

GEO GROUP ON EARTH OBSERVATIONS

GEO BON

MBON

Marine Biodiversity Observation Network

Principal Investigators:
Frank Muller-Karger (USF)
Maria Kavanaugh, Robert Cowen (OSU)
Francisco Chavez (MBARI)
Robert Miller (UCSB)
Jeffrey Runge (UMaine)
Katrin Iken (UAF)
Enrique Montes (USF)
Emmett Duffy (SI)

BLUE PLANET Oceans and Society

GEO BON

Intergovernmental Oceanographic Commission

AmeriGEOSS

OBIS OCEAN BIODIVERSITY INFORMATION SYSTEM

MBARI

University of South Florida 1956

OSU Oregon State University College of Earth, Ocean, and Atmospheric Sciences

University of California Santa Barbara

UAF

1865 THE UNIVERSITY OF MAINE

Florida Fish and Wildlife Conservation Commission

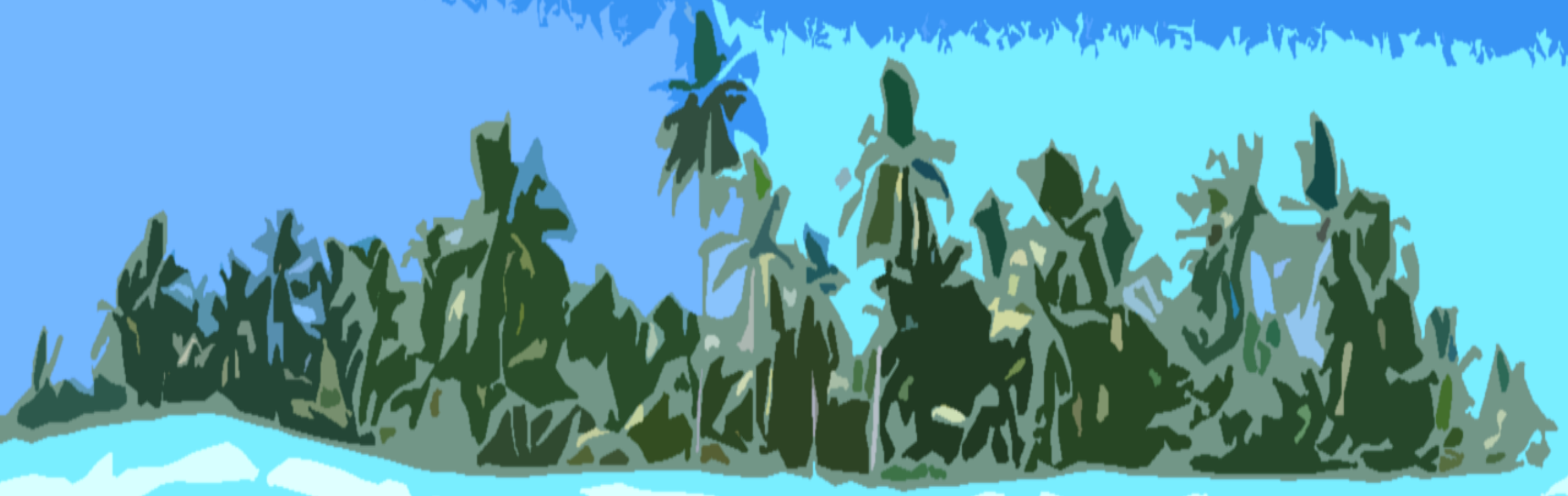
National Marine Sanctuaries

NOAA FISHERIES

NOAA NESDIS STAR Center for Satellite Applications and Research

MBON
Marine Biodiversity Observation Network

Best practices for biology and ecosystems I Ocean Variables (EOVs): the foundation of Biodiversity Variables (EBVs)



Huge investments have gone into ocean observing systems —
But there is still no systematic effort to observe life in the sea

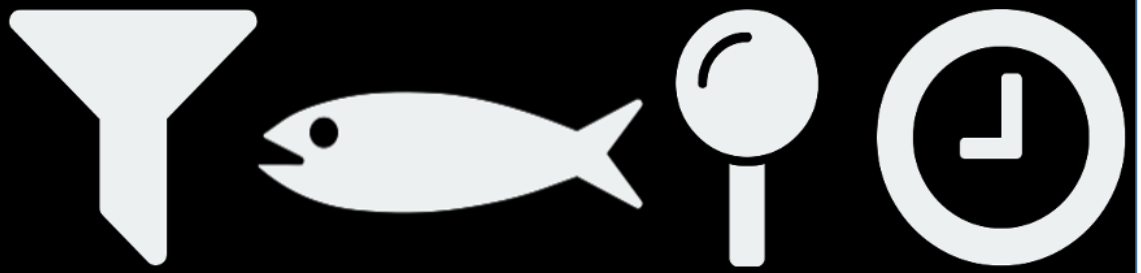
MBON Goal: Enable the effort to characterize how marine biodiversity is changing and how it affects us

