

# A global collaboration for the worldwide mapping of marine zooplankton biomass and production

Lidia Yebra (IEO) & Todd D. O'Brien (NOAA)

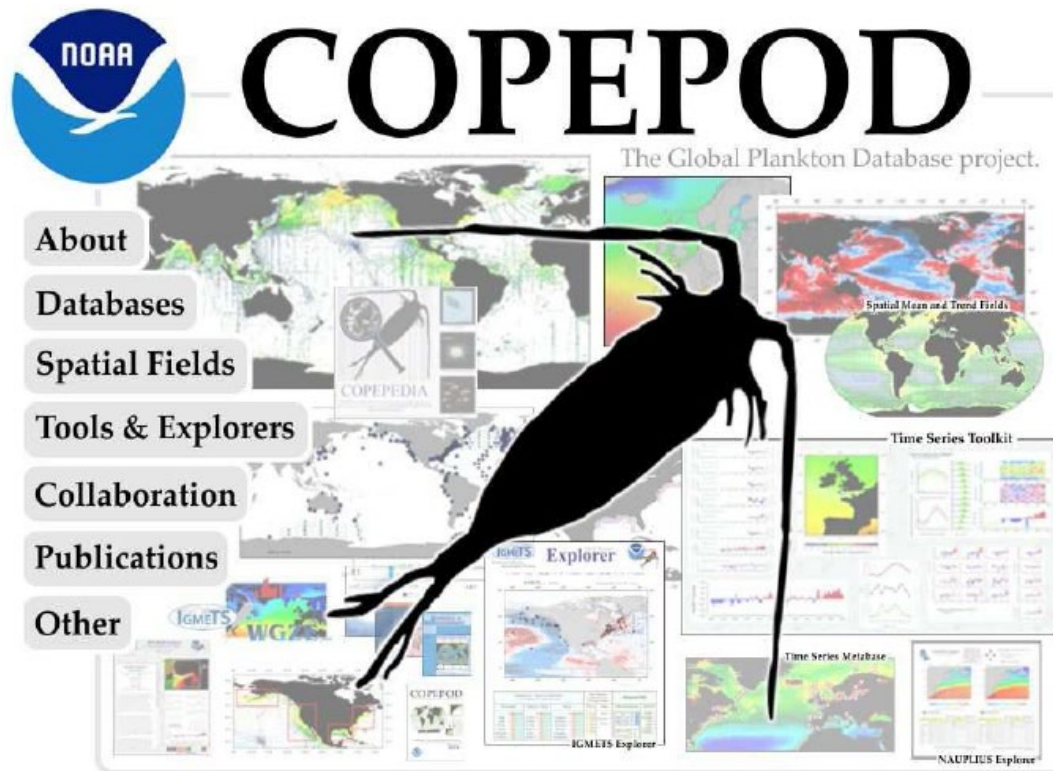
# PICES/ICES collaborative research initiative:

Toward regional to global measurements and comparisons of zooplankton production using existing data sets

- Expand WG37 to become a **global collaboration** between PICES, ICES, the International Group for Marine Ecological Time Series (IGMETS), MedZoo and COPEPOD
- **Worldwide mapping of marine zooplankton biomass and production**
- Are there enough **tools and data available?**

# COPEPOD

- COPEPOD is the **C**oastal & **O**ceanic **P**lankton **E**cology, **P**roduction, and **O**bservation **D**atabase  
<https://www.st.nmfs.noaa.gov/plankton/>
- Since 2004, provides data analytical and visualization support to ICES, SCOR and IOC-UNESCO plankton working groups.

