

DISCOVER OCEAN TIME SERIES

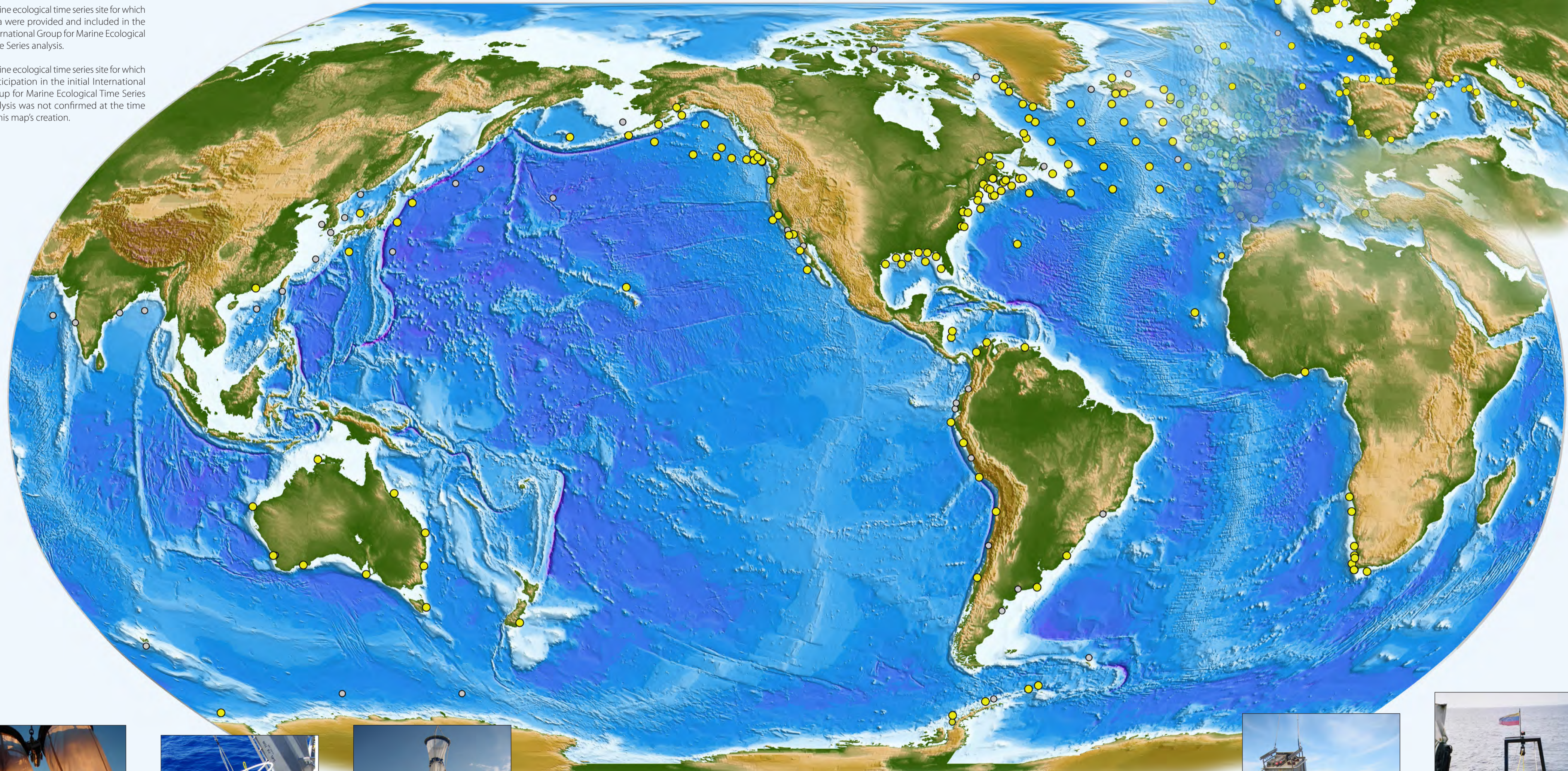


Ship-based biogeochemical and ecological time series are one of the most valuable tools to characterize and quantify ocean ecosystems. These programmes continuously provided major breakthroughs in understanding ecosystem variability, allow quantification of the ocean carbon cycle, and help understand the processes that link biodiversity, food webs, and changes in services that benefit human societies. A quantum jump in regional and global ocean ecosystem science can be gained by aggregating observations from individual time series that are distributed across different oceans and which are managed by different countries. The collective value of these data is greater than that provided by each time series individually. However, maintaining time series requires a commitment by the science community and sponsor agencies.

