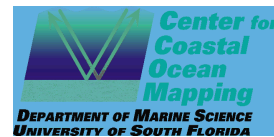


Multibeam Swath Bathymetry



The Kongsberg Simrad EM-3000 Multibeam system is a high resolution echo sounder which measures depth accurately to within several centimeters when post-processed. It not only measures the depth below the vessel but also out to the left and right of the vessel at a range of ~2-4 times the water depth. The location and vertical elevation of the vessel are tracked by the integration of three global positioning systems working together with the echosounder. The multibeam bathymetry is relayed to a Sun Ultra 5 workstation, where it is stored, processed, and presented on screen. Finally, the post-processed image is printed at high resolution with each dot/pixel of color representing ~ 0.3 - 0.6 square meters (~1-2 square feet).

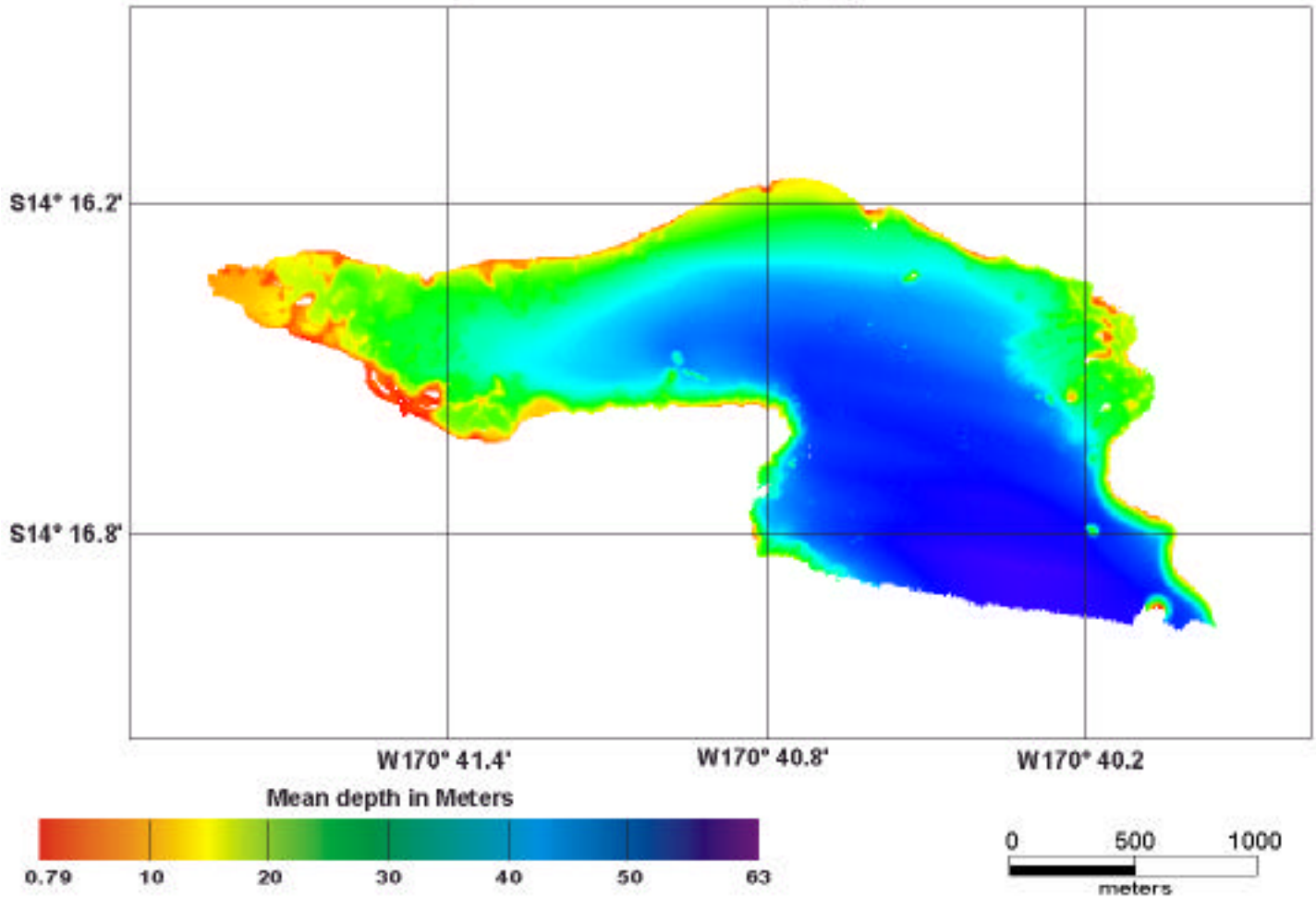
Multibeam Applications:

- Mapping of the seafloor
 - What structures exist?
 - How extensive are the structures?
- Coral Reef Studies
 - the impact of ship groundings
 - growth studies
- Hurricane impact on the beaches
 - where does the sand go ?
 - what effect does the moving sand have on shipping channels ?
- Shipping Channel Assessment
 - What size vessels can enter ports ?
 - Monitor dredging and post dredging
- Habitat Surveys for Fish stocks that are dependent on submerged structures (ledges, drop-offs, wrecks...)
- Beach Renourishment studies
 - where can we find more sand ?
 - where does the sand go ?
- What effect does the Bathymetry have on the ocean or bay's circulation ?
- Quick response to offshore accidents
 - plane crashes
 - sunken vessels

Multibeam Data From American Samoa May 2001

*** NOT FOR NAVIGATION**

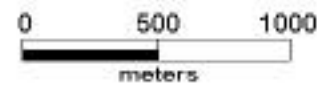
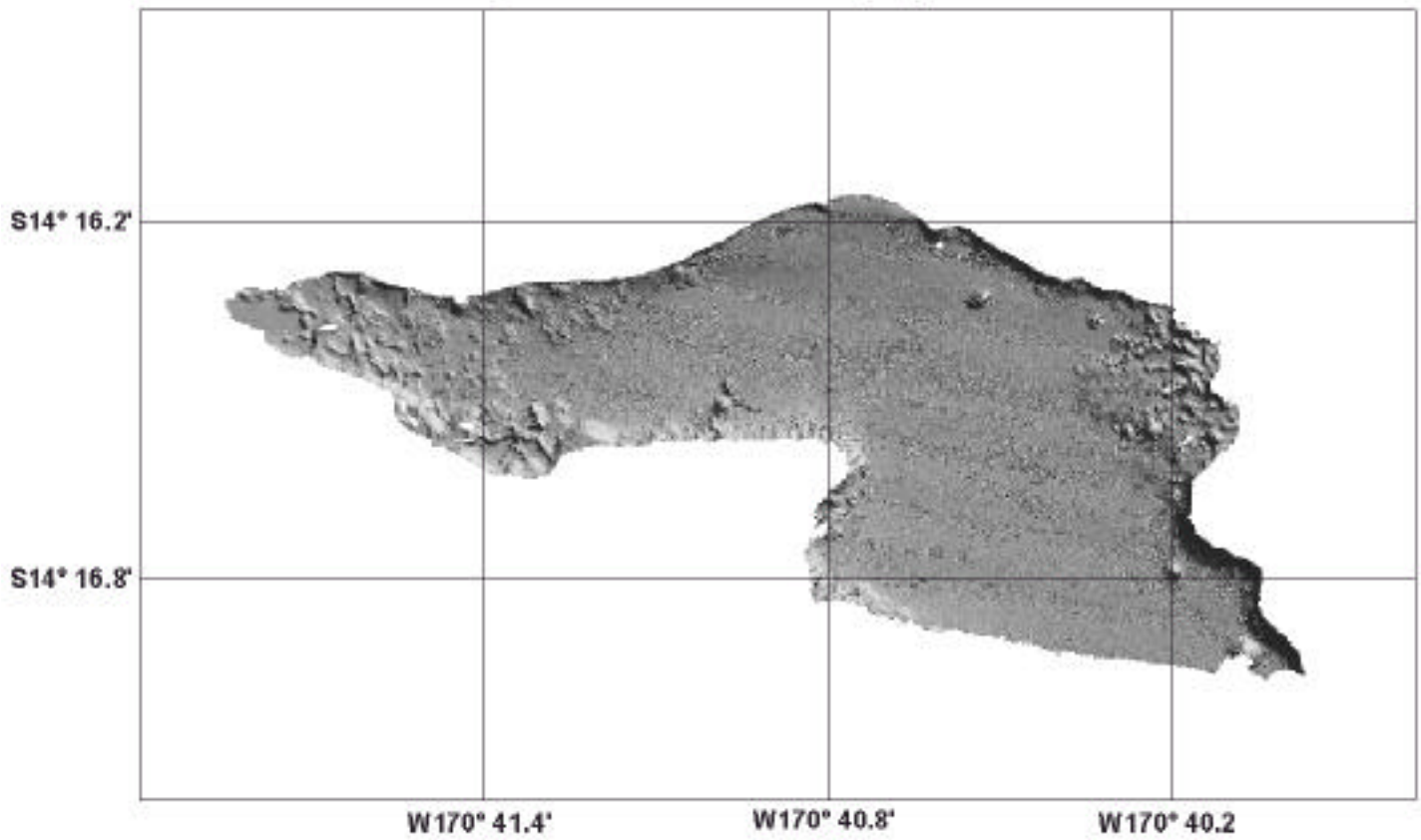
Pago Pago Harbor, American Samoa processed at 1 meter per pixel



