



# ***Some cool things we do with ERDDAP in support of observing and modeling the northeast U.S. coastal ocean***

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<http://marine.rutgers.edu/wilkin>

<http://myroms.org>

Regional Ocean Modeling System

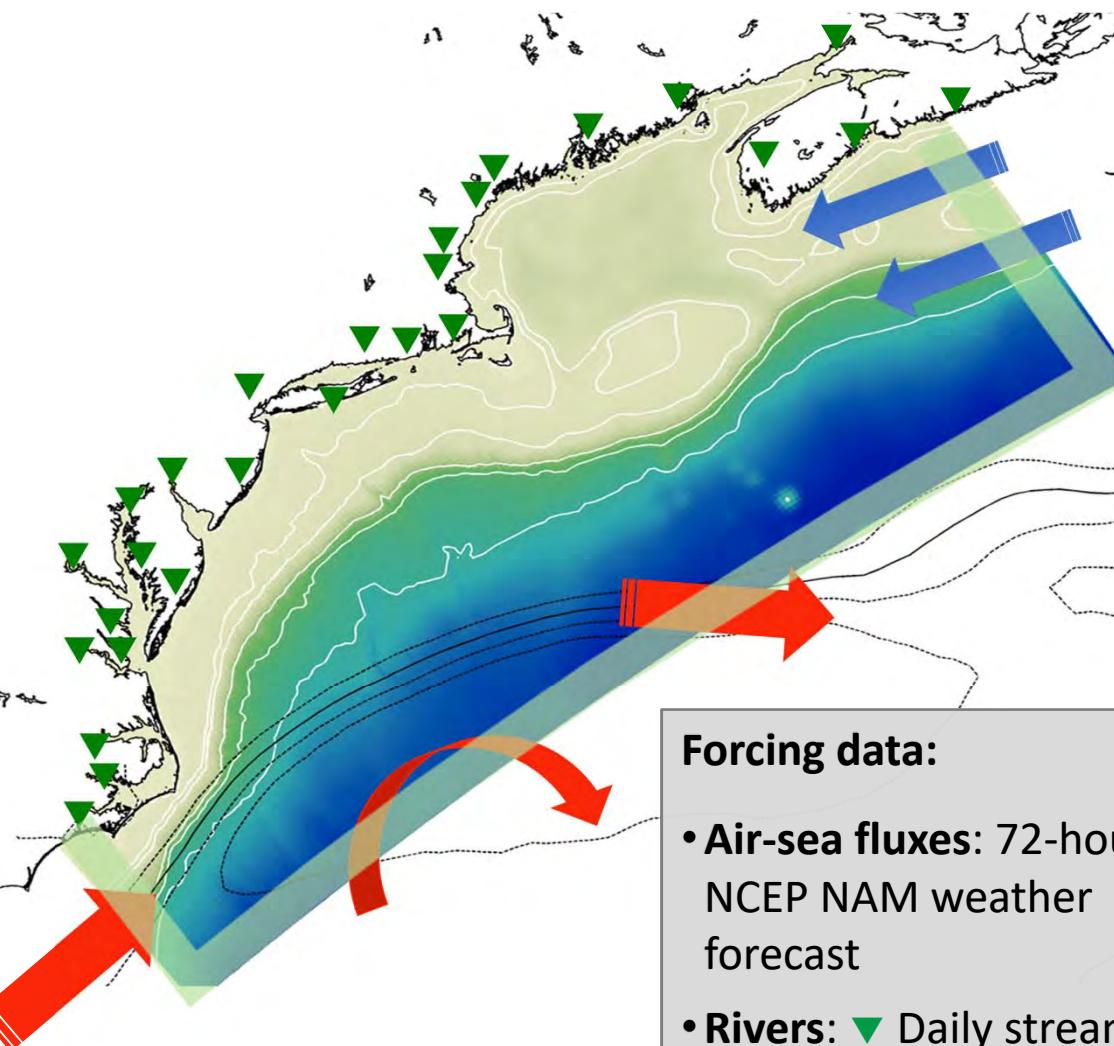
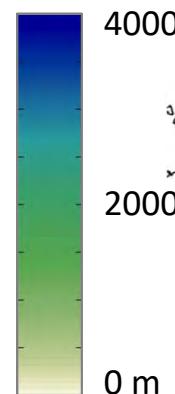
**RUTGERS**

Ocean Surface Topography Science Team, Chicago  
October 2019

# MARACOOS ROMS: forecast for Mid-Atlantic Bight and Gulf of Maine

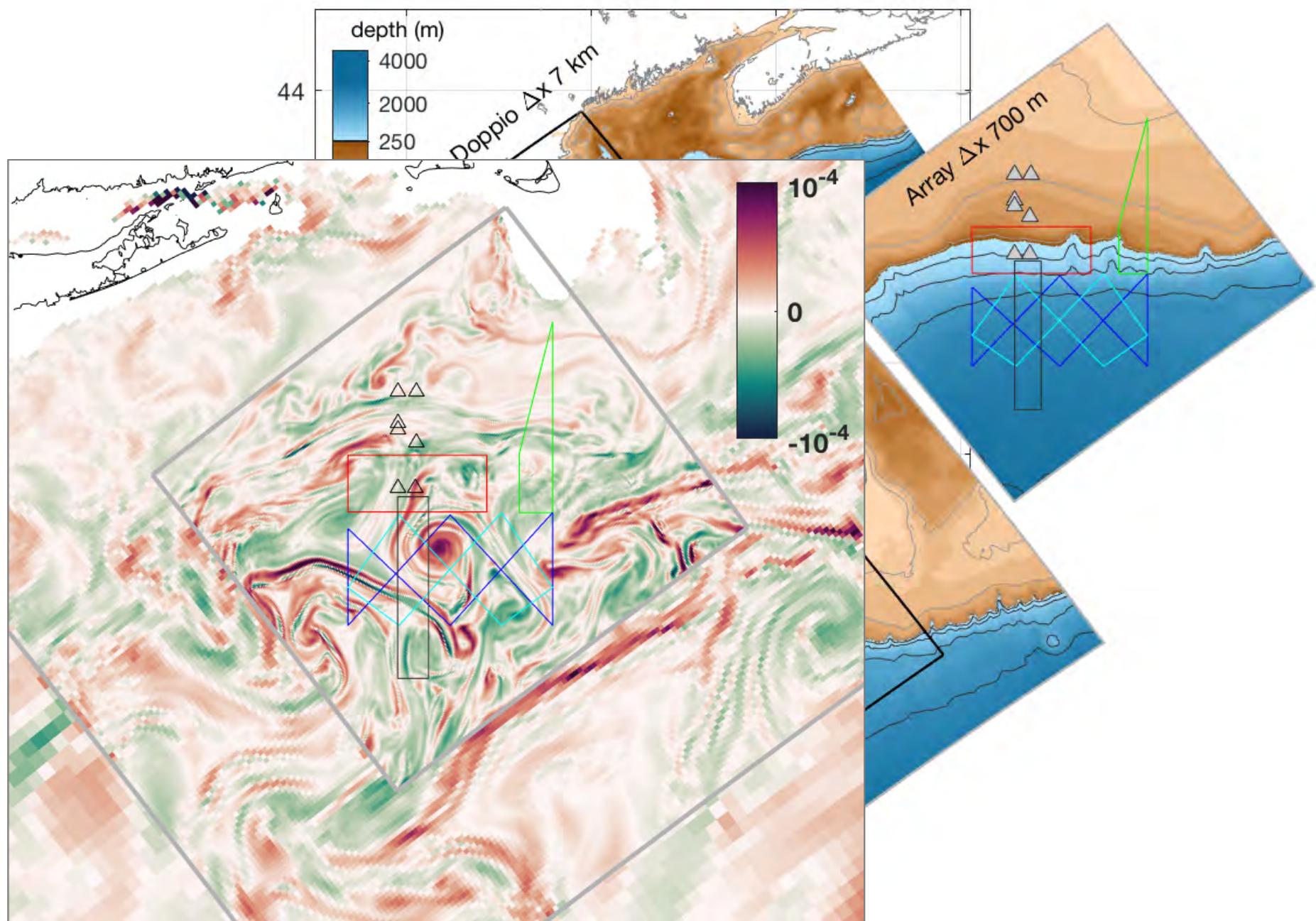
## Open boundary conditions:

- Mercator-Océan 7-day forecast from Copernicus
- Correct for bias in T/S
- Adjust for consistent MDT and mean velocity
- Add harmonic tides
- Active/passive (radiation/nudging) at perimeter, and flow relaxation nudging zone