The importance of continued sampling by existing marine time series is now highlighted by the Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO). The International Group for Marine Ecological Time Series (IGMETS) seeks to aggregate time series dispersed around the world in an effort to augment the observing power to look at changes within different ocean regions, to explore plausible reasons and connections at a global level, and to highlight any locations of especially large changes that may be of special importance.

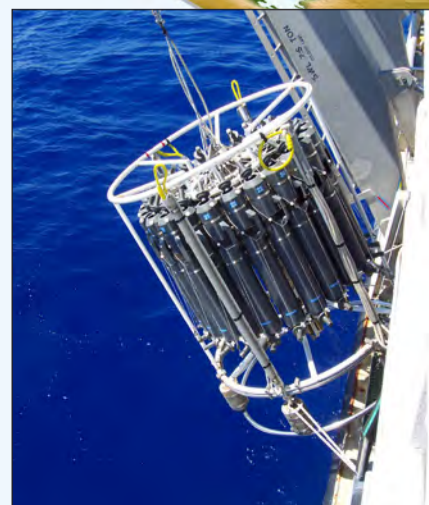
Key:

- Marine ecological time series site for which data were provided and included in the International Group for Marine Ecological Time Series analysis.
- Marine ecological time series site for which participation in the initial International Group for Marine Ecological Time Series analysis was not confirmed at the time of this map's creation.



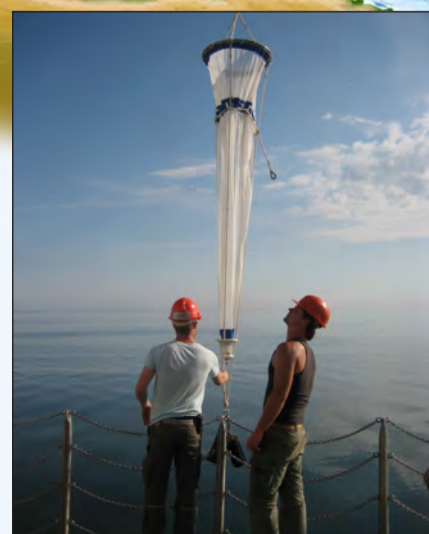
Crew of the NOAA ship Belle M. Shimada recovers the Bongo Net during a CalCOFI cruise.

© James R. Wilkinson/SIO-CalCOFI



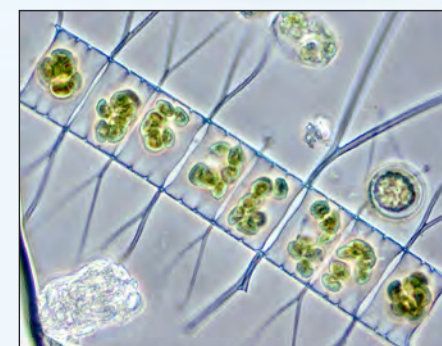
CTD sensor equipped with water sampling rosette deployed at the BATS station.

© Digna Rueda



WP2 plankton net deployed in the Baltic Sea.

© Mikken Isensee



Chaetoceros decipiens.

© Bill Li



Scientific research vessel Veliger II returning from regular sampling at the Ubatuba station.



Limacina retroversa.

© Nancy Copley



Recovery of a multi-net for plankton analysis in the Baltic Sea during a cyanobacteria bloom.

© Mikken Isensee



Sediment trap deployment at the CARIACO station.

© USF

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The list is sorted by major ocean basins, following the ocean conveyor belt. Each time series site, which is marked with a circle, is listed separately. A unique identifier for each site can be used to directly access further information about it at <http://igmets.net/sites/>.

The list provides the following information:
Name of time series site (Regional Sea); Country conducting the regular measurements – unique identifier code.

