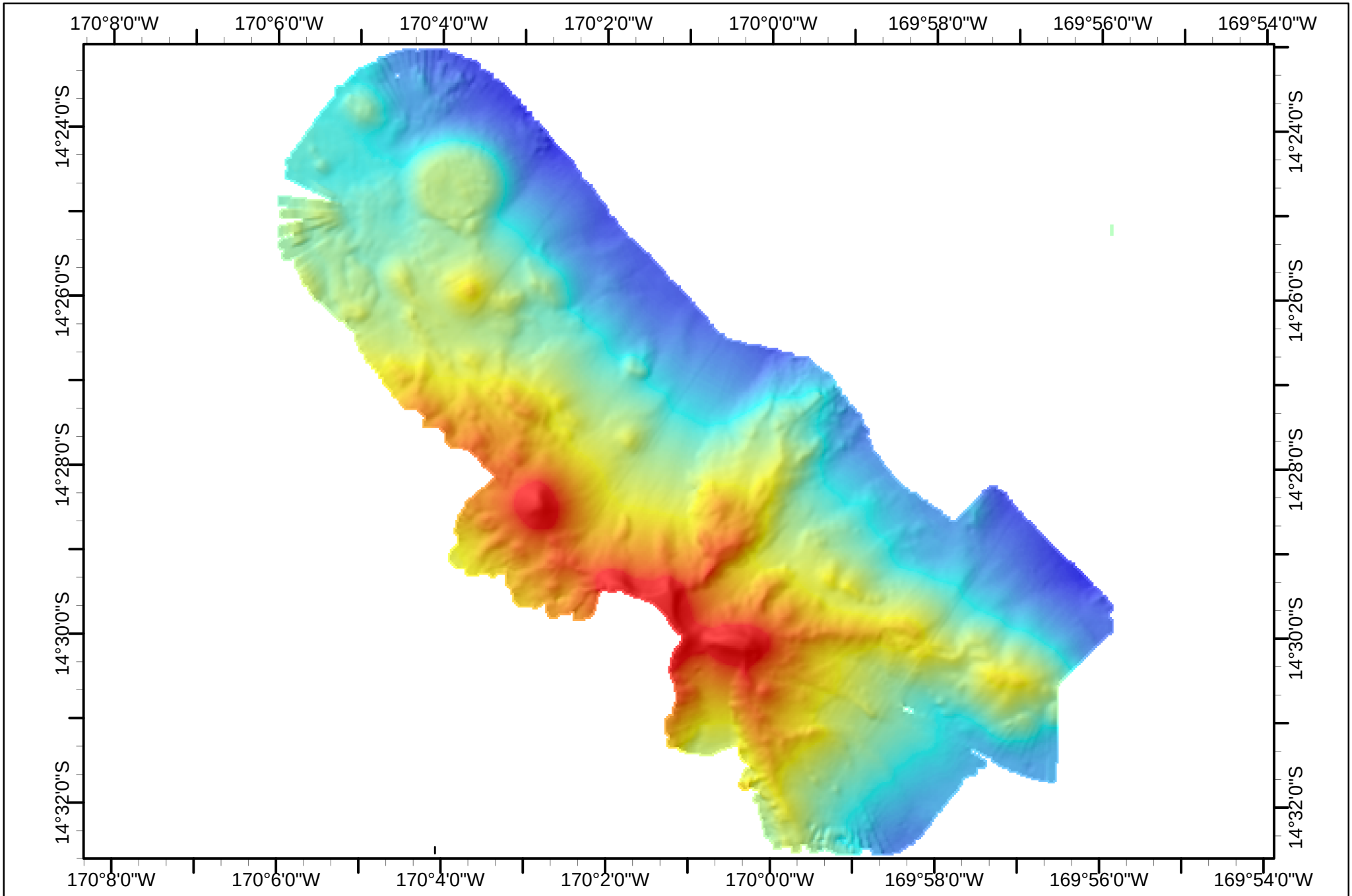
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

U.S. DEPARTMENT OF COMMERCE

Two Percent Bank

(Tulaga)





2% Bank Multibeam Bathymetry

40 m grid cell size

NOAA Coral Reef Ecosystem Division

Data collected aboard NOAA Ship Hiialaka'i

NOT FOR NAVIGATION

Universal Transverse Mercator Projection, Zone 2S, Ellipsoid: WGS84

1

0 2 4 6 8 10 Km

BATHYMETRY

-80 -500 -1000 -1500 -2000 -2200 m

NOAA

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

U.S. DEPARTMENT OF COMMERCE

Metadata

Identification_Information:
Citation:
Citation_Information:
Originator: Joyce E. Miller
Originator: Coral Reef Ecosystem Division, NOAA Pacific Islands
Fisheries Science Center, Pacific Islands Benthic Habitat Mapping Center
Publication_Date: 20060930
Title: Gridded bathymetry of Tutuila Island, American Samoa, South Pacific
Geospatial_Data_Presentation_Form: raster digital data
Online_Linkage: http://soest.hawaii.edu/pibhmc
Description:
Abstract: Gridded (5 m cell size) bathymetry of the shelf and slope environments of Tutuila Island, American Samoa, South Pacific.
Almost complete bottom coverage was achieved in depths between 2 and 3409 meters (5 m grid includes data to 250 m). The bathymetry dataset includes Simrad EM300, EM3002D, and Reson 8101ER multibeam data collected during Jan. to March of 2004 and during Feb. to March of 2006.
Purpose:
The data were collected in support of Coral Reef Conservation Program goals to map all shallow (0-30 m) coral reefs in US Pacific waters and priority moderate (> 30 m) depth areas by 2009. The data are being used to provide bathymetric and backscatter data for previously unmapped areas; in support of ecosystem management requirements for benthic habitat mapping and location of Essential Fish Habitat; and to study the geologic features of the area.
Supplemental_Information:
Data were collected aboard the NOAA Ship Hiialakai, a 218’ United States National Oceanographic and Atmospheric Administration research ship. The NOAA Ship Hiialakai's survey sensors include a 30 kHz Simrad EM300 sonar and a 300 kHz Simrad EM3002D sonar, which provide bathymetry and imagery data, a TSS/Applanix POS/MV Model 320, which measures position, velocity, attitude and heading, and a Seabird SBE 9/11 plus CTD used to measure sound velocity profiles. Sensor configuration for the Hi'ialakai for cruise HI-06-02 is documented in the cruise/multibeam metadata file HI0602_MB_Metadata.txt.

Data were also collected aboard the R/V AHI (Acoustic Habitat Investigator), a 25’ survey launch owned and operated by the NOAA Pacific Islands Fisheries Science Center in Honolulu, HI. The R/V AHI’s survey sensors include a 240 kHz RESON 8101-ER sonar providing bathymetry and imagery data, a TSS/Applanix POS/MV Model 320 which measures position, velocity, attitude and heading, and a Seabird SBE 19 CTD used to measure sound

velocity profiles. Sensor configuration for the AHI for cruise
AHI-06-02 is documented in the cruise/multibeam metadata file
AHI0602_MB_Metadata.txt. Sensor configuration for the AHI for cruise
AHI-04-02 is documented in the cruise/multibeam metadata file
AHI0402_MB_Metadata.txt.
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Maintenance_and_Update_Frequency: As needed
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Access_Constraints: None
Use_Constraints: These data are not to be used for navigation purposes.
Please acknowledge the NOAA Coral Reef Ecosystem Division,

Pacific Islands Fisheries Science Center and the Pacific Islands Benthic
Habitat Mapping Center, School of Ocean and Earth Science and Technology, University
of Hawaii as the sources of this information.
Point_of_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Pacific Islands Benthic Habitat Mapping Center
Coral Reef Ecosystem Division, PIFSC, NOAA and the Joint Institute for Marine and
Atmospheric Research (JIMAR)
Contact_Person: Joyce Miller
Contact_Address:
Address_Type: mailing and physical address
Address: 1680 East-West Road, POST 833
City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96822
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Browse_Graphic:
Browse_Graphic_File_Name: Tutuila_5m.jpg
Browse_Graphic_File_Description: Gridded Bathymetry
Browse_Graphic_File_Type: JPG
Data_Set_Credit: Coral Reef Ecosystem Division (CRED), Pacific Islands Fisheries Science Center
(PIFSC), NOAA and Pacific Islands Benthic Habitat Mapping Center, School of Ocean and Earth
Science and Technology, University of Hawaii
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Attribute_Accuracy:
Attribute_Accuracy_Report: Data are collected for resource management
and research purposes and are tested for internal consistency; however,
no effort is made to compare these data to external references or to
other published data.
Logical_Consistency_Report: These data are believed to be logically consistent
though no tests were performed
Completeness_Report: Complete
Positional_Accuracy:
Horizontal_Positional_Accuracy:
Horizontal_Positional_Accuracy_Report:
Horizontal positioning system: GPS C/A
Horizontal position accuracy: 25 meters
Vertical_Positional_Accuracy:
Vertical_Positional_Accuracy_Report:
Range resolution of sonar: varies with depth

Raw sounding resolution: varies with depth
Vertical accuracy of gridded product ~ 1% of water depth
Lineage:
Process_Step:
Process_Description:
Specifics of data processing are recorded in cruise metadata
reports HI0602_MB_Metadata.txt, AHI0602_MB_Metadata.txt, AHI0402_MB_Metadata.txt

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Direct_Spatial_Reference_Method: Raster
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Vertical_Count: 1
Spatial_Reference_Information:
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Planar:
Planar_Coordinate_Information:
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Coordinate_Representation:
Abscissa_Resolution: 5
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Planar_Distance_Units: meters
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Universal_Transverse_Mercator:
UTM_Zone_Number: -2
Transverse_Mercator:
Scale_Factor_at_Central_Meridian: 0.9996
Longitude_of_Central_Meridian: -171
Latitude_of_Projection_Origin: 0
False_Easting: 500000
False_Northing: 0
Geodetic_Model:
Horizontal_Datum_Name: D_WGS_1984
Ellipsoid_Name: WGS_1984
Semi-major_Axis: 6378137.000000
Denominator_of_Flattening_Ratio: 298.257224
Vertical_Coordinate_System_Definition:
Depth_System_Definition:
Depth_Datum_Name: mean lower low water

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Depth_Distance_Units: meters
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Depth values are real values based on the average of the
soundings that fell within the extracted grid cells. The number of
soundings per grid cell range from >1000 soundings in shallow depths
to as few as 20 soundings in deeper areas. A total error budget for
this survey has not been developed. Therefore, the accuracy of depth
measurements should be considered to be within 1 per cent of water depth.
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Distributor:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Pacific Islands Benthic Habitat Mapping Center,CRED, PIFSC, NOAA and JIMAR
Contact_Person: Joyce E. Miller
Contact_Position: Oceanographer
Contact_Address:
Address_Type: mailing and physical address
Address: 1680 East-West Road, POST 833
City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96822
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Resource_Description: Downloadable Data
Distribution_Liability:
These data are not to be used for navigational purposes.
NOAA makes no warranty regarding these data, expressed or implied, nor
does the fact of distribution constitute such a warranty. NOAA cannot
assume liability for any damages caused by any errors or omissions in
these data, nor as a result of the failure of these data to function
on a particular system.
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Digital_Transfer_Information:
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Arc ASCII can be converted to Arc Raster using ArcToolbox Conversion Tools.
Digital_Transfer_Option:
Online_Option:
Computer_Contact_Information:
Network_Address:
Network_Resource_Name: http://www.soest.hawaii.edu/pibhmc