## Forcing data:

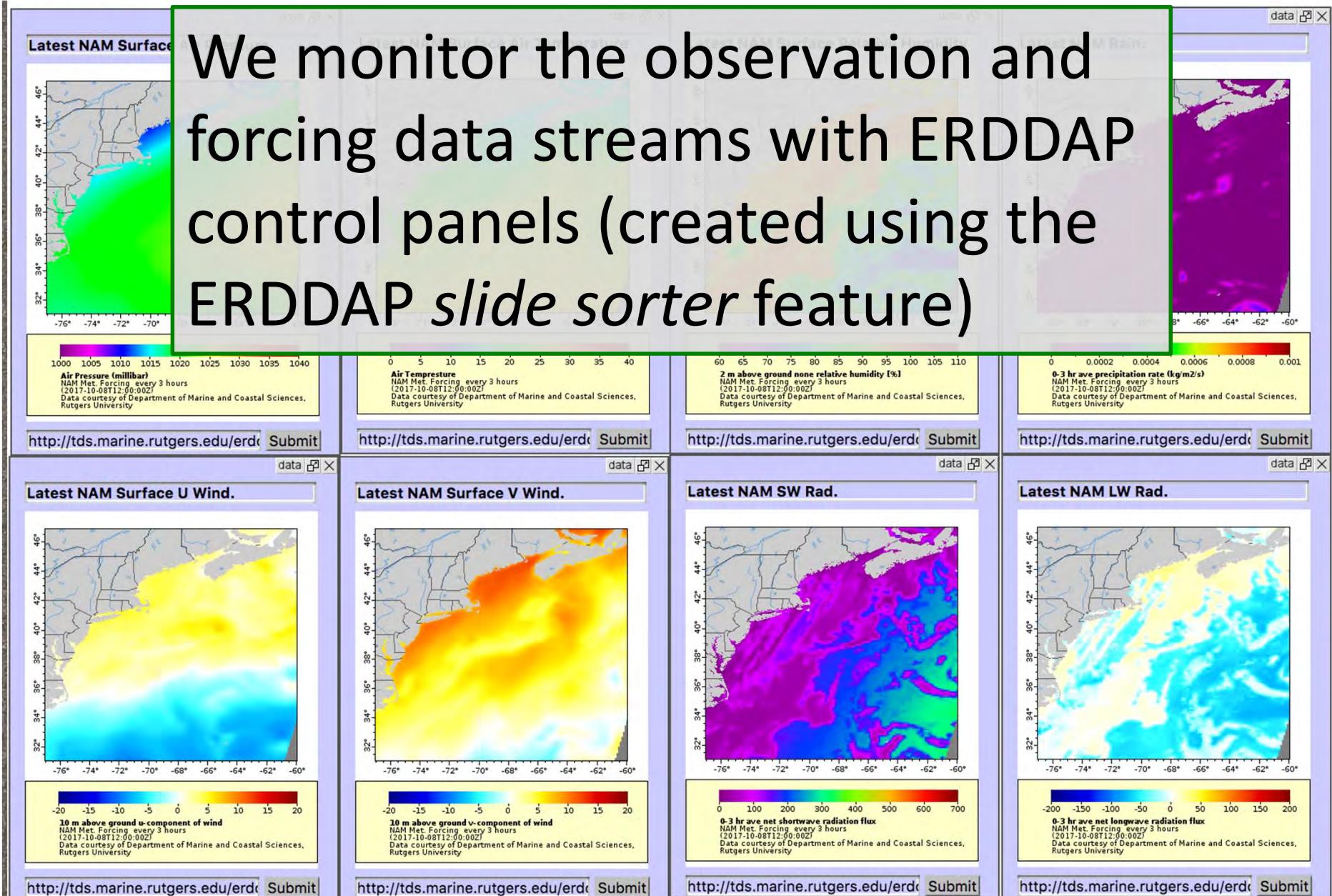
- Air-sea fluxes: 72-hour NCEP NAM weather forecast
- Rivers: ▼ Daily stream gauge data scaled to account for un-gauged watershed





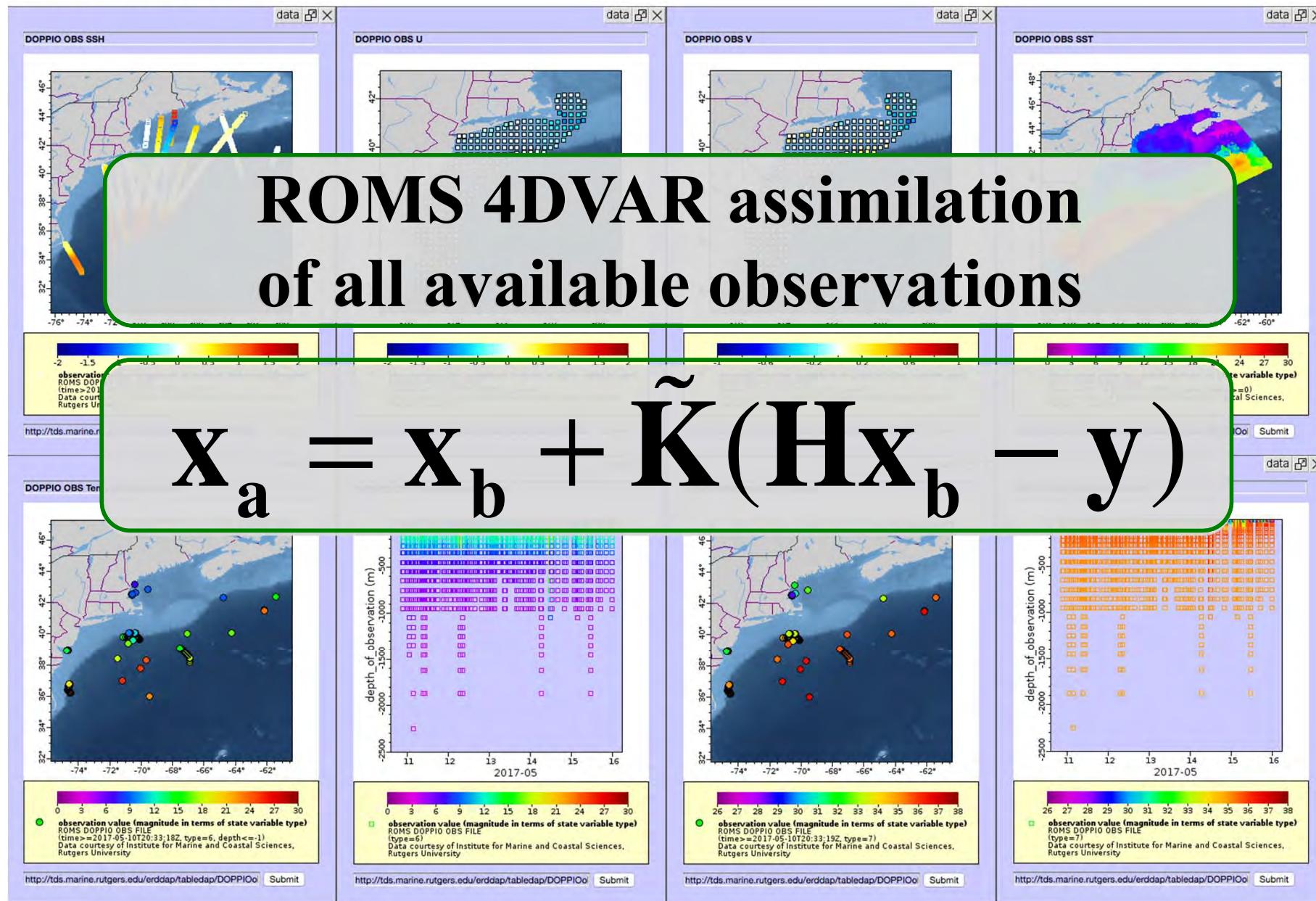
[ERDDAP > Slide Sorter](#)

We monitor the observation and forcing data streams with ERDDAP control panels (created using the ERDDAP *slide sorter* feature)