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Arctic Ocean

- Norwegian Sea transects; Faroe Islands - fo-30102
- Selvogsbanki transect (southern Iceland); Iceland - is-30102
- Siglunes transect (northern Iceland); Iceland - is-30101
- Fugløy-Bjørnøya transect (western Barents Sea); Norway - no-50201
- Svinøy transect (Norwegian Sea); Norway - no-50101
- Vardø-Nord transect (central Barents Sea); Norway - no-50301

Atlantic Ocean

North Atlantic Ocean

Baltic Sea

- Pärnu Bay Time Series (Gulf of Riga, Baltic Sea); Estonia - ee-10101
- SYKE Bothnian Bay monitoring (northern Baltic Sea); Finland - fi-30101
- SYKE Bothnian Sea monitoring (northern Baltic Sea); Finland - fi-30102
- SYKE Åland Sea (F64) (Baltic Sea); Finland - fi-30102-003
- SYKE Gulf of Finland monitoring (Baltic Sea); Finland - fi-30103
- SYKE Baltic Proper monitoring (central Baltic Sea); Finland - fi-30104
- Tallinn Bay Time Series (Gulf of Finland, Baltic Sea); Estonia - ee-10201
- Arkona Basin (southern Baltic Sea); Germany - de-30101
- Boknis Eck Time Series Station (southwestern Baltic Sea); Germany - de-10201
- Bornholm Basin (southern Baltic Sea); Germany - de-30102
- Eastern Gotland Basin (southern Baltic Sea); Germany - de-30104
- Mecklenburg Bight (southern Baltic Sea); Germany - de-30103
- Eastern Gotland Basin - Station 37 (Baltic Sea); Latvia - lv-10201
- Station 121 -Gulf of Riga (Baltic Sea); Latvia - lv-10101
- Bornholm Basin (southern Baltic Sea); Poland - pl-30102
- Gdansk Basin (southern Baltic Sea); Poland - pl-30101
- Pomeranian Bay (southern Baltic Sea); Poland - pl-30103
- Southern Gotland Basin (southern Baltic Sea); Poland - pl-30104
- SMHI Å17 (Kattegat, Baltic Sea); Sweden - se-50101
- SMHI Anholt East (Kattegat, Baltic Sea); Sweden - se-50102
- SMHI Släggö (Kattegat, Baltic Sea); Sweden - se-50103

Western North Atlantic Ocean

- AR7W Labrador Shelf; Canada - ca-50201-001
- AR7W Labrador Slope; Canada - ca-50201-001AR7W central Labrador Sea; Canada - ca-50201-003
- AR7W central Labrador Sea; Canada - ca-50201-004
- AR7W Greenland Shelf; Canada - ca-50201-005
- AZMP Anticosti Gyre (Gulf of St. Lawrence); Canada - ca-50701
- AZMP Gaspé Current (Gulf of St. Lawrence); Canada - ca-50702
- AZMP Rimouski (Gulf of St. Lawrence); Canada - ca-50703
- AZMP Shediac Valley (Gulf of St. Lawrence); Canada - ca-50704
- AZMP Eastern Scotian Shelf; Canada - ca-50802
- AZMP Central Scotian Shelf; Canada - ca-50801
- AZMP Western Scotian Shelf; Canada - ca-50803
- AZMP Halifax Line 2 (Scotian Shelf); Canada - ca-50101
- AZMP Prince 5 (Bay of Fundy); Canada - ca-50102
- Bedford Basin Monitoring Program (BBMP); Canada - ca-50401
- St. Andrews Biological Station Phytoplankton Time Series - Bay of Fundy; Canada - ca-50501
- Station 27 (Newfoundland Shelf); Canada - ca-50601