Fees: None
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Metadata_Date: 20060912
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Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Pacific Islands Benthic Habitat Mapping Center, CRED, PIFSC, NOAA and JIMAR
Contact_Person: Joyce E. Miller
Contact_Position: Oceanographer
Contact_Address:
Address_Type: mailing and physical address
Address: 1680 East-West Road POST 833
City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96822
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
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      Originator: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
      Publication_Date: 20041130
      Title: Gridded bathymetry of the banktop and slope environments of Ta'u
        Island of the Manu'a Island group, American Samoa
      Geospatial_Data_Presentation_Form: raster digital data
      Online_Linkage: http://www.soest.hawaii.edu/pibhmc
  Description:
    Abstract: Gridded bathymetry of the banktop and slope environments of Ta'u
      Island of the Manu'a Island group, American Samoa. This
      survey provides almost complete coverage between 20 and 350 meters.
      The multibeam data are from Reson 8101ER system aboard the R/V AHI and were
      collected during Jan. to March of 2004.
    Purpose:
      The data were collected in support of Coral Reef Conservation Program goals
      to map all shallow (0-30 m) coral reefs in US Pacific waters and priority
      moderate (> 30 m) depth areas by 2009. The data are being used to provide
      bathymetric and backscatter data for previously unmapped areas; in support
      of ecosystem management requirements for benthic habitat mapping and
      location of Essential Fish Habitat; and to study the geologic features of
      the area.
    Supplemental_Information:
      Data were collected aboard the R/V AHI (Acoustic Habitat Investigator),
      a 25’ survey launch owned and operated by the NOAA Pacific Islands
      Fisheries Science Center in Honolulu, HI. The R/V AHI’s survey sensors
      include a 240 kHz RESON 8101-ER sonar providing bathymetry and imagery
      data, a TSS/Applanix POS/MV Model 320 which measures position, velocity,
      attitude and heading, and a Seabird SBE 19 CTD used to measure sound
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      AHI0402 is documented in the cruise/multibeam metadata file
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Spatial_Domain:
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Please acknowledge the NOAA Coral Reef Ecosystem Division,
Pacific Islands Fisheries Science Center and the Pacific Islands Benthic
Habitat Mapping Center, School of Ocean and Earth Science and Technology, University
of Hawaii as the sources of this information.
Point_of_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Benthic Habitat Mapping Group,
Coral Reef Ecosystem Division, PIFSC,NOAA
Contact_Person: Joyce Miller
Contact_Address:
Address_Type: mailing and physical address
Address: 1125B Ala Moana Blvd
City: Honolulu
State_or_Province: HI
Postal_Code: 96814
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Browse_Graphic:
Browse_Graphic_File_Name: tau_10m.jpg

Browse_Graphic_File_Description: Gridded Bathymetry
Browse_Graphic_File_Type: jpg
Data_Set_Credit: Benthic Habitat Mapping Group, Coral Reef Ecosystem Division (CRED), Pacific Islands Fisheries Science Center (PIFSC), NOAA
Data_Quality_Information:
Attribute_Accuracy:
Attribute_Accuracy_Report: Data are collected for resource management and research purposes and are tested for internal consistency; however, no effort is made to compare these data to external references or to other published data.
Logical_Consistency_Report: These data are believed to be logically consistent though no tests were performed
Completeness_Report: Complete
Positional_Accuracy:
Horizontal_Positional_Accuracy:
Horizontal_Positional_Accuracy_Report:
Horizontal positioning system: GPS C/A
Horizontal position accuracy: 25 meters
Vertical_Positional_Accuracy:
Vertical_Positional_Accuracy_Report:
Range resolution of sonar: varies with depth
Raw sounding resolution: varies with depth
Vertical accuracy of gridded product ~ 1% of water depth
Lineage:
Process_Step:
Process_Description:
Specifics of data processing are recorded in cruise metadata report AHI0402_MB_Metadata.txt
Process_Date: 20041130
Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Raster
Raster_Object_Information:
Raster_Object_Type: Grid Cell
Row_Count: 876
Column_Count: 1477
Vertical_Count: 1
Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: row and column
Coordinate_Representation:
Abscissa_Resolution: 10