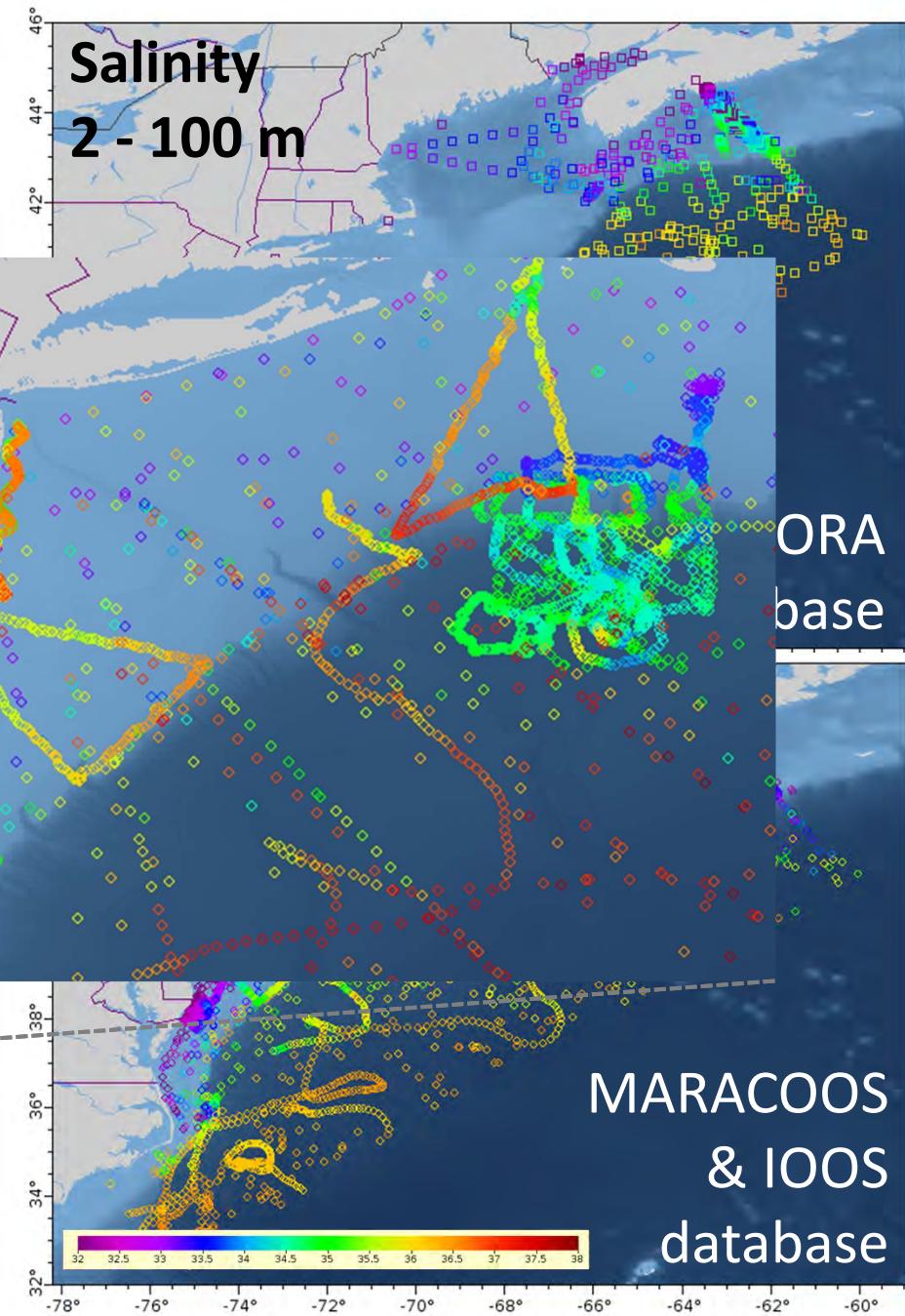
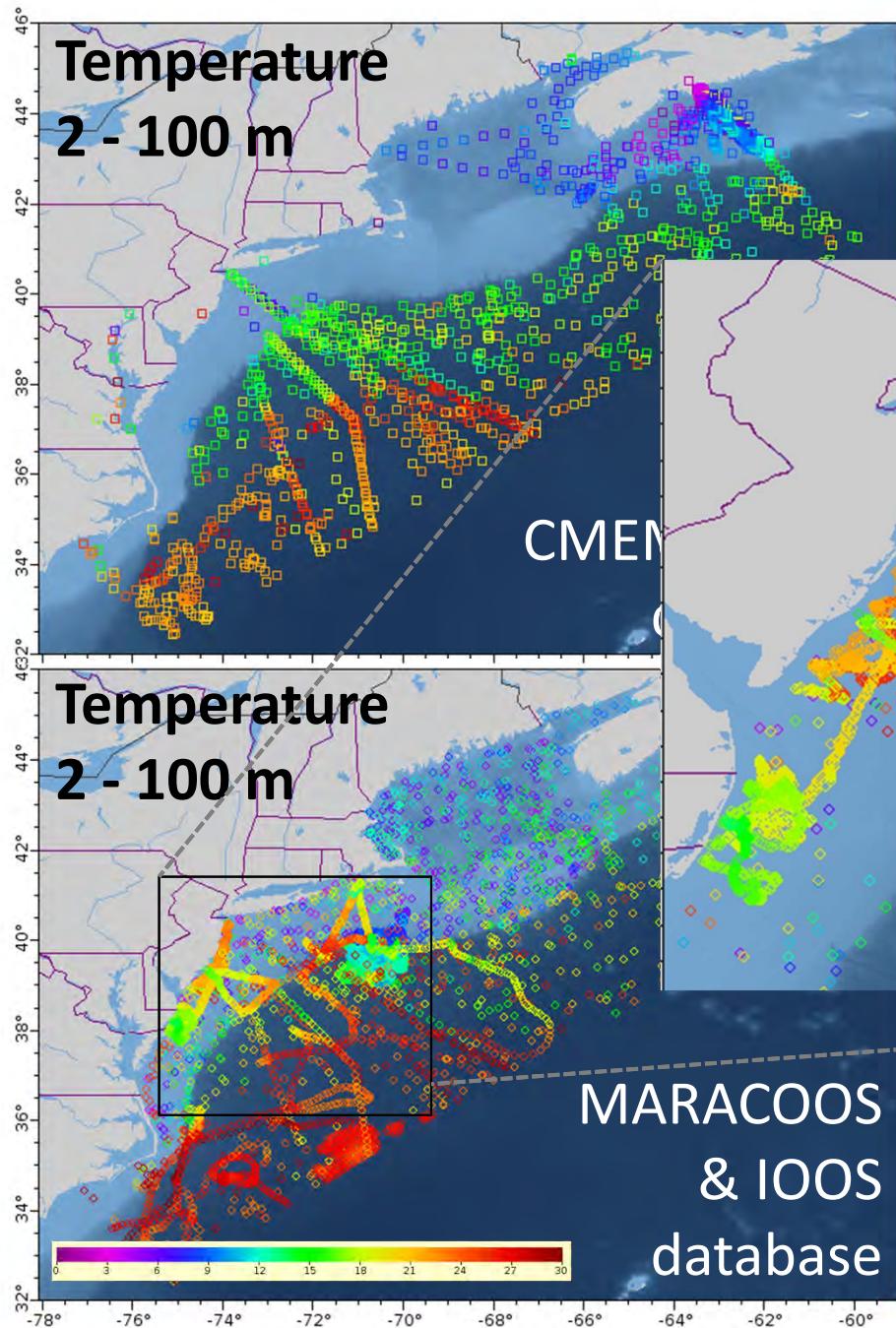




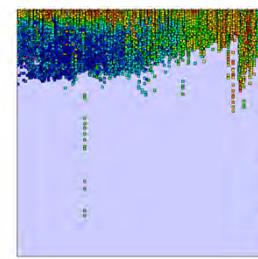
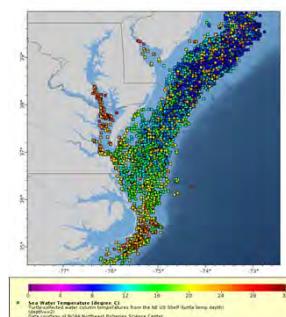
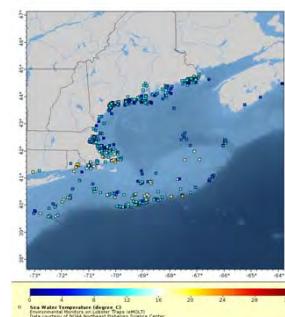
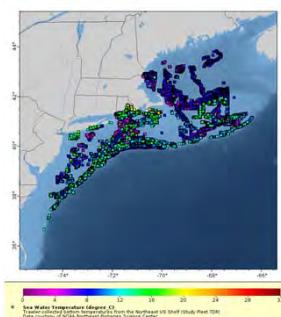
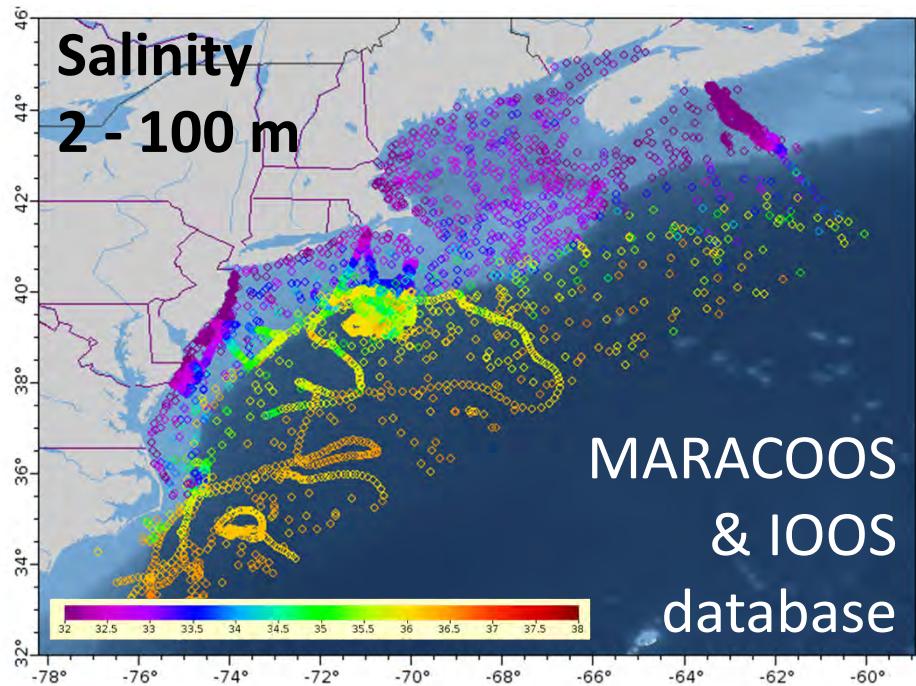
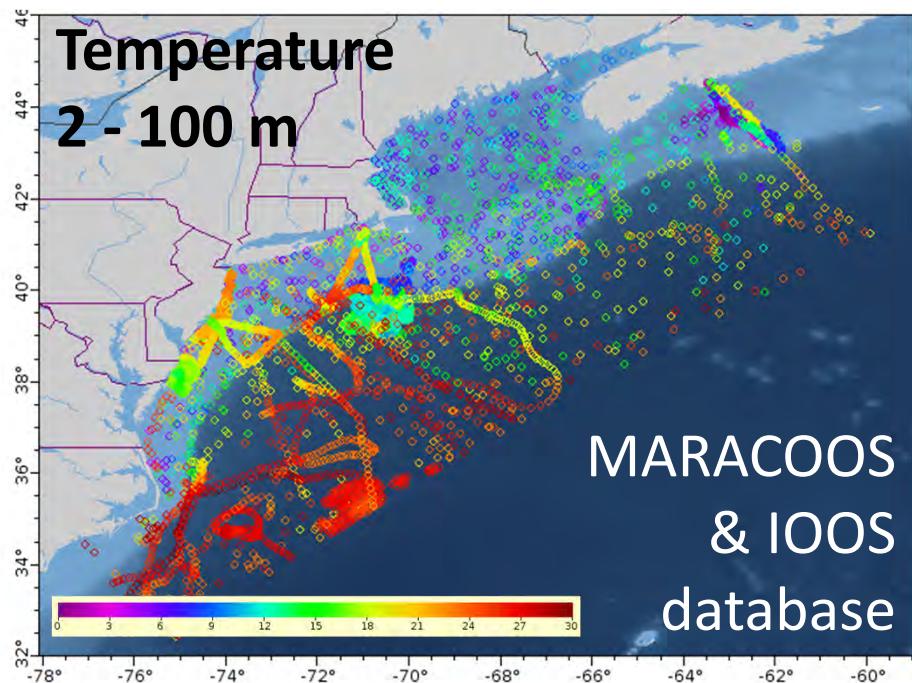
[ERDDAP > Slide Sorter](#)



