

History and Results of the IOC GODAR Project

2nd International Workshop for GODAR WESTPAC

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Japan Oceanographic Data Center, Tokyo
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The Global Oceanographic Data Archaeology and Rescue (GODAR) Project

Established in 1993 by the Intergovernmental Oceanographic Commission.

"Data Archaeology":

the process of seeking out, restoring, evaluating, correcting, and interpreting historical data sets;

"Data Rescue":

the effort to save data at risk of being lost to the science community by digitizing manuscript data and copying data on older, failing electronic media, and then archiving these data into an internationally available electronic database.

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REASONS FOR BUILDING GLOBAL, HISTORICAL *IN SITU* OCEANOGRAPHIC DATABASES

- a) The international scientific community advises national and international bodies on such issues as climate change.

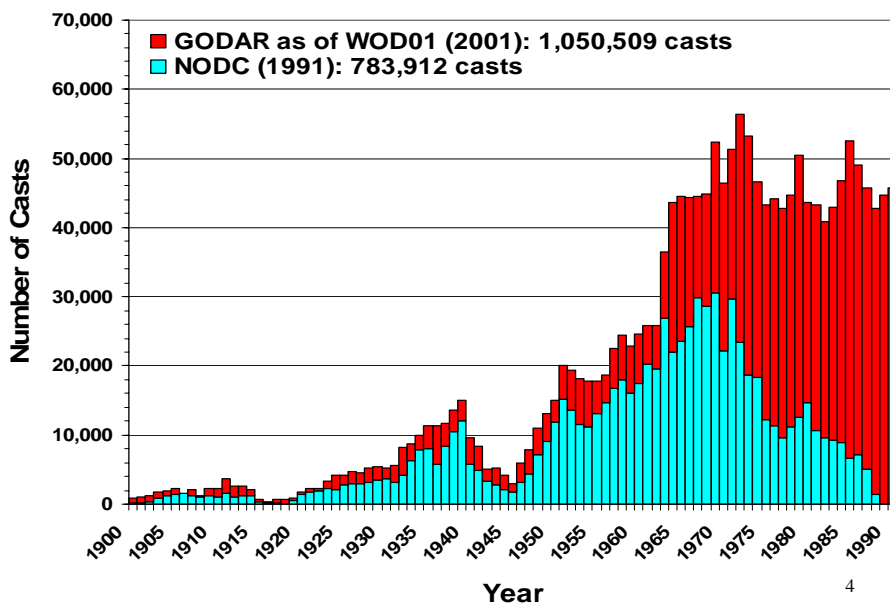
Historical data are required to support such studies.

The international scientific community must have access to the most complete oceanographic data bases possible.

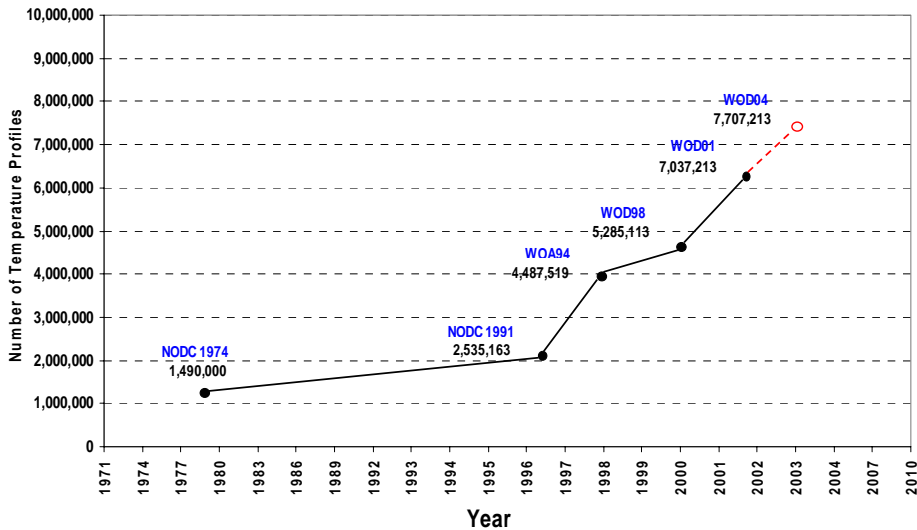
These data bases must be accessible in electronic form and available internationally without restriction.