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        Ordinate_Resolution: 10
      Planar_Distance_Units: meters
    Grid_Coordinate_System:
      Grid_Coordinate_System_Name: Universal Transverse Mercator
      Universal_Transverse_Mercator:
        UTM_Zone_Number: -2
        Transverse_Mercator:
          Scale_Factor_at_Central_Meridian: 0.9996
          Longitude_of_Central_Meridian: -171
          Latitude_of_Projection_Origin: 0
          False_Easting: 500000
          False_Northing: 1000000
  Geodetic_Model:
    Horizontal_Datum_Name: D_WGS_1984
    Ellipsoid_Name: WGS_1984
    Semi-major_Axis: 6378137.000000
    Denominator_of_Flattening_Ratio: 298.257224
Vertical_Coordinate_System_Definition:
  Depth_System_Definition:
    Depth_Datum_Name: mean lower low water
    Depth_Resolution:  0.01 meters
    Depth_Distance_Units: meters
    Depth_Encoding_Method: Attribute values
Entity_and_Attribute_Information:
Overview_Description:
  Entity_and_Attribute_Overview:
    Depth values are real values based on the average of the
    soundings that fell within the extracted grid cells.  The number of
    soundings per grid cell range from >1000 soundings in shallow depths
    to as few as 20 soundings in deeper areas.  A total error budget for
    this survey has not been developed. Therefore, the accuracy of depth
    measurements should be considered to be within 1 per cent of water depth.
  Entity_and_Attribute_Detail_Citation: none
Distribution_Information:
Distributor:
  Contact_Information:
    Contact_Organization_Primary:
      Contact_Organization: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
      Contact_Person: Joyce E. Miller
    Contact_Position: Oceanographer
    Contact_Address:
      Address_Type: mailing and physical address
      Address: 1125 'B' Ala Moana Blvd
```

City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96814
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Resource_Description: Downloadable Data
Distribution_Liability:
These data are not to be used for navigational purposes.
NOAA makes no warranty regarding these data, expressed or implied, nor
does the fact of distribution constitute such a warranty. NOAA cannot
assume liability for any damages caused by any errors or omissions in
these data, nor as a result of the failure of these data to function
on a particular system.
Standard_Order_Process:
Digital_Form: Arc ASCII
Digital_Transfer_Information:
Format_Name: Arc ASCII
Format_Information_Content:
Arc ASCII can be converted to Arc Raster using ArcToolbox Conversion Tools.
Digital_Transfer_Option:
Online_Option:
Computer_Contact_Information:
Network_Address:
Network_Resource_Name: http://www.soest.hawaii.edu/pibhmc
Fees: None
Metadata_Reference_Information:
Metadata_Date: 20060912
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
Contact_Person: Joyce E. Miller
Contact_Position: Oceanographer
Contact_Address:
Address_Type: mailing and physical address
Address: 1125 'B' Ala Moana Blvd
City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96814
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov

Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: universal time
Metadata_Access_Constraints: None
Metadata_Use_Constraints: None

Identification_Information:
  Citation:
    Citation_Information:
      Originator: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
      Publication_Date: 20041130
      Title: Gridded bathymetry of the submarine volcanos between Olosega and Ta'u
        Islands of the Manu'a Island group, American Samoa
      Geospatial_Data_Presentation_Form: raster digital data
      Online_Linkage: http://www.soest.hawaii.edu/pibhmc
  Description:
    Abstract: Gridded bathymetry of the submarine volcanos between Olosega and Ta'u
      Islands of the Manu'a Island group, American Samoa This
      survey provides almost complete coverage between 20 and 350 meters.
      The multibeam data are from Reson 8101ER system aboard the R/V AHI and were
      collected during Jan. to March of 2004.
    Purpose:
      This grid was created using data gathered from multibeam soundings
      for use as a planning and reference document. Refer to supplemental
      information for description of instrument and survey.
    Supplemental_Information:
      Data were collected aboard the R/V AHI (Acoustic Habitat Investigator),
      a 25’ survey launch owned and operated by the NOAA Pacific Islands
      Fisheries Science Center in Honolulu, HI. The R/V AHI’s survey sensors
      include a 240 kHz RESON 8101-ER sonar providing bathymetry and imagery
      data, a TSS/Applanix POS/MV Model 320 which measures position, velocity,
      attitude and heading, and a Seabird SBE 19 CTD used to measure sound
      velocity profiles. Sensor configuration for the AHI for cruise
      AHI0402 is documented in the cruise/multibeam metadata file
      AHI0402_MB_Metadata.txt.
  Time_Period_of_Content:
    Time_Period_Information:
      Range_of_Dates/Times:
        Beginning_Date: 20040205
        Ending_Date: 20040212
    Currentness_Reference: ground condition
  Status:
    Progress: Complete
    Maintenance_and_Update_Frequency: As needed
  Spatial_Domain:
    Bounding_Coordinates:
      West_Bounding_Coordinate: -169.594468
      East_Bounding_Coordinate: -169.528580

North_Bounding_Coordinate: -14.187228
South_Bounding_Coordinate: -14.233088
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: Gridded bathymetry
Place:
Place_Keyword_Thesaurus: None
Place_Keyword: Ta'u Island
Place_Keyword: Olosega Island
Place_Keyword: Manu’a Islands
Place_Keyword: American Samoa
Access_Constraints: None
Use_Constraints: These data are not to be used for navigation purposes.
Please acknowledge the NOAA Coral Reef Ecosystem Division,
Pacific Islands Fisheries Science Center and the Pacific Islands Benthic
Habitat Mapping Center, School of Ocean and Earth Science and Technology, University
of Hawaii as the sources of this information..
Point_of_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Benthic Habitat Mapping Group,
Coral Reef Ecosystem Division, PIFSC,NOAA
Contact_Person: Joyce Miller
Contact_Address:
Address_Type: mailing and physical address
Address: 1125B Ala Moana Blvd
City: Honolulu
State_or_Province: HI
Postal_Code: 96814
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Browse_Graphic:
Browse_Graphic_File_Name: tau_w_10m.jpg
Browse_Graphic_File_Description: Gridded Bathymetry
Browse_Graphic_File_Type: JPG
Data_Set_Credit: Benthic Habitat Mapping Group, Coral Reef Ecosystem Division
(CRED), Pacific Islands Fisheries Science Center (PIFSC), NOAA
Data_Quality_Information:
Attribute_Accuracy:
Attribute_Accuracy_Report: Data are collected for resource management
and research purposes and are tested for internal consistency; however,

no effort is made to compare these data to external references or to other published data.
Logical_Consistency_Report: These data are believed to be logically consistent though no tests were performed
Completeness_Report: Complete
Positional_Accuracy:
Horizontal_Positional_Accuracy:
Horizontal_Positional_Accuracy_Report:
Horizontal positioning system: GPS C/A
Horizontal position accuracy: 25 meters
Vertical_Positional_Accuracy:
Vertical_Positional_Accuracy_Report:
Range resolution of sonar: varies with depth
Raw sounding resolution: varies with depth
Vertical accuracy of gridded product ~ 1% of water depth
Lineage:
Process_Step:
Process_Description:
Specifics of data processing are recorded in cruise metadata report AHI0402_MB_Metadata.txt
Process_Date: 20041130
Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Raster
Raster_Object_Information:
Raster_Object_Type: Grid Cell
Row_Count: 503
Column_Count: 708
Vertical_Count: 1
Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: row and column
Coordinate_Representation:
Abscissa_Resolution: 10
Ordinate_Resolution: 10
Planar_Distance_Units: meters
Grid_Coordinate_System:
Grid_Coordinate_System_Name: Universal Transverse Mercator
Universal_Transverse_Mercator:
UTM_Zone_Number: -2
Transverse_Mercator:
Scale_Factor_at_Central_Meridian: 0.9996

Longitude_of_Central_Meridian: -171
Latitude_of_Projection_Origin: 0
False_Easting: 500000
False_Northing: 1000000
Geodetic_Model:
Horizontal_Datum_Name: D_WGS_1984
Ellipsoid_Name: WGS_1984
Semi-major_Axis: 6378137.000000
Denominator_of_Flattening_Ratio: 298.257224
Vertical_Coordinate_System_Definition:
Depth_System_Definition:
Depth_Datum_Name: mean lower low water
Depth_Resolution: 0.01 meters
Depth_Distance_Units: meters
Depth_Encoding_Method: Attribute values
Entity_and_Attribute_Information:
Overview_Description:
Entity_and_Attribute_Overview:
Depth values are real values based on the average of the soundings that fell within the extracted grid cells. Number of soundings per grid cell range from >1000 soundings in shallow depths to as few as 20 soundings in deeper areas. A total error budget for this survey has not been developed, therefore the accuracy of depth measurements should be considered to be within 1 meter.
Entity_and_Attribute_Detail_Citation: none
Distribution_Information:
Distributor:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
Contact_Person: Joyce E. Miller
Contact_Position: Oceanographer
Contact_Address:
Address_Type: mailing and physical address
Address: 1125 'B' Ala Moana Blvd
City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96814
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Resource_Description: Downloadable Data
Distribution_Liability:

These data are not to be used for navigational purposes.
NOAA makes no warranty regarding these data, expressed or implied, nor does the fact of distribution constitute such a warranty. NOAA cannot assume liability for any damages caused by any errors or omissions in these data, nor as a result of the failure of these data to function on a particular system.

Standard_Order_Process:
Digital_Form: Arc ASCII
Digital_Transfer_Information:
Format_Name: Arc ASCII
Format_Information_Content:
Arc ASCII can be converted to Arc Raster using ArcToolbox Conversion Tools.
Digital_Transfer_Option:
Online_Option:
Computer_Contact_Information:
Network_Address:
Network_Resource_Name: http://www.soest.hawaii.edu/pibhmc
Fees: None
Metadata_Reference_Information:
Metadata_Date: 20060912
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
Contact_Person: Joyce E. Miller
Contact_Position: Oceanographer
Contact_Address:
Address_Type: mailing and physical address
Address: 1125 'B' Ala Moana Blvd
City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96814
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: Joyce.Miller@noaa.gov
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: universal time
Metadata_Access_Constraints: None
Metadata_Use_Constraints: None

Identification_Information:
  Citation:
    Citation_Information:
      Originator: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
      Publication_Date: 20040506
      Title: Gridded bathymetry of the banktop and slope environments of Ofu and
        Olosega Islands of the Manu'a Island group, American Samoa
      Geospatial_Data_Presentation_Form: raster digital data
      Online_Linkage: http://www.soest.hawaii.edu/pibhmc
  Description:
    Abstract: Gridded bathymetry of the banktop and slope environments of Ofu
      and Olosega Islands of the Manu'a Island group, American Samoa. This
      survey provides almost complete coverage between 20 and 300 meters.
      The multibeam data are from Reson 8101ER system aboard the R/V AHI and were
      collected during Jan. to March of 2004.
    Purpose:
      The data were collected in support of Coral Reef Conservation Program goals
      to map all shallow (0-30 m) coral reefs in US Pacific waters and priority
      moderate (> 30 m) depth areas by 2009. The data are being used to provide
      bathymetric and backscatter data for previously unmapped areas; in support
      of ecosystem management requirements for benthic habitat mapping and
      location of Essential Fish Habitat; and to study the geologic features of
      the area.
    Supplemental_Information:
      Data were collected aboard the R/V AHI (Acoustic Habitat Investigator),
      a 25’ survey launch owned and operated by the NOAA Pacific Islands
      Fisheries Science Center in Honolulu, HI. The R/V AHI’s survey sensors
      include a 240 kHz RESON 8101-ER sonar providing bathymetry and imagery
      data, a TSS/Applanix POS/MV Model 320 which measures position, velocity,
      attitude and heading, and a Seabird SBE 19 CTD used to measure sound
      velocity profiles. Sensor configuration for the AHI for cruise
      AHI0402 is documented in the cruise/multibeam metadata file
      AHI0402_MB_Metadata.txt.
  Time_Period_of_Content:
    Time_Period_Information:
      Range_of_Dates/Times:
        Beginning_Date: 20040205
        Ending_Date: 20040212
    Currentness_Reference: ground condition
  Status:
    Progress: Complete
    Maintenance_and_Update_Frequency: As needed

Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate: -169.705274
East_Bounding_Coordinate: -169.583687
North_Bounding_Coordinate: -14.133505
South_Bounding_Coordinate: -14.203385
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: Gridded bathymetry
Place:
Place_Keyword_Thesaurus: None
Place_Keyword: Ofu and Olosega Islands
Place_Keyword: Manu’a Islands
Place_Keyword: American Samoa
Place:
Place_Keyword_Thesaurus: CoRIS Place Thesaurus Version 1.0
Place_Keyword: OCEAN BASIN > Pacific Ocean > South Pacific Ocean > Pacific > American Samoa > Ofu and Olosega Islands
Place_Keyword: COUNTRY/TERRITORY > United States of America > American Samoa
Access_Constraints: None
Use_Constraints: These data are not to be used for navigation purposes.
Please acknowledge the NOAA Coral Reef Ecosystem Division,
Pacific Islands Fisheries Science Center and the Pacific Islands Benthic
Habitat Mapping Center, School of Ocean and Earth Science and Technology, University
of Hawaii as the sources of this information.
Point_of_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Benthic Habitat Mapping Group,
Coral Reef Ecosystem Division, PIFSC,NOAA
Contact_Person: Joyce Miller
Contact_Address:
Address_Type: mailing and physical address
Address: 1125B Ala Moana Blvd
City: Honolulu
State_or_Province: HI
Postal_Code: 96814
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Browse_Graphic:
Browse_Graphic_File_Name: ofuolo_5m.jpg

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    Browse_Graphic_File_Description: Gridded Bathymetry
    Browse_Graphic_File_Type: JPG
  Data_Set_Credit: Benthic Habitat Mapping Group, Coral Reef Ecosystem Division
     (CRED), Pacific Islands Fisheries Science Center (PIFSC), NOAA
Data_Quality_Information:
  Attribute_Accuracy:
    Attribute_Accuracy_Report: Data are collected for resource management
      and research purposes and are tested for internal consistency; however,
      no effort is made to compare these data to external references or to
      other published data.
  Logical_Consistency_Report: These data are believed to be logically consistent
      though no tests were performed
  Completeness_Report: Complete
  Positional_Accuracy:
    Horizontal_Positional_Accuracy:
      Horizontal_Positional_Accuracy_Report:
        Horizontal positioning system: GPS C/A
        Horizontal position accuracy: 25 meters
    Vertical_Positional_Accuracy:
      Vertical_Positional_Accuracy_Report:
        Range resolution of sonar: varies with depth
        Raw sounding resolution: varies with depth
        Vertical accuracy of gridded product ~ 1% of water depth
  Lineage:
    Process_Step:
     Process_Description:
        Specifics of data processing are recorded in cruise metadata
        report AHI0402_MB_Metadata.txt
     Process_Date: 20040707
Spatial_Data_Organization_Information:
  Direct_Spatial_Reference_Method: Raster
  Raster_Object_Information:
    Raster_Object_Type: Grid Cell
    Row_Count: 1531
    Column_Count: 2616
    Vertical_Count: 1
Spatial_Reference_Information:
  Horizontal_Coordinate_System_Definition:
    Planar:
      Planar_Coordinate_Information:
        Planar_Coordinate_Encoding_Method: row and column
        Coordinate_Representation:
          Abscissa_Resolution: 5
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Ordinate_Resolution: 5
Planar_Distance_Units: meters
Grid_Coordinate_System:
Grid_Coordinate_System_Name: Universal Transverse Mercator
Universal_Transverse_Mercator:
UTM_Zone_Number: -2
Transverse_Mercator:
Scale_Factor_at_Central_Meridian: 0.9996
Longitude_of_Central_Meridian: -171
Latitude_of_Projection_Origin: 0
False_Easting: 500000
False_Northing: 1000000
Geodetic_Model:
Horizontal_Datum_Name: D_WGS_1984
Ellipsoid_Name: WGS_1984
Semi-major_Axis: 6378137.000000
Denominator_of_Flattening_Ratio: 298.257224
Vertical_Coordinate_System_Definition:
Depth_System_Definition:
Depth_Datum_Name: mean lower low water
Depth_Resolution: 0.01 meters
Depth_Distance_Units: meters
Depth_Encoding_Method: Attribute values
Entity_and_Attribute_Information:
Overview_Description:
Entity_and_Attribute_Overview:
Depth values are real values based on the average of the
soundings that fell within the extracted grid cells. The number of
soundings per grid cell range from >1000 soundings in shallow depths
to as few as 20 soundings in deeper areas. A total error budget for
this survey has not been developed. Therefore, the accuracy of depth
measurements should be considered to be within 1 per cent of water depth.
Entity_and_Attribute_Detail_Citation: none
Distribution_Information:
Distributor:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
Contact_Person: Joyce E. Miller
Contact_Position: Oceanographer
Contact_Address:
Address_Type: mailing and physical address
Address: 1125 'B' Ala Moana Blvd

City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96814
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Resource_Description: Downloadable Data
Distribution_Liability:
These data are not to be used for navigational purposes.
NOAA makes no warranty regarding these data, expressed or implied, nor
does the fact of distribution constitute such a warranty. NOAA cannot
assume liability for any damages caused by any errors or omissions in
these data, nor as a result of the failure of these data to function
on a particular system.
Standard_Order_Process:
Digital_Form: Arc ASCII
Digital_Transfer_Information:
Format_Name: Arc ASCII
Format_Information_Content:
Arc ASCII can be converted to Arc Raster using ArcToolbox Conversion Tools.
Digital_Transfer_Option:
Online_Option:
Computer_Contact_Information:
Network_Address:
Network_Resource_Name: http://www.soest.hawaii.edu/pibhmc
Fees: None
Metadata_Reference_Information:
Metadata_Date: 20060912
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
Contact_Person: Joyce E. Miller
Contact_Position: Oceanographer
Contact_Address:
Address_Type: mailing and physical address
Address: 1125 'B' Ala Moana Blvd
City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96814
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: Joyce.Miller@noaa.gov

Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: universal time
Metadata_Access_Constraints: None
Metadata_Use_Constraints: None

Identification_Information:
Citation:
Citation_Information:
Originator: Joyce E. Miller
Originator: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
Publication_Date: 20060930
Title: Gridded bathymetry of the slope environment of Rose Island, American Samoa
Geospatial_Data_Presentation_Form: raster digital data
Online_Linkage: http://www.soest.hawaii.edu/pibhmc
Description:
Abstract: Gridded (5 m cell size) bathymetry of the slope environment of Rose Atoll, American Samoa, South Pacific.
Almost complete bottom coverage was achieved in depths between 10 and 3000 meters (5 m grid includes data to 300 m). The bathymetry dataset includes Simrad EM300, EM3002D, and Reson 8101ER multibeam data collected during Feb. to March of 2006.
Purpose:
The data were collected in support of Coral Reef Conservation Program goals to map all shallow (0-30 m) coral reefs in US Pacific waters and priority moderate (> 30 m) depth areas by 2009. The data are being used to provide bathymetric and backscatter data for previously unmapped areas; in support of ecosystem management requirements for benthic habitat mapping and location of Essential Fish Habitat; and to study the geologic features of the area.
Supplemental_Information:
Data were collected aboard the NOAA Ship Hiialakai, a 218’ United States National Oceanographic and Atmospheric Administration research ship. The NOAA Ship Hiialakai's survey sensors include a 30 kHz Simrad EM300 sonar and a 300 kHz Simrad EM3002D sonar, which provide bathymetry and imagery data, a TSS/Applanix POS/MV Model 320, which measures position, velocity, attitude and heading, and a Seabird SBE 9/11 plus CTD used to measure sound velocity profiles. Sensor configuration for the Hi'ialakai for cruise HI-06-02 is documented in the cruise/multibeam metadata file HI0602_MB_Metadata.txt.

Data were also collected aboard the R/V AHI (Acoustic Habitat Investigator), a 25’ survey launch owned and operated by the NOAA Pacific Islands Fisheries Science Center in Honolulu, HI. The R/V AHI’s survey sensors include a 240 kHz RESON 8101-ER sonar providing bathymetry and imagery data, a TSS/Applanix POS/MV Model 320 which measures position, velocity, attitude and heading, and a Seabird SBE 19 CTD used to measure sound

velocity profiles. Sensor configuration for the AHI for cruise
AHI-06-02 is documented in the cruise/multibeam metadata file
AHI0602_MB_Metadata.txt.
Time_Period_of_Content:
Time_Period_Information:
Range_of_Dates/Times:
Beginning_Date: 20060210
Ending_Date: 20060313
Currentness_Reference: ground condition
Status:
Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate: -168.176635
East_Bounding_Coordinate: -168.131605
North_Bounding_Coordinate: -14.525078
South_Bounding_Coordinate: -14.563367
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: Gridded bathymetry
Place:
Place_Keyword_Thesaurus: None
Place_Keyword: Rose Atoll
Place_Keyword: American Samoa
Place:
Place_Keyword_Thesaurus: CoRIS Place Thesaurus Version 1.0
Place_Keyword: OCEAN BASIN > Pacific Ocean > South Pacific Ocean > Pacific > American Samoa > Rose Atoll
Place_Keyword: COUNTRY/TERRITORY > United States of America > American Samoa
Access_Constraints: None
Use_Constraints: These data are not to be used for navigation purposes.
Please acknowledge the NOAA Coral Reef Ecosystem Division,
Pacific Islands Fisheries Science Center and the Pacific Islands Benthic
Habitat Mapping Center, School of Ocean and Earth Science and Technology, University
of Hawaii as the sources of this information.
Point_of_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Benthic Habitat Mapping Group,
Coral Reef Ecosystem Division, PIFSC,NOAA
Contact_Person: Joyce Miller