MBON
Marine Biodiversity Observation Network

A collaborative NETWORK that links



Databases Datasets



Filters: Taxa Space Time

To produce:

Maps



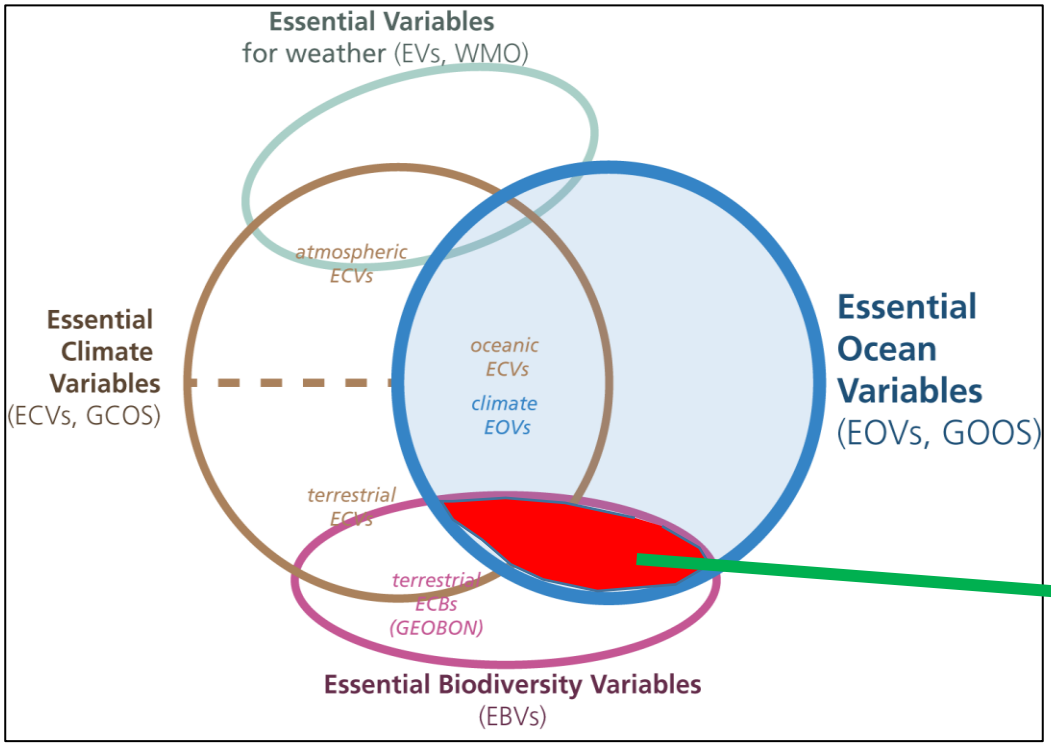
Abundance

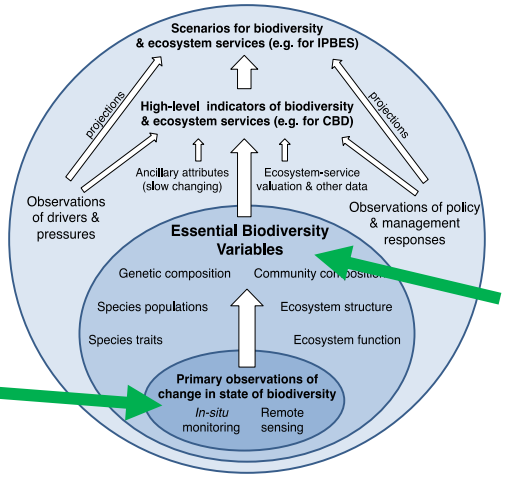


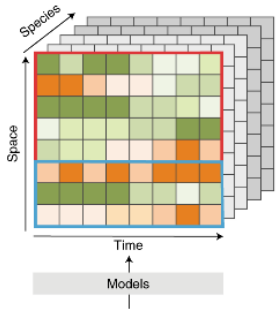
Trends



Essential Variables







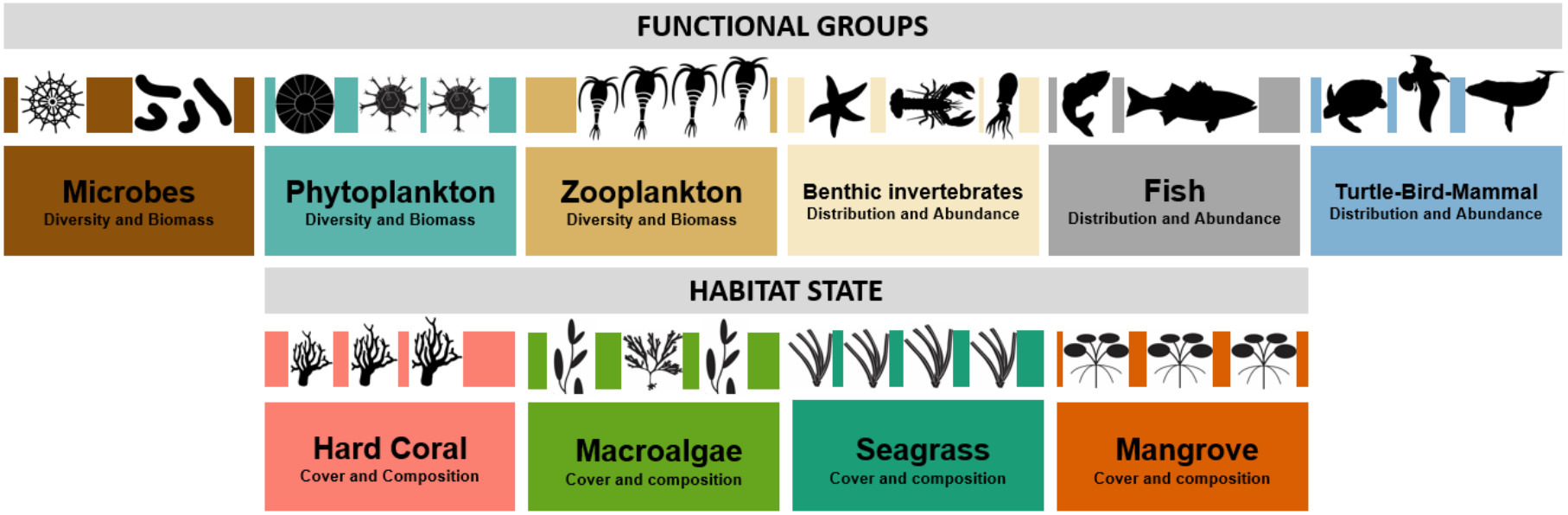
EBVs are not measured.
They are derived (multidimensional data 'cubes')

Pereira et al. (2013)
GEO BON EBVs

Framework for Ocean Observing (2012)
Global Ocean Observing System (GOOS)
Essential Ocean Variables (EOVs)

EOVs are the primary observations needed to model and build the EBVs (multidimensional data cubes)

Biology and Ecosystem Essential Ocean Variables (EOVs)



Evolving technology matrix

	Microbes/ Phyto	Zooplankton	Fish	Top Predators	Benthos, habitat forming
Optics/Imaging	X	X	X Benthic		X
Animal tracking (satellite, underwater)			X	X	
Acoustics		X active	X Active, passive	X Tags, passive	X Active, passive (noise)
Genomics	X	X	X	X	X
Platforms with samplers	AUVs, floats, moorings, satellites	AUVs, moorings	AUVs, moorings	AUVs, moorings, tags	AUVs, moorings, satellites
Data and visualization	X	X	X	X	X