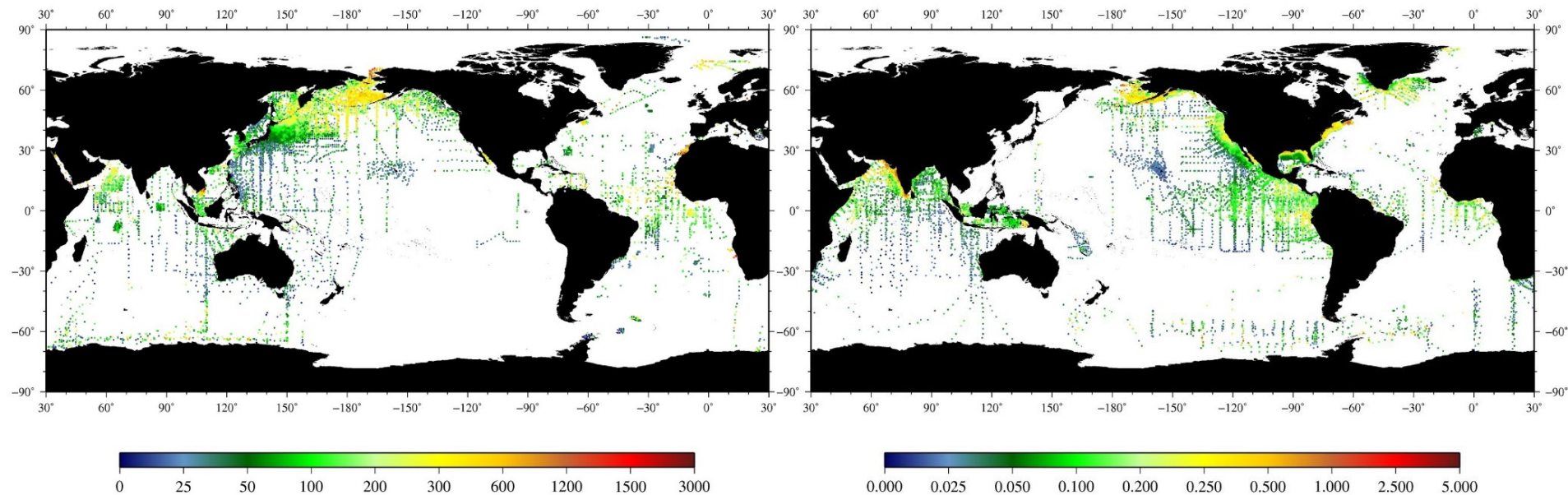


The image shows the COPEPOD logo, which consists of the NOAA logo (a blue circle with a white wave and the word "NOAA" in white) to the left of the word "COPEPOD" in large, bold, black capital letters. Below the logo is a navigation menu with several buttons: "About", "Databases", "Spatial Fields", "Tools & Explorers", "Collaboration", "Publications", and "Other". To the right of the menu is a large, black silhouette of a copepod, a small aquatic crustacean. The background of the slide is a collage of various data visualizations, including world maps, charts, and graphs, representing the data and tools available in the COPEPOD database. The text "The Global Plankton Database project." is visible in the upper right area of the collage.

COPEPOD is the *Coastal and Oceanic Plankton Ecology, Production, and Observation Database*.

# COPEPOD “Total Biomass” Data

- COPEPOD has over 161,000 net tows of “total zooplankton biomass” data from ongoing and historical surveys and cruises. Most of these are not “time series”, but still useful for understanding spatial biomass distributions.
- The two most common sampling methods are “Total Wet Mass” and “Total Displacement Volume”.



Annual Average zooplankton Total Wet Mass (mg m<sup>-3</sup>)