```
      Contact_Address:
        Address_Type: mailing and physical address
        Address: 1125B Ala Moana Blvd
        City: Honolulu
        State_or_Province: HI
        Postal_Code: 96814
        Country: USA
      Contact_Voice_Telephone: 808-956-5239
      Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
  Browse_Graphic:
    Browse_Graphic_File_Name: rose_5m.jpg
    Browse_Graphic_File_Description: Gridded Bathymetry
    Browse_Graphic_File_Type: JPG
  Data_Set_Credit: Benthic Habitat Mapping Group, Coral Reef Ecosystem Division
     (CRED), Pacific Islands Fisheries Science Center (PIFSC), NOAA
Data_Quality_Information:
  Attribute_Accuracy:
    Attribute_Accuracy_Report: Data are collected for resource management
      and research purposes and are tested for internal consistency; however,
      no effort is made to compare these data to external references or to
      other published data.
  Logical_Consistency_Report: Unspecified
  Completeness_Report: Complete
  Positional_Accuracy:
    Horizontal_Positional_Accuracy:
    Horizontal_Positional_Accuracy:
      Horizontal_Positional_Accuracy_Report:
        Horizontal positioning system: GPS C/A
        Horizontal position accuracy: 25 meters
    Vertical_Positional_Accuracy:
      Vertical_Positional_Accuracy_Report:
        Range resolution of sonar: varies with depth
        Raw sounding resolution: varies with depth
        Vertical accuracy of gridded product ~ 1% of water depth
  Lineage:
    Process_Step:
     Process_Description:
        Specifics of data processing are recorded in cruise metadata
        reports HI0602_MB_Metadata.txt, AHI0602_MB_Metadata.txt
     Process_Date: 20060313
Spatial_Data_Organization_Information:
  Direct_Spatial_Reference_Method: Raster
  Raster_Object_Information:
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Raster_Object_Type: Grid Cell
Row_Count: 836
Column_Count: 961
Vertical_Count: 1
Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: row and column
Coordinate_Representation:
Abscissa_Resolution: 5
Ordinate_Resolution: 5
Planar_Distance_Units: meters
Grid_Coordinate_System:
Grid_Coordinate_System_Name: Universal Transverse Mercator
Universal_Transverse_Mercator:
UTM_Zone_Number:
Transverse_Mercator:
Scale_Factor_at_Central_Meridian: 0.9996
Longitude_of_Central_Meridian: -171
Latitude_of_Projection_Origin: 0
False_Easting: 500000
False_Northing: 1000000
Geodetic_Model:
Horizontal_Datum_Name: D_WGS_1984
Ellipsoid_Name: WGS_1984
Semi-major_Axis: 6378137.000000
Denominator_of_Flattening_Ratio: 298.257224
Vertical_Coordinate_System_Definition:
Depth_System_Definition:
Depth_Datum_Name: mean lower low water
Depth_Resolution: 0.01 meters
Depth_Distance_Units: meters
Depth_Encoding_Method: Attribute values
Entity_and_Attribute_Information:
Overview_Description:
Entity_and_Attribute_Overview:
Depth values are real values based on the average of the
soundings that fell within the extracted grid cells. The number of
soundings per grid cell range from >1000 soundings in shallow depths
to as few as 20 soundings in deeper areas. A total error budget for
this survey has not been developed. Therefore, the accuracy of depth
measurements should be considered to be within 1 per cent of water depth.

Entity_and_Attribute_Detail_Citation: none
Distribution_Information:
Distributor:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
Contact_Person: Joyce E. Miller
Contact_Position: Oceanographer
Contact_Address:
Address_Type: mailing and physical address
Address: 1125 'B' Ala Moana Blvd
City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96814
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Resource_Description: Downloadable Data
Distribution_Liability:
These data are not to be used for navigational purposes.
NOAA makes no warranty regarding these data, expressed or implied, nor
does the fact of distribution constitute such a warranty. NOAA cannot
assume liability for any damages caused by any errors or omissions in
these data, nor as a result of the failure of these data to function
on a particular system.
Standard_Order_Process:
Digital_Form: Arc ASCII
Digital_Transfer_Information:
Format_Name: Arc ASCII
Format_Information_Content:
Arc ASCII can be converted to Arc Raster using ArcToolbox Conversion Tools.
Digital_Transfer_Option:
Online_Option:
Computer_Contact_Information:
Network_Address:
Network_Resource_Name: http://www.soest.hawaii.edu/pibhmc
Fees: None
Metadata_Reference_Information:
Metadata_Date: 20060912
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA

Contact_Person: Joyce E. Miller
Contact_Position: Oceanographer
Contact_Address:
Address_Type: mailing and physical address
Address: 1125 'B' Ala Moana Blvd
City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96814
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: Joyce.Miller@noaa.gov
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: universal time
Metadata_Access_Constraints: None
Metadata_Use_Constraints: None

Identification_Information:
Citation:
Citation_Information:
Originator: Joyce E. Miller
Originator: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
Publication_Date: 20060930
Title: Gridded bathymetry of the slope environment of Rose Island, American Samoa
Geospatial_Data_Presentation_Form: raster digital data
Online_Linkage: http://www.soest.hawaii.edu/pibhmc
Description:
Abstract: Gridded (40 m cell size) bathymetry of the slope environment of Rose Atoll, American Samoa, South Pacific.
Almost complete bottom coverage was achieved in depths between 10 and 3000 meters. The bathymetry dataset includes Simrad EM300, EM3002D, and Reson 8101ER multibeam data collected during Feb. to March of 2006.
Purpose:
The data were collected in support of Coral Reef Conservation Program goals to map all shallow (0-30 m) coral reefs in US Pacific waters and priority moderate (> 30 m) depth areas by 2009. The data are being used to provide bathymetric and backscatter data for previously unmapped areas; in support of ecosystem management requirements for benthic habitat mapping and location of Essential Fish Habitat; and to study the geologic features of the area.
Supplemental_Information:
Data were collected aboard the NOAA Ship Hiialakai, a 218’ United States National Oceanographic and Atmospheric Administration research ship. The NOAA Ship Hiialakai's survey sensors include a 30 kHz Simrad EM300 sonar and a 300 kHz Simrad EM3002D sonar, which provide bathymetry and imagery data, a TSS/Applanix POS/MV Model 320, which measures position, velocity, attitude and heading, and a Seabird SBE 9/11 plus CTD used to measure sound velocity profiles. Sensor configuration for the Hi'ialakai for cruise HI-06-02 is documented in the cruise/multibeam metadata file HI0602_MB_Metadata.txt.

Data were also collected aboard the R/V AHI (Acoustic Habitat Investigator), a 25’ survey launch owned and operated by the NOAA Pacific Islands Fisheries Science Center in Honolulu, HI. The R/V AHI’s survey sensors include a 240 kHz RESON 8101-ER sonar providing bathymetry and imagery data, a TSS/Applanix POS/MV Model 320 which measures position, velocity, attitude and heading, and a Seabird SBE 19 CTD used to measure sound