*** NOT FOR NAVIGATION**

Pago Pago Harbor, American Samoa

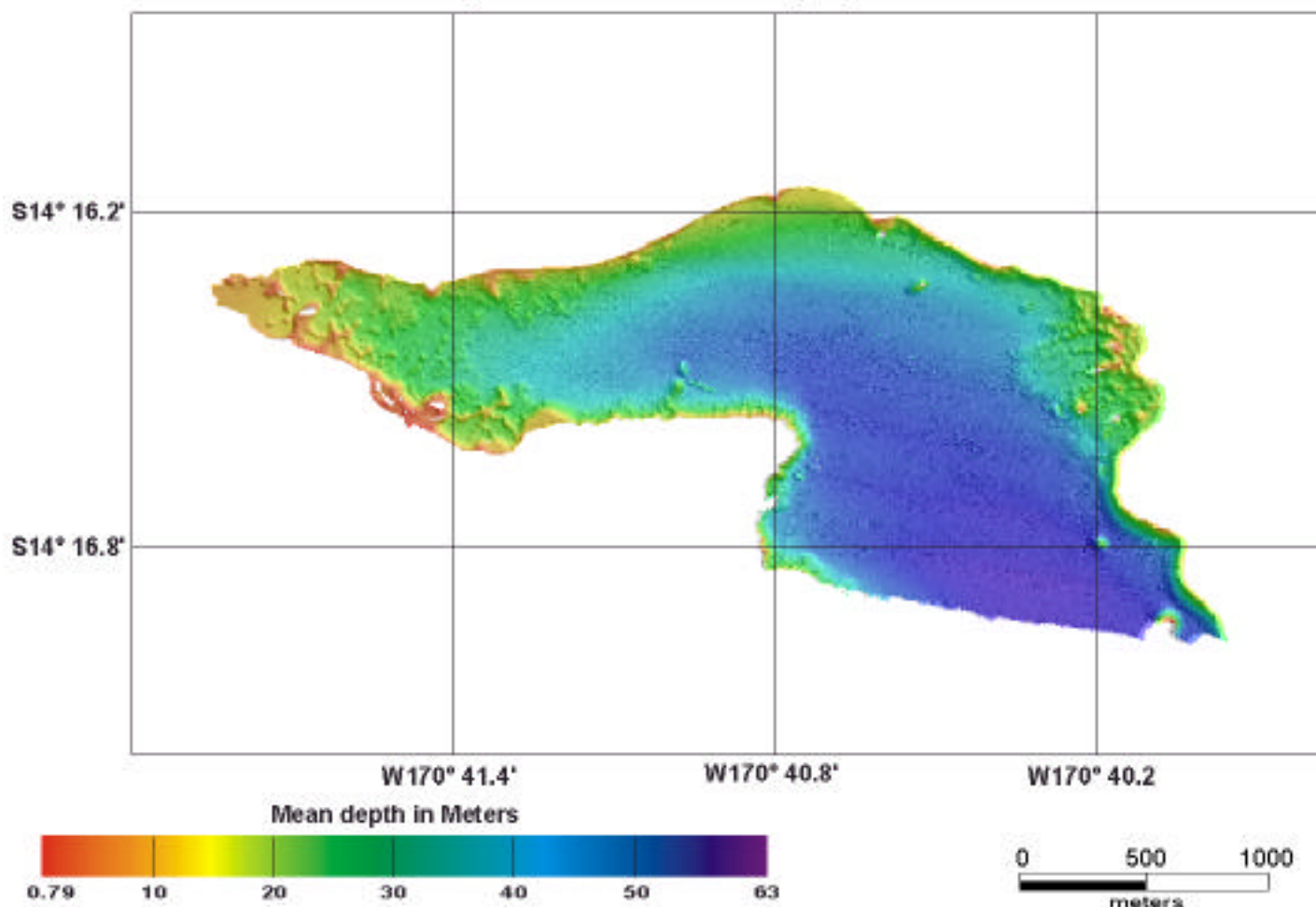
processed at 1 meter per pixel



*** NOT FOR NAVIGATION**

Pago Pago Harbor, American Samoa

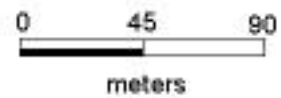
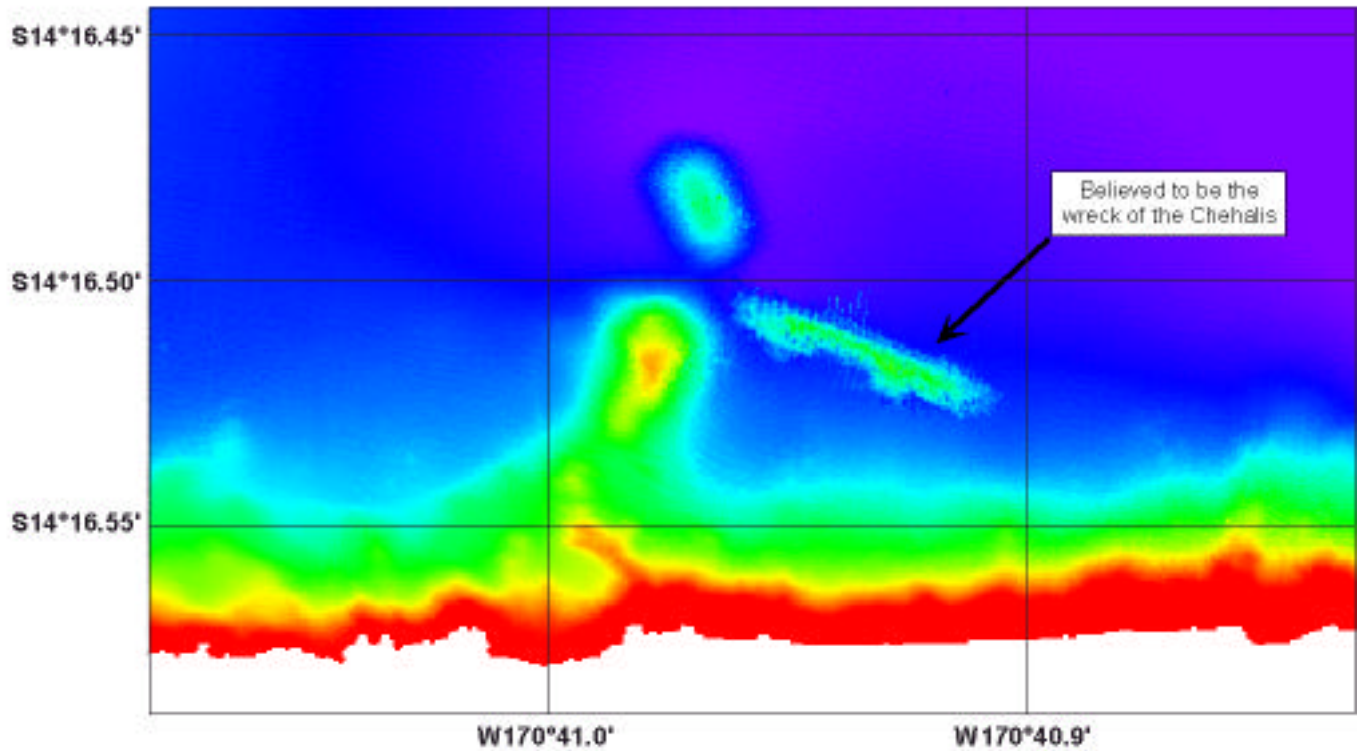
processed at 1 meter per pixel