Data Management

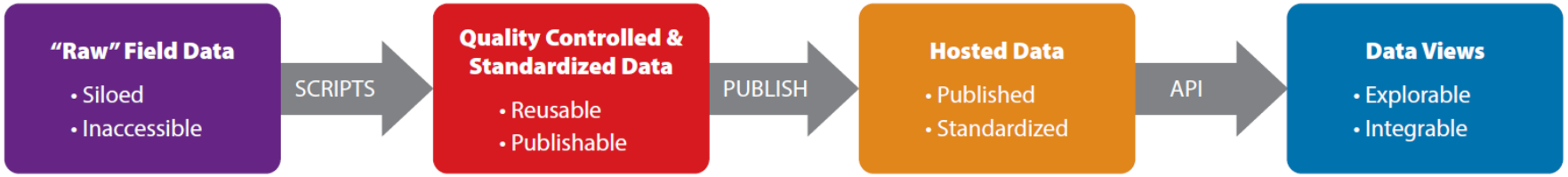
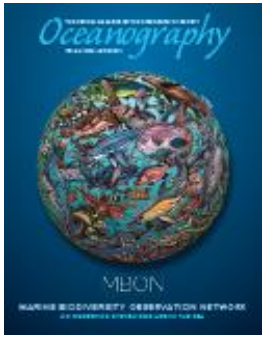
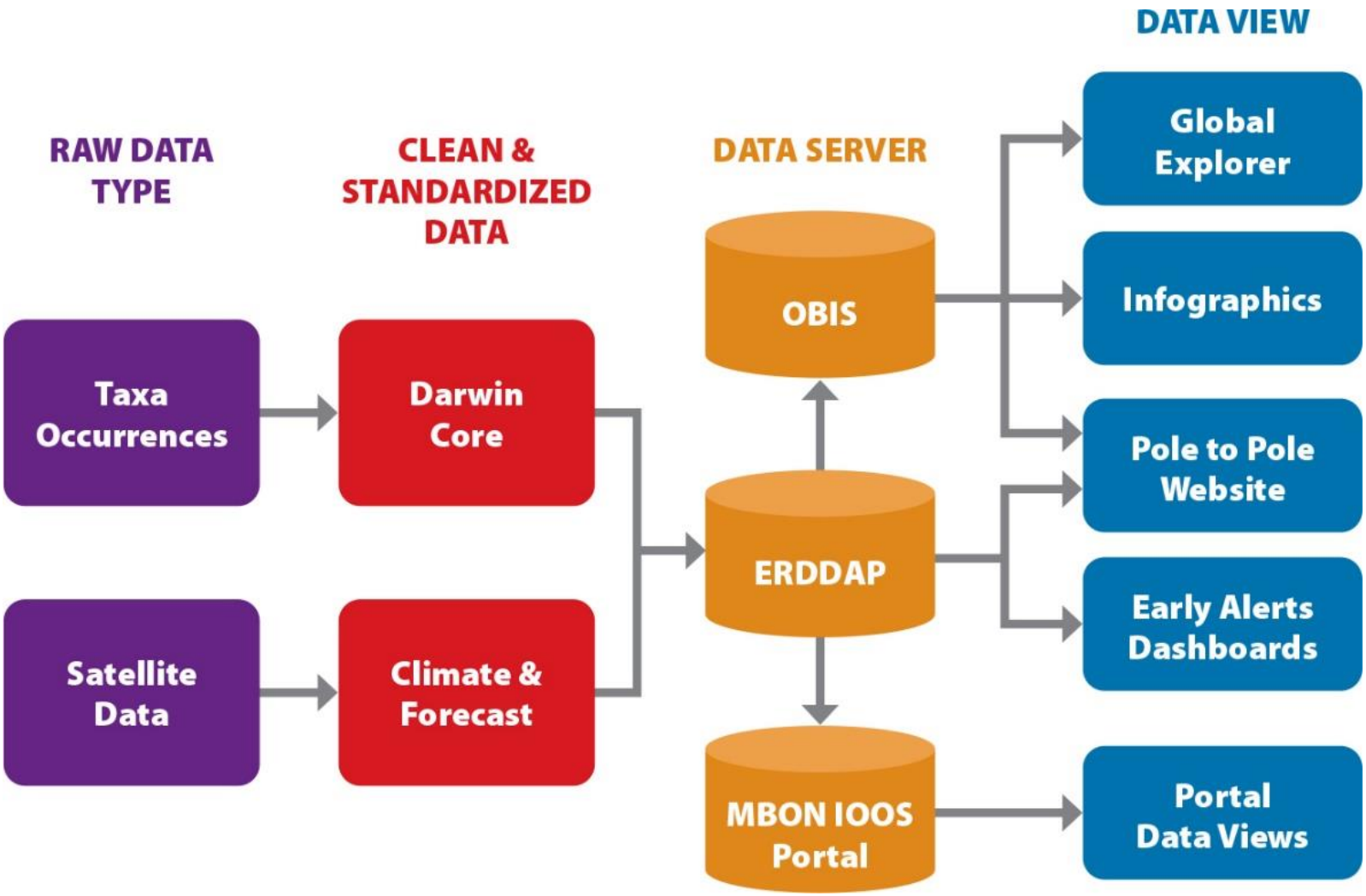


FIGURE 1. Marine Biodiversity Observation Network (MBON) data follow a generalized flow that ensures adherence to appropriate data and metadata standards and accessibility in machine readable ways for reproducibility and open access. API = Application programming interface.