- Fyllas Bank (Greenland) - S3; Denmark - dk-10103
- Hellefiske Bank (Greenland) - S1; Denmark - dk-10101
- Sukkertop Bank (Greenland) - S2; Denmark - dk-10102
- SAHFOS Continuous Plankton Recorder surveys – (multiple); United Kingdom - uk-40101
- Bermuda Atlantic Time Series; United States of America - us-10101
- Booth Bay – Maine; United States of America - us-10401
- Chesapeake Bay – lower (Virginia); United States of America - us-30102
- Chesapeake Bay – upper (Maryland); United States of America - us-30101
- EcoMon - Gulf of Maine; United States of America - us-50101
- EcoMon - Georges Bank; United States of America - us-50102
- EcoMon - Southern New England; United States of America - us-50103
- EcoMon - Mid-Atlantic Bight; United States of America - us-50104
- EcoMon - Gulf of Maine CPR Transects; United States of America - us-50105
- EcoMon - Mid-Atlantic Bight CPR Transects; United States of America - us-50106
- Narragansett Bay; United States of America - us-30201
- Neuse River Estuary; United States of America - us-30301
- Pamlico Sound; United States of America - us-30302
- SEAMAP: Texas/Louisiana Shelf WEST (Gulf of Mexico); United States of America - us-50201
- SEAMAP: Texas/Louisiana Shelf EAST (Gulf of Mexico); United States of America - us-50203
- SEAMAP: Mississippi/Alabama Shelf (Gulf of Mexico); United States of America - us-50204
- SEAMAP: Florida Shelf (Gulf of Mexico); United States of America - us-50206
- SEAMAP: Northeast Gulf of Mexico; United States of America - us-50208
- SEAMAP: Northwest Gulf of Mexico; United States of America - us-50209
- CARIACO Ocean Time Series (Gulf of Mexico; Caribbean Sea); Venezuela - ve-10101



Plankton sampling using a Bongo Net.

Eastern North Atlantic Ocean

- Faroe Islands - Central Shelf; Faroe Islands - fo-30104
- Faroe Islands Shelf; Faroe Islands - fo-30101
- Helgolander Roads; Germany - de-30201
- Wadden Sea (southeast North Sea); Germany - de-10101
- East Coast Ireland; Ireland - ie-30101
- Northwest Coast Ireland; Ireland - ie-30102
- South Coast Ireland; Ireland - ie-30103
- Southwest Coast Ireland; Ireland - ie-30104
- West Coast Ireland; Ireland - ie-30105
- Cypris Station - Isle of Man; Isle of Man - im-10101
- Arendal Station 2 (northern Skagerrak); Norway - no-50401
- Gravelines Station (English Channel); France - fr-50201
- REPHY Antifer Ponton Petrolier (English Channel); France - fr-50101
- REPHY At So (English Channel); France - fr-50102
- REPHY Donville (English Channel); France - fr-50103
- REPHY Pen al Lann (English Channel); France - fr-50104
- REPHY Point 1 SRN Boulogne (English Channel); France - fr-50105
- REPHY Kervel (Bay of Biscay); France - fr-50106
- REPHY Le Cornard (Bay of Biscay); France - fr-50107
- REPHY Men er Roue (Bay of Biscay); France - fr-50108
- REPHY Ouest Loscollo (Bay of Biscay); France - fr-50109
- REPHY Teychan Bis (Bay of Biscay); France - fr-50110
- Cascais Bay; Portugal - pt-30101
- Guadiana Lower Estuary; Portugal - pt-30201
- Guadiana Upper Estuary; Portugal - pt-30301
- Bilbao 35 Time Series (southern Bay of Biscay); Spain - es-30101-001

- AZTI Station D2 (southern Bay of Biscay); Spain - es-30201
- Nervion River Estuary (southern Bay of Biscay); Spain - es-30401
- RADIALES Santander St. 4; Spain - es-50101
- RADIALES A Coruña Station 2; Spain - es-50102
- RADIALES Gijón/Xixón Station 2; Spain - es-50103
- RADIALES Vigo St. 3; Spain - es-50104
- RADIALES Cudillero St. 2; Spain - es-50105
- Urdaibai 35 Time Series (southern Bay of Biscay); Spain - es-30101-002
- Dove Station; United Kingdom - uk-30301
- Loch Ewe (northwest Scotland); United Kingdom - uk-30102
- Loch Maddy (Western Isles, Scotland); United Kingdom - uk-30103
- Mill Port (western Scotland); United Kingdom - uk-30104
- Plymouth L4 (western English Channel); United Kingdom - uk-30201
- SAHFOS Continuous Plankton Recorder surveys – (multiple); United Kingdom - uk-40101
- Scalloway - Shetland Isles; United Kingdom - uk-30105
- Scapa Bay – Orkney (Scotland); United Kingdom - uk-30106
- Stonehaven (northwest North Sea); United Kingdom - uk-30101



Zooplankton community.