- b) Ocean measurement programs are expensive. Scientists planning such programs should have access to all available data in order to make the most efficient use of scarce scientific resources such as ships.
- c) Pollutants flow across boundaries. The international community should have access to all historical data for pollution transport studies. This is particularly important for studies of the coastal environment. Natural variability versus anthropogenically induced changes.
- d) To develop and improve long-range weather forecasts. Statistical forecasting and hindcasting studies require historical ocean data. 3

OSD cast data acquired through the GODAR Project for 1900-1991 compared to NODC archive holdings as of 1991



Building Ocean Profile-Plankton Databases for Climate System Research



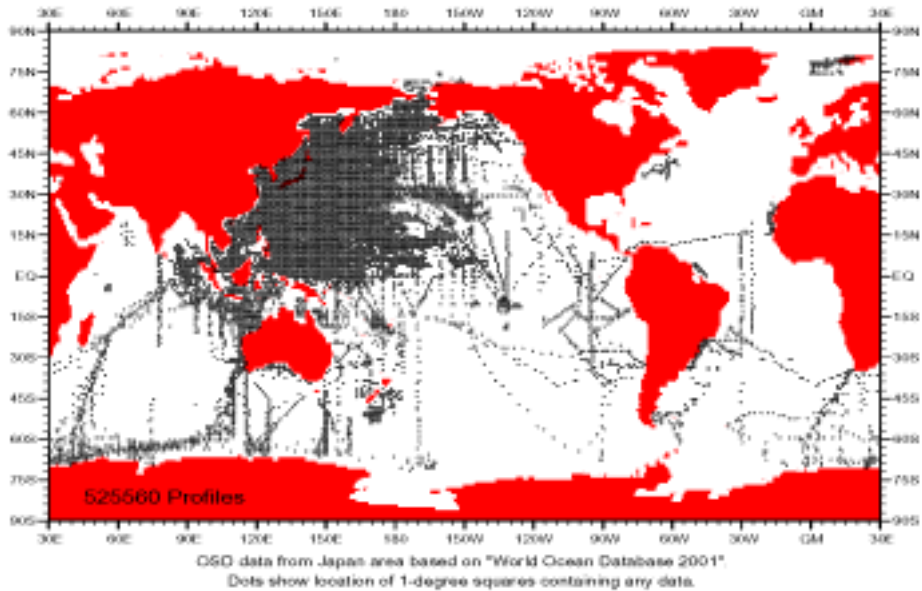
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World Ocean Database 2001

- Data from 112 countries
- Data from 489 institutes worldwide
- Data from 3057 ships and other platforms
- Data from 55,897 cruises

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Japan Ocean Station Data in WOD01



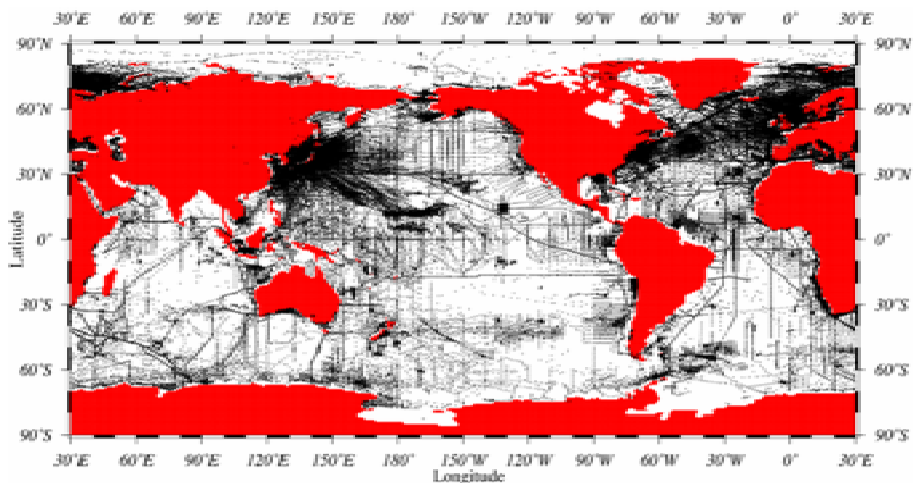
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World Ocean Database 2001(WOD01)