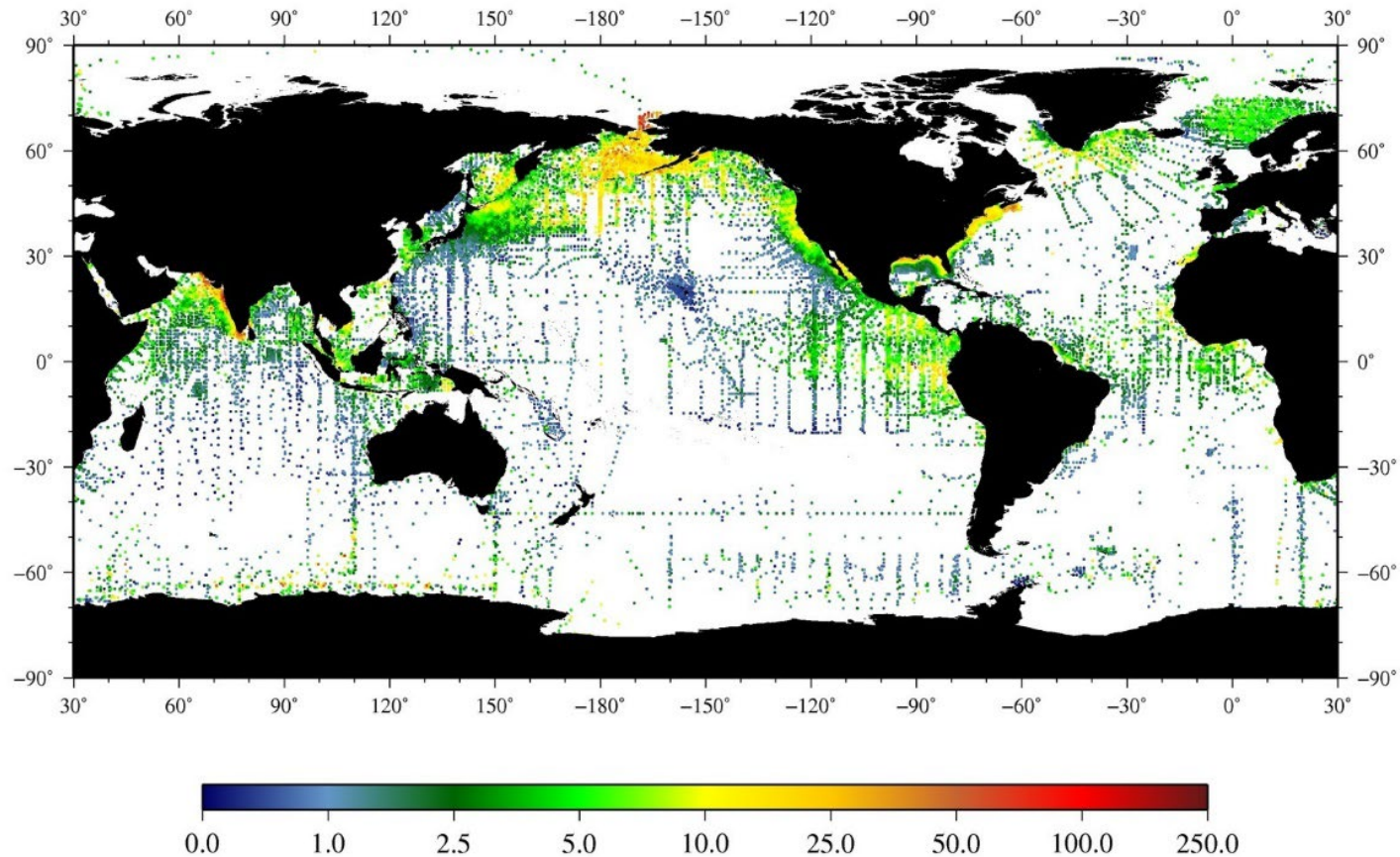
Source: COPEPOD-2012 Depth-layer: 0-200 meters Time-period: All seasons (annual)

Annual Average zooplankton Total Displacement Volume (ml m<sup>-3</sup>)

Source: COPEPOD-2012 Depth-layer: 0-200 meters Time-period: All seasons (annual)

# COPEPOD “Total Biomass” Data

- COPEPOD also has both type of data converted to “Total Carbon Mass”, using published conversion equations, increasing spatial coverage.