Mediterranean Sea

- PhytoCly (Mediterranean Sea); Belgium - be-10101
- Kaštela Bay (Mediterranean Sea); Croatia - hr-10102
- Stoniča (Mediterranean Sea); Croatia - hr-10101
- North Western Mediterranean Sea Zooplankton Time Series - Villefranche Point B (Mediterranean Sea); France - fr-10101
- REPHY Diana Centre (Mediterranean Sea); France - fr-50111
- REPHY Lazaret A (Mediterranean Sea); France - fr-50112
- REPHY Parc Leucate 2 (Mediterranean Sea); France - fr-50113
- REPHY Villefranche (Mediterranean Sea); France - fr-50114
- Thau Lagoon Time Series (Mediterranean Sea); France - fr-10201
- Saronikos S11 (Mediterranean Sea); Greece - gr-10101
- Gulf of Naples LTER-MC (Mediterranean Sea); Italy - it-30101
- Gulf of Trieste LTER C1 (Mediterranean Sea); Italy - it-30201
- Gulf of Trieste (Mediterranean Sea); Slovenia - si-10101
- Blanes Bay (Mediterranean Sea); Spain - es-30301
- IEO Málaga Bay (Mediterranean Sea); Spain - es-50301
- IEO Mallorca Balears Station (Mediterranean Sea); Spain - es-50201

South Atlantic Ocean

Eastern South Atlantic Ocean

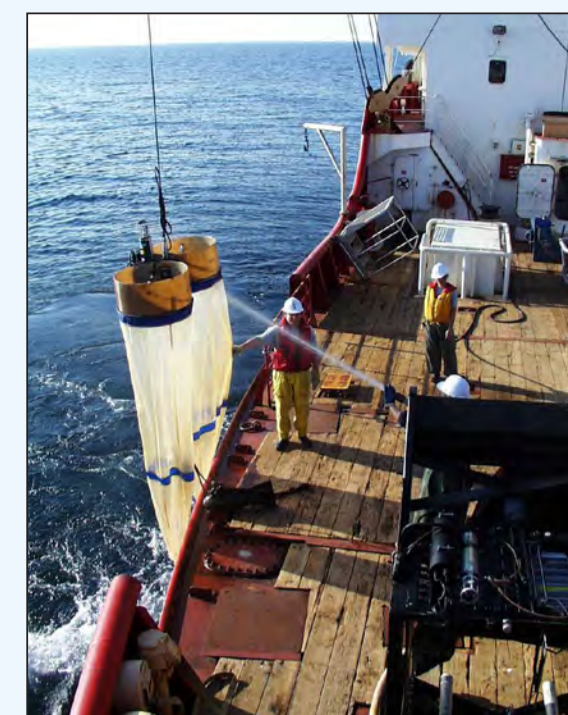
- Gulf of Guinea (eastern Equatorial Atlantic Ocean); Ghana - gh-10101
- Namibia 20°S (eastern Equatorial Atlantic Ocean); Namibia - na-10102
- Walvis Bay Time Series; Namibia - na-10101
- Danger Point Monitoring Line; South Africa - za-30201
- SBCTS Central West Coast; South Africa - za-30102
- SBCTS North West Coast; South Africa - za-30101
- SBCTS South West Coast; South Africa - za-30103
- SBCTS Western Agulhas Bank; South Africa - es-30301
- St Helena Bay; South Africa - za-10101

Western South Atlantic Ocean

- EPEA - Estacion Permanente de Estudios Ambientales; Argentina - ar-10201
- Puerto Cuatros; Argentina - ar-10101
- Patos Lagoon Estuary (PLE); Brazil - br-10101

Antarctic Ocean

- Japanese Antarctic Research Expedition (JARE) eastern surveys; Japan - jp-30301
- Japanese Antarctic Research Expedition (JARE) western surveys; Japan - jp-30302
- KRILLBASE – Antarctic Peninsula & western Scotia Sea; multiple countries – uk-30402
- KRILLBASE – Eastern Scotia Sea & South Georgia; multiple countries – uk-30403
- KRILLBASE – Indian Ocean Sector; multiple countries – uk-30405



Plankton sampling using a Bongo Net.