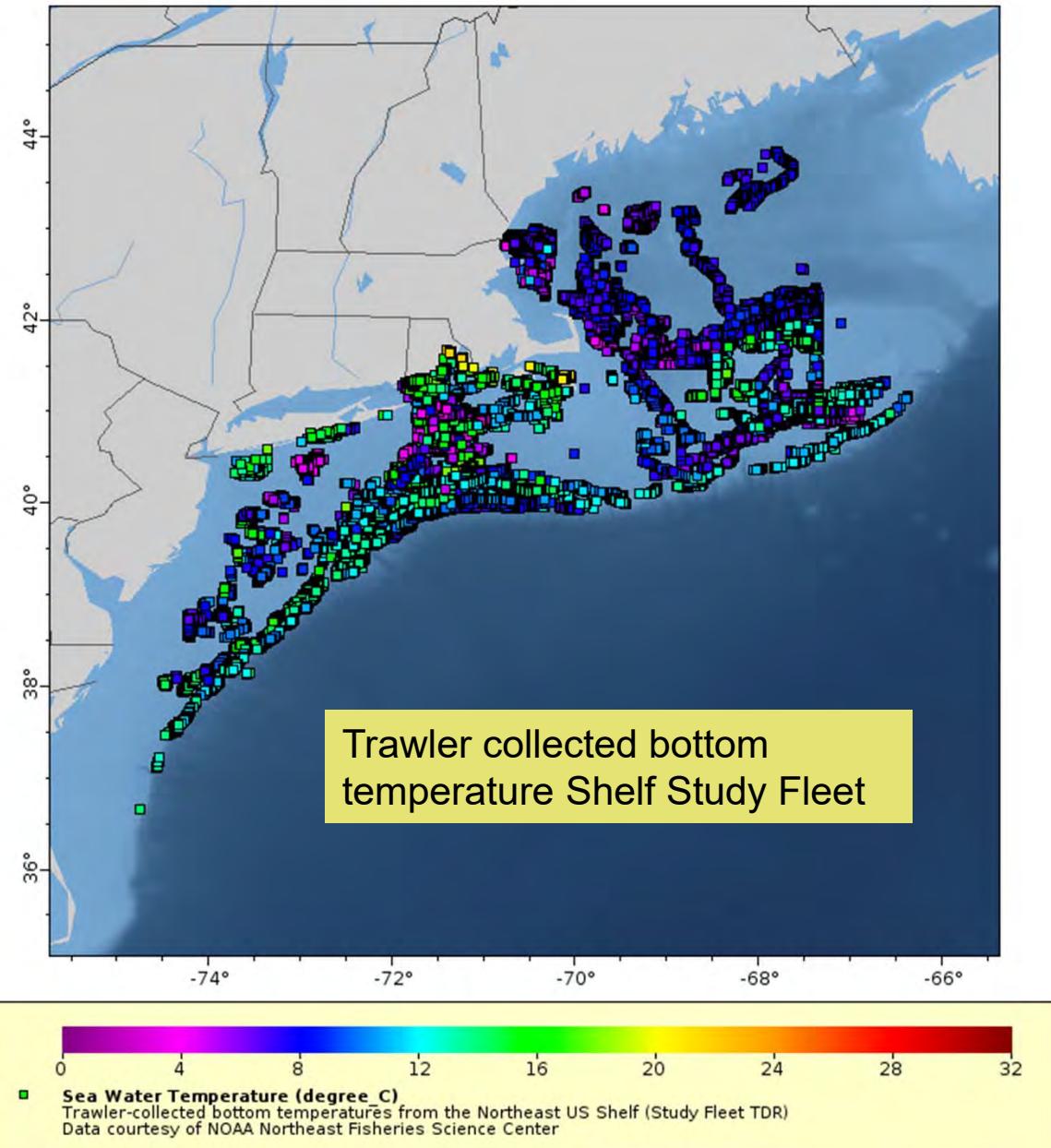
# Subsurface in situ ocean observations for the northeast U.S. in 2015



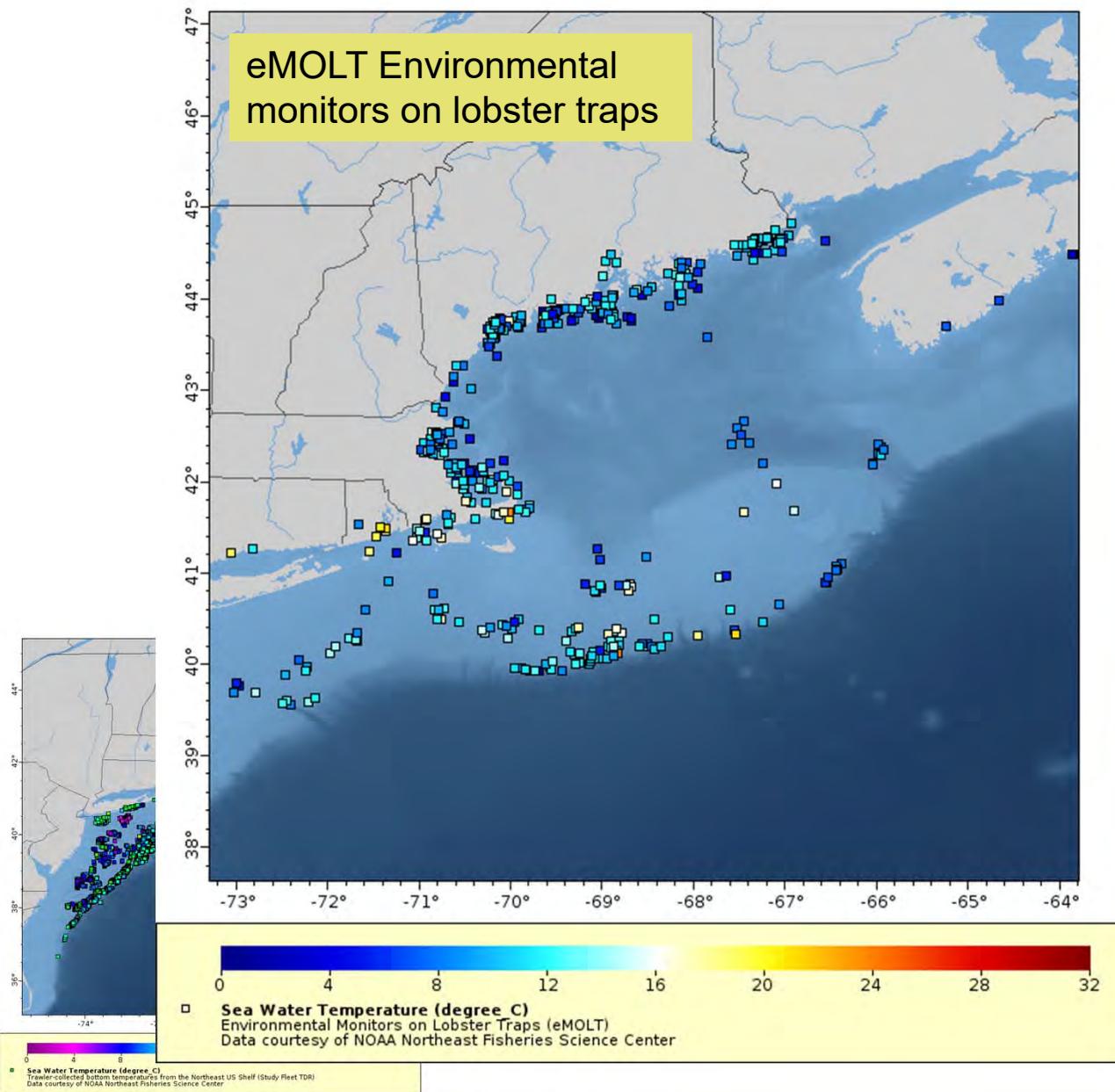
# Subsurface in situ ocean observations for the northeast U.S. in 2015