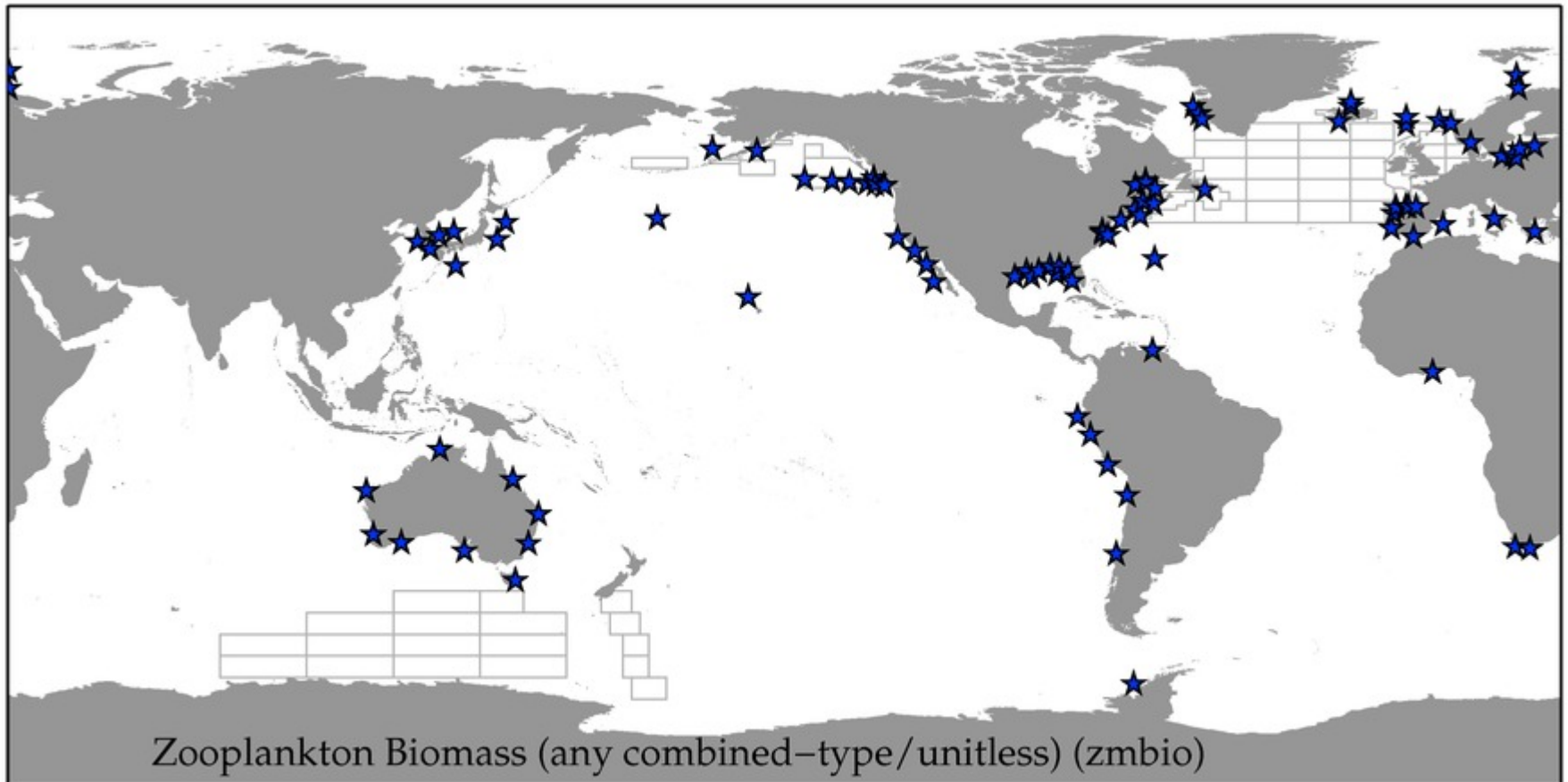


Annual Average zooplankton Total Carbon Mass ( $\text{mg C m}^{-3}$ )

Source: COPEPOD-2012    Depth-layer: 0-200 meters    Time-period: All seasons (annual)

