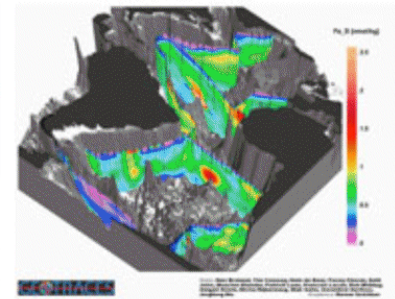




AN INTERNATIONAL STUDY OF THE MARINE BIOGEOCHEMICAL
CYCLES OF TRACE ELEMENTS AND THEIR ISOTOPES



Exploring GEOTRACES data with Ocean Data View

Sunday, 26 June 2016 (9-16h), Yokohama, Japan

Ocean Data View



Reiner Schlitzer

Alfred Wegener Institute for Polar and Marine Research

Software for interactive analysis and visualization of environmental data.

- ***Available for Windows, MacOS, Linux, and UNIX.***
- ***Reads and imports many oceanographic data formats, such as WOD, ARGO, GTSP, WOCE, SeaDataNet, MedAtlas, Sea-Bird***
- ***Supports native ODV collection format and netCDF.***

ODV Collections

- ***Optimized for heterogenous, variable length observed data.***
- ***Binary format providing dense storage and fast data access.***
- ***Expandable.***
- ***Platform-independent.***
- ***Can be used for many different data types.***
- ***Supports numeric or string data values, error values, quality flags and info strings.***

GEOTRACES
Intermediate Data Product 2014

IDP 2014 v2 - Info Files

59: Ag_D_CONC_BOTTLE [pmol/kg]		9	
60: Al_D_CONC_BOTTLE [nmol/kg]	24.28 ± 0.22	1	
61: Al_TD_CONC_BOTTLE [nmol/kg]		9	
62: Ba_D_CONC_BOTTLE [nmol/kg]		9	
63: Cd_D_CONC_BOTTLE [nmol/kg]	0.30	1	
64: Cu_D_CONC_BOTTLE [nmol/kg]		9	
65: Fe_D_CONC_BOTTLE [nmol/kg]	0.63	1	
66: Fe_D_CONC_BOTTLE_FIA [nm...]	0.64 ± 0.03	1	
67: Fe_II_D_CONC_BOTTLE [nmol/...]		9	



Download PDF

Export

Search ScienceDirect



Advanced search



Progress in Oceanography

Volume 137, Part A, September 2015, Pages 261–283



Metal contents of phytoplankton and labile particulate material in the North Atlantic Ocean

Benjamin S. Twining^a, Sara Rauschenberg^a, Peter L. Morton^{b, 1}, Stefan Vogt^c[Show more](#)

doi:10.1016/j.pocean.2015.07.001

[Get rights and content](#)

Highlights

- First basin-wide measurements of plankton metal quotas in the N. Atlantic Ocean.
- Fe and Mn quotas significantly higher on western side of section.
- Cu and Ni quotas significantly elevated on eastern side of section.
- Evidence for Al scavenging by biogenic silica.
- Dissolved ratios not an accurate measure of cellular Fe quotas.

Abstract

Phytoplankton contribute significantly to global C cycling and serve as the base of ocean food webs. Phytoplankton require trace metals for growth and also mediate the vertical distributions of many metals in the ocean. We collected bulk particulate material and

Recommended articles

[Composition of metals in suspended](#)

2016, Regional Studies in Marine Science

[Intertidal diatom communities reflect](#)

2015, Estuarine, Coastal and Shelf Science

[Evaluation of approaches to estimat](#)

2015, Marine Chemistry

[View more articles »](#)

Citing articles (0)

Related book content

November 6, 2009 –January 9, 2010

**Meridional Studies on Biogeochemistry of Trace Elements
and Isotopes in the Indian Ocean (GEOTRACES)**



by
The scientific Members of the Expedition
Edited by
Toshitaka GAMO

142
GI04
ER-10 (B)
72.547°E / 20.002°S
11 December 2009
04:49:57.000
[0 - 4377]
4343
1697888
KH09-05
[hakuhomaru_kh-09-5.pdf](#)
R/V Hakuho Maru
Toshitaka Gamo
Toshitaka Gamo

	2
0_Surface	2
AMP	2
	9
	9
303	2
	2
	9
	9
	2
40	1
40	2
	72.547
	-20.002
	2009.943
	345

Per-Station Data History

The screenshot displays a software interface with a menu bar (File, Collection, View, Import, Export, Tools, Help) and a main workspace. A red oval highlights a table of history information and a data plot. The history table lists actions performed on station data, including imports, edits, and exports. The plot shows a time series of data points with a red trend line. A text box overlaid on the plot area states: "History information stays with station data when exporting to ODV spreadsheet or ODV collection."

Timestamp	User	Action	Details
2013-08-28T09:21:10	rschlitz@GSYSM234-1	IMPORT (ADD)	from D:/rschlitz/data/importFormats/NODC/WOD09/OSDO5605.gz (2013-07-12T11:54:46)
2013-08-28T11:47:56	rschlitz@GSYSM234-1	EDITFLAGS	Temperature [°C] @ Depth [m] = {0:1 5:1 10:1 25:1 50:1 75:0 100:0 150:0 200:0 250:0} -> 1
2013-08-28T11:57:03	rschlitz@GSYSM234-1	EDITHEADER	Originator's Cruise ->Xaver's Cruise Investigator ->NN, Xaver
2013-08-28T11:58:07	rschlitz@GSYSM234-1	EDITDATA	Temperature [°C] @ Depth [m] = {75:14.02} -> 14.02007
2013-08-28T11:58:34	rschlitz@GSYSM234-1	EDITFLAGS	Temperature [°C] @ Depth [m] = {75:0} -> 1

Station ID: 4437

Number: 2353
WOD09_US
6627056 (B)
52°W / 65.03°S
Date: 17 March 1964

Depth Range [m]: [0 - 250]
Bot. Depth [m]: 1000
OCL Cruise Number: 11216
Originator's Cruise: Xaver's Cruise
Originator's Station:
Investigator: NN, Xaver

Sample: 6 / 10

1: Depth [m]	75
2: Temperature [°C]	14.02
3: Salinity [psu]	35.080
4: Oxygen [ml/l]	
5: Phosphate [μmol/l]	
6: Silicate [μmol/l]	
7: Nitrate [μmol/l]	
8: Nitrite [μmol/l]	
9: pH	
10: Chlorophyll [μg/l]	
11: Plankton/Biomass	
12: Alkalinity [meq/l]	
13: NO2+NO3 [μmol/l]	
14: pCO2 [μatm]	
15: tCO2 [mmol/l]	
16: Tritium [TU]	
17: Helium [nM]	
18: δ3He [‰]	

Isosurface Values

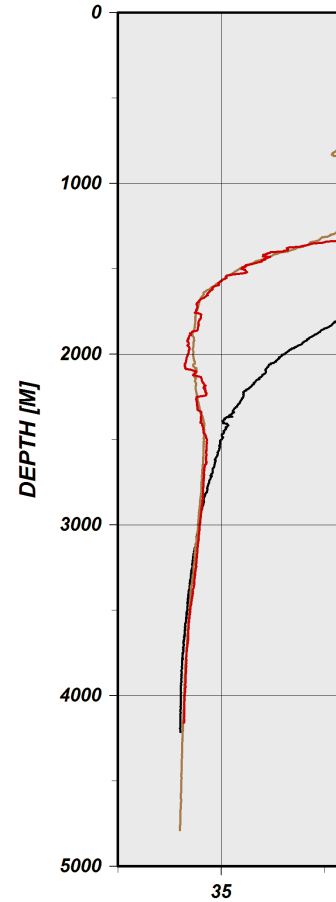
Longitude	-52.000
Latitude	-65.030
Time [yr]	1964.208
Day of Year	77