* NOT FOR NAVIGATION

Pago Pago Harbor, American Samoa

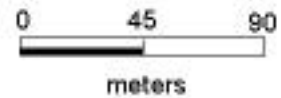
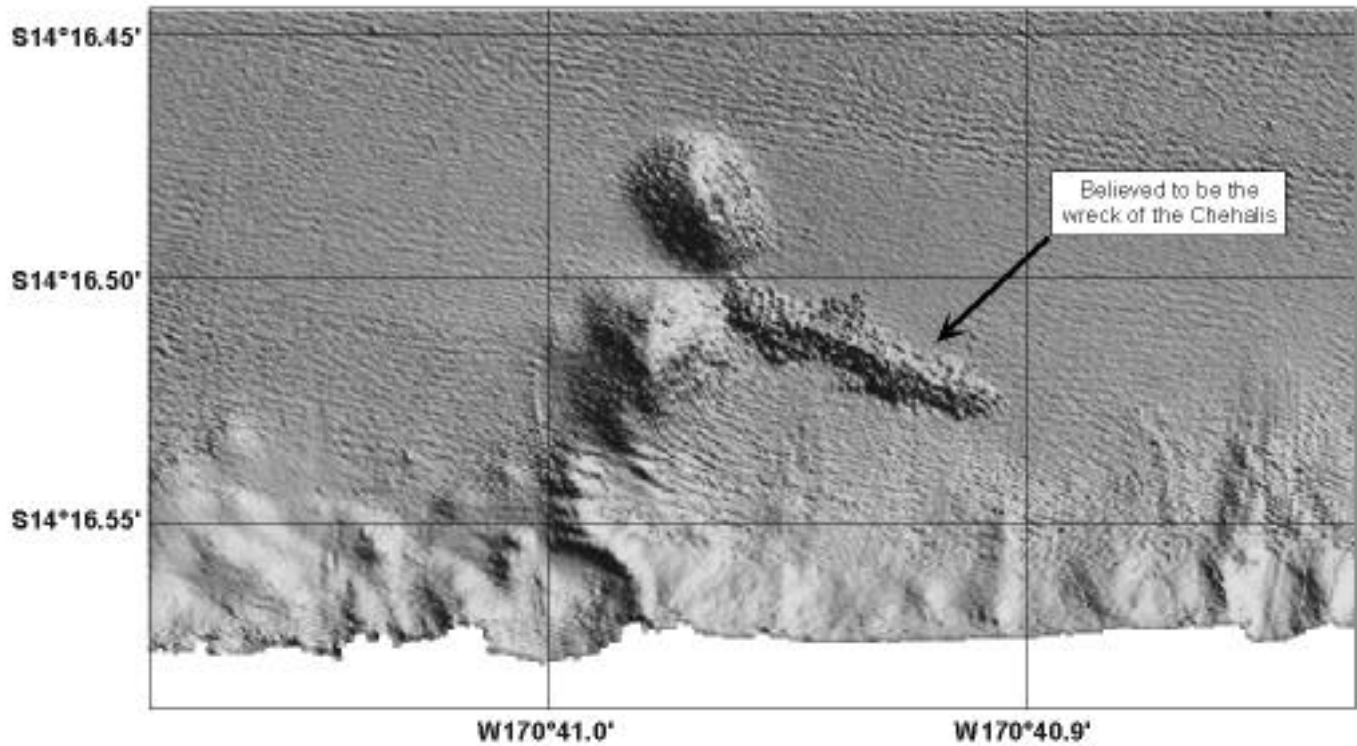
processed at 1 m per pixel