velocity profiles. Sensor configuration for the AHI for cruise
AHI-06-02 is documented in the cruise/multibeam metadata file
AHI0602_MB_Metadata.txt.
Time_Period_of_Content:
Time_Period_Information:
Range_of_Dates/Times:
Beginning_Date: 20060210
Ending_Date: 20060313
Currentness_Reference: ground condition
Status:
Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate: -168.176635
East_Bounding_Coordinate: -168.131605
North_Bounding_Coordinate: -14.525078
South_Bounding_Coordinate: -14.563367
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: Gridded bathymetry
Place:
Place_Keyword_Thesaurus: None
Place_Keyword: Rose Atoll
Place_Keyword: American Samoa
Place:
Place_Keyword_Thesaurus: CoRIS Place Thesaurus Version 1.0
Place_Keyword: OCEAN BASIN > Pacific Ocean > South Pacific Ocean > Pacific > American Samoa > Rose Atoll
Place_Keyword: COUNTRY/TERRITORY > United States of America > American Samoa
Access_Constraints: None
Use_Constraints: These data are not to be used for navigation purposes.
Please acknowledge the NOAA Coral Reef Ecosystem Division,
Pacific Islands Fisheries Science Center and the Pacific Islands Benthic
Habitat Mapping Center, School of Ocean and Earth Science and Technology, University
of Hawaii as the sources of this information.
Point_of_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Benthic Habitat Mapping Group,
Coral Reef Ecosystem Division, PIFSC,NOAA
Contact_Person: Joyce Miller

```
      Contact_Address:
        Address_Type: mailing and physical address
        Address: 1125B Ala Moana Blvd
        City: Honolulu
        State_or_Province: HI
        Postal_Code: 96814
        Country: USA
      Contact_Voice_Telephone: 808-956-5239
      Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
  Browse_Graphic:
    Browse_Graphic_File_Name: rose_40m.jpg
    Browse_Graphic_File_Description: Gridded Bathymetry
    Browse_Graphic_File_Type: JPG
  Data_Set_Credit: Benthic Habitat Mapping Group, Coral Reef Ecosystem Division
     (CRED), Pacific Islands Fisheries Science Center (PIFSC), NOAA
Data_Quality_Information:
  Attribute_Accuracy:
    Attribute_Accuracy_Report: Data are collected for resource management
      and research purposes and are tested for internal consistency; however,
      no effort is made to compare these data to external references or to
      other published data.
  Logical_Consistency_Report: Unspecified
  Completeness_Report: Complete
  Positional_Accuracy:
    Horizontal_Positional_Accuracy:
    Horizontal_Positional_Accuracy:
      Horizontal_Positional_Accuracy_Report:
        Horizontal positioning system: GPS C/A
        Horizontal position accuracy: 25 meters
    Vertical_Positional_Accuracy:
      Vertical_Positional_Accuracy_Report:
        Range resolution of sonar: varies with depth
        Raw sounding resolution: varies with depth
        Vertical accuracy of gridded product ~ 1% of water depth
  Lineage:
    Process_Step:
     Process_Description:
        Specifics of data processing are recorded in cruise metadata
        reports HI0602_MB_Metadata.txt, AHI0602_MB_Metadata.txt
     Process_Date: 20060313
Spatial_Data_Organization_Information:
  Direct_Spatial_Reference_Method: Raster
  Raster_Object_Information:
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    Raster_Object_Type: Grid Cell
    Row_Count: 694
    Column_Count: 700
    Vertical_Count: 1
Spatial_Reference_Information:
  Horizontal_Coordinate_System_Definition:
    Planar:
      Planar_Coordinate_Information:
        Planar_Coordinate_Encoding_Method: row and column
        Coordinate_Representation:
          Abscissa_Resolution: 40
          Ordinate_Resolution: 40
        Planar_Distance_Units: meters
      Grid_Coordinate_System:
        Grid_Coordinate_System_Name: Universal Transverse Mercator
        Universal_Transverse_Mercator:
          UTM_Zone_Number:
          Transverse_Mercator:
            Scale_Factor_at_Central_Meridian: 0.9996
            Longitude_of_Central_Meridian: -171
            Latitude_of_Projection_Origin: 0
            False_Easting: 500000
            False_Northing: 1000000
    Geodetic_Model:
      Horizontal_Datum_Name: D_WGS_1984
      Ellipsoid_Name: WGS_1984
      Semi-major_Axis: 6378137.000000
      Denominator_of_Flattening_Ratio: 298.257224
  Vertical_Coordinate_System_Definition:
    Depth_System_Definition:
      Depth_Datum_Name: mean lower low water
      Depth_Resolution:  0.01 meters
      Depth_Distance_Units: meters
      Depth_Encoding_Method: Attribute values
Entity_and_Attribute_Information:
  Overview_Description:
    Entity_and_Attribute_Overview:
      Depth values are real values based on the average of the
      soundings that fell within the extracted grid cells.  The number of
      soundings per grid cell range from >1000 soundings in shallow depths
      to as few as 20 soundings in deeper areas.  A total error budget for
      this survey has not been developed. Therefore, the accuracy of depth
      measurements should be considered to be within 1 per cent of water depth.
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Entity_and_Attribute_Detail_Citation: none
Distribution_Information:
Distributor:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
Contact_Person: Joyce E. Miller
Contact_Position: Oceanographer
Contact_Address:
Address_Type: mailing and physical address
Address: 1125 'B' Ala Moana Blvd
City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96814
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Resource_Description: Downloadable Data
Distribution_Liability:
These data are not to be used for navigational purposes.
NOAA makes no warranty regarding these data, expressed or implied, nor
does the fact of distribution constitute such a warranty. NOAA cannot
assume liability for any damages caused by any errors or omissions in
these data, nor as a result of the failure of these data to function
on a particular system.
Standard_Order_Process:
Digital_Form: Arc ASCII
Digital_Transfer_Information:
Format_Name: Arc ASCII
Format_Information_Content:
Arc ASCII can be converted to Arc Raster using ArcToolbox Conversion Tools.
Digital_Transfer_Option:
Online_Option:
Computer_Contact_Information:
Network_Address:
Network_Resource_Name: http://www.soest.hawaii.edu/pibhmc
Fees: None
Metadata_Reference_Information:
Metadata_Date: 20060912
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA

Contact_Person: Joyce E. Miller
Contact_Position: Oceanographer
Contact_Address:
Address_Type: mailing and physical address
Address: 1125 'B' Ala Moana Blvd
City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96814
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: Joyce.Miller@noaa.gov
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: universal time
Metadata_Access_Constraints: None
Metadata_Use_Constraints: None

Identification_Information:
Citation:
Citation_Information:
Originator: Joyce E. Miller
Originator: Coral Reef Ecosystem Division, NOAA Pacific Islands
Fisheries Science Center, Pacific Islands Benthic Habitat Mapping Center
Publication_Date: 20060930
Title: Gridded bathymetry of Swains Island, American Samoa, South Pacific
Geospatial_Data_Presentation_Form: raster digital data
Online_Linkage: http://soest.hawaii.edu/pibhmc
Description:
Abstract: Gridded (10 m cell size) bathymetry of the slope environment of Swains Island, American Samoa, South Pacific.
Almost complete bottom coverage was achieved in depths between 7 and 4800 meters (10 m grid includes data to 300 m). The bathymetry dataset includes Simrad EM300 and Reson 8101ER multibeam data collected from the 10th - 13th of February 2006.
Purpose:
The data were collected in support of Coral Reef Conservation Program goals to map all shallow (0-30 m) coral reefs in US Pacific waters and priority moderate (> 30 m) depth areas by 2009. The data are being used to provide bathymetric and backscatter data for previously unmapped areas; in support of ecosystem management requirements for benthic habitat mapping and location of Essential Fish Habitat; and to study the geologic features of the area.
Supplemental_Information:
Data were collected aboard the NOAA Ship Hiialakai, a 218’ United States National Oceanographic and Atmospheric Administration research ship. The NOAA Ship Hiialakai's survey sensors include a 30 kHz Simrad EM300 sonar and a 300 kHz Simrad EM3002D sonar, which provide bathymetry and imagery data, a TSS/Applanix POS/MV Model 320, which measures position, velocity, attitude and heading, and a Seabird SBE 9/11 plus CTD used to measure sound velocity profiles. Sensor configuration for the Hi'ialakai for cruise HI-06-02 is documented in the cruise/multibeam metadata file HI0602_MB_Metadata.txt.

Data were also collected aboard the R/V AHI (Acoustic Habitat Investigator), a 25’ survey launch owned and operated by the NOAA Pacific Islands Fisheries Science Center in Honolulu, HI. The R/V AHI’s survey sensors include a 240 kHz RESON 8101-ER sonar providing bathymetry and imagery data, a TSS/Applanix POS/MV Model 320 which measures position, velocity, attitude and heading, and a Seabird SBE 19 CTD used to measure sound

velocity profiles. Sensor configuration for the AHI for cruise
AHI-06-02 is documented in the cruise/multibeam metadata file
AHI0602_MB_Metadata.txt.

Time_Period_of_Content:
Time_Period_Information:
Range_of_Dates/Times:
Beginning_Date: 20040210
Ending_Date: 20060213
Currentness_Reference: ground condition
Status:
Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate: -171.114867
East_Bounding_Coordinate: -171.051038
North_Bounding_Coordinate: -11.031863
South_Bounding_Coordinate: -11.082437
Keywords:
Theme:
Theme_Keyword_Thesaurus: CoRIS Theme Thesaurus Version 1.0
Theme_Keyword: EARTH SCIENCE > Oceans > Bathymetry/Seafloor Topography > Bathymetry
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: Bathymetry
Theme_Keyword: Multibeam sonar
Place:
Place_Keyword_Thesaurus: None
Place_Keyword: Swains Island
Place_Keyword: American Samoa
Place_Keyword: South Pacific
Place_Keyword: Pacific Ocean
Place:
Place_Keyword_Thesaurus: CoRIS Place Thesaurus Version 1.0
Place_Keyword: OCEAN BASIN > Pacific Ocean > South Pacific Ocean > Pacific > American Samoa > Tutuila Island
Place_Keyword: COUNTRY/TERRITORY > United States of America > American Samoa
Access_Constraints: None
Use_Constraints: These data are not to be used for navigation purposes.
Please acknowledge the NOAA Coral Reef Ecosystem Division,
Pacific Islands Fisheries Science Center and the Pacific Islands Benthic

Habitat Mapping Center, School of Ocean and Earth Science and Technology, University of Hawaii as the sources of this information.

Point_of_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Pacific Islands Benthic Habitat Mapping Center
Coral Reef Ecosystem Division, PIFSC, NOAA and the Joint Institute for Marine and Atmospheric Research (JIMAR)
Contact_Person: Joyce Miller
Contact_Address:
Address_Type: mailing and physical address
Address: 1680 East-West Road, POST 833
City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96822
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Browse_Graphic:
Browse_Graphic_File_Name: Swains_10m.jpg
Browse_Graphic_File_Description: Gridded Bathymetry
Browse_Graphic_File_Type: JPG
Data_Set_Credit: Coral Reef Ecosystem Division (CRED), Pacific Islands Fisheries Science Center (PIFSC), NOAA and Pacific Islands Benthic Habitat Mapping Center, School of Ocean and Earth Science and Technology, University of Hawaii
Data_Quality_Information:
Attribute_Accuracy:
Attribute_Accuracy_Report: Data are collected for resource management and research purposes and are tested for internal consistency; however, no effort is made to compare these data to external references or to other published data.
Logical_Consistency_Report: These data are believed to be logically consistent though no tests were performed
Completeness_Report: Complete
Positional_Accuracy:
Horizontal_Positional_Accuracy:
Horizontal_Positional_Accuracy_Report:
Horizontal positioning system: GPS C/A
Horizontal position accuracy: 25 meters
Vertical_Positional_Accuracy:
Vertical_Positional_Accuracy_Report:
Range resolution of sonar: varies with depth
Raw sounding resolution: varies with depth

Vertical accuracy of gridded product ~ 1% of water depth
Lineage:
Process_Step:
Process_Description:
Specifics of data processing are recorded in cruise metadata reports HI0602_MB_Metadata.txt and AHI0602_MB_Metadata.txt

Process_Date: 20060213
Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Raster
Raster_Object_Information:
Raster_Object_Type: Grid Cell
Row_Count: 559
Column_Count: 697
Vertical_Count: 1
Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: row and column
Coordinate_Representation:
Abscissa_Resolution: 10
Ordinate_Resolution: 10
Planar_Distance_Units: meters
Grid_Coordinate_System:
Grid_Coordinate_System_Name: Universal Transverse Mercator
Universal_Transverse_Mercator:
UTM_Zone_Number: -2
Transverse_Mercator:
Scale_Factor_at_Central_Meridian: 0.9996
Longitude_of_Central_Meridian: -171
Latitude_of_Projection_Origin: 0
False_Easting: 500000
False_Northing: 0
Geodetic_Model:
Horizontal_Datum_Name: D_WGS_1984
Ellipsoid_Name: WGS_1984
Semi-major_Axis: 6378137.000000
Denominator_of_Flattening_Ratio: 298.257224
Vertical_Coordinate_System_Definition:
Depth_System_Definition:
Depth_Datum_Name: mean lower low water
Depth_Resolution: 0.01 meters

Depth_Distance_Units: meters
Depth_Encoding_Method: Attribute values
Entity_and_Attribute_Information:
Overview_Description:
Entity_and_Attribute_Overview:
Depth values are real values based on the average of the soundings that fell within the extracted grid cells. The number of soundings per grid cell range from >1000 soundings in shallow depths to as few as 20 soundings in deeper areas. A total error budget for this survey has not been developed. Therefore, the accuracy of depth measurements should be considered to be within 1 per cent of water depth.
Entity_and_Attribute_Detail_Citation: none
Distribution_Information:
Distributor:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Pacific Islands Benthic Habitat Mapping Center,CRED, PIFSC, NOAA and JIMAR
Contact_Person: Joyce E. Miller
Contact_Position: Oceanographer
Contact_Address:
Address_Type: mailing and physical address
Address: 1680 East-West Road, POST 833
City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96822
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Resource_Description: Downloadable Data
Distribution_Liability:
These data are not to be used for navigational purposes.
NOAA makes no warranty regarding these data, expressed or implied, nor does the fact of distribution constitute such a warranty. NOAA cannot assume liability for any damages caused by any errors or omissions in these data, nor as a result of the failure of these data to function on a particular system.
Standard_Order_Process:
Digital_Form: Arc ASCII
Digital_Transfer_Information:
Format_Name: Arc ASCII
Format_Information_Content:
Arc ASCII can be converted to Arc Raster using ArcToolbox Conversion Tools.

Digital_Transfer_Option:
Online_Option:
Computer_Contact_Information:
Network_Address:
Network_Resource_Name: http://www.soest.hawaii.edu/pibhmc

Fees: None
Metadata_Reference_Information:
Metadata_Date: 20060912
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Pacific Islands Benthic Habitat Mapping Center, CRED, PIFSC, NOAA and JIMAR
Contact_Person: Joyce E. Miller
Contact_Position: Oceanographer
Contact_Address:
Address_Type: mailing and physical address
Address: 1680 East-West Road POST 833
City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96822
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: Universal Time
Metadata_Access_Constraints: None
Metadata_Use_Constraints: None

Identification_Information:
Citation:
Citation_Information:
Originator: Joyce E. Miller
Originator: Coral Reef Ecosystem Division, NOAA Pacific Islands
Fisheries Science Center, Pacific Islands Benthic Habitat Mapping Center
Publication_Date: 20060930
Title: Gridded bathymetry of Swains Island, American Samoa, South Pacific
Geospatial_Data_Presentation_Form: raster digital data
Online_Linkage: http://soest.hawaii.edu/pibhmc
Description:
Abstract: Gridded (40 m cell size) bathymetry of the slope environment of Swains Island, American Samoa, South Pacific.
Almost complete bottom coverage was achieved in depths between 7 and 4800 meters. The bathymetry dataset includes Simrad EM300 and Reson 8101ER multibeam data collected from the 10th - 13th of February 2006.
Purpose:
The data were collected in support of Coral Reef Conservation Program goals to map all shallow (0-30 m) coral reefs in US Pacific waters and priority moderate (> 30 m) depth areas by 2009. The data are being used to provide bathymetric and backscatter data for previously unmapped areas; in support of ecosystem management requirements for benthic habitat mapping and location of Essential Fish Habitat; and to study the geologic features of the area.
Supplemental_Information:
Data were collected aboard the NOAA Ship Hiialakai, a 218’ United States National Oceanographic and Atmospheric Administration research ship. The NOAA Ship Hiialakai's survey sensors include a 30 kHz Simrad EM300 sonar and a 300 kHz Simrad EM3002D sonar, which provide bathymetry and imagery data, a TSS/Applanix POS/MV Model 320, which measures position, velocity, attitude and heading, and a Seabird SBE 9/11 plus CTD used to measure sound velocity profiles. Sensor configuration for the Hi'ialakai for cruise HI-06-02 is documented in the cruise/multibeam metadata file HI0602_MB_Metadata.txt.

Data were also collected aboard the R/V AHI (Acoustic Habitat Investigator), a 25’ survey launch owned and operated by the NOAA Pacific Islands Fisheries Science Center in Honolulu, HI. The R/V AHI’s survey sensors include a 240 kHz RESON 8101-ER sonar providing bathymetry and imagery data, a TSS/Applanix POS/MV Model 320 which measures position, velocity, attitude and heading, and a Seabird SBE 19 CTD used to measure sound velocity profiles. Sensor configuration for the AHI for cruise

AHI-06-02 is documented in the cruise/multibeam metadata file
AHI0602_MB_Metadata.txt.

Time_Period_of_Content:
Time_Period_Information:
Range_of_Dates/Times:
Beginning_Date: 20040210
Ending_Date: 20060213
Currentness_Reference: ground condition
Status:
Progress: Complete
Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate: -171.218733
East_Bounding_Coordinate: -171.93808
North_Bounding_Coordinate: -10.934991
South_Bounding_Coordinate: -11.188662
Keywords:
Theme:
Theme_Keyword_Thesaurus: CoRIS Theme Thesaurus Version 1.0
Theme_Keyword: EARTH SCIENCE > Oceans > Bathymetry/Seafloor Topography > Bathymetry
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: Bathymetry
Theme_Keyword: Multibeam sonar
Place:
Place_Keyword_Thesaurus: None
Place_Keyword: Swains Island
Place_Keyword: American Samoa
Place_Keyword: South Pacific
Place_Keyword: Pacific Ocean
Place:
Place_Keyword_Thesaurus: CoRIS Place Thesaurus Version 1.0
Place_Keyword: OCEAN BASIN > Pacific Ocean > South Pacific Ocean > Pacific > American Samoa > Tutuila Island
Place_Keyword: COUNTRY/TERRITORY > United States of America > American Samoa
Access_Constraints: None
Use_Constraints: These data are not to be used for navigation purposes.
Please acknowledge the NOAA Coral Reef Ecosystem Division,
Pacific Islands Fisheries Science Center and the Pacific Islands Benthic
Habitat Mapping Center, School of Ocean and Earth Science and Technology, University

of Hawaii as the sources of this information.
Point_of_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Pacific Islands Benthic Habitat Mapping Center
Coral Reef Ecosystem Division, PIFSC, NOAA and the Joint Institute for Marine and Atmospheric Research (JIMAR)
Contact_Person: Joyce Miller
Contact_Address:
Address_Type: mailing and physical address