PROBE (Instrument Type)	WOD98	ADDED	TOTAL
Bottle (OSD)	1,373,440	746,602	2,121,042
Mechanical Bathythermograph (MBT)	2,077,200	299,006	2,376,206
Expendable Bathythermograph (XBT)	1,537,203	206,389	1,743,592
High Resolution Conductivity/Temperature/Depth (HCTD)	189,555	122,789	312,344
Profiling Float (e.g., PALACE, SOLO, APEX)	0	22,637	22,637
Moored Buoy (e.g. TAO, PIRATA, TRITON)	114,634	182,762	297,936
Drifting Buoy	0	50,549	50,549
Towed Conductivity/Temperature/Depth (UOR)	0	37,651	37,631
Autonomous Pinniped Bathythermograph (APBT)	0	75,665	75,665
Total Casts/Profiles	5,292,032	1,773,383	7,037,062
Total Surface-Only Observations	159,794	1,650,852	1,810,646

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OSD data added to WOD98 and included in WOD01

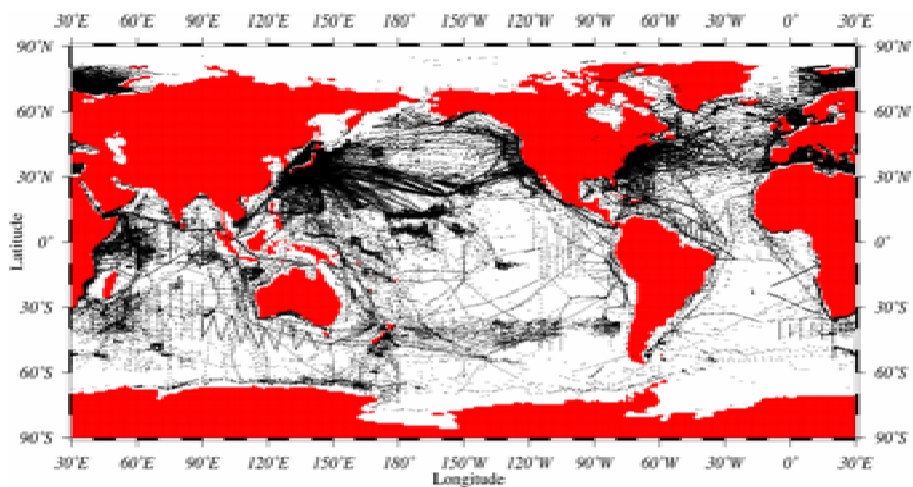


Location of all OSD profiles added since publication of WOD98 (16 July 2002)