* NOT FOR NAVIGATION

Pago Pago Harbor, American Samoa

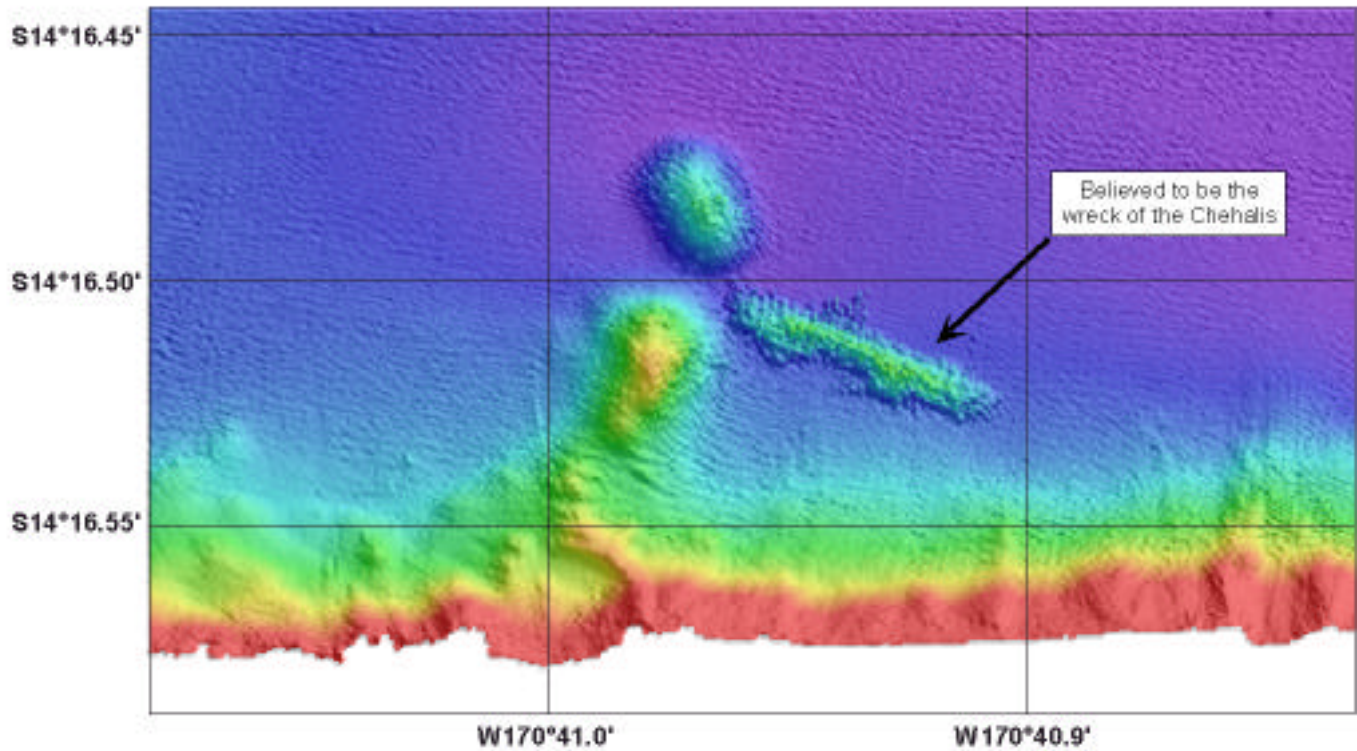
processed at 1 m per pixel



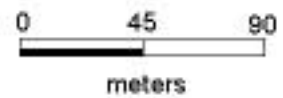
* NOT FOR NAVIGATION

Pago Pago Harbor, American Samoa

processed at 1 m per pixel

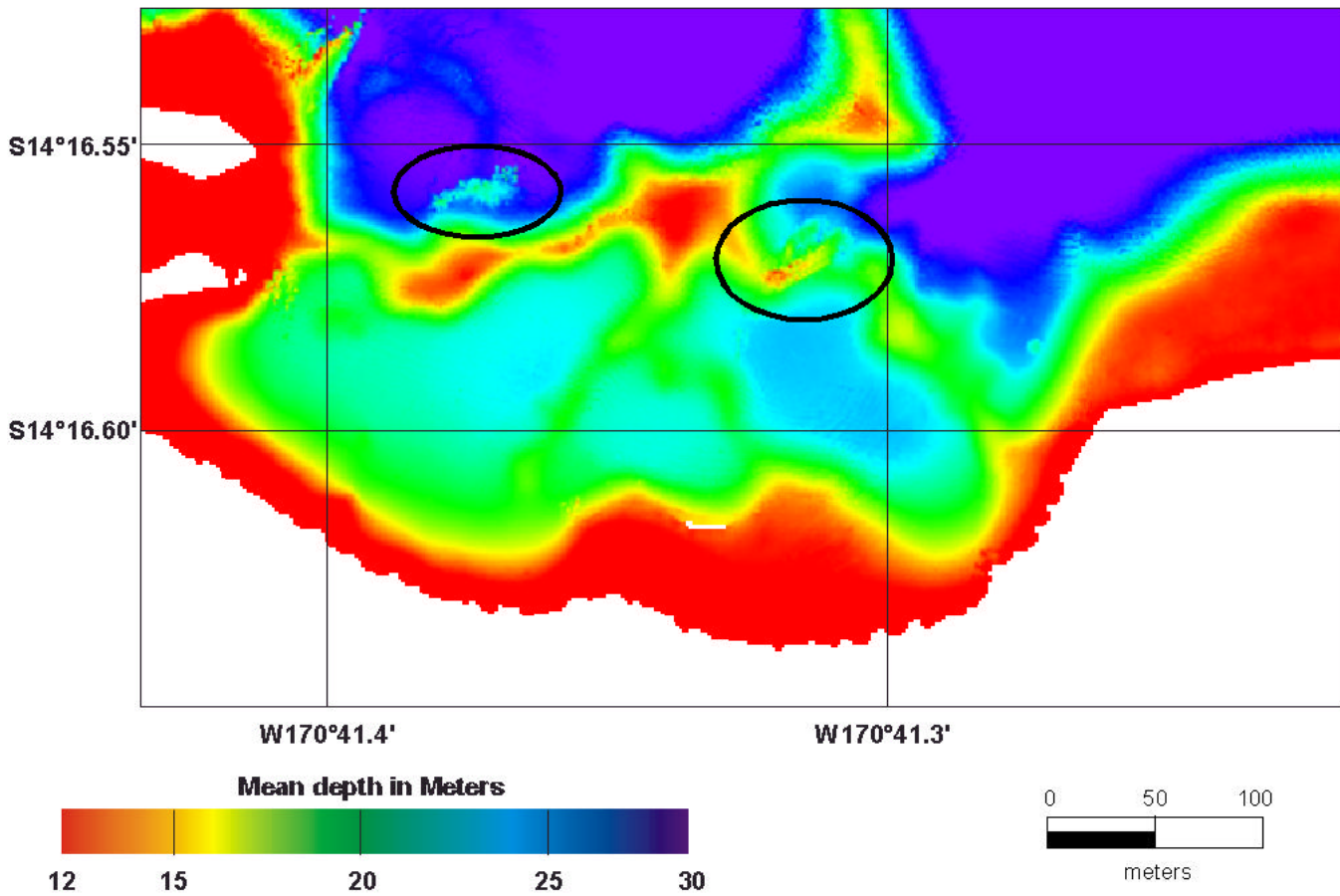


Mean depth in Meters



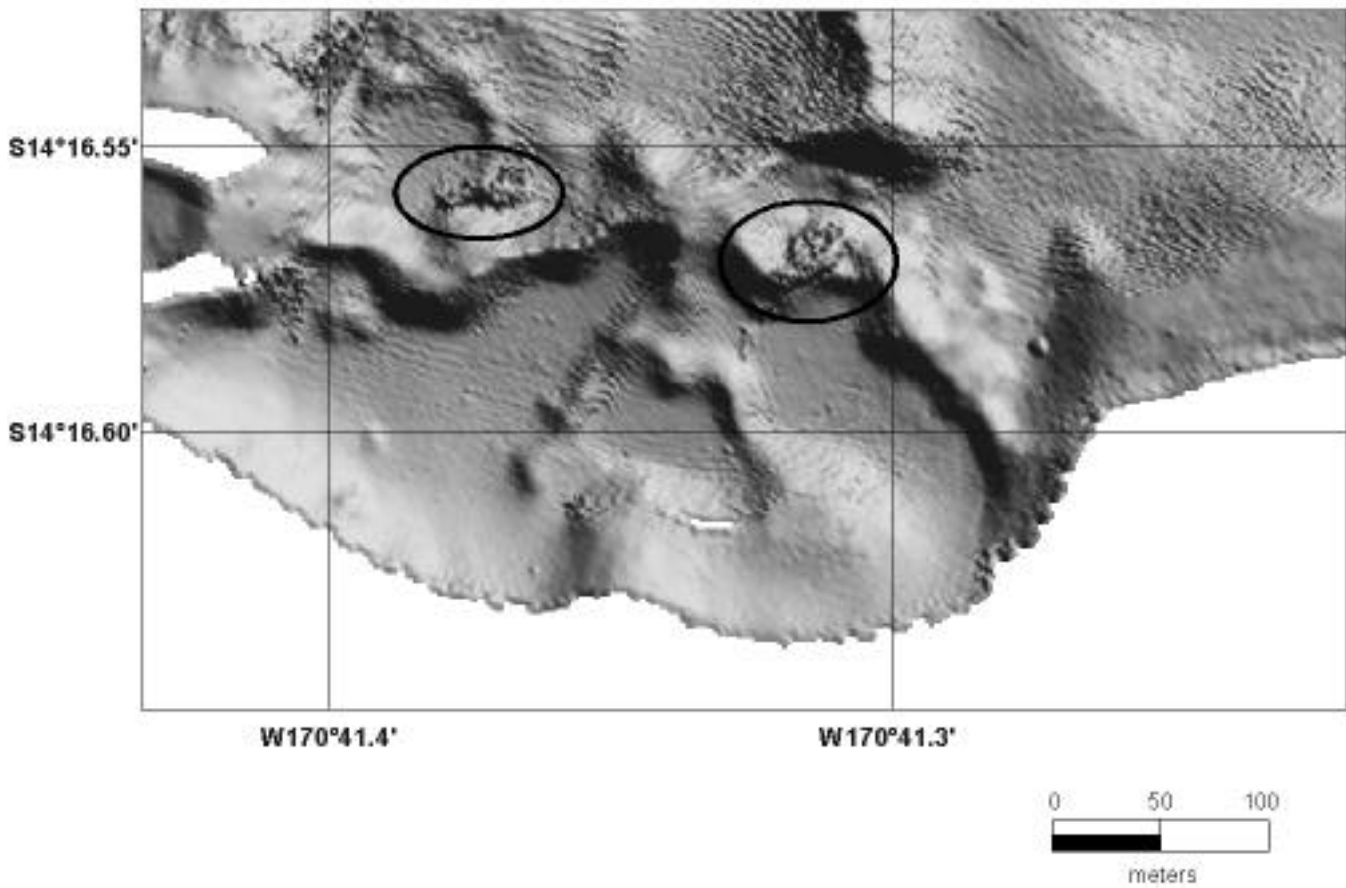
* NOT FOR NAVIGATION

Pago Pago Harbor, American Samoa, Two possible Wrecks processed at 1 meter per pixel