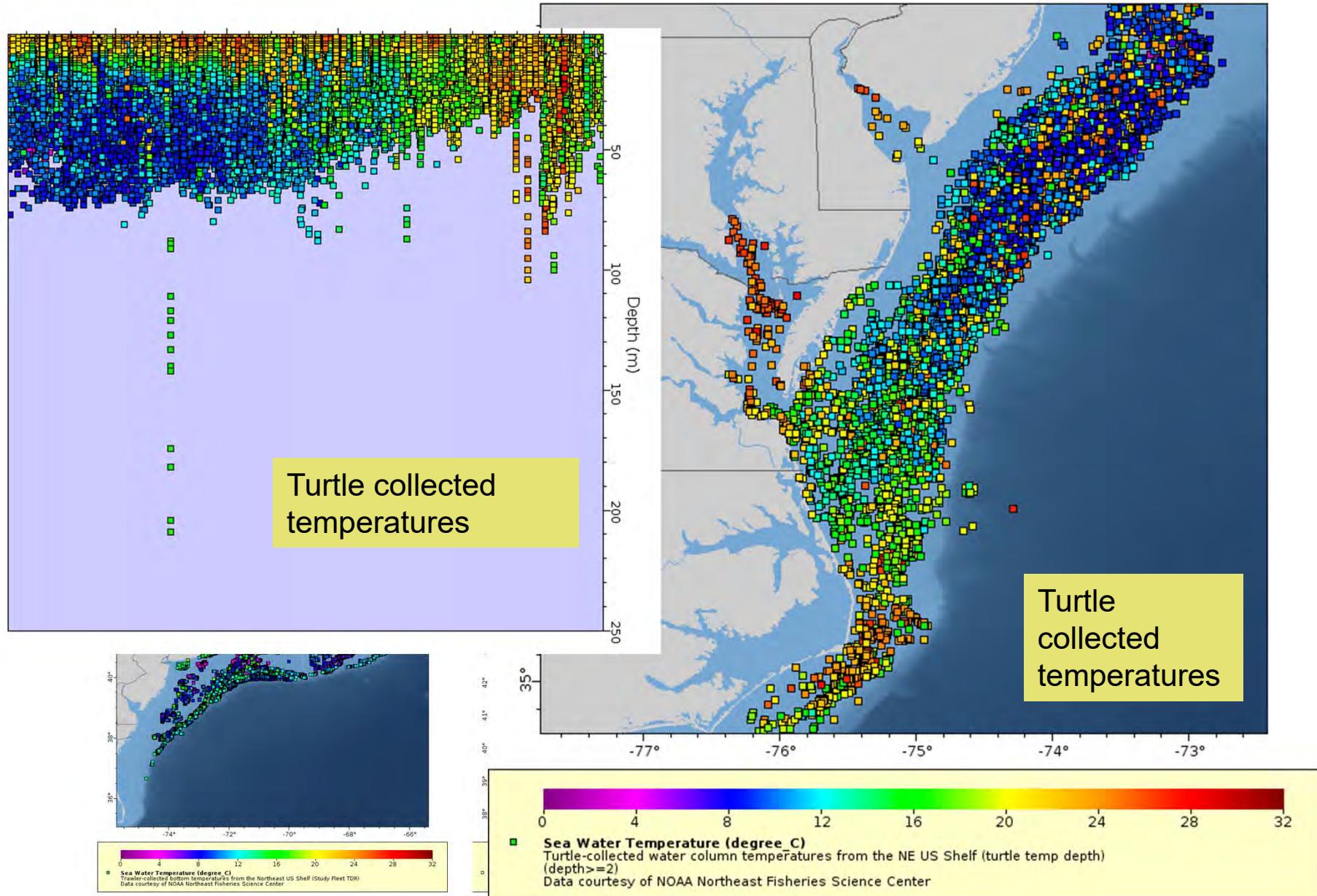
## *Subsurface in situ ocean observations - delayed*



## *Subsurface in situ ocean observations - delayed*



# *Subsurface in situ ocean observations - delayed*



[ERDDAP](#) > [tabledap](#) > Make A Graph 

Dataset Title: Observations  
Institution: Rutgers  
Range: longitude  
Information: Summary

Graph Type: markers  
X Axis: longitude  
Y Axis: latitude  
Color: obs\_value

Constraints

obs\_type

depth

>= -2

<=

time

>= 2015-12-07T00:00:00

<=

2015-12-10T00:00:00

>=

<=

>=

<=

Server-side Functions

distinct()

("       ")

Graph Settings

Marker Type: Dot Size: 3

Color:

Color Bar:

Continuity: Scale:

Min:

Max:

N Sections:

Draw the land mask:

Y Axis Minimum: Maximum: ascending

**Redraw the Graph** (Please be patient. It may take a while to get the data.)

Optional:

Then set the File Type:  .largePng and

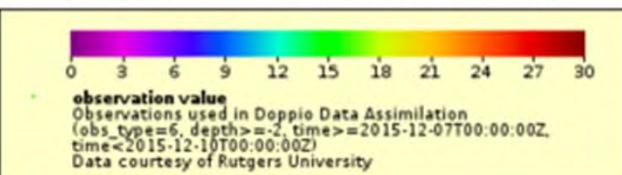
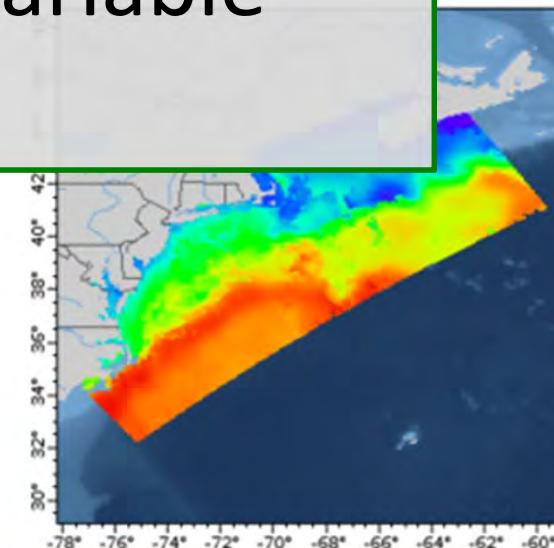
or view the URL: [http://tds.marine.rutgers.edu/erddap/tabledap/DOPPIO\\_REANALYSIS\\_OI](http://tds.marine.rutgers.edu/erddap/tabledap/DOPPIO_REANALYSIS_OI)

[\(Documentation / Bypass this form \)](#) [\(File Type information\)](#)

Observations entering the 4D-Var assimilation can be quickly visualized according to variable type or provenance.

30T23:00:00Z

point.   
 In 8x





## ERDDAP > tabledap > Make A Graph

Dataset Title: **Observations used in Doppio Data Assimilation** [RSS](#)

Institution: Rutgers University (Dataset ID: DOPPIO\_REANALYSIS\_OBS)

Range: longitude = -77.44505 to -59.690285°E, latitude = 32.23944 to 45.95889°N, depth = -4250.0 to 0.0, time = 2007-01-02T00:00:00Z to 2015-12-30T23:00:00Z

Information: [Summary](#) | [License](#) | [FGDC](#) | [ISO 19115](#) | [Metadata](#) | [Background](#) | [Subset](#) | [Data Access Form](#)

**Graph Type:**

X Axis:

Y Axis:

Color:

Click on the map to specify a new center point.

Zoom:

Time range:  day(s)

**Constraints**

**Optional Constraint #1**

**Optional Constraint #2**

= 6

<=

6

>= -2

<=

= 302

<=

>= 2015-12-07T00:00:00

< 2015-12-10T00:00:00

**Server-side Functions**

[distinct\(\)](#)

(" ")

**Graph Settings**

Marker Type:  Size:

Continuity:

Scale:

Min:

Max:

N Sections:

Draw the land mask:

Maximum:

ascending

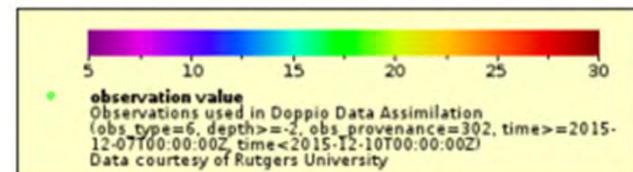
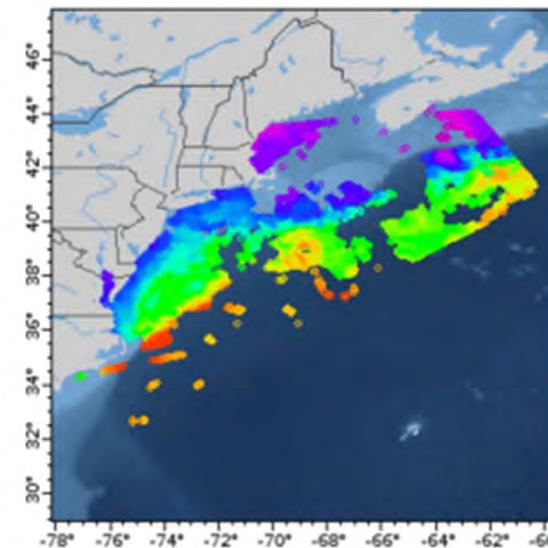
**Redraw the Graph** (Please be patient. It may take a while to get the data.)