Ready | RW | 5221 / 5221: DefaultView *

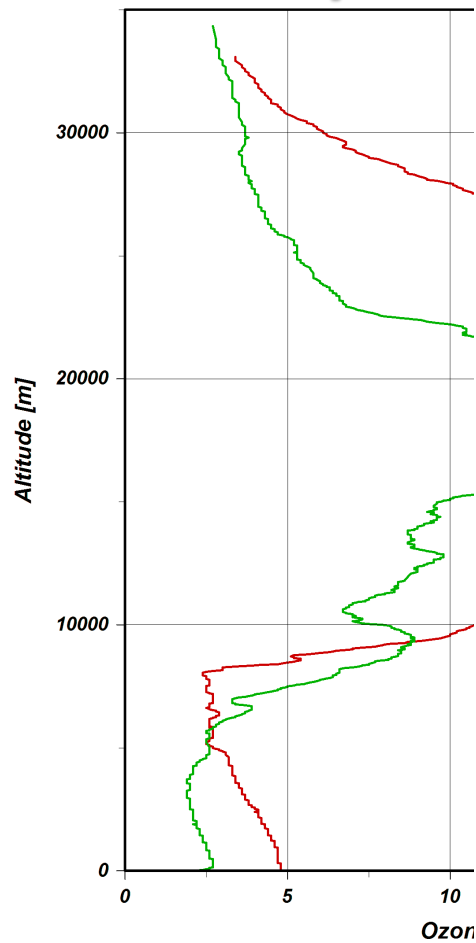
Supported Data Types

Profiles

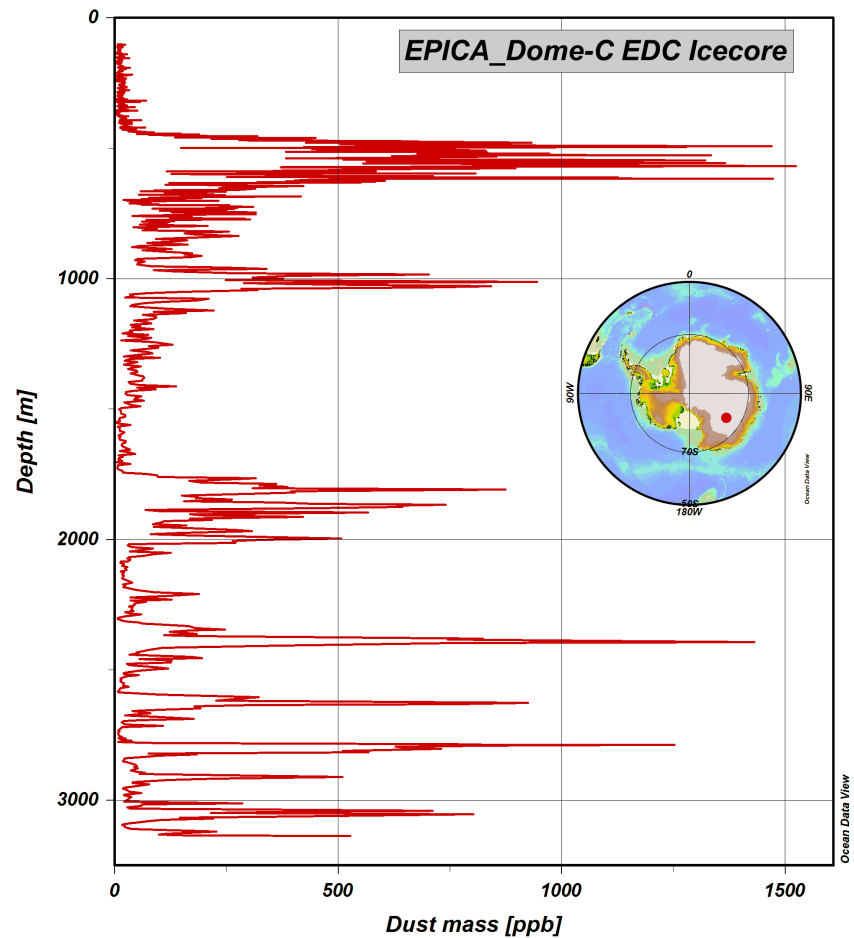
Ocean



Atmosphere



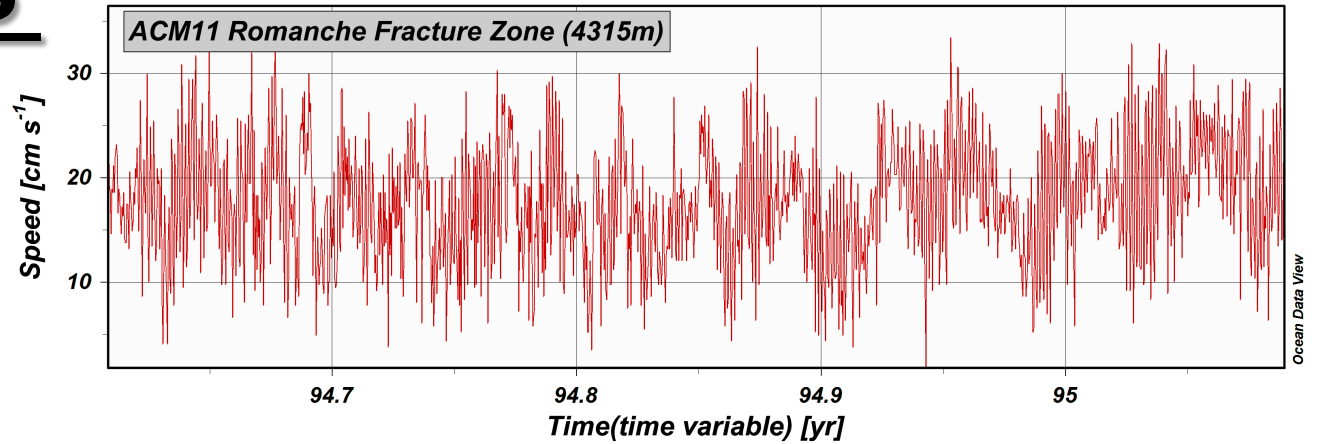
Ice



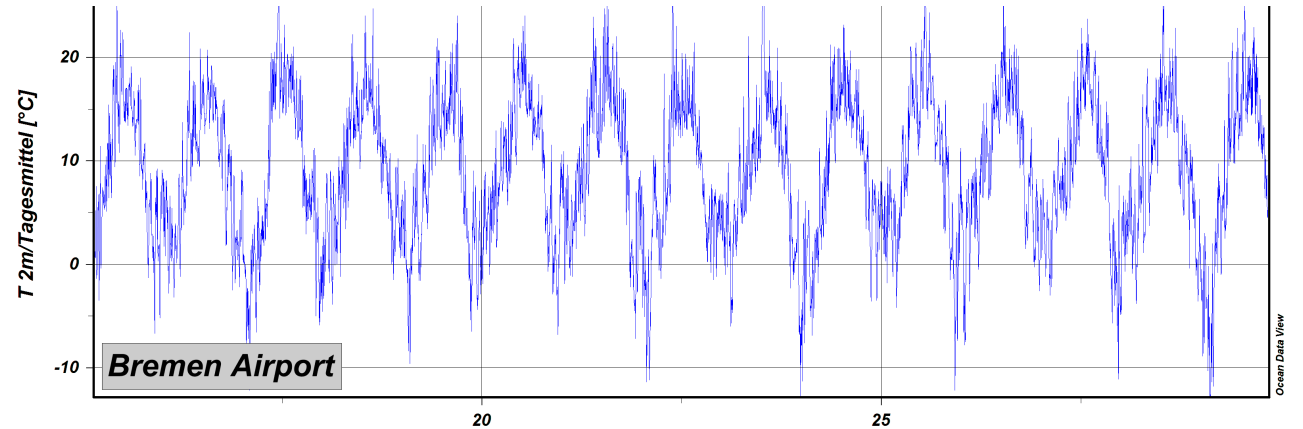
Sediments, Soil, ...

Timeseries

Ocean

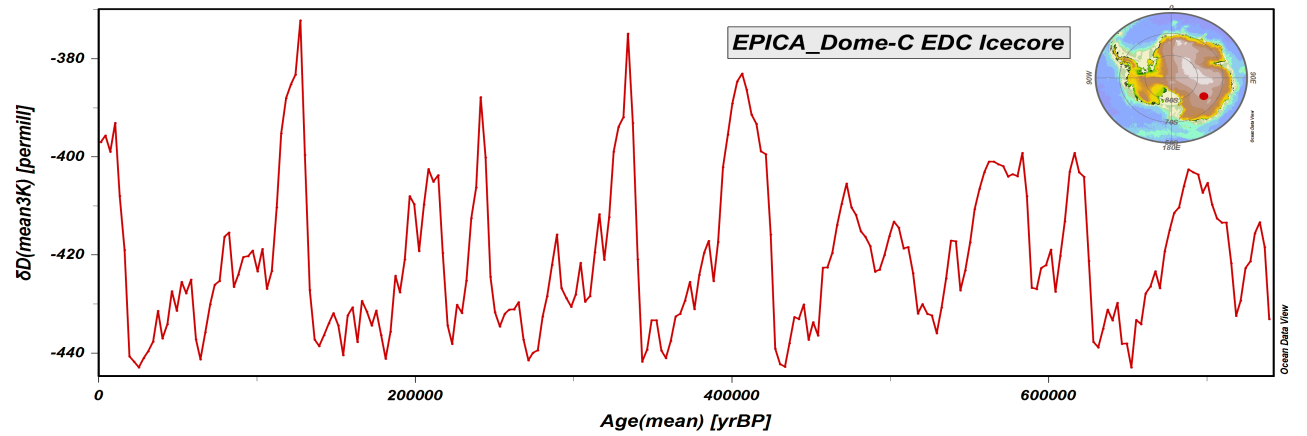


Atmosphere



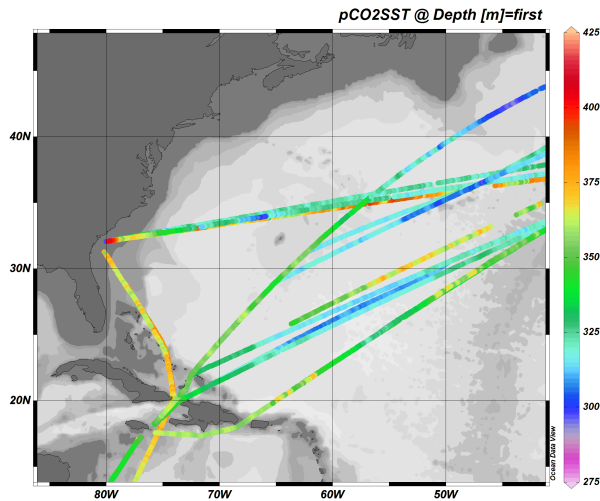
Ice

etc. ...