Total number of profiles = 690557

Ocean Climate Laboratory
21 Oct 2003

MBT data added to WOD98 and included in WOD01

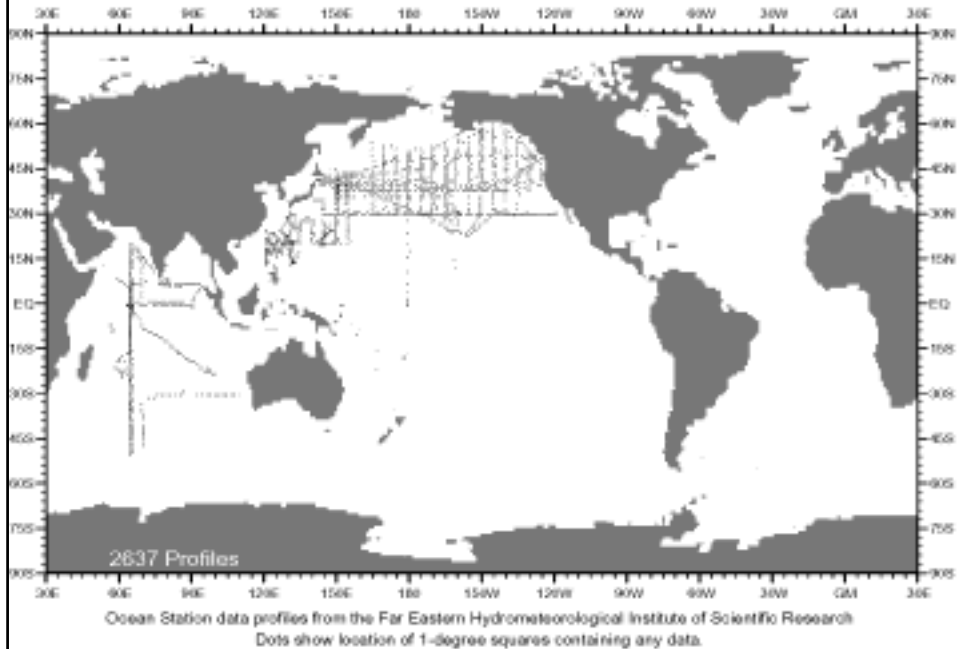


Location of all MBT profiles added since publication of WOD98 (16 July 2002)

Total number of profiles = 321618

Ocean Climate Laboratory
21 Oct 2003

Example of data rescued as part of the GODAR Project



Regional GODAR Project meetings

Six regional *GODAR Project* workshops were held worldwide that encompassed all countries that make oceanographic measurements.

Attendance of these meetings in total was approximately 150 oceanographic data managers and scientists.

- | | | | |
|----|-----------|---------------------|----------------|
| a) | GODAR I | Obninsk, Russia | May, 1993 |
| b) | GODAR II | Tianjin, China | March, 1994 |
| c) | GODAR III | Goa, India | December, 1995 |
| d) | GODAR IV | Valletta, Malta | April, 1995 |
| e) | GODAR V | Cartagena, Colombia | April, 1996 |
| f) | GODAR VI | Accra, Ghana | March, 1997. |

Each meeting produced a Workshop Report that included listings of data in Manuscript and electronic form in each participating country.

International GODAR Review Meeting

July 1999, Silver Spring, Maryland

Meeting conclusions:

- 1) *GODAR Project* has been successful,
- 2) variables to be included under the *GODAR Project* should be expanded to include sea level,
- 3) *GODAR-WESTPAC* project be initiated.

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GODAR data and project announcements

- *UNESCO, IMS Newsletter*
- *ICES CIEM Information Newsletter*
- *NOAA/Earth System Monitor*
- *U.S. JGOFS News*
- *Global Change Newsletter*
- *Bulletin American Meteorological Society*
- *EOS Transactions, Section News*
- *Computing Magazine*
- *NODC Environmental Information Bulletins*
- *Arctic Forum 2002*

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INTERNATIONAL PROGRAM SUPPORT FOR DATA ARCHAEOLOGY AND RESCUE ACTIVITIES

Support for data archaeology and rescue activities in oceanography and meteorology,

and specifically for the *GODAR Project* has come from many sources,

e.g.,

World Climate Research program's *CLIVAR* program (WCRP, 1995; 1999)

and

the IPCC Assessment (1996).

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Specific uses for ocean profile-plankton data and products

- a) **Planning observational programs.**
- b) **Diagnostic studies describing role of the ocean as part of the earth's climate system.**
- c) **Boundary and Initial conditions for numerical models.**
- d) **Verification for ocean and atmosphere simulations.**
- e) **"Sea truth" for satellite ocean altimetry measurements".**
- f) **Initial state for acoustic tomography inversions.**
- g) **Paleontological reference fields
(e.g. CLIMAP).**

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FINANCIAL SUPPORT FOR THE GODAR PROJECT

The IOC has provided important support in the form of staff time and resources.

The NOAA Climate and Global Change Program and the NOAA ESDIM Program have provided crucial support for U.S. participation, for meeting support, visits by scientific and data management personnel, and for digitization of many data sets for the world ocean.

The European Community has provided support for the MEDAR/MEDATLAS project and for GODAR meetings.

Individual countries and international institutions (e.g. ICES) have provided support as Japan is doing with its leadership of the GODAR-WESTPAC Project.

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THE WORLD OCEAN DATABASE PROJECT

“*World Ocean Database Project*” was proposed by S. Levitus at the IODE XVI meeting held in Athens, Greece during December, 2001.