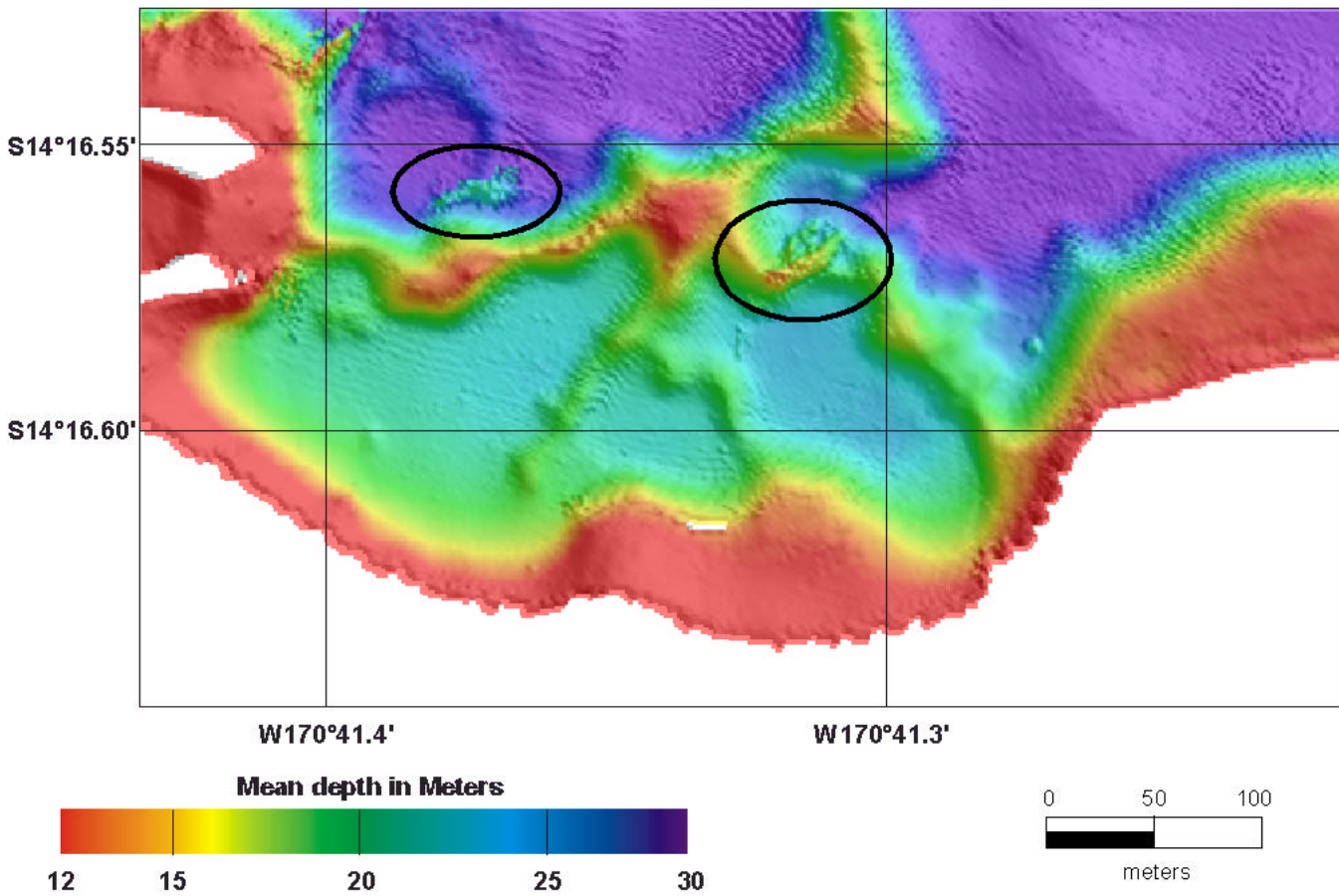
* NOT FOR NAVIGATION

Pago Pago Harbor, American Samoa, Two possible Wrecks processed at 1 meter per pixel



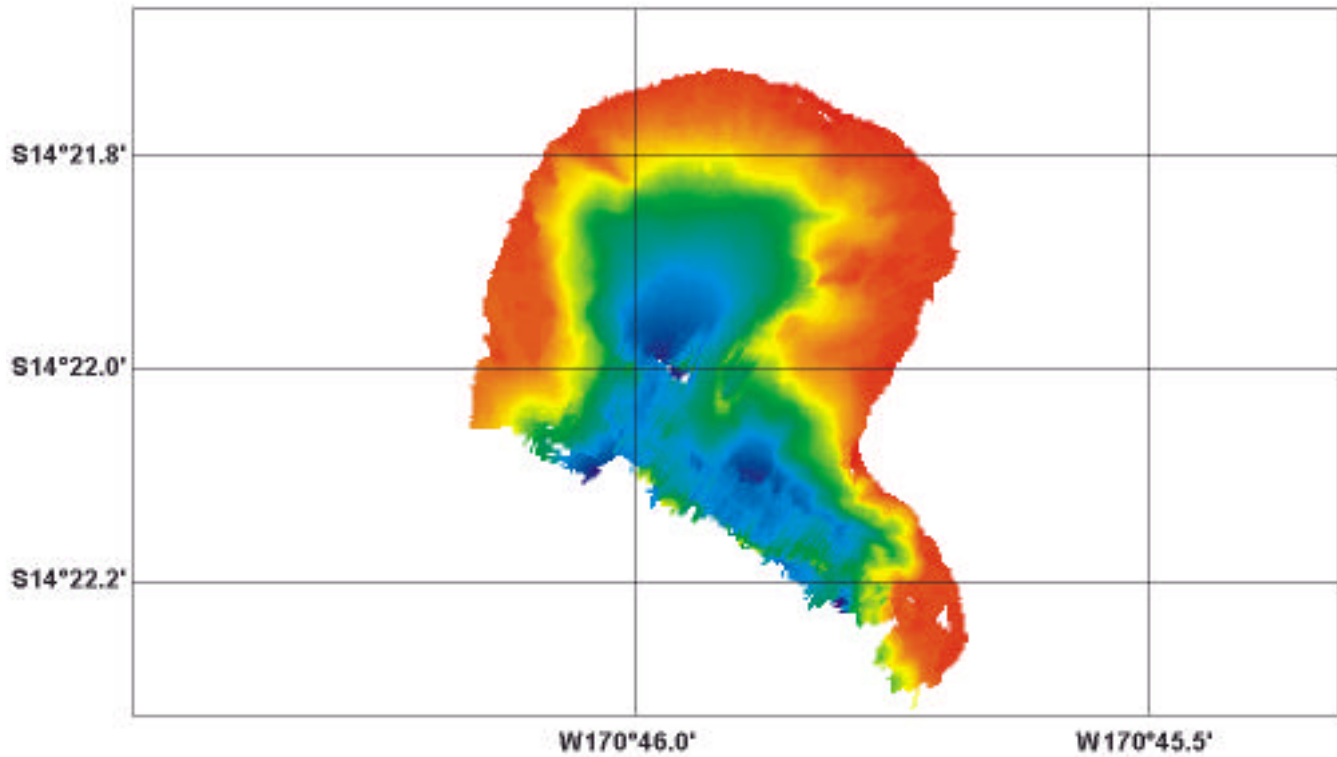
* NOT FOR NAVIGATION

Pago Pago Harbor, American Samoa, Two possible Wrecks processed at 1 meter per pixel