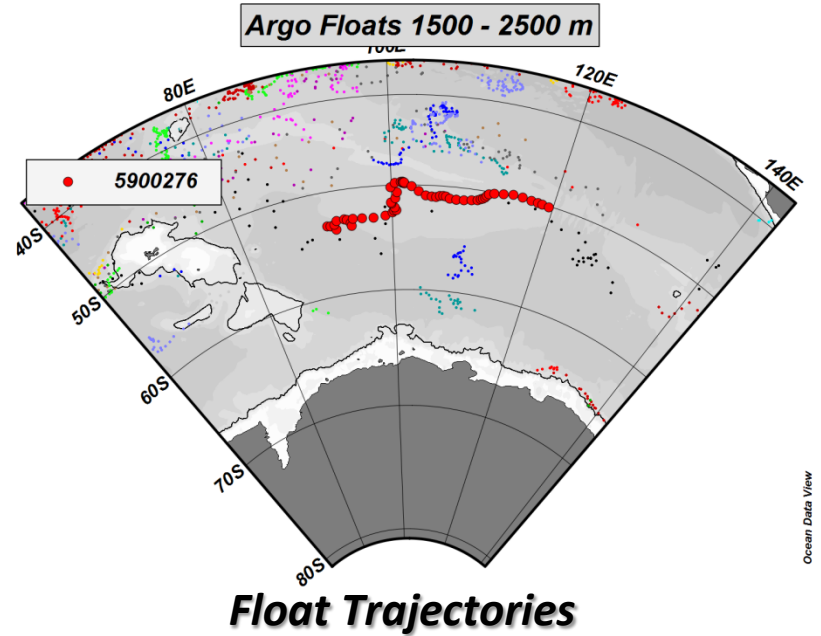
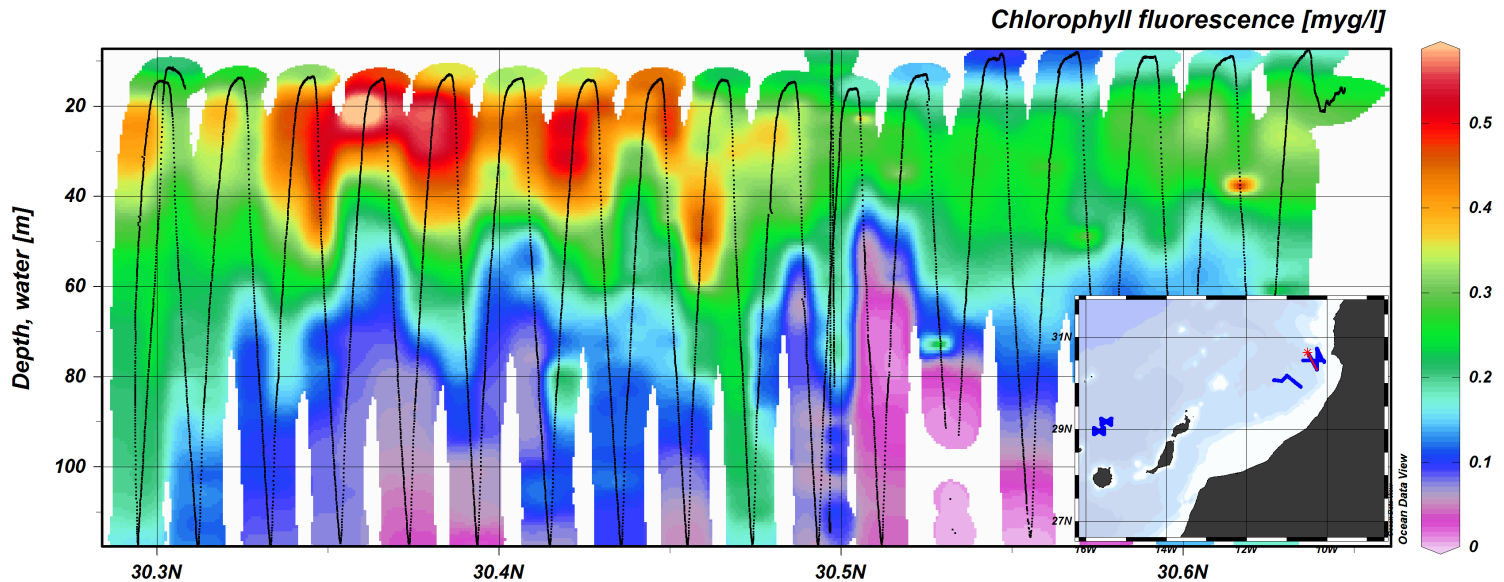


Trajectories

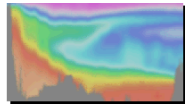
**Underway
Ship Data**



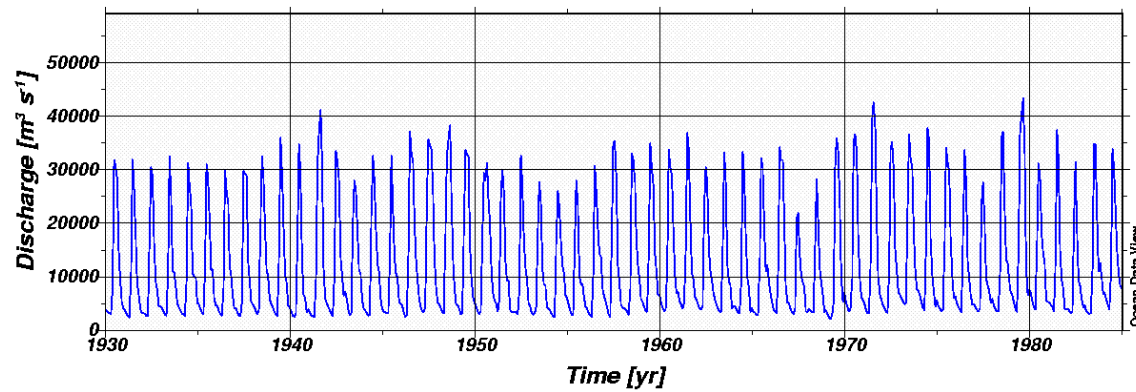
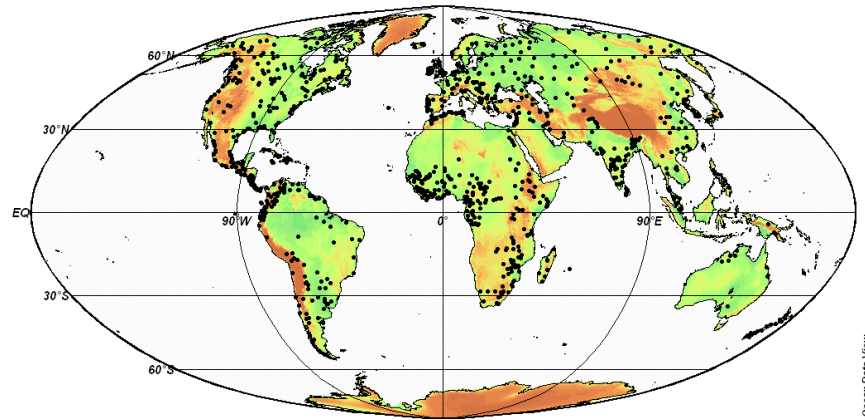
**AUV, ROV,
Glider or
Towed
Instrument**