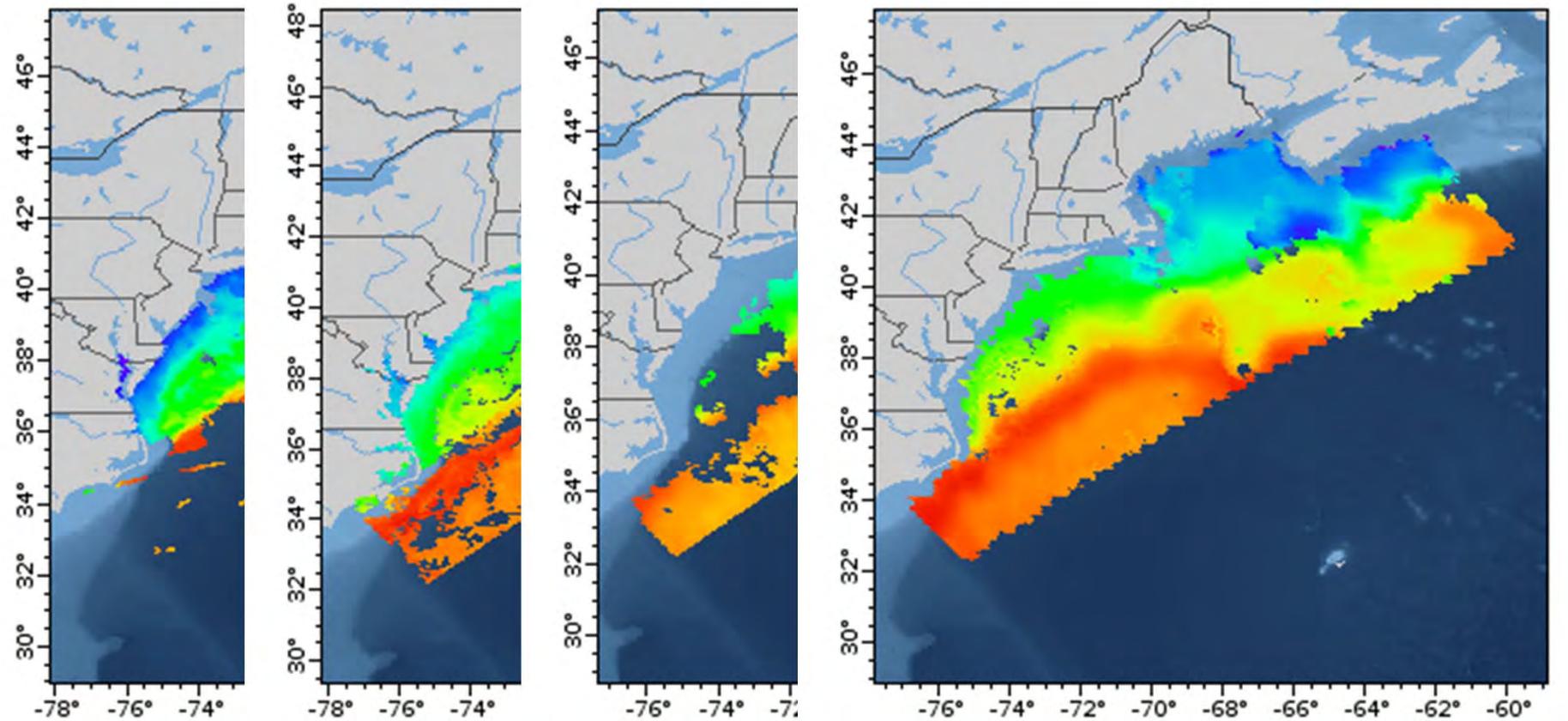
Optional:

Then set the File Type:  and

or view the URL: [http://tds.marine.rutgers.edu/erddap/tabledap/DOPPIO\\_REANALYSIS\\_OI](http://tds.marine.rutgers.edu/erddap/tabledap/DOPPIO_REANALYSIS_OI)

([Documentation / Bypass this form](#) ) ([File Type information](#))





**observation val**  
 Observations used  
 (obs\_type=6, depth>=-2, time>=2015-12-07T00:00:00Z,  
 time<2015-12-10T00:00:00Z, obs\_provenance=306)  
 Data courtesy of Rutgers University

**observation val**  
 Observations used  
 (obs\_type=6, depth>=-2, time>=2015-12-07T00:00:00Z,  
 time<2015-12-10T00:00:00Z, obs\_provenance=306)  
 Data courtesy of Rutgers University

**observation val**  
 Observations used  
 (obs\_type=6, depth>=-2, time>=2015-12-07T00:00:00Z,  
 time<2015-12-10T00:00:00Z, obs\_provenance=306)  
 Data courtesy of Rutgers University

**observation value**  
 Observations used in Doppio Data Assimilation  
 (obs\_type=6, depth>=-2, time>=2015-12-07T00:00:00Z,  
 time<2015-12-10T00:00:00Z, obs\_provenance=306)  
 Data courtesy of Rutgers University