Address: 1680 East-West Road, POST 833
City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96822
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Browse_Graphic:
Browse_Graphic_File_Name: Swains_10m.jpg
Browse_Graphic_File_Description: Gridded Bathymetry
Browse_Graphic_File_Type: JPG
Data_Set_Credit: Coral Reef Ecosystem Division (CRED), Pacific Islands Fisheries Science Center (PIFSC), NOAA and Pacific Islands Benthic Habitat Mapping Center, School of Ocean and Earth Science and Technology, University of Hawaii
Data_Quality_Information:
Attribute_Accuracy:
Attribute_Accuracy_Report: Data are collected for resource management and research purposes and are tested for internal consistency; however, no effort is made to compare these data to external references or to other published data.
Logical_Consistency_Report: These data are believed to be logically consistent though no tests were performed
Completeness_Report: Complete
Positional_Accuracy:
Horizontal_Positional_Accuracy:
Horizontal_Positional_Accuracy_Report:
Horizontal positioning system: GPS C/A
Horizontal position accuracy: 25 meters
Vertical_Positional_Accuracy:
Vertical_Positional_Accuracy_Report:
Range resolution of sonar: varies with depth
Raw sounding resolution: varies with depth
Vertical accuracy of gridded product ~ 1% of water depth

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  Lineage:
    Process_Step:
     Process_Description:
        Specifics of data processing are recorded in cruise metadata
        reports HI0602_MB_Metadata.txt and AHI0602_MB_Metadata.txt

     Process_Date: 20060213
Spatial_Data_Organization_Information:
  Direct_Spatial_Reference_Method: Raster
  Raster_Object_Information:
    Raster_Object_Type: Grid Cell
    Row_Count: 701
    Column_Count: 766
    Vertical_Count: 1
Spatial_Reference_Information:
  Horizontal_Coordinate_System_Definition:
    Planar:
      Planar_Coordinate_Information:
        Planar_Coordinate_Encoding_Method: row and column
        Coordinate_Representation:
          Abscissa_Resolution: 40
          Ordinate_Resolution: 40
        Planar_Distance_Units: meters
      Grid_Coordinate_System:
        Grid_Coordinate_System_Name: Universal Transverse Mercator
        Universal_Transverse_Mercator:
          UTM_Zone_Number: -2
          Transverse_Mercator:
            Scale_Factor_at_Central_Meridian: 0.9996
            Longitude_of_Central_Meridian: -171
            Latitude_of_Projection_Origin: 0
            False_Easting: 500000
            False_Northing: 0
    Geodetic_Model:
      Horizontal_Datum_Name: D_WGS_1984
      Ellipsoid_Name: WGS_1984
      Semi-major_Axis: 6378137.000000
      Denominator_of_Flattening_Ratio: 298.257224
  Vertical_Coordinate_System_Definition:
    Depth_System_Definition:
      Depth_Datum_Name: mean lower low water
      Depth_Resolution:  0.01 meters
      Depth_Distance_Units: meters
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Depth_Encoding_Method: Attribute values
Entity_and_Attribute_Information:
Overview_Description:
Entity_and_Attribute_Overview:
Depth values are real values based on the average of the
soundings that fell within the extracted grid cells. The number of
soundings per grid cell range from >1000 soundings in shallow depths
to as few as 20 soundings in deeper areas. A total error budget for
this survey has not been developed. Therefore, the accuracy of depth
measurements should be considered to be within 1 per cent of water depth.
Entity_and_Attribute_Detail_Citation: none
Distribution_Information:
Distributor:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Pacific Islands Benthic Habitat Mapping Center,CRED, PIFSC, NOAA and JIMAR
Contact_Person: Joyce E. Miller
Contact_Position: Oceanographer
Contact_Address:
Address_Type: mailing and physical address
Address: 1680 East-West Road, POST 833
City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96822
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Resource_Description: Downloadable Data
Distribution_Liability:
These data are not to be used for navigational purposes.
NOAA makes no warranty regarding these data, expressed or implied, nor
does the fact of distribution constitute such a warranty. NOAA cannot
assume liability for any damages caused by any errors or omissions in
these data, nor as a result of the failure of these data to function
on a particular system.
Standard_Order_Process:
Digital_Form: Arc ASCII
Digital_Transfer_Information:
Format_Name: Arc ASCII
Format_Information_Content:
Arc ASCII can be converted to Arc Raster using ArcToolbox Conversion Tools.
Digital_Transfer_Option:

Online_Option:
Computer_Contact_Information:
Network_Address:
Network_Resource_Name: http://www.soest.hawaii.edu/pibhmc

Fees: None
Metadata_Reference_Information:
Metadata_Date: 20060912
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Pacific Islands Benthic Habitat Mapping Center, CRED, PIFSC, NOAA and JIMAR
Contact_Person: Joyce E. Miller
Contact_Position: Oceanographer
Contact_Address:
Address_Type: mailing and physical address
Address: 1680 East-West Road POST 833
City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96822
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: Universal Time
Metadata_Access_Constraints: None
Metadata_Use_Constraints: None

Identification_Information:
  Citation:
    Citation_Information:
    Originator: Joyce E. Miller
Originator: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
    Publication_Date: 20060930
    Title: Gridded bathymetry of the banktop and slope environments of Vailul'u Seamount, American Samoa
    Geospatial_Data_Presentation_Form: raster digital data
    Online_Linkage: http://www.soest.hawaii.edu/pibhmc
  Description:
    Abstract: Gridded (40 m cell size) bathymetry of
      of Vailul'u Seamount, an active volcano that lies between Ta'u Island and Rose Atoll, American Samoa, South Pacific. Almost complete bottom coverage was achieved in depths between 583 and 3017 meters. The bathymetry dataset includes Simrad EM300 and EM3002D data collected during Feb. to March of 2006.
    Purpose:
      The data were collected in support of Coral Reef Conservation Program goals to map all shallow (0-30 m) coral reefs in US Pacific waters and priority moderate (> 30 m) depth areas by 2009. The data are being used to provide bathymetric and backscatter data for previously unmapped areas; in support of ecosystem management requirements for benthic habitat mapping and location of Essential Fish Habitat; and to study the geologic features of the area.
    Supplemental_Information:
      Data were collected aboard the NOAA Ship Hiialakai, a 218’ United States National Oceanographic and Atmospheric Administration research ship. The NOAA Ship Hiialakai's survey sensors include a 30 kHz Simrad EM300 sonar which provides bathymetry and imagery data, a TSS/Applanix POS/MV Model 320, which measures position,
      velocity, attitude and heading, and a Seabird SBE 9/11 plus CTD used to measure sound velocity profiles. Sensor configuration for the Hi'ialakai for cruise HI-06-02 is documented in the cruise/multibeam metadata file HI0602_MB_Metadata.txt.

    Time_Period_Information:
      Range_of_Dates/Times:
        Beginning_Date: 20060210
        Ending_Date: 20060313
    Currentness_Reference: ground condition
  Status:
    Progress: Complete

Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate: -169.09825
East_Bounding_Coordinate: -168.990284
North_Bounding_Coordinate: -14.183568
South_Bounding_Coordinate: -14.244088
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: Gridded bathymetry
Place:
Place_Keyword_Thesaurus: None
Place_Keyword: Vailulu Seamount
Place_Keyword: American Samoa
Place:
Place_Keyword_Thesaurus: CoRIS Place Thesaurus Version 1.0
Place_Keyword: OCEAN BASIN > Pacific Ocean > South Pacific Ocean > Pacific > American Samoa > Vailulu Seamoun
Place_Keyword: COUNTRY/TERRITORY > United States of America > American Samoa
Access_Constraints: None
Use_Constraints: These data are not to be used for navigation purposes.
Please acknowledge the NOAA Coral Reef Ecosystem Division,
Pacific Islands Fisheries Science Center and the Pacific Islands Benthic
Habitat Mapping Center, School of Ocean and Earth Science and Technology, University
of Hawaii as the sources of this information.
Point_of_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Benthic Habitat Mapping Group,
Coral Reef Ecosystem Division, PIFSC,NOAA
Contact_Person: Joyce Miller
Contact_Address:
Address_Type: mailing and physical address
Address: 1125B Ala Moana Blvd
City: Honolulu
State_or_Province: HI
Postal_Code: 96814
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Browse_Graphic:
Browse_Graphic_File_Name: vailulu_40m.jpg

Browse_Graphic_File_Description: Gridded Bathymetry
Browse_Graphic_File_Type: JPG
Data_Set_Credit: Benthic Habitat Mapping Group, Coral Reef Ecosystem Division (CRED), Pacific Islands Fisheries Science Center (PIFSC), NOAA
Data_Quality_Information:
Attribute_Accuracy:
Attribute_Accuracy_Report: Data are collected for resource management and research purposes and are tested for internal consistency; however, no effort is made to compare these data to external references or to other published data.
Logical_Consistency_Report: Unspecified
Completeness_Report: Complete
Positional_Accuracy:
Horizontal_Positional_Accuracy:
Horizontal_Positional_Accuracy:
Horizontal_Positional_Accuracy_Report:
Horizontal positioning system: GPS C/A
Horizontal position accuracy: 25 meters
Vertical_Positional_Accuracy:
Vertical_Positional_Accuracy_Report:
Range resolution of sonar: varies with depth
Raw sounding resolution: varies with depth
Vertical accuracy of gridded product ~ 1% of water depth
Lineage:
Process_Step:
Process_Description:
Specifics of data processing are recorded in cruise metadata reports HI0602_MB_Metadata.txt.
Process_Date: 20060313
Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Raster
Raster_Object_Information:
Raster_Object_Type: Grid Cell
Row_Count: 165
Column_Count: 290
Vertical_Count: 1
Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: row and column
Coordinate_Representation:
Abscissa_Resolution: 40

Ordinate_Resolution: 40
Planar_Distance_Units: meters
Grid_Coordinate_System:
Grid_Coordinate_System_Name: Universal Transverse Mercator
Universal_Transverse_Mercator:
UTM_Zone_Number:
Transverse_Mercator:
Scale_Factor_at_Central_Meridian: 0.9996
Longitude_of_Central_Meridian: -171
Latitude_of_Projection_Origin: 0
False_Easting: 500000
False_Northing: 1000000
Geodetic_Model:
Horizontal_Datum_Name: D_WGS_1984
Ellipsoid_Name: WGS_1984
Semi-major_Axis: 6378137.000000
Denominator_of_Flattening_Ratio: 298.257224
Vertical_Coordinate_System_Definition:
Depth_System_Definition:
Depth_Datum_Name: mean lower low water
Depth_Resolution: 0.01 meters
Depth_Distance_Units: meters
Depth_Encoding_Method: Attribute values
Entity_and_Attribute_Information:
Overview_Description:
Entity_and_Attribute_Overview:
Depth values are real values based on the average of the
soundings that fell within the extracted grid cells. The number of
soundings per grid cell range from >1000 soundings in shallow depths
to as few as 20 soundings in deeper areas. A total error budget for
this survey has not been developed. Therefore, the accuracy of depth
measurements should be considered to be within 1 per cent of water depth.
Entity_and_Attribute_Detail_Citation: none
Distribution_Information:
Distributor:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
Contact_Person: Joyce E. Miller
Contact_Position: Oceanographer
Contact_Address:
Address_Type: mailing and physical address
Address: 1125 'B' Ala Moana Blvd

City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96814
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Resource_Description: Downloadable Data
Distribution_Liability:
These data are not to be used for navigational purposes.
NOAA makes no warranty regarding these data, expressed or implied, nor
does the fact of distribution constitute such a warranty. NOAA cannot
assume liability for any damages caused by any errors or omissions in
these data, nor as a result of the failure of these data to function
on a particular system.
Standard_Order_Process:
Digital_Form: Arc ASCII
Digital_Transfer_Information:
Format_Name: Arc ASCII
Format_Information_Content:
Arc ASCII can be converted to Arc Raster using ArcToolbox Conversion Tools.
Digital_Transfer_Option:
Online_Option:
Computer_Contact_Information:
Network_Address:
Network_Resource_Name: http://www.soest.hawaii.edu/pibhmc
Fees: None
Metadata_Reference_Information:
Metadata_Date: 20060930
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
Contact_Person: Joyce E. Miller
Contact_Position: Oceanographer
Contact_Address:
Address_Type: mailing and physical address
Address: 1125 'B' Ala Moana Blvd
City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96814
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: Joyce.Miller@noaa.gov

Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: universal time
Metadata_Access_Constraints: None
Metadata_Use_Constraints: None

Identification_Information:
  Citation:
    Citation_Information:
    Originator: Joyce E. Miller
Originator: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
    Publication_Date: 20060930
    Title: Gridded bathymetry of the banktop and slope environments of Northeast Bank (sometimes called "Muli" Seamount), American Samoa
    Geospatial_Data_Presentation_Form: raster digital data
    Online_Linkage: http://www.soest.hawaii.edu/pibhmc
  Description:
    Abstract: Gridded (5 m cell size) bathymetry of the banktop and slope environments of Northeast Bank (sometimes called "Muli" seamount), American Samoa, South Pacific. Almost complete bottom coverage was achieved in depths between 48 and 1822 meters (5 m grid includes data to 150 m). The bathymetry dataset includes Simrad EM300 and EM3002D data collected during Feb. to March of 2006.
    Purpose:
      The data were collected in support of Coral Reef Conservation Program goals to map all shallow (0-30 m) coral reefs in US Pacific waters and priority moderate (> 30 m) depth areas by 2009. The data are being used to provide bathymetric and backscatter data for previously unmapped areas; in support of ecosystem management requirements for benthic habitat mapping and location of Essential Fish Habitat; and to study the geologic features of the area.
    Supplemental_Information:
      Data were collected aboard the NOAA Ship Hiialakai, a 218’ United States National Oceanographic and Atmospheric Administration research ship. The NOAA Ship Hiialakai's survey sensors include a 30 kHz Simrad EM300 sonar and a 300 kHz Simrad EM3002D sonar, which provide bathymetry and imagery data, a TSS/Applanix POS/MV Model 320, which measures position, velocity, attitude and heading, and a Seabird SBE 9/11 plus CTD used to measure sound velocity profiles. Sensor configuration for the Hi'ialakai for cruise HI-06-02 is documented in the cruise/multibeam metadata file HI0602_MB_Metadata.txt.

    Time_Period_Information:
      Range_of_Dates/Times:
        Beginning_Date: 20060210
        Ending_Date: 20060313
    Currentness_Reference: ground condition
  Status:
    Progress: Complete

Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:-170.123494
East_Bounding_Coordinate: -170.013435
North_Bounding_Coordinate:-14.018732
South_Bounding_Coordinate: -14.107709
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: Gridded bathymetry
Place:
Place_Keyword_Thesaurus: None
Place_Keyword: Northeast Bank
Place_Keyword: Muli Seamount
Place_Keyword: American Samoa
Place:
Place_Keyword_Thesaurus: CoRIS Place Thesaurus Version 1.0
Place_Keyword: OCEAN BASIN > Pacific Ocean > South Pacific Ocean > Pacific > American Samoa > Northeast Bank
Place_Keyword: COUNTRY/TERRITORY > United States of America > American Samoa
Access_Constraints: None
Use_Constraints: These data are not to be used for navigation purposes.
Please acknowledge the NOAA Coral Reef Ecosystem Division,
Pacific Islands Fisheries Science Center and the Pacific Islands Benthic
Habitat Mapping Center, School of Ocean and Earth Science and Technology, University
of Hawaii as the sources of this information.
Point_of_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Benthic Habitat Mapping Group,
Coral Reef Ecosystem Division, PIFSC,NOAA
Contact_Person: Joyce Miller
Contact_Address:
Address_Type: mailing and physical address
Address: 1125B Ala Moana Blvd
City: Honolulu
State_or_Province: HI
Postal_Code: 96814
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Browse_Graphic:

Browse_Graphic_File_Name: neb_5m.jpg
Browse_Graphic_File_Description: Gridded Bathymetry
Browse_Graphic_File_Type: JPG
Data_Set_Credit: Benthic Habitat Mapping Group, Coral Reef Ecosystem Division (CRED), Pacific Islands Fisheries Science Center (PIFSC), NOAA
Data_Quality_Information:
Attribute_Accuracy:
Attribute_Accuracy_Report: Data are collected for resource management and research purposes and are tested for internal consistency; however, no effort is made to compare these data to external references or to other published data.
Logical_Consistency_Report: Unspecified
Completeness_Report: Complete
Positional_Accuracy:
Horizontal_Positional_Accuracy:
Horizontal_Positional_Accuracy:
Horizontal_Positional_Accuracy_Report:
Horizontal positioning system: GPS C/A
Horizontal position accuracy: 25 meters
Vertical_Positional_Accuracy:
Vertical_Positional_Accuracy_Report:
Range resolution of sonar: varies with depth
Raw sounding resolution: varies with depth
Vertical accuracy of gridded product ~ 1% of water depth
Lineage:
Process_Step:
Process_Description:
Specifics of data processing are recorded in cruise metadata reports HI0602_MB_Metadata.txt, AHI0602_MB_Metadata.txt
Process_Date: 20060313
Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Raster
Raster_Object_Information:
Raster_Object_Type: Grid Cell
Row_Count: 1959
Column_Count: 2369
Vertical_Count: 1
Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: row and column
Coordinate_Representation:

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        Abscissa_Resolution: 5
        Ordinate_Resolution: 5
       Planar_Distance_Units: meters
     Grid_Coordinate_System:
      Grid_Coordinate_System_Name: Universal Transverse Mercator
      Universal_Transverse_Mercator:
       UTM_Zone_Number:
       Transverse_Mercator:
        Scale_Factor_at_Central_Meridian: 0.9996
        Longitude_of_Central_Meridian: -171
        Latitude_of_Projection_Origin: 0
        False_Easting: 500000
        False_Northing: 1000000
   Geodetic_Model:
    Horizontal_Datum_Name: D_WGS_1984
    Ellipsoid_Name: WGS_1984
    Semi-major_Axis: 6378137.000000
    Denominator_of_Flattening_Ratio: 298.257224
  Vertical_Coordinate_System_Definition:
   Depth_System_Definition:
    Depth_Datum_Name: mean lower low water
    Depth_Resolution:  0.01 meters
    Depth_Distance_Units: meters
    Depth_Encoding_Method: Attribute values
Entity_and_Attribute_Information:
  Overview_Description:
   Entity_and_Attribute_Overview:
    Depth values are real values based on the average of the
    soundings that fell within the extracted grid cells.  The number of
    soundings per grid cell range from >1000 soundings in shallow depths
    to as few as 20 soundings in deeper areas.  A total error budget for
    this survey has not been developed. Therefore, the accuracy of depth
    measurements should be considered to be within 1 per cent of water depth.
   Entity_and_Attribute_Detail_Citation: none
Distribution_Information:
  Distributor:
   Contact_Information:
    Contact_Organization_Primary:
     Contact_Organization: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
     Contact_Person: Joyce E. Miller
    Contact_Position: Oceanographer
    Contact_Address:
     Address_Type: mailing and physical address
```