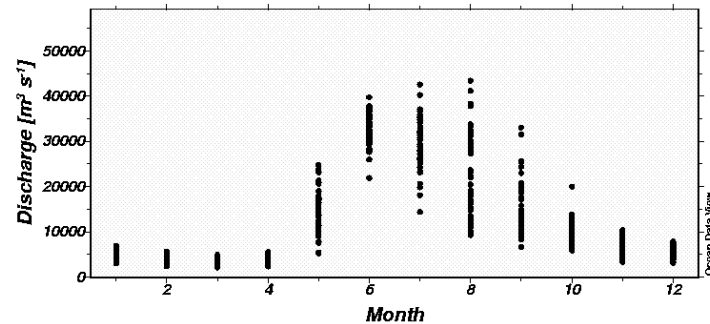
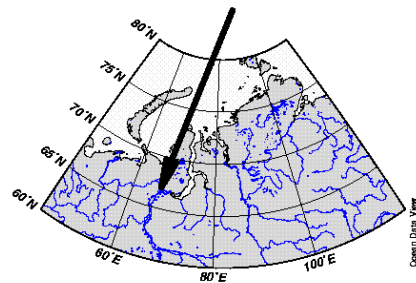
Other – River Discharge

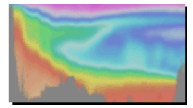


**Vorosmarty, Fekete,
and Tucker (1018 stations)**

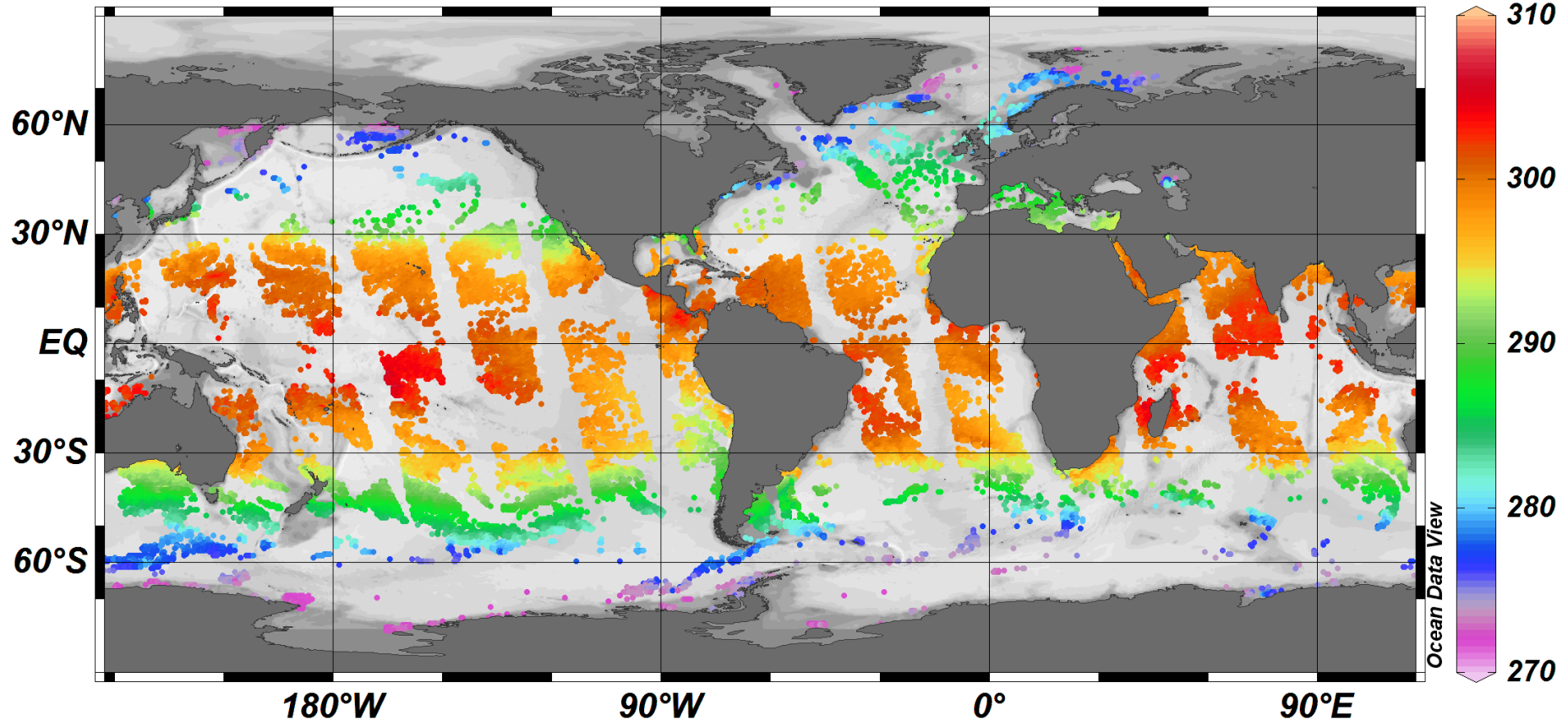


Ob River @ Salekhard



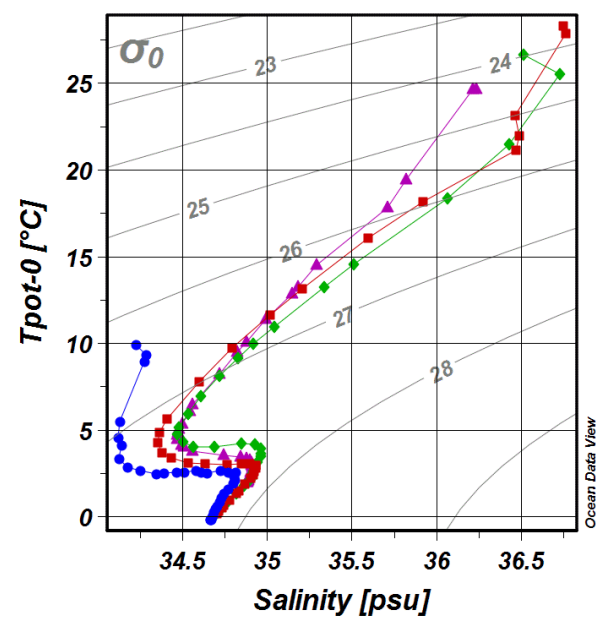
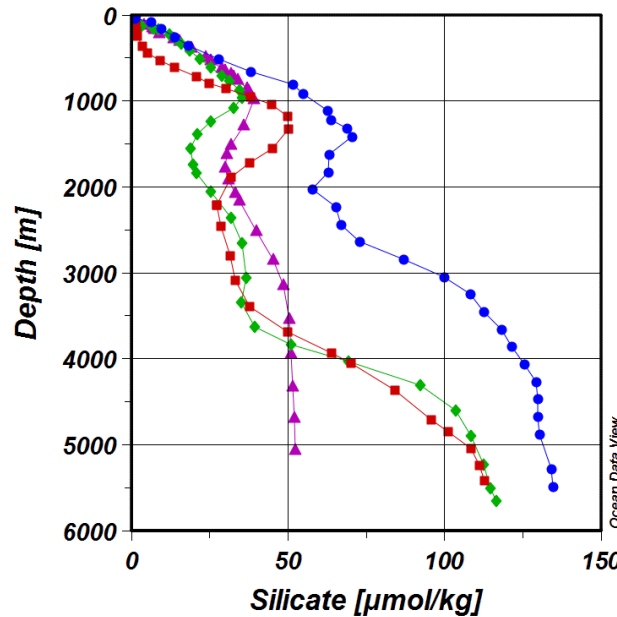
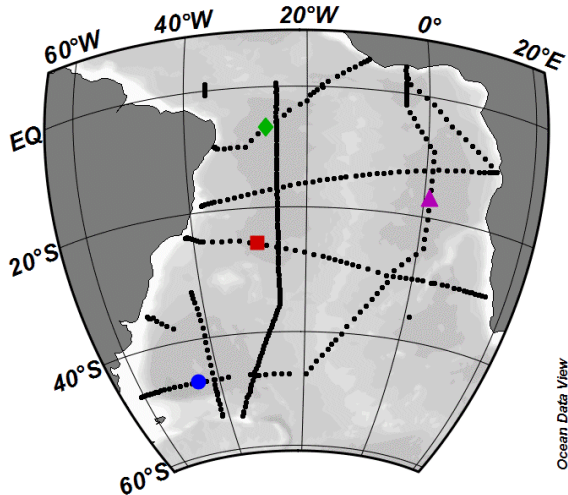
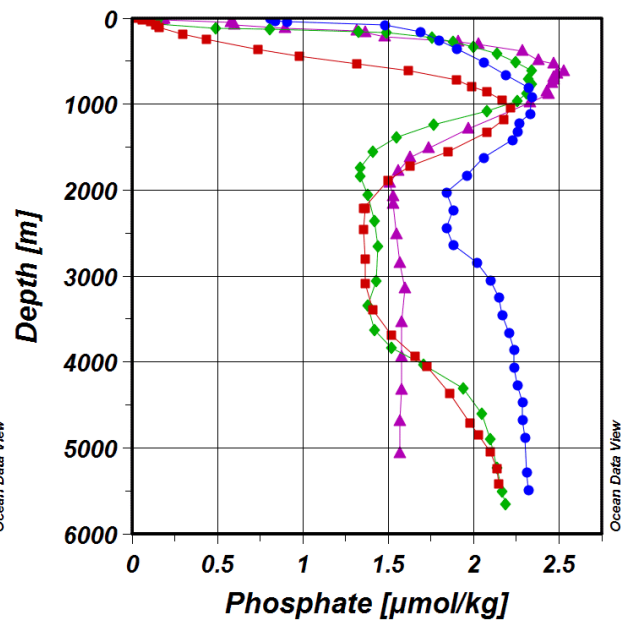
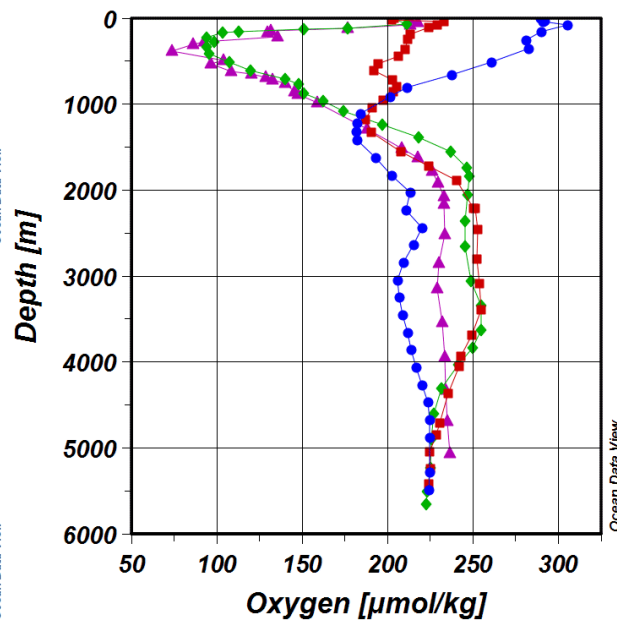
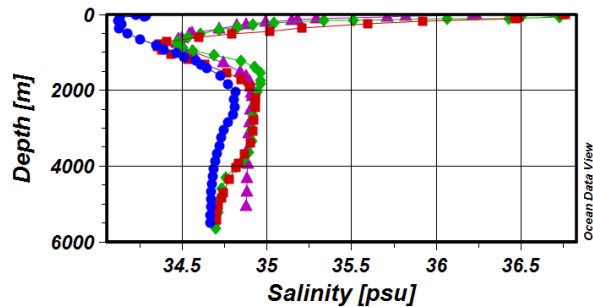
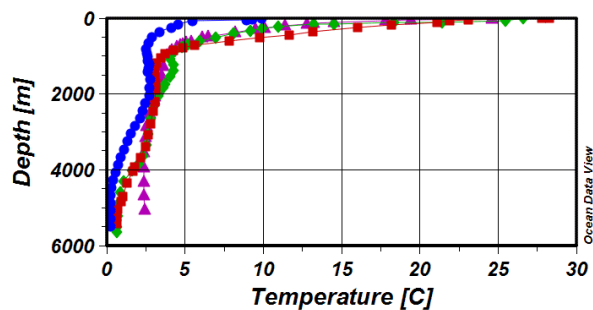
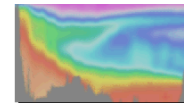