AVHRR

GOES

WSAT

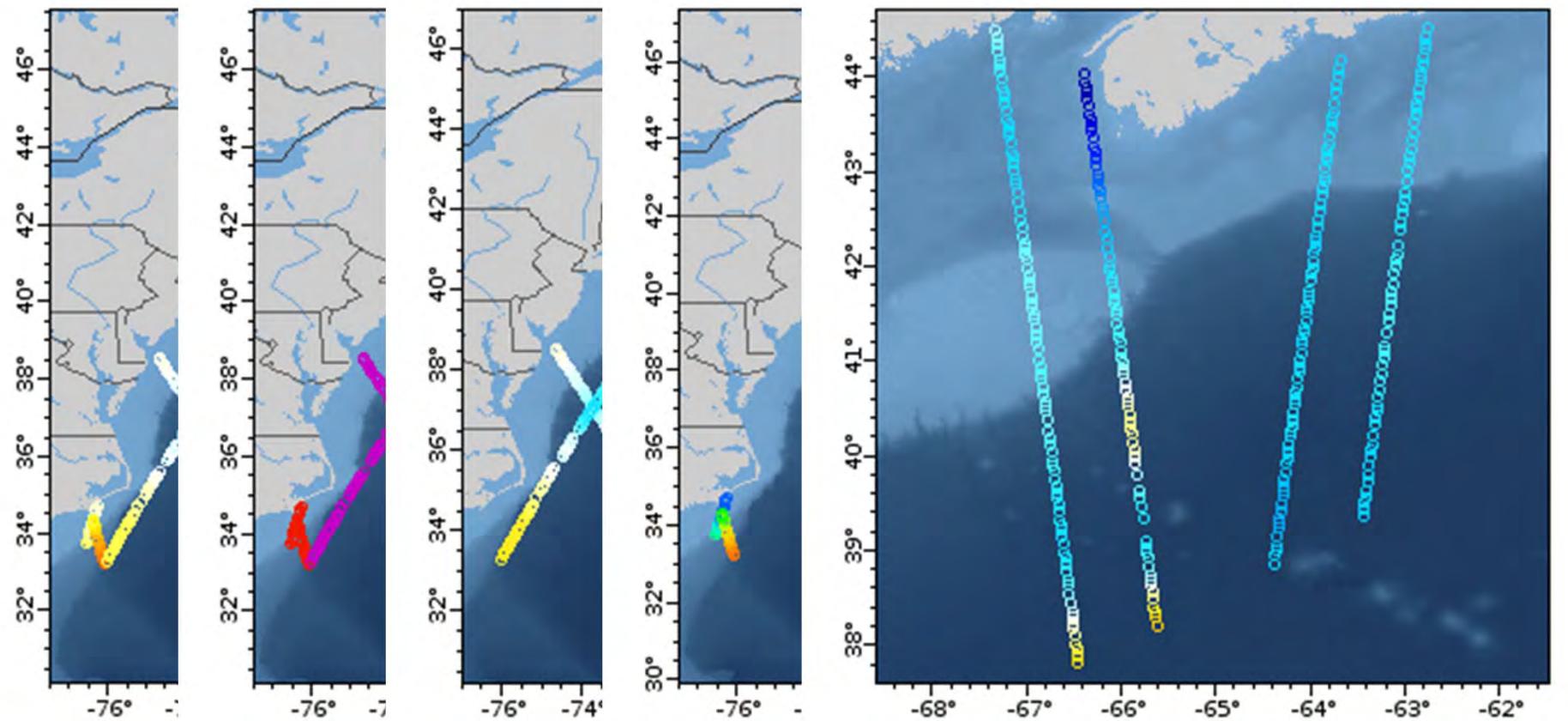
AMSR

3-hour

microwave

microwave SST

geostationary



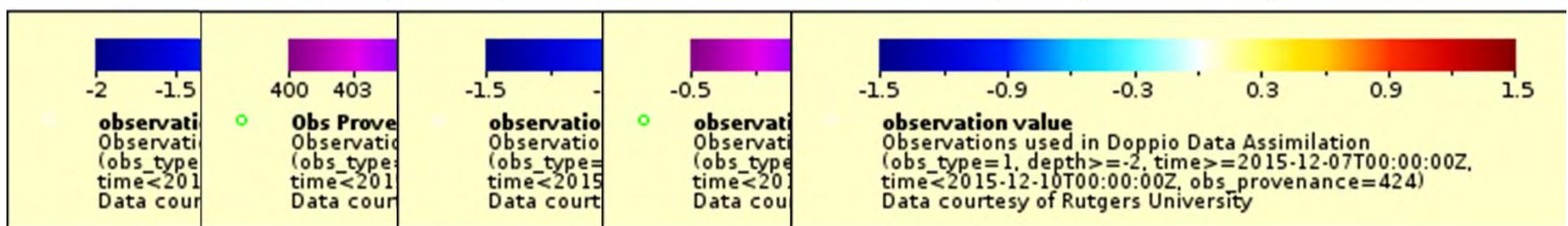
All SSH

Obs.  
provenance  
code

Jason-2

AltiKa

CryoSat



```
wilkin@queequeg{doppio} ? cat ProvenanceTableJan2018.txt
```

Provenance, CODE, Description

201,Aquarius,Aquarius SSS  
202,SMOS,SMOS SSS  
211,MODISSSS,SSS from MODIS color  
300,SST-sup, SST super obs  
302,AVHRR, AVHRR IR SST  
303,GOES, GOES geostationary IR SST  
304,TRMM, TRMM microwave SST  
305,WSAT, WSAT microwave SST  
306,AMSR, AMSR microwave SST  
307,VIIRS, VIIRS infrared SST  
351,REMSS, REMSS blended SST  
352,JPLMURSST, JPL MUR SST  
400,SSH-sup, SSH super obs  
401,Jason1, Jason-1  
402,Jason2, Jason-2  
403,Jason3, Jason-3  
404,JasonCS,Jason-CS  
405,Topex, TOPEX  
406,GFO, GEOSAT Follow-on  
421,ERS1, ERS-1  
422,ERS2, ERS-2  
423,ENVISAT, Envisat  
424,CRYOSAT, CryoSat  
425,HY2A, HY-2A

Provenance, CODE, Description

607,CP03ISSM, CP03ISSM surface bottom CTD  
608,CP03ISSP, CP03ISSP profiling CTD  
609,CP04OSPM, CP04OSPM profiling CTD  
611,CP04OSSM, CP04OSSM surface bottom CTD  
612,CP01CNPM, CP04CNPM profiling CTD  
613,CP03ISPM, CP03ISPM profiling CTD  
641,GL003, Pioneer glider GL003  
642,GL335, Pioneer glider GL335  
643,GL336, Pioneer glider GL336  
644,GL339, Pioneer glider GL339  
645,GL340, Pioneer glider GL340  
646,GL374, Pioneer glider GL374  
647,GL376, Pioneer glider GL376  
648,GL379, Pioneer glider GL379  
649,GL380, Pioneer glider GL380  
650,GL387, Pioneer glider GL387  
651,GL388, Pioneer glider GL388  
652,GL389, Pioneer glider GL389  
653,GL390, Pioneer glider GL390  
654,PG564, Pioneer glider PG564  
655,GL375, Pioneer glider GL375  
656,PG583, Pioneer glider PG583  
700,GLD-sup, Glider super obs  
701,RUGLD, RU/MARACOOS gliders

We manage the group provenance code “data base” using a simple ascii file and ERDDAP

Provenance	CODE	Description
201	Aquarius	Aquarius SSS
202	SMOS	SMOS SSS

[ERDDAP > tabledap > Data Access Form](#)

Dataset Title: **DOPPIO Provenance Codes** [RSS](#)

Institution: Department of Marine and Coastal Sciences, Rutgers University (Dataset ID)

Information: [Summary](#) | [License](#) | [Metadata](#) | [Background](#) | [Subset](#)

Variable [?](#) [Check All](#) [Uncheck All](#)

Optional Constraint #1 <a href="#">?</a>	Optional Constraint #2 <a href="#">?</a>
>= 600	<= 650
>=	<=
>=	<=
>=	<=

File type: [.htmlTable](#) – View a UTF-8 .html web page with the data in a table. Times are ISO 8601 s  
Just generate the URL: [http://tds.marine.rutgers.edu/erddap/tabledap/DOPPIO\\_PROVENANCE.html](http://tds.marine.rutgers.edu/erddap/tabledap/DOPPIO_PROVENANCE.html)

Submit (Please be patient. It may take a while to get the data.)

H	Provenance	CODE	Description
H			
L			
B	601	CP01CNSM	CP01CNSM near surface and near bottom T/S
W	602	CP01CNSP	CP01CNSP profiling CTD
A	603	CP02PMCI	CP02PMCI profiling CTD
C	604	CP02PMCO	CP02PMCO profiling CTD
L	605	CP02PMUI	CP02PMUI profiling CTD
D	606	CP02PMUO	CP02PMUO profiling CTD
H	607	CP03ISSM	CP03ISSM near surface and near bottom T/S
C	608	CP03ISSP	CP03ISSP profiling CTD
C	609	CP04OSPM	CP04OSPM profiling CTD
C	611	CP04OSSM	CP04OSSM near surface and near bottom T/S
C	612	CP04CNPM	CP04CNPM profiling CTD
C	613	CP03ISPM	CP03ISPM profiling CTD
C	641	GL003	Pioneer glider GL 003

```

function [short,long,num] = doppio_provenance_lookup(prov)
% [Shortname,Description,Prov_number] = doppio_provenance_lookup(Prov)
% Query the Doppio provenance table in the ERDDAP service at
% http://tds.marine.rutgers.edu/erddap/tabledap/DOPPIO_PROVENANCE.html

server = 'http://tds.marine.rutgers.edu/erddap/tabledap/';
url = [server 'DOPPIO_PROVENANCE.mat?' ...
        'Provenance%2CCODE%2CDescription&Provenance=' int2str(prov(1))];
load(urlwrite(url,'doppio_provenance_lookup_tmpfile.mat'))
short = DOPPIO_PROVENANCE.CODE;
long = DOPPIO_PROVENANCE.Description;

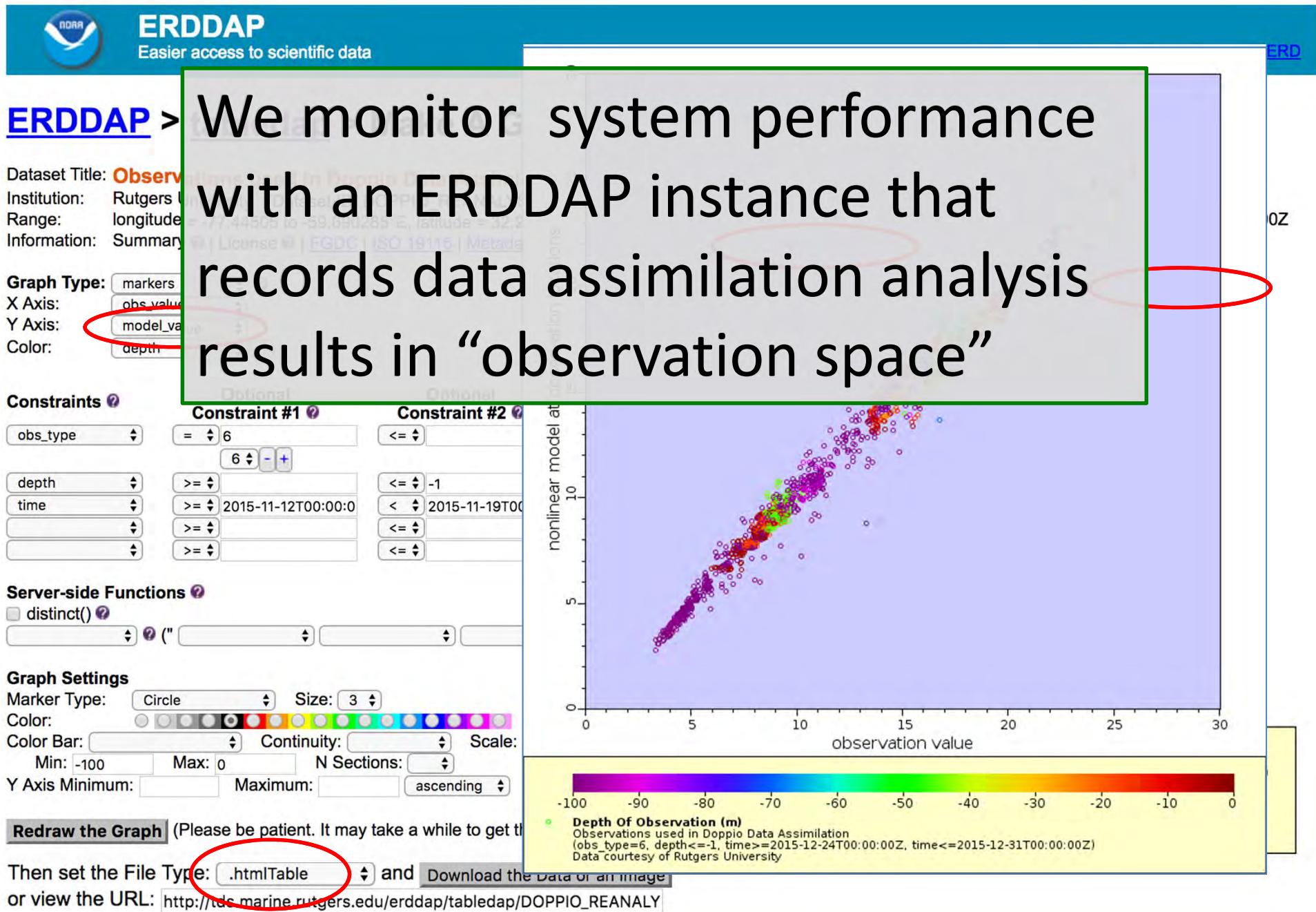
_____

>> [short,long,num] = doppio_provenance_lookup(441)
short =
    'Sent3a'
long =
    'Sentinel-3a'
num =
    441

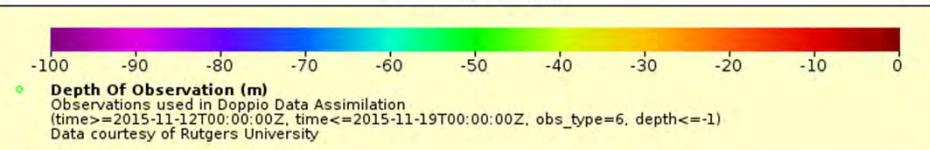
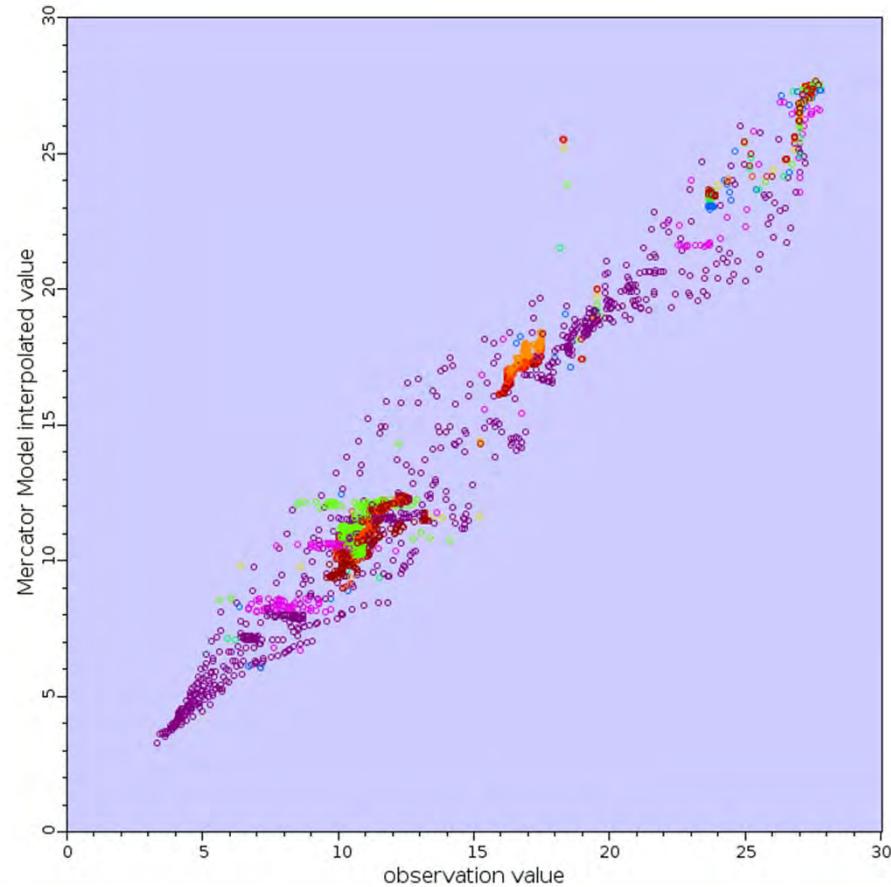
```