Indian Ocean

- IMOS National Reference Station – Darwin (northern Australia); Australia - au-50101-002
- IMOS National Reference Station – Esperence (southern Australia); Australia - au-50101-003
- IMOS National Reference Station - Kangaroo Island (southern Australia); Australia - au-50101-004
- IMOS National Reference Station – Ningaloo (western Australia); Australia - au-50101-006
- IMOS National Reference Systems - Rottneest Island (southwestern Australia); Australia - au-50101-008
- Mossel Bay Monitoring Line; South Africa - za-30202
- Swan River Estuary (southwestern Australia); Australia - au-10101



Laboratory equipped for chemical and biological analysis/sample preparation on board of the FS Heincke.

Pacific Ocean

South Pacific Ocean

Western South Pacific Ocean

- IMOS National Reference Station - Port Hacking (southeastern Australia); Australia - au-50101-001
- IMOS National Reference Station - Maria Island (Tasmania); Australia - au-50101-005
- IMOS National Reference Station - North Stradbroke Island (eastern Australia); Australia - au-50101-007
- IMOS National Reference Stations - Yongala (northeastern Australia); Australia - au-50101-009
- Munida Time Series; New Zealand - nz-10101

Eastern South Pacific Ocean

- Bay of Mejillones (northern Chile); Chile - cl-30102
- Concepcion Station 18 (southern Chile); Chile - cl-30101
- IMARPE Region A (northern Humboldt Current); Peru - pe-30101
- IMARPE Region B (northern Humboldt Current); Peru - pe-30102
- IMARPE Region C (northern Humboldt Current); Peru - pe-30103

North Pacific Ocean

Eastern North Pacific Ocean

- Line P and OWS Papa; Canada - ca-50901
- Northern Vancouver Island; Canada - ca-50301
- Southern Vancouver Island; Canada - ca-50302
- IMECOCAL - Northern Baja; Mexico - mx-30101

- IMECOCAL - Southern Baja; Mexico - mx-30102
- Pacific CPR - Southern Bering Sea; multiple countries - uk-40201-001
- Pacific CPR - Aleutian Shelf; multiple countries - uk-40201-002
- Pacific CPR - Western Gulf of Alaska; multiple countries - uk-40201-003
- Pacific CPR - Alaskan Shelf; multiple countries - uk-40201-004
- Pacific CPR - Cook Inlet; multiple countries - uk-40201-005
- Pacific CPR - Northern Gulf of Alaska; multiple countries - uk-40201-006
- Pacific CPR - Offshore BC; multiple countries - uk-40201-007
- Pacific CPR - BC Shelf; multiple countries - uk-40201-008
- CalCOFI California Current region; United States of America - us-50301
- CalCOFI Southern California region; United States of America - us-50302
- Hawaii Ocean Time-series (HOT); United States of America - us-10201
- Newport Line NH-5; United States of America - us-50501
- San Francisco Bay; United States of America - us-30401
- USC WIES San Pedro Ocean Time-series (SPOT); United States of America - us-10301
- Western Kodiak Island (western Gulf of Alaska) – EcoFOCI; United States of America - us-50401

Western North Pacific Ocean

- Pearl River (Hong Kong); Hong Kong, China - hk-30101
- Hokkaido University Fisheries and Oceanographic database (HUFO) - Bering Sea surveys; Japan - jp-30201
- Hokkaido University Fisheries and Oceanographic database (HUFO) – central North Pacific surveys; Japan - jp-30202
- Japanese Meteorological Agency oceanographic monitoring - East China Sea; Japan - jp-30401
- Kuroshio Current ; Japan - jp-30101
- Oyashio Current; Japan - jp-30102
- Oyashio-Kuroshio Transition; Japan - jp-30103
- PM Line; Japan - jp-30104
- Korea East - Japan Sea; Republic of Korea - kr-30103
- Korea South - East China Sea; Republic of Korea - kr-30102
- Korea West - Yellow Sea; Republic of Korea - kr-30101
- Northeast Korea; Republic of Korea - kr-30104



Scientific research vessel Atlantic Explorer returning from regular sampling at the BATS station.

Acknowledgement:

We would like to acknowledge Todd O'Brien (NOAA) and Laura Lorenzoni (USF) for their assistance during the preparation of this map. Further we thank the whole core group of IGMETS and every single ship based ocean time series, which provides the needed long-term data sets to discover new insights on how the marine environment is impacted by anthropogenic influences.

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