Pathfinder Sea Surface Skin Temperature [Kelvin] - 2010-01-06

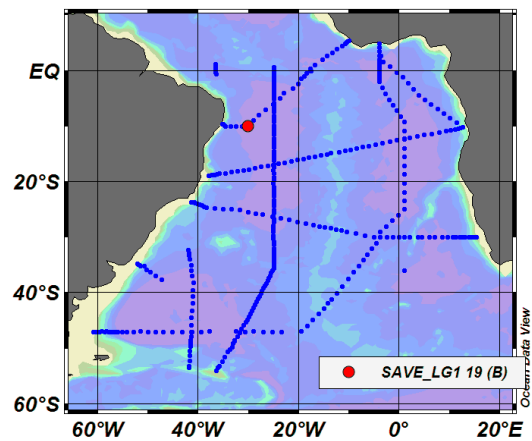
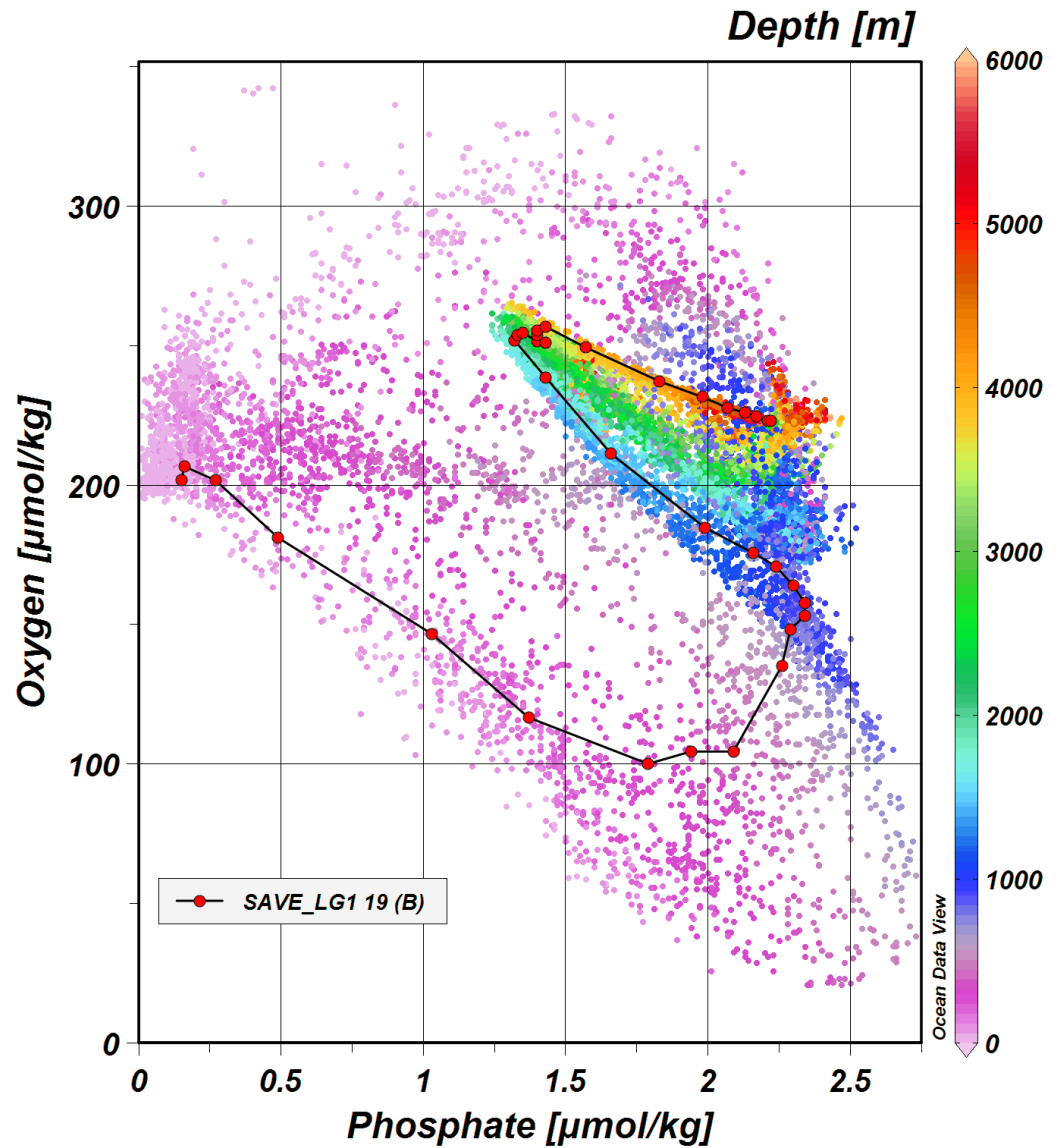
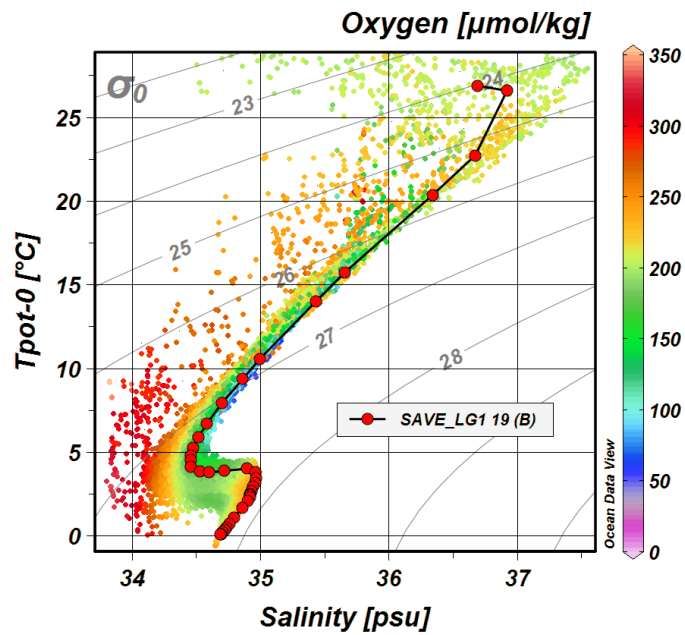
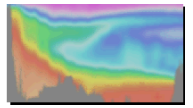