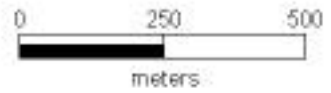


Fagatele Bay National Marine Sanctuary, America Samoa

Processed at 1 meter per pixel

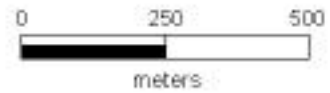
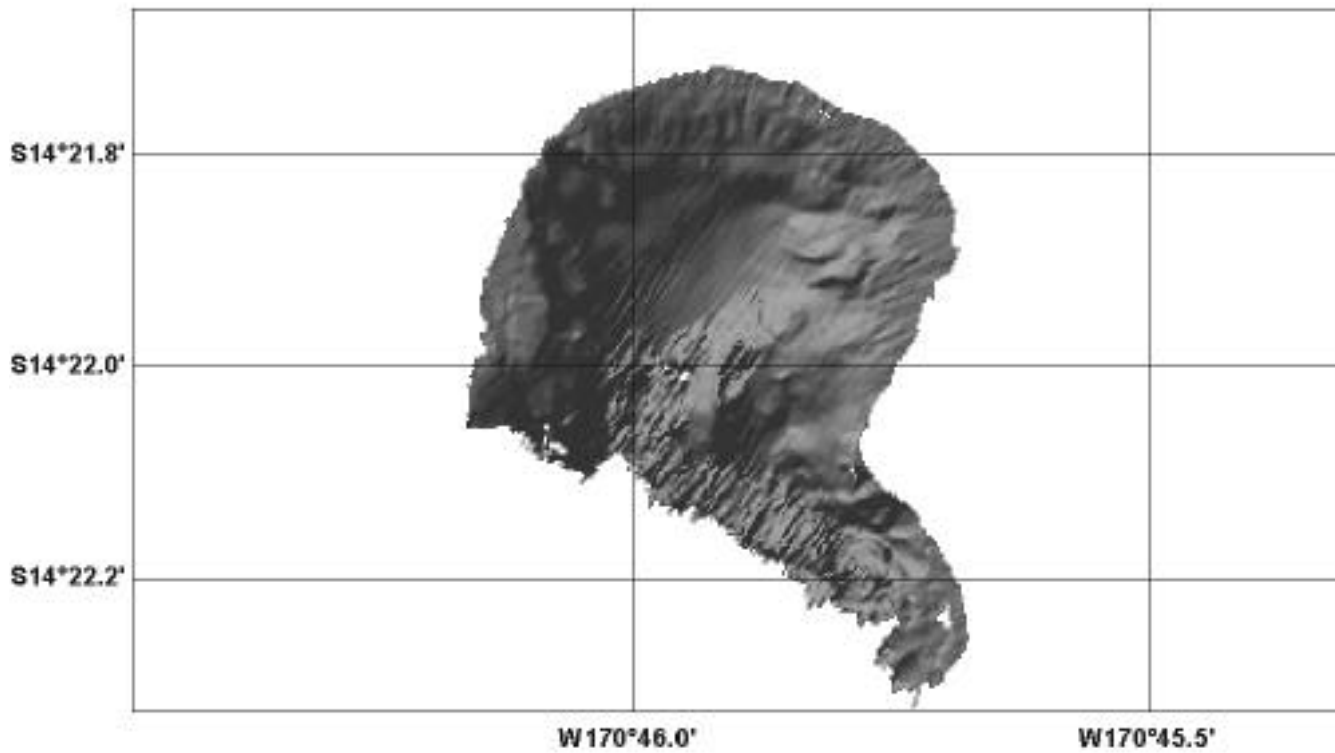


Mean Depth in Meters



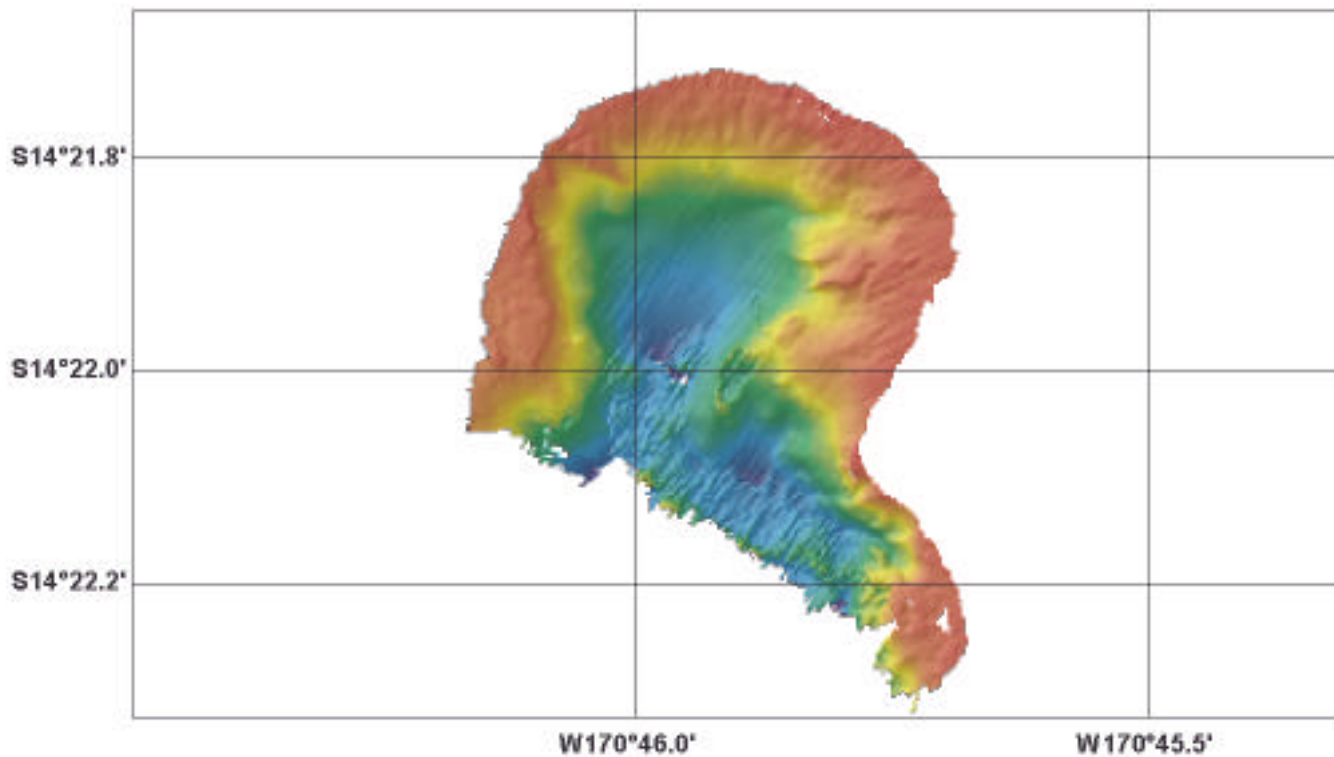
Fagatele Bay National Marine Sanctuary, America Samoa

