



IHO 8th Marine SDI Working Group meeting

Ecological Marine Units

GIS Provides Better Understanding of Ocean Ecosystems

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The Problem

- The need for a way to measure the health of the ocean
- 95% of its environment remains a mystery
- Limiting the extent to which vital marine ecosystems can be managed properly
- The need to reduce the risk of critically damaging or exhausting marine resources



The Solution

- The Group on Earth Observations (GEO), commissioned a global map of EMUs to support the wise use of ocean resources and the preservation of environmental resilience.
- EMUs are globally comprehensive, quantitatively data driven and truly 3D.
 - 37 physically and chemically distinct volumetric regions where chemical properties most likely to drive ecosystem responses
 - 52 million data points from the World Ocean Atlas (NOAA)
 - Parameters gathered every 27 Km (3D grid)
 - Seafloor morphology
 - Statistical techniques grouping results into categories
- Available to all interested MPAs
- Individuals can gauge indicators of positive or negative trends and use data to make informed decisions that preserve marine environments



Many uses of EMUs

While EMUs greatly benefit communities regulating marine protected areas (MPAs), their use is also valuable for academic instruction, scientific reference, and increased understanding of the world's ocean resources.

Publicly available

Ecological Marine Unit Explorer



Welcome to the Ecological Marine Unit (EMU) Explorer!



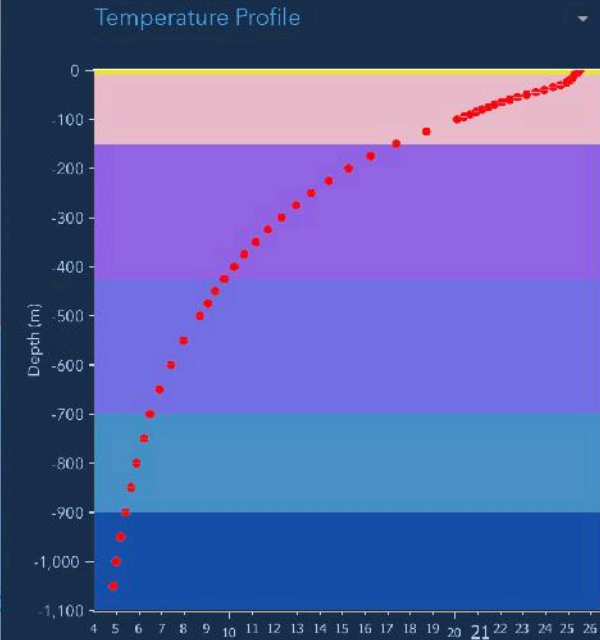
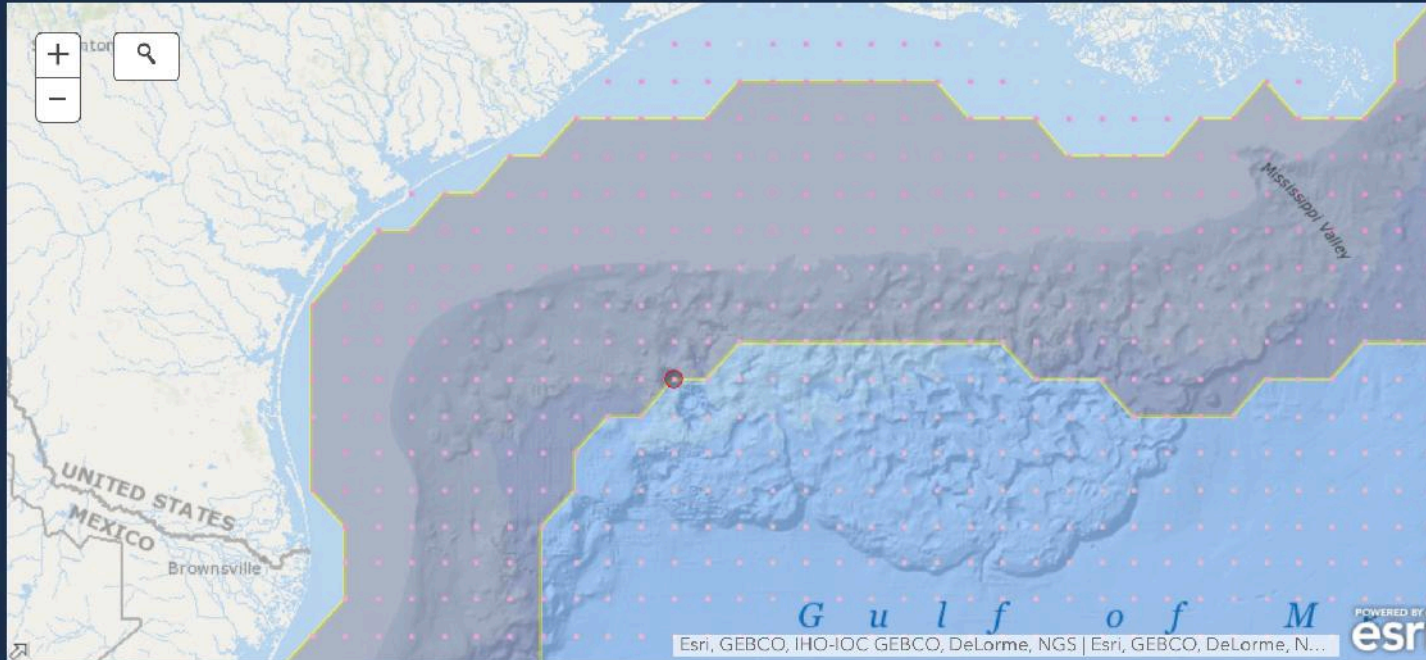
Clicking on the map will display information about ecological marine units based on a clustering analysis that was performed against NOAA's World Ocean Atlas Data. The interactive map allows you to zoom and pan and interact with the data by clicking on the map. Clicking the points on the map enables you to explore the depth (vertical) profile and associated oceanographic information for the selected location.

Please explore this fascinating ocean dataset and discover the (statistically) different clusters and what makes each one of them unique.

[More Info](#)

<http://livingatlas.arcgis.com/emu/>

Ecological Marine Unit Explorer



EMU: **24**
 Volume: **0.85%**
 Euhaline-Oxic-Warm to Very Warm-Epipelagic with (Low Nitrate-Low Silicate-Low Phosphate) Nutrients

	Temperature	Salinity	Dissolved O ₂	Nitrate	Phosphate	Silicate	Thickness	Unit Top
Minimum	18.78	34.73	1.76	0.00	0.01	0.25	5.00	-250.00
Maximum	29.54	36.26	5.51	15.01	1.40	17.58	25.00	0.00
Average	24.77	35.39	4.58	2.05	0.31	2.95	7.40	-56.42
SD	2.52	0.30	0.43	2.67	0.23	1.94	6.50	43.14

EMU	Unit Top (m)	Thickness (m)
24	0	5
21	-5	145
26	-150	275
10	-425	275
37	-700	200
36	-900	200

The Partnership

The EMU Explorer was made possible by an innovative public-private partnership led by Esri.



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Owned by: KVanGraafeiland-esristaff

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Understanding our world.