Data Window Types

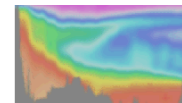
STATION



SCATTER

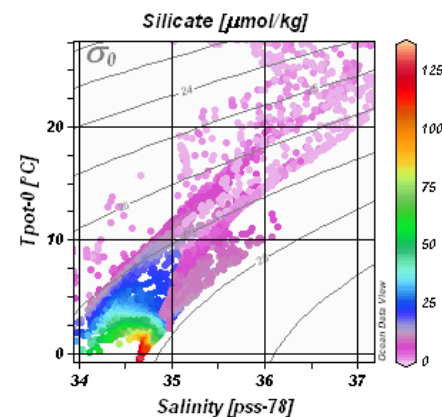
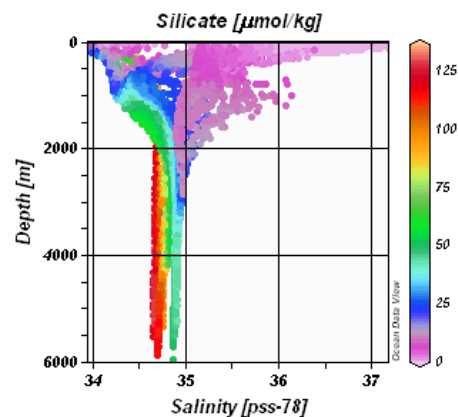
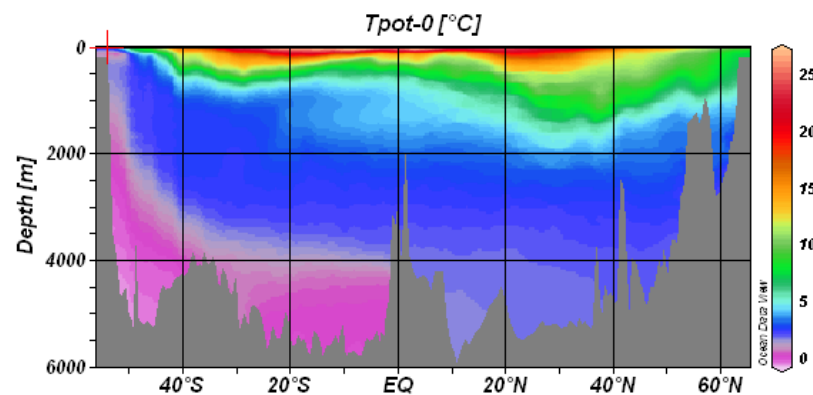
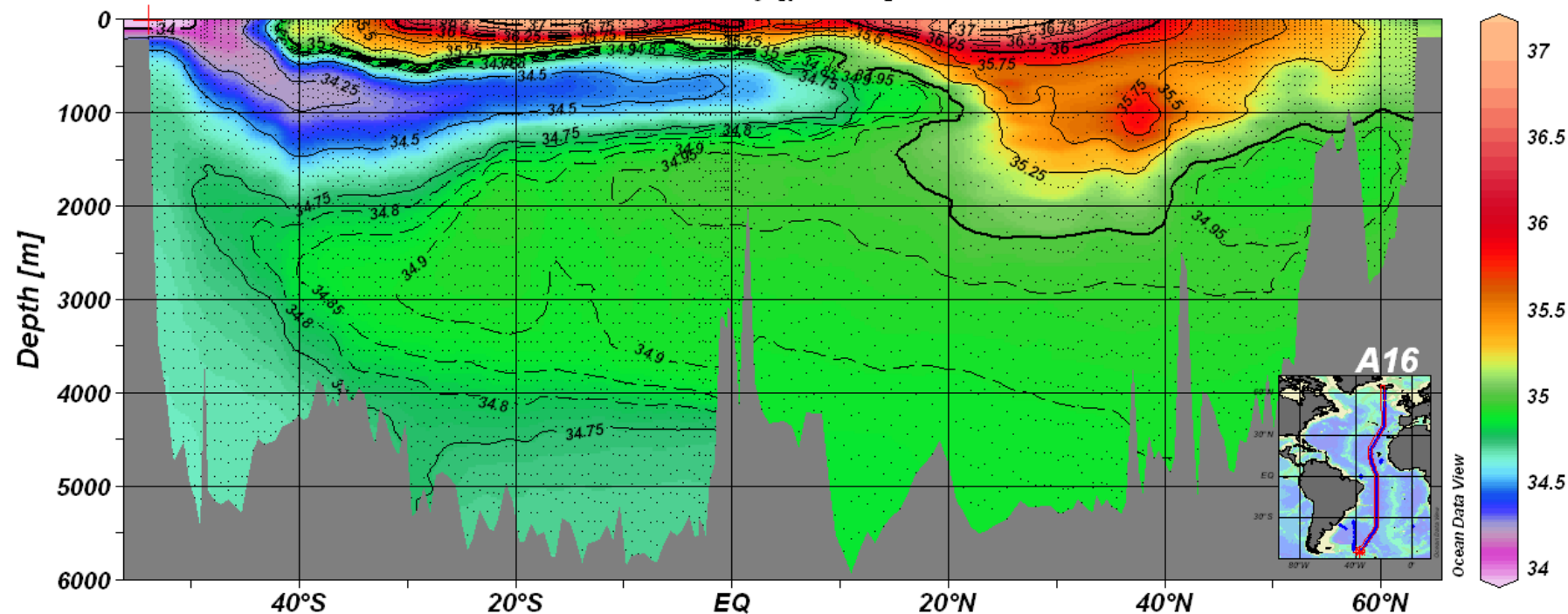


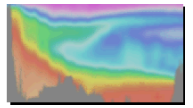
SECTION



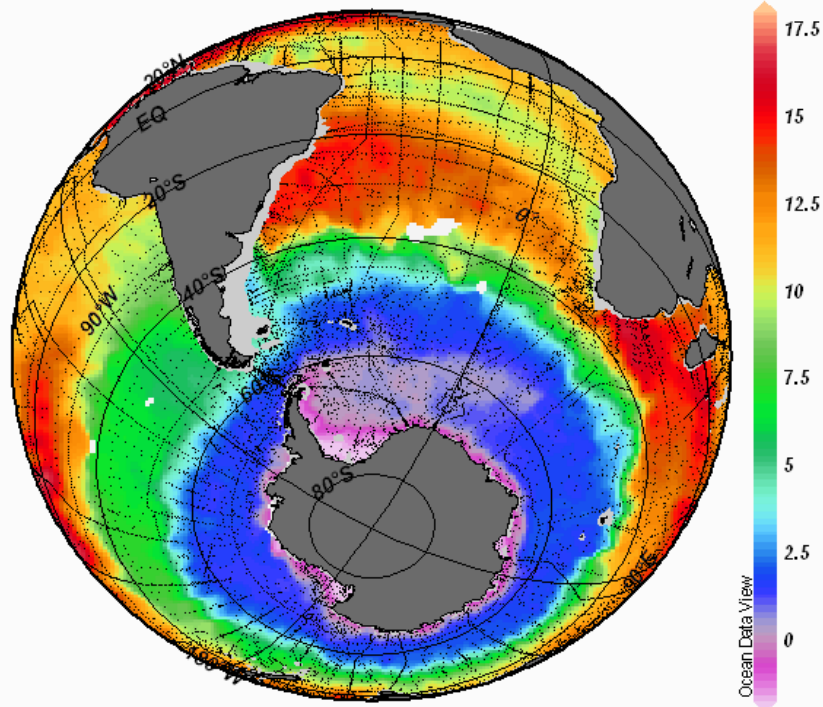
eWOCE

Salinity [pss-78]