The purpose of this project is to:

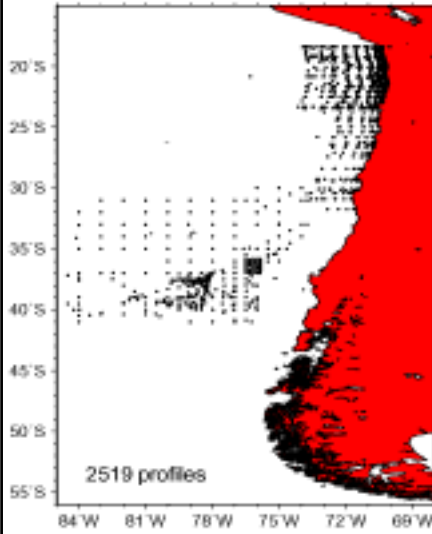
- a) Encourage a more timely exchange of modern oceanographic data;
- b) Encourage the development of regional quality control procedures for oceanographic data;
- c) Encourage the development of regional oceanographic atlases.

Planning for a meeting on “Quality Control of Oceanographic Profile-Plankton Data” will start soon. Meeting to be held within one year.

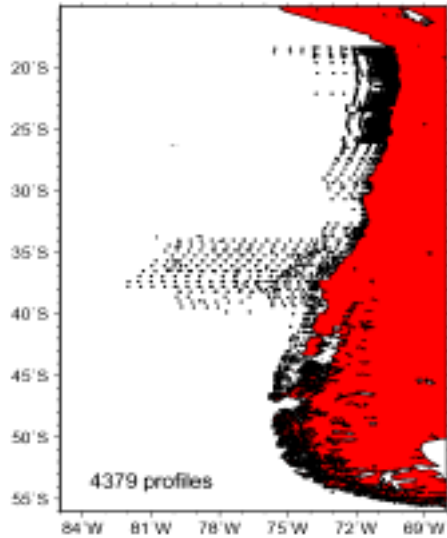
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Chilean data