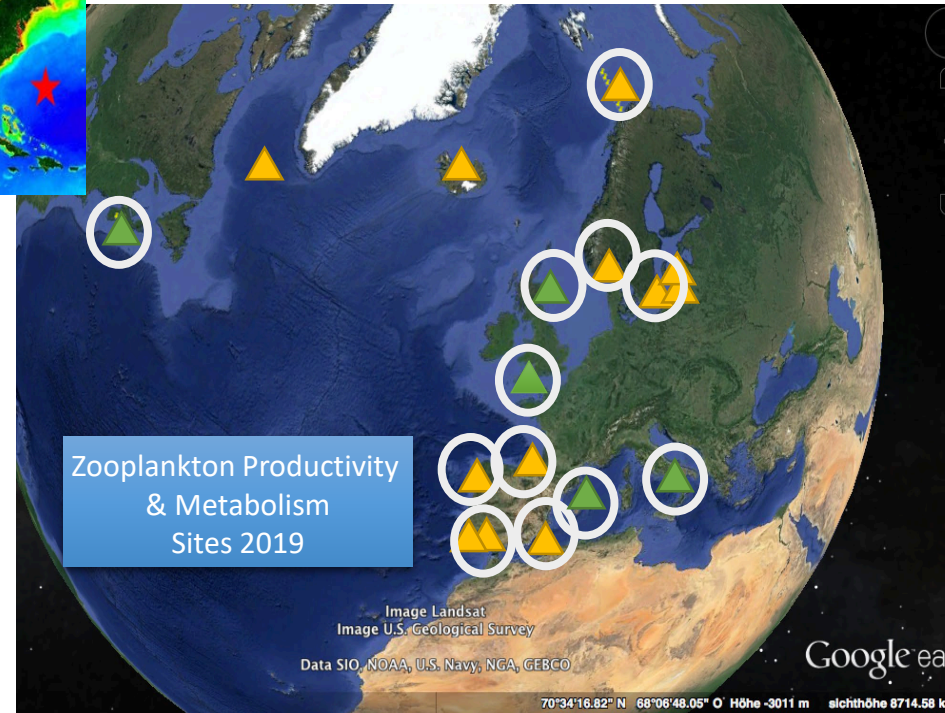
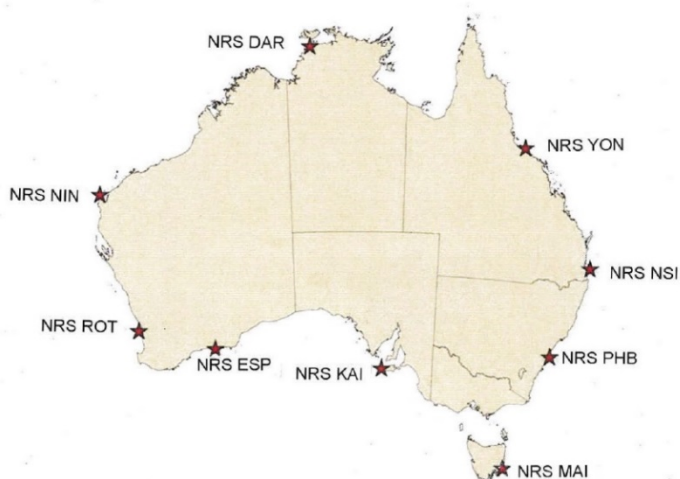
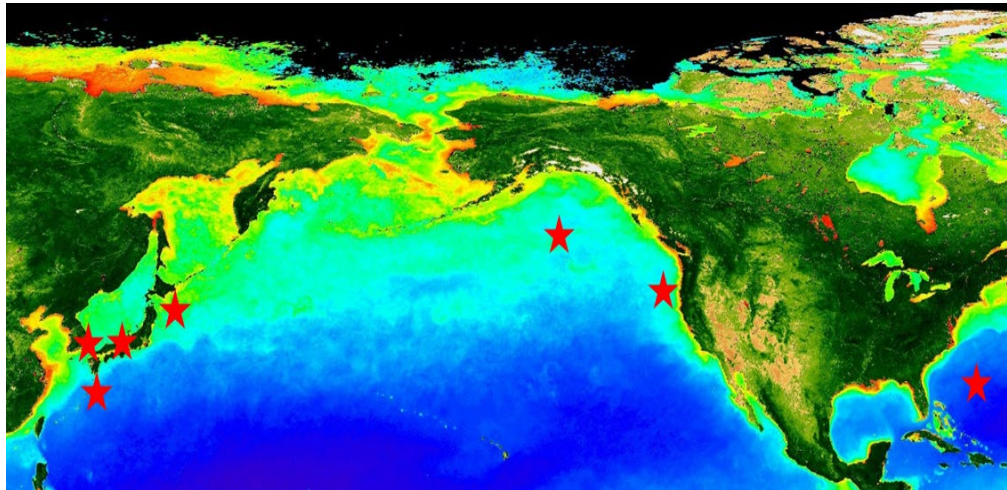
# COPEPOD “TS Biomass and Abundance” Data

- We also have around 96 zooplankton “total biomass” and “total abundance” time series (ranging from 5 to 50 years), from ICES-WGZE (*North Atlantic*) and/or IGMETS (*all oceans*).
- Some data owners need to be invited, as not all data are public.



# Ongoing regional collaborations

- PICES WG37 time series -> production (Kobari et al.)
- ICES WGZE time series -> production (Postel et al.)
- CSIRO/IMOS/NRS time series (Richardson et al.)



# Global collaboration

What tools can be developed to support the goal of a worldwide mapping of marine zooplankton biomass and production?

- *Visualization tools*: interactive website for local-regional-global mapping of biomass and/or production estimates
- *Analytical tools*:
  - Possibility of incorporating ZP production rates into COPEPOD
  - Calculation of 'individual biomass' using total biomass and total abundance data provided by users
  - Suite of equations (~50 approaches) may be applied to existing biomass data to estimate production
  - Possibility to incorporate field and/or satellite data to models if needed



# Thank you!

**Got interested? Please contact us**

***Lidia*** [lidia.yebra@ieo.es](mailto:lidia.yebra@ieo.es)

***Todd*** [todd.obrien@noaa.gov](mailto:todd.obrien@noaa.gov)