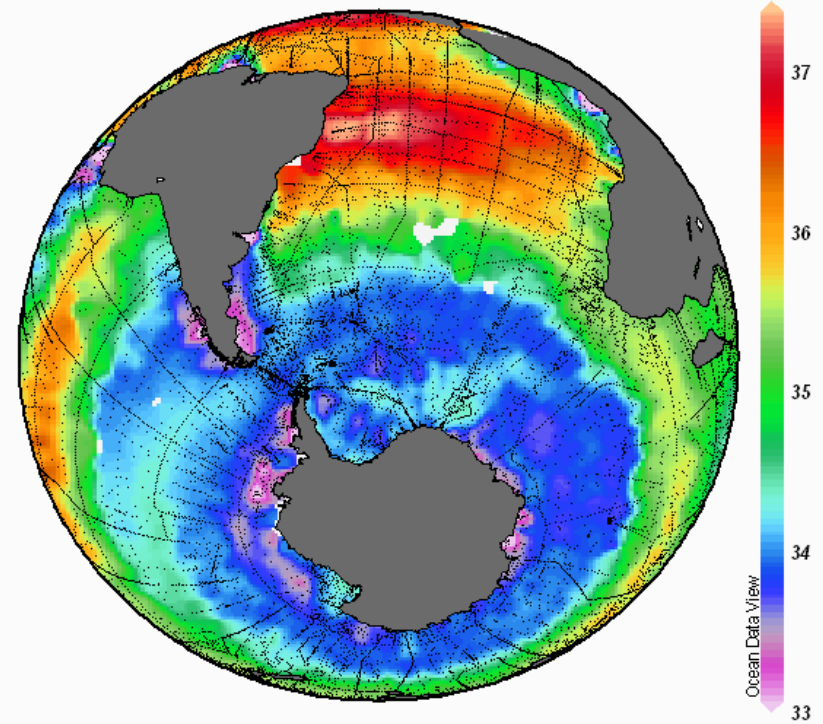




Temperature [C] on Depth [m]=300

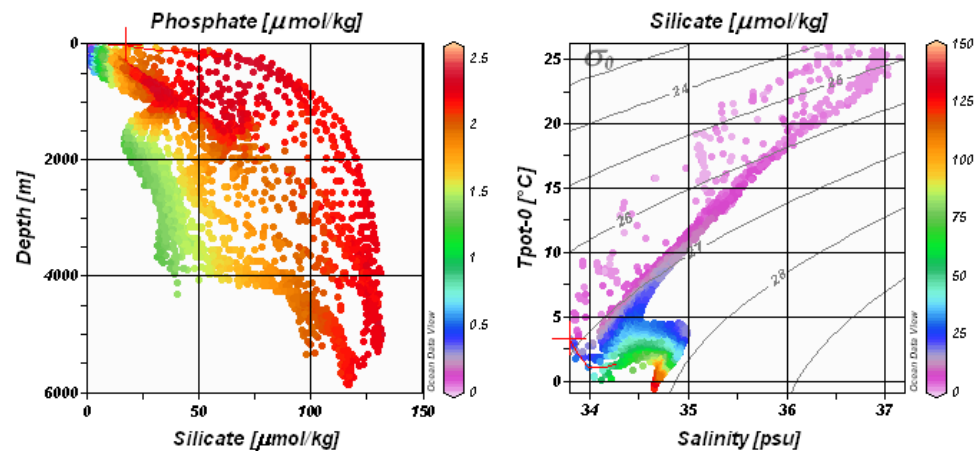
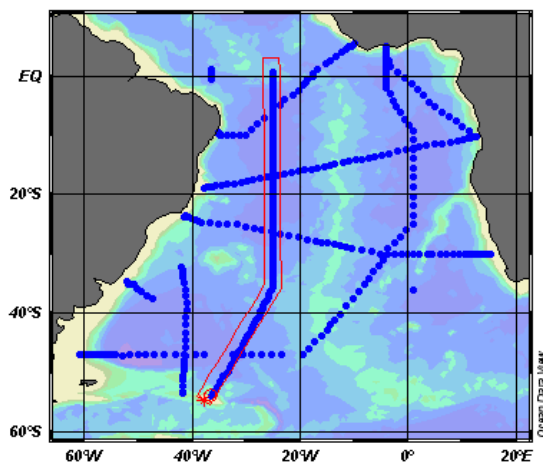
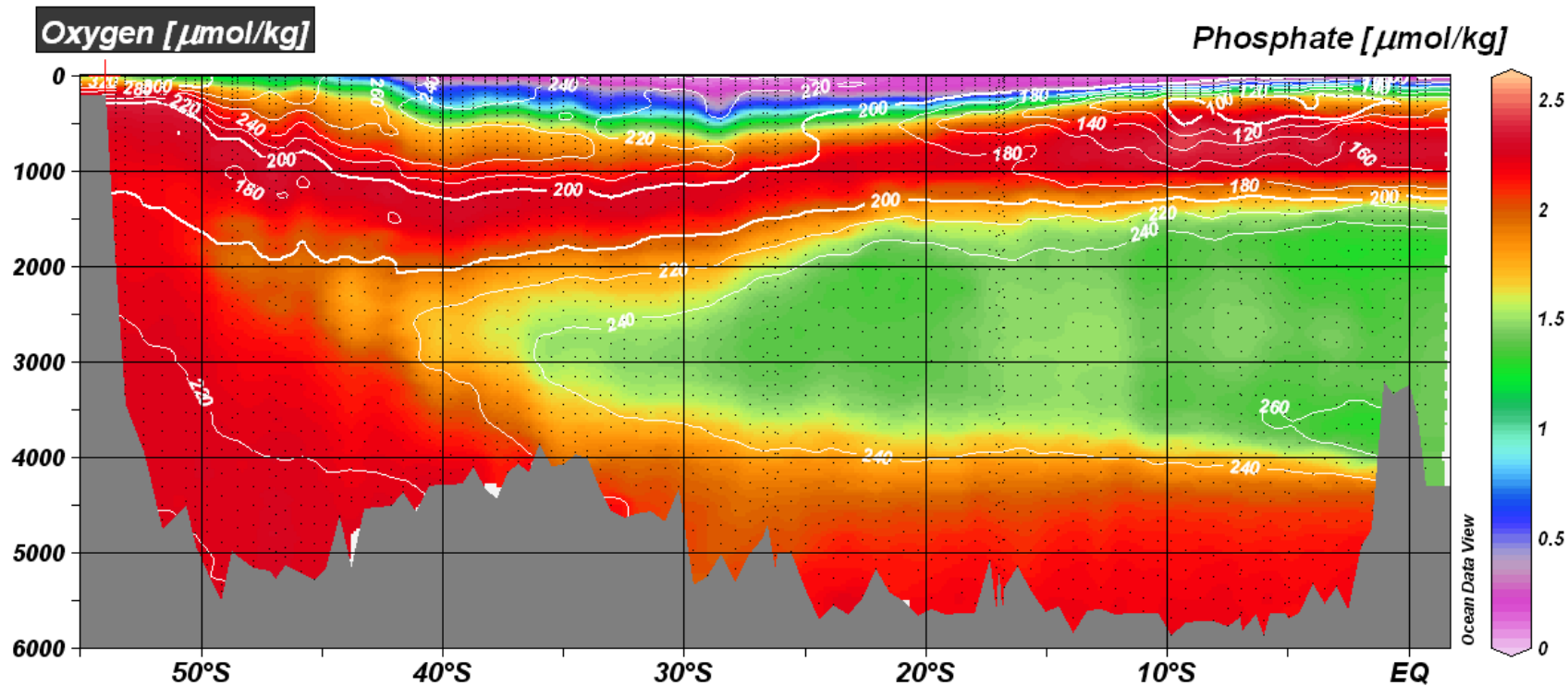
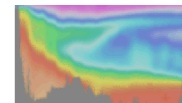