Benson et al., 2021
https://doi.org/10.5670/oceanog.2021.220



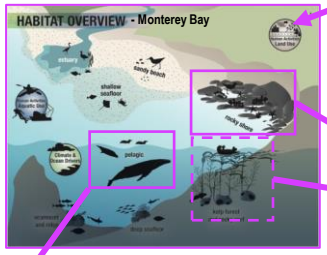
Benson et al., 2021
https://doi.org/10.5670/oceanog.2021.220

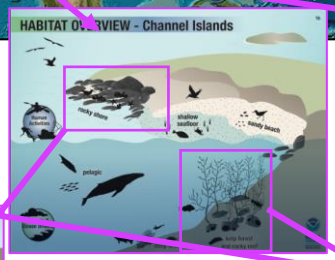
Addressing Sanctuary Needs: data tools

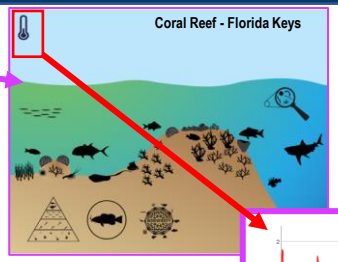
Processes and products being shared across programs and regions



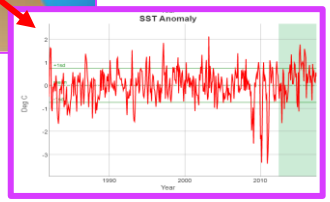
Collaboration between sanctuaries, IEA, MBON expanding to Gulf of Mexico



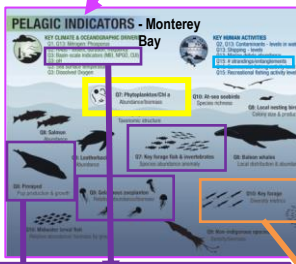




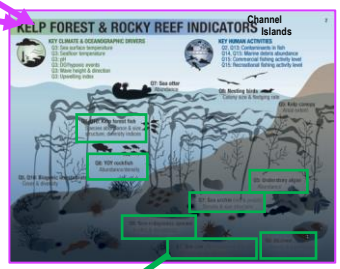
Currently conceptual models and data products under Development by Sanctuaries MBON

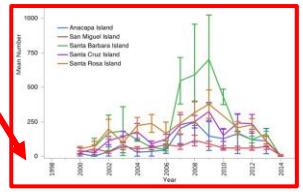


Gulf of Mexico IEA meeting with FKNMS, including Sanctuaries MBON partners, to expand collaboration apply IEA products and processes to the sanctuary.



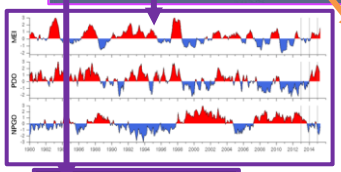


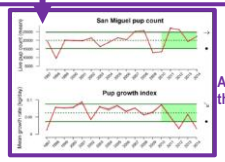




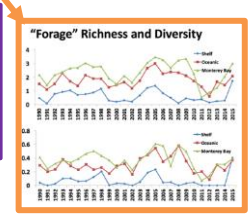
MARINe long-term monitoring data



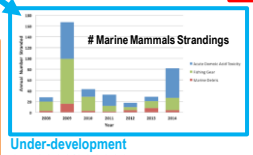




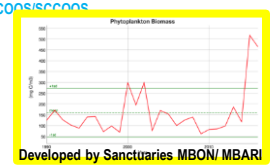
Available through CCIEA



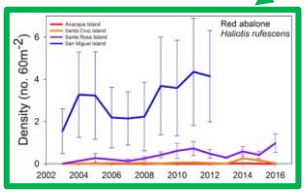
Developed by Sanctuaries MBON



Under-development CeNCOOS/SCCOOS



Developed by Sanctuaries MBON/ MBARI



PISCO / CINP / LTER data

Collaboration of IEA with

MBON Marine Biodiversity Observation Network

U.S. MBON PORTAL

Thank You!

Frank Muller-Karger
carib@usf.edu

http://marinebon.org

#MarineLife2030

https://marinelife2030.org/

UNIVERSITY OF SOUTH FLORIDA
College of MARINE SCIENCE