Processed at 1 meter per pixel

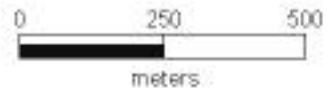


Fagatele Bay National Marine Sanctuary, America Samoa

Processed at 1 meter per pixel

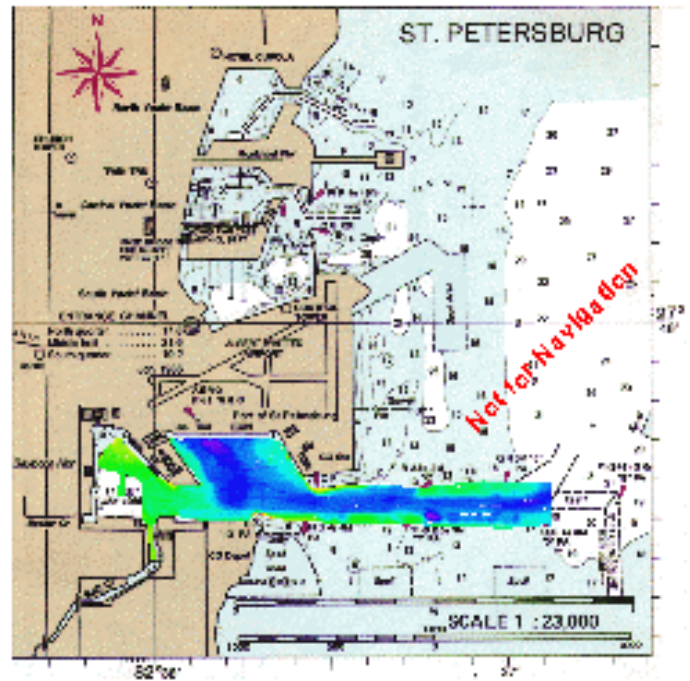
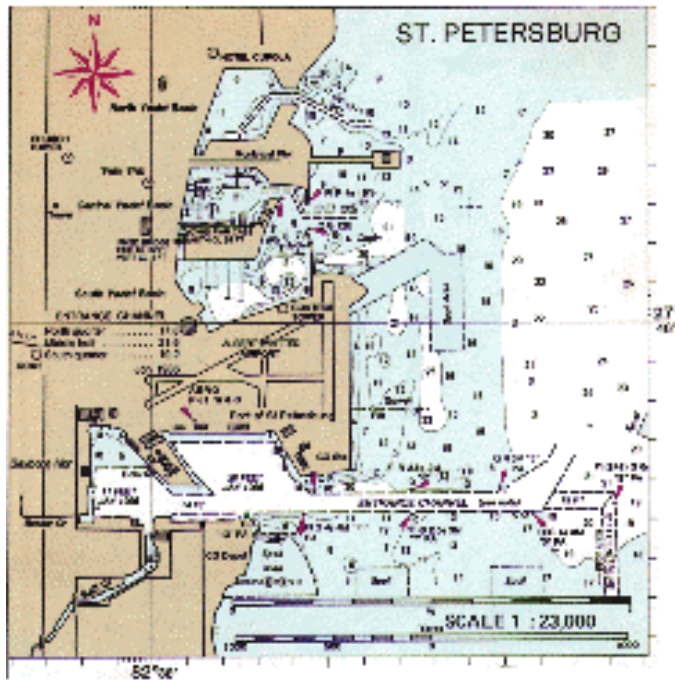


Mean Depth in Meters



Examples of previous surveys are
displayed in the following
slides....

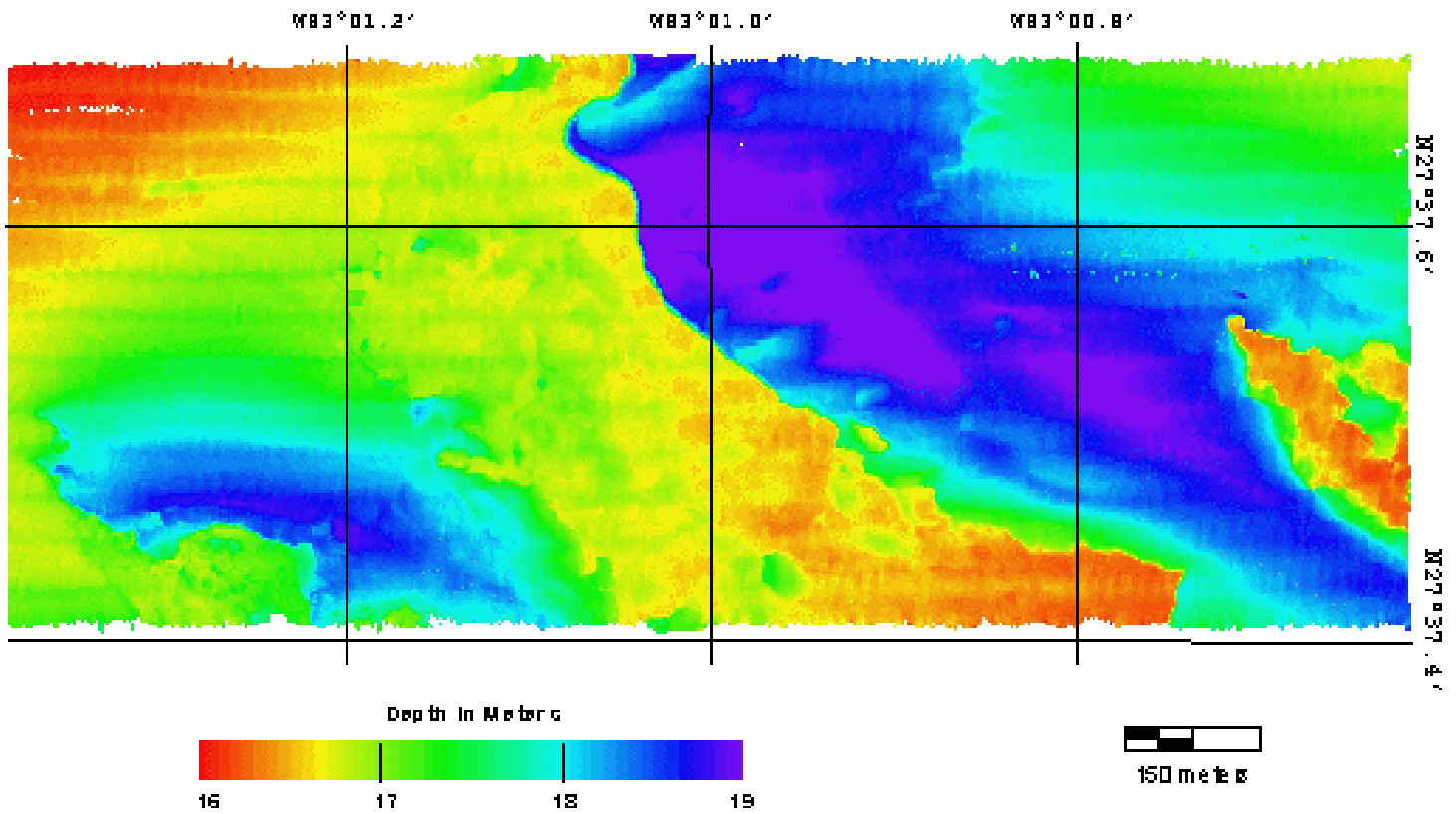
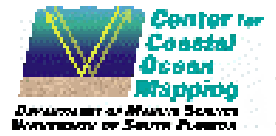
A Comparison of NOAA Bathymetry Data with the University of South Florida's EM-3000 Multibeam Bathymetry Data in Bayboro Harbor



- Depth of NOAA chart in fathoms
- NOAA information from Chart #11111
- Time to survey and process data was approximately one day

Any questions about the system or applications, contact:
 Dr. David Nair - 727-555-1897
 Brian Donahue - 727-555-1121