Ocean Station Data

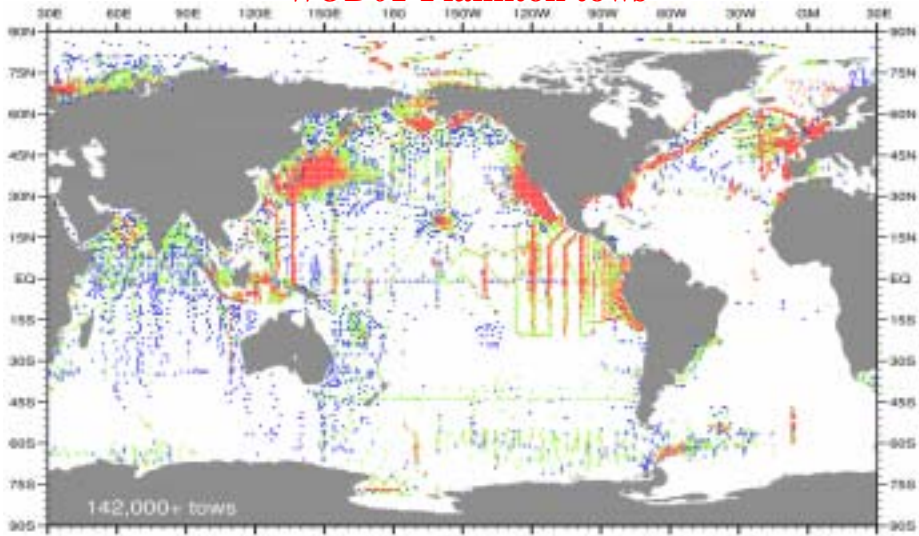


CTD data



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WOD01 Plankton tows

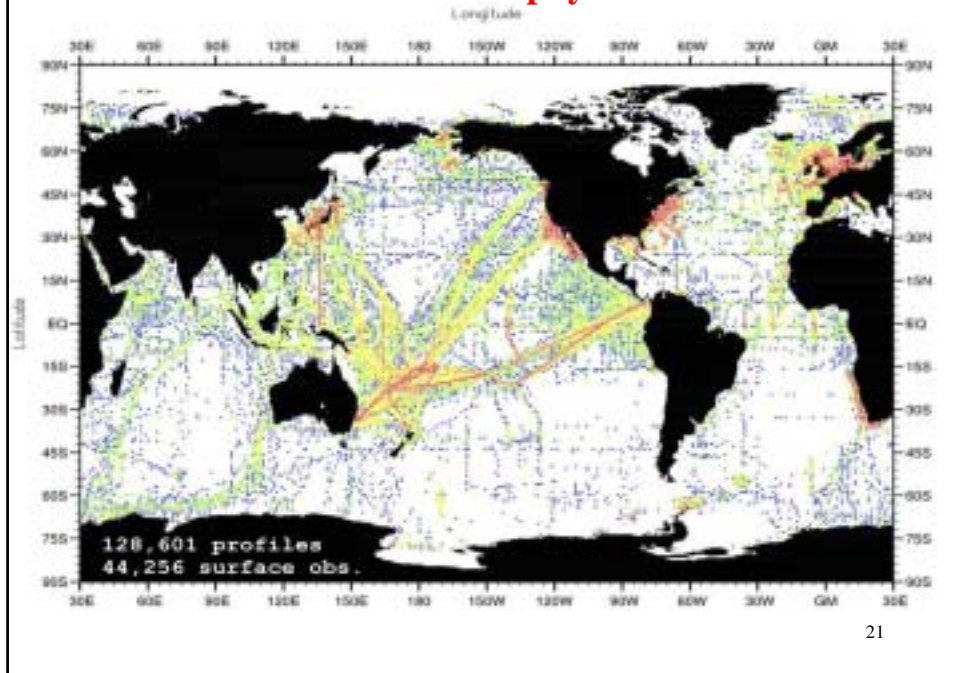


WORLD OCEAN DATABASE PLANKTON

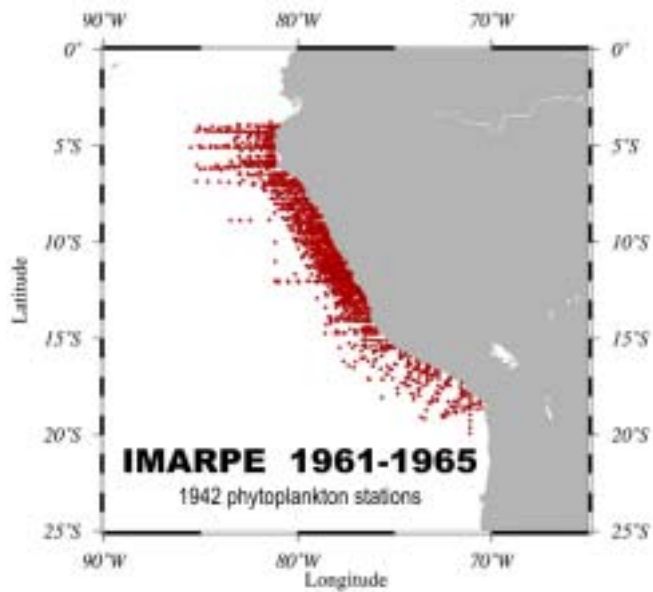
[blue = low density (1-4 tows), green = medium (5-9 tows), red = high density (10+ tows)]

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WOD01 chlorophyll data

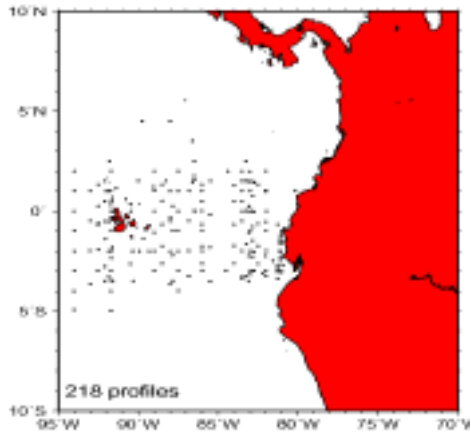


IMARPE, Peru Phytoplankton- (1961-65) GODAR Project



Ecuador CTD and OSD

Ecuador CTD data from INOCAR



Ecuador Ocean Station Data (OSD) from INOCAR