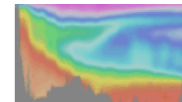
Salinity [psu] on Depth [m]=Top



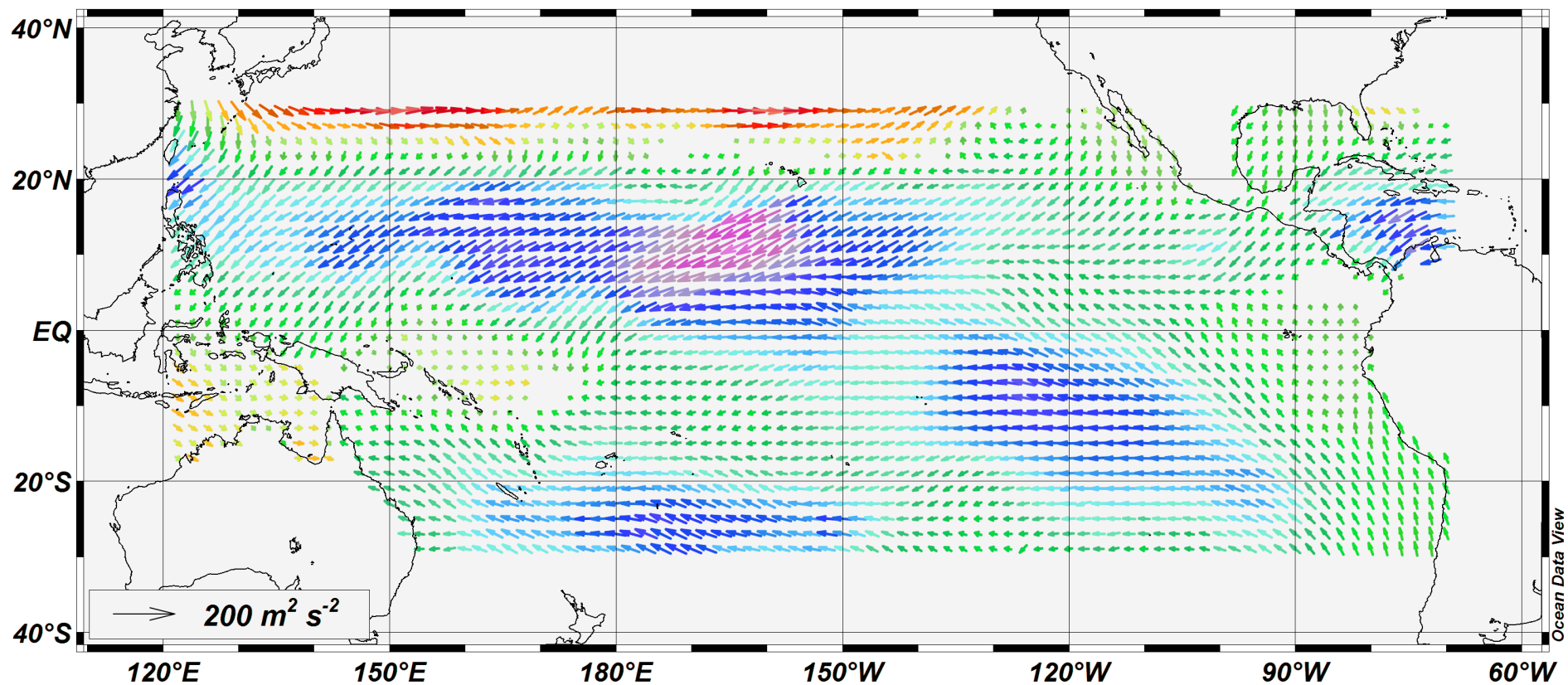
Special Features

Overlays





FSU Psuedostress - January 1978



Derived Variables

Physical Properties (TEOS-10)

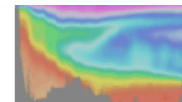
Absolute Salinity SA
Absolute Salinity at Freezing Point
Adiabatic Lapse Rate Γ
Brunt-Vaisala Frequency
Cabbeling Coefficient $C_{\theta b}$
Conductivity from Practical Salinity
Conservative Temperature θ
Depth from Pressure
Dynamic Enthalpy
Dynamic Height
Freezing Temperature θ_f
In situ Density Anomaly
In situ Temperature from Conservative T...
Isentropic Compressibility κ
Latent Heat of Evaporation
Latent Heat of Melting
Neutral Density γ_n
Potential Density Anomaly σ
Potential Temperature θ
Potential Vorticity Q
Practical Salinity from Absolute Salinity
Practical Salinity from Conductivity
Preformed Salinity S^*
Pressure from Depth
Reference Salinity SR
Saline Contraction Coefficient β_{θ}
Sound Speed c
Specific Enthalpy h
Specific Entropy η
Specific Heat Capacity Cp
Specific Internal Energy u
Specific Volume Anomaly δ
Spiciness n
Stability Ratio Rp
Thermal Expansion Coefficient α_{θ}
Thermobaric Coefficient $T_{\theta b}$
Turner Angle Tu

Carbon

Alkalinity (any C input pair)
CO2* (any C input pair)
CO3-- (any C input pair)
DIC (any C input pair)
fCO2 (any C input pair)
fCO2 (pCO2)
HCO3- (any C input pair)
OmegaA (any C input pair)
OmegaC (any C input pair)
pCO2 (any C input pair)
pCO2 (fCO2)
pH (any C input pair)
Revelle Factor (any C input pair)

Gases

AOU
CFC-11 Saturation
CFC-12 Saturation
CFC-10 Saturation
CFC-113 Saturation
CH4 Saturation
Oxygen Saturation
pCFC-11
pCFC-12
pCFC-10
pCFC-113
pCH4
pSF6
SF6 Saturation



Expressions, Derivatives, Integrals

Derivative
Derivative (2nd)
Expression
Integral
Macro File
Ratio

Metadata

Cruise ID
Latitude
Longitude
Meta Variable Value
Quality Flag Value
Station Number

Special

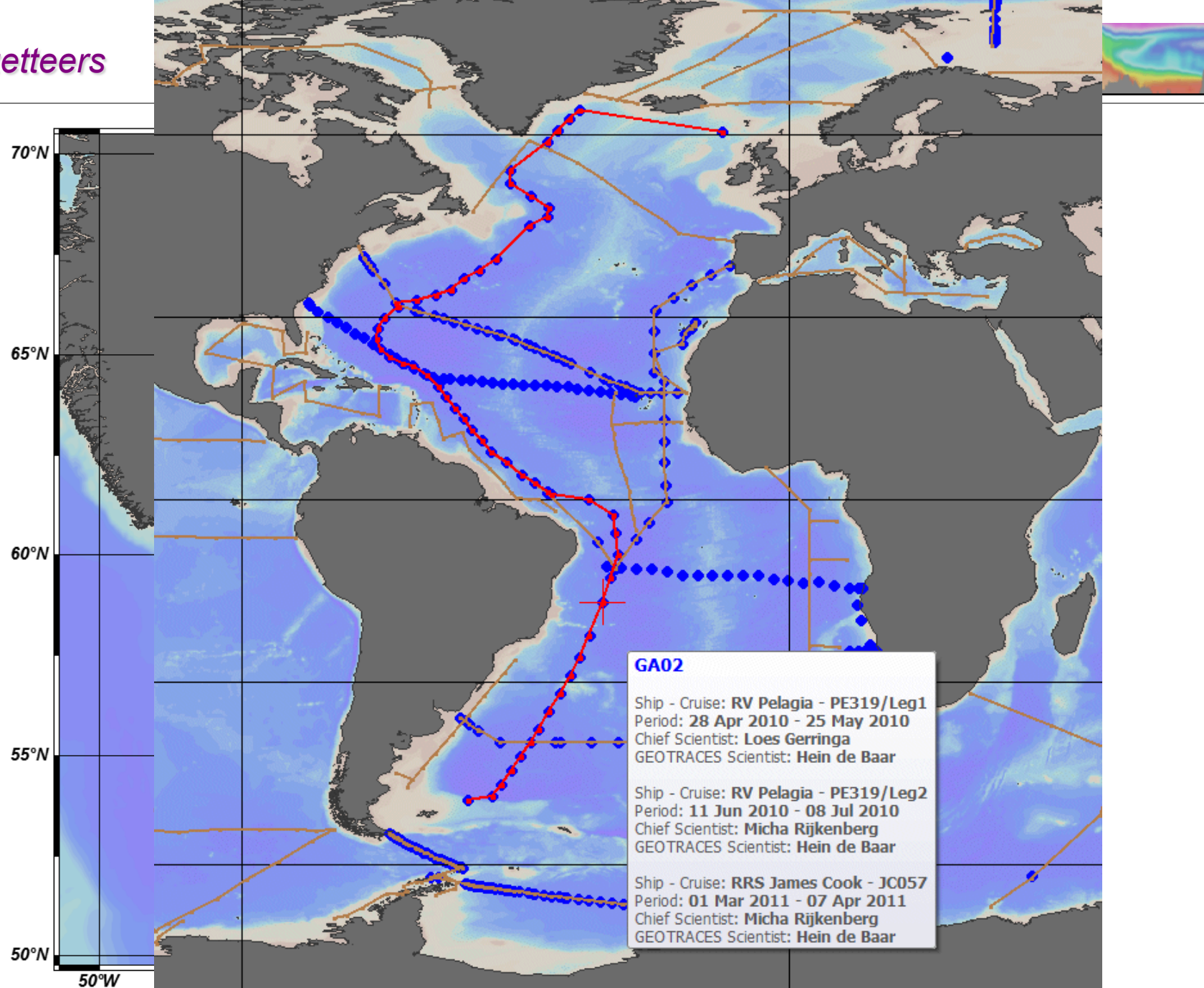
Aggregated Variable
Difference from Reference
Interpolated Variable
Patches

▷ Carbon
▷ Expressions, Derivatives, Integrals
▷ Gases
▷ Metadata
▷ Physical Properties (TEOS-10)
▷ Special
▷ Time

Time

Day of Month (station date)
Day of Month (time variable)
Day of Week (station date)
Day of Week (time variable)
Day of Year (station date)
Day of Year (time variable)
Day Time (station date)
Day Time (time variable)
Month of Year (station date)
Month of Year (time variable)
Time (station date&time)
Time (time variable)
Year (station date)
Year (time variable)

Gazetteers



Built-in Importers:

- *Sea-Bird .cnv files*
- *U.S. NODC World Ocean Database*
- *ARGO profile and trajectory data*
- *WOCE Exchange Format CTD and bottle data*
- *GTSP netCDF 4 files*
- *MEDAR/MEDATLAS data*
- *Various spreadsheet file formats*

ODV Website: <https://odv.awi.de>

Provides:

Software

Documentation

High-resolution map resources

Data in ODV Format