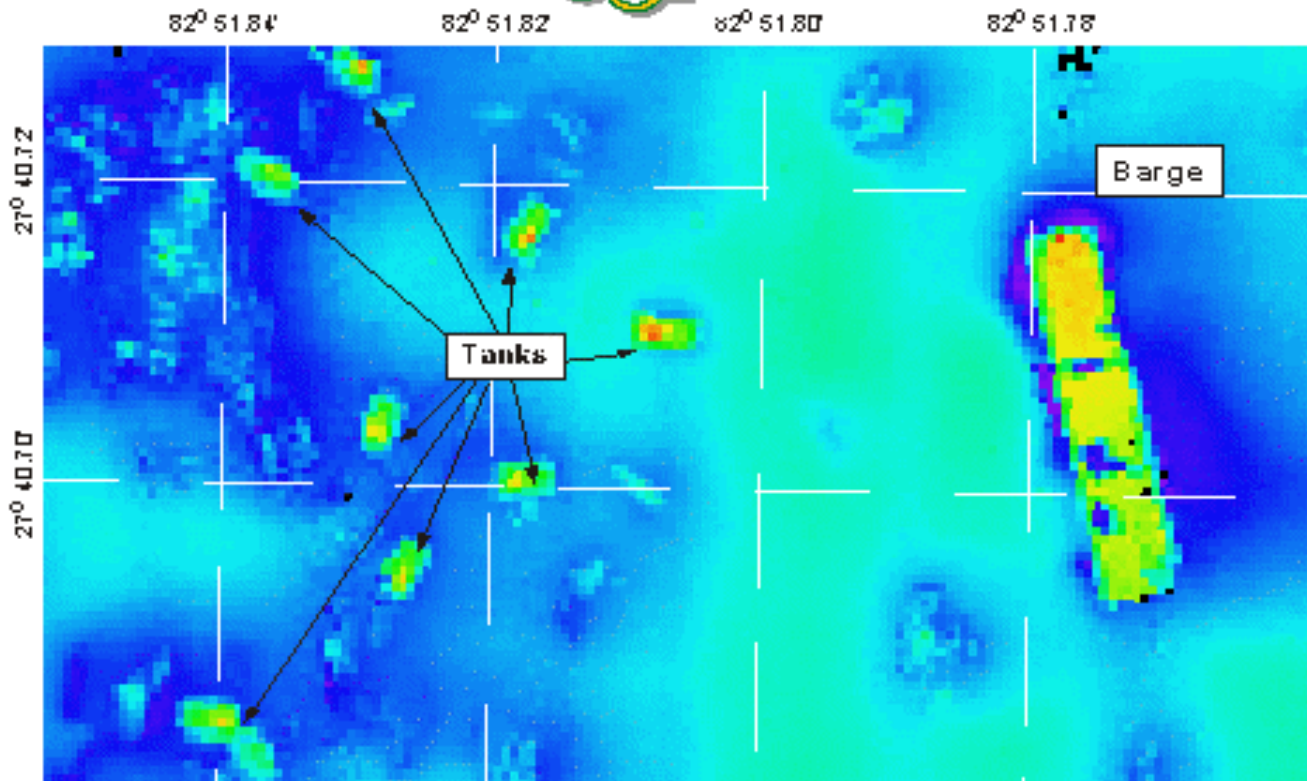
Ledge Area 15 nmi West of Tampa Bay with ~3 meters of Relief (processed at 1m by 1m)



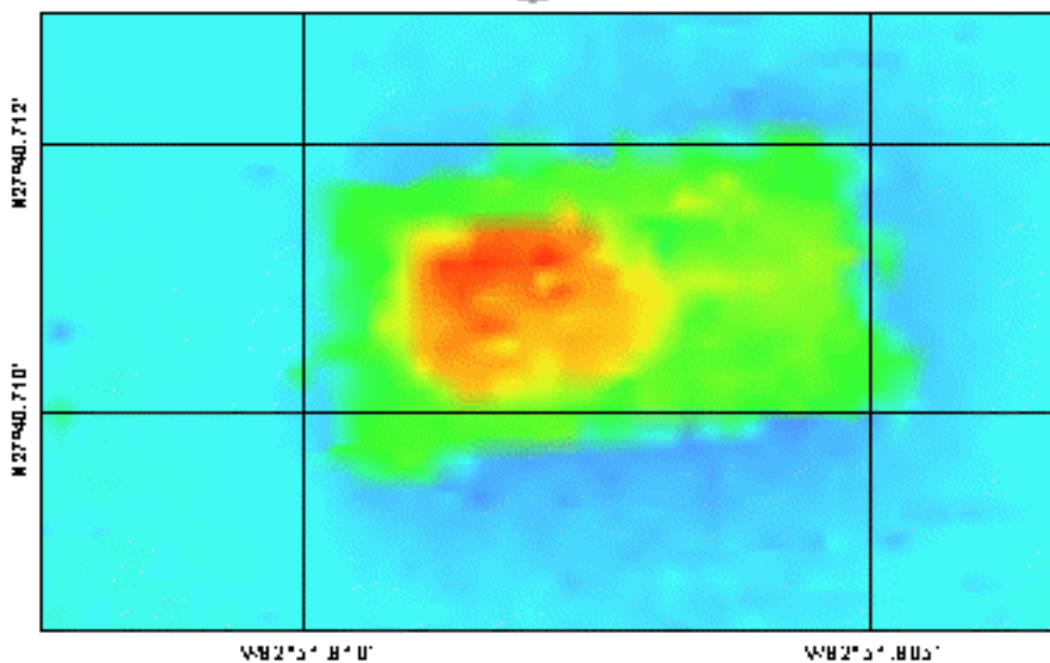


Multibeam Survey of St. Petersburg Reef

(processed at 1 m by 1 m)



Multibeam EM-3000 image of an Army M-60 Tank used in an Artificial Reef off the West Coast of Florida



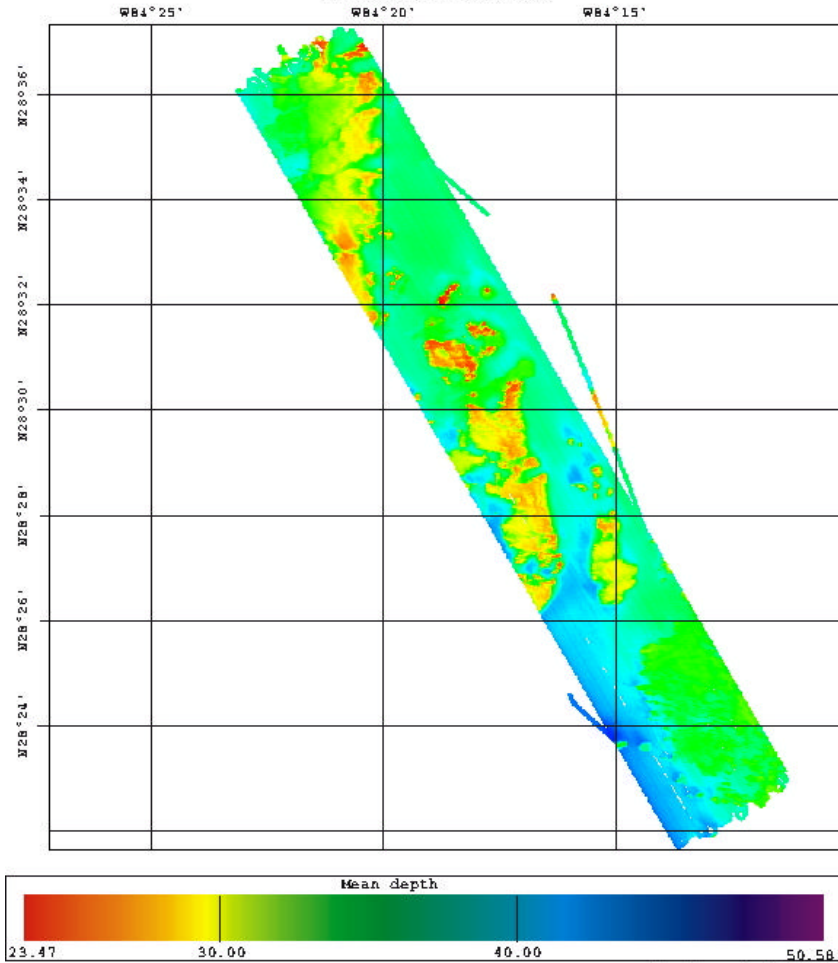
Scale = 1:75
Processed at 0.5 m / pixel



EM3000 Multibeam Bathymetry Survey of the Florida Middlegrounds



processed at 10 m per pixel
completed summer of 2000



More Images and details
available at :

<http://moontan.marine.usf.edu/>