Address: 1125 'B' Ala Moana Blvd
City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96814
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Resource_Description: Downloadable Data
Distribution_Liability:
These data are not to be used for navigational purposes.
NOAA makes no warranty regarding these data, expressed or implied, nor
does the fact of distribution constitute such a warranty. NOAA cannot
assume liability for any damages caused by any errors or omissions in
these data, nor as a result of the failure of these data to function
on a particular system.
Standard_Order_Process:
Digital_Form: Arc ASCII
Digital_Transfer_Information:
Format_Name: Arc ASCII
Format_Information_Content:
Arc ASCII can be converted to Arc Raster using ArcToolbox Conversion Tools.
Digital_Transfer_Option:
Online_Option:
Computer_Contact_Information:
Network_Address:
Network_Resource_Name: http://www.soest.hawaii.edu/pibhmc
Fees: None
Metadata_Reference_Information:
Metadata_Date: 20060912
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
Contact_Person: Joyce E. Miller
Contact_Position: Oceanographer
Contact_Address:
Address_Type: mailing and physical address
Address: 1125 'B' Ala Moana Blvd
City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96814
Country: USA
Contact_Voice_Telephone: 808-956-5239

Contact_Electronic_Mail_Address: Joyce.Miller@noaa.gov
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: universal time
Metadata_Access_Constraints: None
Metadata_Use_Constraints: None

Identification_Information:
  Citation:
    Citation_Information:
    Originator: Joyce E. Miller
Originator: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
    Publication_Date: 20060930
    Title: Gridded bathymetry of the banktop and slope environments of Northeast Bank (sometimes called "Muli" Seamount), American Samoa
    Geospatial_Data_Presentation_Form: raster digital data
    Online_Linkage: http://www.soest.hawaii.edu/pibhmc
  Description:
    Abstract: Gridded (20 m cell size) bathymetry of the banktop and slope environments of Northeast Bank (sometimes called "Muli" Seamount), American Samoa, South Pacific. Almost complete bottom coverage was achieved in depths between 48 and 1822 meters. The bathymetry dataset includes Simrad EM300 and EM3002D data collected during Feb. to March of 2006.
    Purpose:
      The data were collected in support of Coral Reef Conservation Program goals to map all shallow (0-30 m) coral reefs in US Pacific waters and priority moderate (> 30 m) depth areas by 2009. The data are being used to provide bathymetric and backscatter data for previously unmapped areas; in support of ecosystem management requirements for benthic habitat mapping and location of Essential Fish Habitat; and to study the geologic features of the area.
    Supplemental_Information:
      Data were collected aboard the NOAA Ship Hiialakai, a 218’ United States National Oceanographic and Atmospheric Administration research ship. The NOAA Ship Hiialakai's survey sensors include a 30 kHz Simrad EM300 sonar and a 300 kHz Simrad EM3002D sonar, which provide bathymetry and imagery data, a TSS/Applanix POS/MV Model 320, which measures position, velocity, attitude and heading, and a Seabird SBE 9/11 plus CTD used to measure sound velocity profiles. Sensor configuration for the Hi'ialakai for cruise HI-06-02 is documented in the cruise/multibeam metadata file HI0602_MB_Metadata.txt.

    Time_Period_Information:
      Range_of_Dates/Times:
        Beginning_Date: 20060210
        Ending_Date: 20060313
    Currentness_Reference: ground condition
  Status:
    Progress: Complete

Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate:-170.123403
East_Bounding_Coordinate: -170.013204
North_Bounding_Coordinate:-14.018369
South_Bounding_Coordinate: -14.107573
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: Gridded bathymetry
Place:
Place_Keyword_Thesaurus: None
Place_Keyword: Northeast Bank
Place_Keyword: Muli Seamount
Place_Keyword: American Samoa
Place:
Place_Keyword_Thesaurus: CoRIS Place Thesaurus Version 1.0
Place_Keyword: OCEAN BASIN > Pacific Ocean > South Pacific Ocean > Pacific > American Samoa > Northeast Bank
Place_Keyword: COUNTRY/TERRITORY > United States of America > American Samoa
Access_Constraints: None
Use_Constraints: These data are not to be used for navigation purposes.
Please acknowledge the NOAA Coral Reef Ecosystem Division,
Pacific Islands Fisheries Science Center and the Pacific Islands Benthic
Habitat Mapping Center, School of Ocean and Earth Science and Technology, University
of Hawaii as the sources of this information.
Point_of_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Benthic Habitat Mapping Group,
Coral Reef Ecosystem Division, PIFSC,NOAA
Contact_Person: Joyce Miller
Contact_Address:
Address_Type: mailing and physical address
Address: 1125B Ala Moana Blvd
City: Honolulu
State_or_Province: HI
Postal_Code: 96814
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Browse_Graphic:

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    Browse_Graphic_File_Name: neb_20m.jpg
    Browse_Graphic_File_Description: Gridded Bathymetry
    Browse_Graphic_File_Type: JPG
  Data_Set_Credit: Benthic Habitat Mapping Group, Coral Reef Ecosystem Division
     (CRED), Pacific Islands Fisheries Science Center (PIFSC), NOAA
Data_Quality_Information:
  Attribute_Accuracy:
    Attribute_Accuracy_Report: Data are collected for resource management
      and research purposes and are tested for internal consistency; however,
      no effort is made to compare these data to external references or to
      other published data.
  Logical_Consistency_Report: Unspecified
  Completeness_Report: Complete
  Positional_Accuracy:
    Horizontal_Positional_Accuracy:
    Horizontal_Positional_Accuracy:
      Horizontal_Positional_Accuracy_Report:
        Horizontal positioning system: GPS C/A
        Horizontal position accuracy: 25 meters
    Vertical_Positional_Accuracy:
      Vertical_Positional_Accuracy_Report:
        Range resolution of sonar: varies with depth
        Raw sounding resolution: varies with depth
        Vertical accuracy of gridded product ~ 1% of water depth
  Lineage:
    Process_Step:
     Process_Description:
        Specifics of data processing are recorded in cruise metadata
        reports HI0602_MB_Metadata.txt
     Process_Date: 20060313
Spatial_Data_Organization_Information:
  Direct_Spatial_Reference_Method: Raster
  Raster_Object_Information:
    Raster_Object_Type: Grid Cell
    Row_Count: 491
    Column_Count: 593
    Vertical_Count: 1
Spatial_Reference_Information:
  Horizontal_Coordinate_System_Definition:
    Planar:
      Planar_Coordinate_Information:
        Planar_Coordinate_Encoding_Method: row and column
        Coordinate_Representation:
```

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        Abscissa_Resolution: 20
        Ordinate_Resolution: 20
       Planar_Distance_Units: meters
     Grid_Coordinate_System:
      Grid_Coordinate_System_Name: Universal Transverse Mercator
      Universal_Transverse_Mercator:
       UTM_Zone_Number:
       Transverse_Mercator:
        Scale_Factor_at_Central_Meridian: 0.9996
        Longitude_of_Central_Meridian: -171
        Latitude_of_Projection_Origin: 0
        False_Easting: 500000
        False_Northing: 1000000
   Geodetic_Model:
    Horizontal_Datum_Name: D_WGS_1984
    Ellipsoid_Name: WGS_1984
    Semi-major_Axis: 6378137.000000
    Denominator_of_Flattening_Ratio: 298.257224
  Vertical_Coordinate_System_Definition:
   Depth_System_Definition:
    Depth_Datum_Name: mean lower low water
    Depth_Resolution:  0.01 meters
    Depth_Distance_Units: meters
    Depth_Encoding_Method: Attribute values
Entity_and_Attribute_Information:
  Overview_Description:
   Entity_and_Attribute_Overview:
    Depth values are real values based on the average of the
    soundings that fell within the extracted grid cells.  The number of
    soundings per grid cell range from >1000 soundings in shallow depths
    to as few as 20 soundings in deeper areas.  A total error budget for
    this survey has not been developed. Therefore, the accuracy of depth
    measurements should be considered to be within 1 per cent of water depth.
   Entity_and_Attribute_Detail_Citation: none
Distribution_Information:
  Distributor:
   Contact_Information:
    Contact_Organization_Primary:
     Contact_Organization: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
     Contact_Person: Joyce E. Miller
    Contact_Position: Oceanographer
    Contact_Address:
     Address_Type: mailing and physical address
```

Address: 1125 'B' Ala Moana Blvd
City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96814
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Resource_Description: Downloadable Data
Distribution_Liability:
These data are not to be used for navigational purposes.
NOAA makes no warranty regarding these data, expressed or implied, nor
does the fact of distribution constitute such a warranty. NOAA cannot
assume liability for any damages caused by any errors or omissions in
these data, nor as a result of the failure of these data to function
on a particular system.
Standard_Order_Process:
Digital_Form: Arc ASCII
Digital_Transfer_Information:
Format_Name: Arc ASCII
Format_Information_Content:
Arc ASCII can be converted to Arc Raster using ArcToolbox Conversion Tools.
Digital_Transfer_Option:
Online_Option:
Computer_Contact_Information:
Network_Address:
Network_Resource_Name: http://www.soest.hawaii.edu/pibhmc
Fees: None
Metadata_Reference_Information:
Metadata_Date: 20060912
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
Contact_Person: Joyce E. Miller
Contact_Position: Oceanographer
Contact_Address:
Address_Type: mailing and physical address
Address: 1125 'B' Ala Moana Blvd
City: Honolulu
State_or_Province: Hawaii
Postal_Code: 96814
Country: USA
Contact_Voice_Telephone: 808-956-5239

Contact_Electronic_Mail_Address: Joyce.Miller@noaa.gov
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: universal time
Metadata_Access_Constraints: None
Metadata_Use_Constraints: None

Identification_Information:
  Citation:
    Citation_Information:
    Originator: Joyce E. Miller
Originator: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
    Publication_Date: 20060930
    Title: Gridded bathymetry of the banktop and slope environments of Two Percent Bank (also called Tulaga Seamount), American Samoa
    Geospatial_Data_Presentation_Form: raster digital data
    Online_Linkage: http://www.soest.hawaii.edu/pibhmc
  Description:
    Abstract: Gridded (40 m cell size) bathymetry of Two Percent Bank (also called Talaga Seamount) that lies between southeast of Tutuila, American Samoa, South Pacific. Almost complete bottom coverage was achieved in depths between 78 and 2221 meters. The bathymetry dataset includes Simrad EM300 and EM3002 data collected during Feb. to March of 2006.
    Purpose:
      The data were collected in support of Coral Reef Conservation Program goals to map all shallow (0-30 m) coral reefs in US Pacific waters and priority moderate (> 30 m) depth areas by 2009. The data are being used to provide bathymetric and backscatter data for previously unmapped areas; in support of ecosystem management requirements for benthic habitat mapping and location of Essential Fish Habitat; and to study the geologic features of the area.
    Supplemental_Information:
      Data were collected aboard the NOAA Ship Hiialakai, a 218’ United States National Oceanographic and Atmospheric Administration research ship. The NOAA Ship Hiialakai's survey sensors include a 30 kHz Simrad EM300 and a 300 kHZ EM3002 sonar both of which provide bathymetry and imagery data, a TSS/Applanix POS/MV Model 320, which measures position, velocity, attitude and heading, and a Seabird SBE 9/11 plus CTD used to measure sound velocity profiles. Sensor configuration for the Hi'ialakai for cruise HI-06-02 is documented in the cruise/multibeam metadata file HI0602_MB_Metadata.txt.

    Time_Period_Information:
      Range_of_Dates/Times:
        Beginning_Date: 20060210
        Ending_Date: 20060313
    Currentness_Reference: ground condition
  Status:
    Progress: Complete

Maintenance_and_Update_Frequency: As needed
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate: -170.099458
East_Bounding_Coordinate: -169.928399
North_Bounding_Coordinate: -14.40675
South_Bounding_Coordinate: -14.566935
Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: Gridded bathymetry
Place:
Place_Keyword_Thesaurus: None
Place_Keyword: Two Percent Bank
Place_Keyword: Tulaga Seamount
Place_Keyword: American Samoa
Place:
Place_Keyword_Thesaurus: CoRIS Place Thesaurus Version 1.0
Place_Keyword: OCEAN BASIN > Pacific Ocean > South Pacific Ocean > Pacific > American Samoa > Two Percent Bank
Place_Keyword: COUNTRY/TERRITORY > United States of America > American Samoa
Access_Constraints: None
Use_Constraints: These data are not to be used for navigation purposes.
Please acknowledge the NOAA Coral Reef Ecosystem Division,
Pacific Islands Fisheries Science Center and the Pacific Islands Benthic
Habitat Mapping Center, School of Ocean and Earth Science and Technology, University
of Hawaii as the sources of this information.
Point_of_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Benthic Habitat Mapping Group,
Coral Reef Ecosystem Division, PIFSC,NOAA
Contact_Person: Joyce Miller
Contact_Address:
Address_Type: mailing and physical address
Address: 1125B Ala Moana Blvd
City: Honolulu
State_or_Province: HI
Postal_Code: 96814
Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Browse_Graphic:

```
    Browse_Graphic_File_Name: two_40m.jpg
    Browse_Graphic_File_Description: Gridded Bathymetry
    Browse_Graphic_File_Type: JPG
  Data_Set_Credit: Benthic Habitat Mapping Group, Coral Reef Ecosystem Division
     (CRED), Pacific Islands Fisheries Science Center (PIFSC), NOAA
Data_Quality_Information:
  Attribute_Accuracy:
    Attribute_Accuracy_Report: Data are collected for resource management
      and research purposes and are tested for internal consistency; however,
      no effort is made to compare these data to external references or to
      other published data.
  Logical_Consistency_Report: Unspecified
  Completeness_Report: Complete
  Positional_Accuracy:
    Horizontal_Positional_Accuracy:
    Horizontal_Positional_Accuracy:
      Horizontal_Positional_Accuracy_Report:
        Horizontal positioning system: GPS C/A
        Horizontal position accuracy: 25 meters
    Vertical_Positional_Accuracy:
      Vertical_Positional_Accuracy_Report:
        Range resolution of sonar: varies with depth
        Raw sounding resolution: varies with depth
        Vertical accuracy of gridded product ~ 1% of water depth
  Lineage:
    Process_Step:
     Process_Description:
        Specifics of data processing are recorded in cruise metadata
        reports HI0602_MB_Metadata.txt.
     Process_Date: 20060313
Spatial_Data_Organization_Information:
  Direct_Spatial_Reference_Method: Raster
  Raster_Object_Information:
    Raster_Object_Type: Grid Cell
    Row_Count: 441
    Column_Count: 459
    Vertical_Count: 1
Spatial_Reference_Information:
  Horizontal_Coordinate_System_Definition:
    Planar:
      Planar_Coordinate_Information:
        Planar_Coordinate_Encoding_Method: row and column
        Coordinate_Representation:
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        Abscissa_Resolution: 40
        Ordinate_Resolution: 40
       Planar_Distance_Units: meters
     Grid_Coordinate_System:
      Grid_Coordinate_System_Name: Universal Transverse Mercator
      Universal_Transverse_Mercator:
       UTM_Zone_Number:
       Transverse_Mercator:
        Scale_Factor_at_Central_Meridian: 0.9996
        Longitude_of_Central_Meridian: -171
        Latitude_of_Projection_Origin: 0
        False_Easting: 500000
        False_Northing: 1000000
   Geodetic_Model:
    Horizontal_Datum_Name: D_WGS_1984
    Ellipsoid_Name: WGS_1984
    Semi-major_Axis: 6378137.000000
    Denominator_of_Flattening_Ratio: 298.257224
  Vertical_Coordinate_System_Definition:
   Depth_System_Definition:
    Depth_Datum_Name: mean lower low water
    Depth_Resolution:  0.01 meters
    Depth_Distance_Units: meters
    Depth_Encoding_Method: Attribute values
Entity_and_Attribute_Information:
  Overview_Description:
   Entity_and_Attribute_Overview:
    Depth values are real values based on the average of the
    soundings that fell within the extracted grid cells.  The number of
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    to as few as 20 soundings in deeper areas.  A total error budget for
    this survey has not been developed. Therefore, the accuracy of depth
    measurements should be considered to be within 1 per cent of water depth.
   Entity_and_Attribute_Detail_Citation: none
Distribution_Information:
  Distributor:
   Contact_Information:
    Contact_Organization_Primary:
     Contact_Organization: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
     Contact_Person: Joyce E. Miller
    Contact_Position: Oceanographer
    Contact_Address:
     Address_Type: mailing and physical address
```

Address: 1125 'B' Ala Moana Blvd
City: Honolulu
State_or_Province: Hawaii
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Country: USA
Contact_Voice_Telephone: 808-956-5239
Contact_Electronic_Mail_Address: joyce.miller@noaa.gov
Resource_Description: Downloadable Data
Distribution_Liability:
These data are not to be used for navigational purposes.
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does the fact of distribution constitute such a warranty. NOAA cannot
assume liability for any damages caused by any errors or omissions in
these data, nor as a result of the failure of these data to function
on a particular system.
Standard_Order_Process:
Digital_Form: Arc ASCII
Digital_Transfer_Information:
Format_Name: Arc ASCII
Format_Information_Content:
Arc ASCII can be converted to Arc Raster using ArcToolbox Conversion Tools.
Digital_Transfer_Option:
Online_Option:
Computer_Contact_Information:
Network_Address:
Network_Resource_Name: http://www.soest.hawaii.edu/pibhmc
Fees: None
Metadata_Reference_Information:
Metadata_Date: 20060930
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Benthic Habitat Mapping Group, CRED, PIFSC, NOAA
Contact_Person: Joyce E. Miller
Contact_Position: Oceanographer
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Contact_Electronic_Mail_Address: Joyce.Miller@noaa.gov
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: universal time
Metadata_Access_Constraints: None
Metadata_Use_Constraints: None