[Disclaimers](#) | [Privacy Policy](#) | [Contact](#)

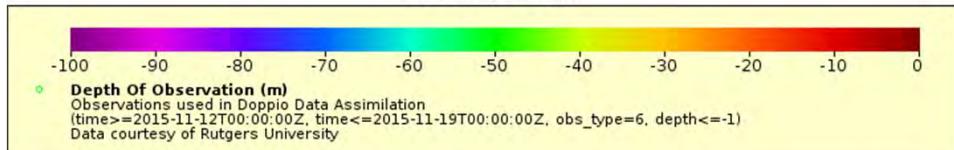
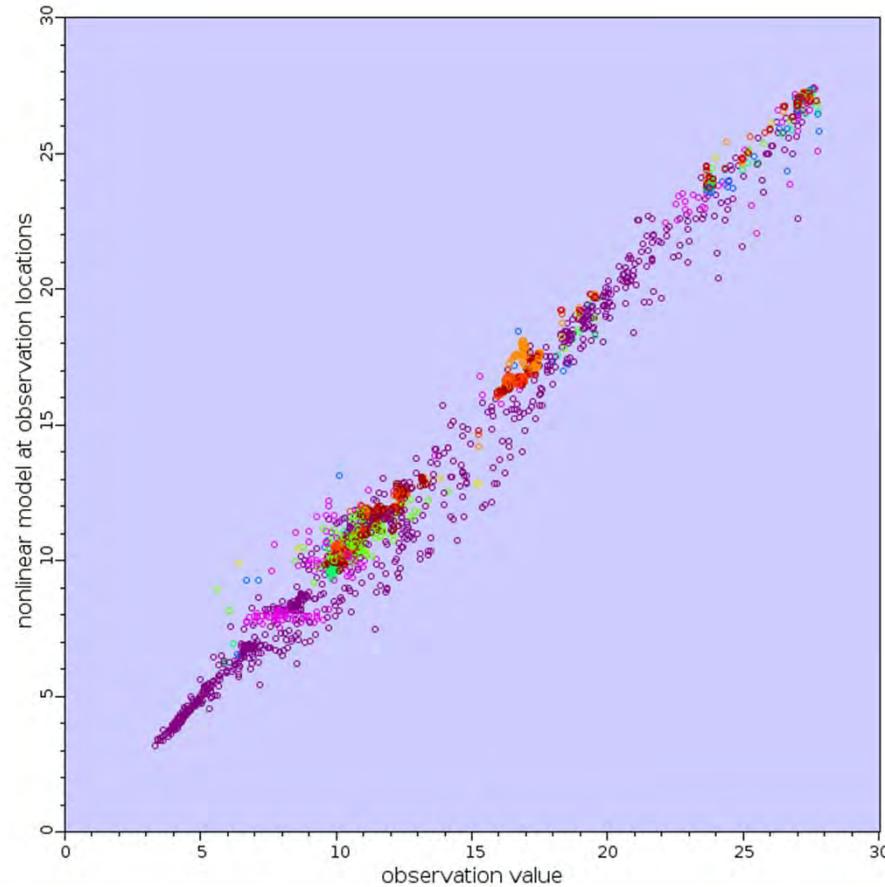
## Browsing the data assimilation system performance



# Mercator-Océan analysis



# ROMS 4DVAR analysis



**There is an ever expanding set of ERDDAP servers in the marine science community ... all processing queries in the same format and delivering data with consistent metadata and standards compliance**

<https://coastwatch.pfeg.noaa.gov/erddap/info/index.html?page=1&itemsPerPage=1000>



**ERDDAP**  
Easier access to scientific data

log in

Brought to you by NOAA NMFS SWFSC ERD

## ERDDAP > List of All Datasets

1409 matching datasets, listed in alphabetical order. View page: 1 (current) [2](#).

Grid DAP Data	Sub-set	Table DAP Data	Make A Graph	W M S	Source Data Files	Accessible ?	Title	Summary	FGDC, ISO, Metadata	Back-ground Info
	set	data	graph			public	* The List of All Active Datasets in this ERDDAP *	?	M	background ↗
data			graph			public	AMSRE Model Output, obs4MIPs NASA-JPL, Global, 1 Degree, 2002-2010, Monthly	?	F I M	background ↗
data			graph	M		public	AMSRE Model Output, obs4MIPs NASA-JPL, Global, 1 Degree, 2002-2010, Monthly, Lon+/-180	?	F I M	background ↗
		data	graph		files	public	AN EXPERIMENTAL DATASET: Underway Sea Surface Temperature and Salinity Aboard the Oleander, 2007-2010	?	F I M	background ↗
	set	data	graph			public	Animal Telemetry Network (ATN)	?	F I M	background ↗
data			graph	M		public	Aquarius Sea Surface Salinity, L3 SMI, Version 5, 1.0°, Global, 2011-2015, 3-Month	?	F I M	background ↗
data			graph	M		public	Aquarius Sea Surface Salinity, L3 SMI, Version 5, 1.0°, Global, 2011-2015, 7-Day	?	F I M	background ↗
data			graph	M		public	Aquarius Sea Surface Salinity, L3 SMI, Version 5, 1.0°, Global, 2011-2015, Daily	?	F I M	background ↗
data			graph	M		public	Aquarius Sea Surface Salinity, L3 SMI, Version 5, 1.0°, Global, 2011-2015, Monthly	?	F I M	background ↗
data			graph		files	public	Audio data from a local source.	?	M	background ↗
	set	data	graph		files	public	Audio data from a local source.	?	M	background ↗
data			graph	M	files	public	AVHRR Pathfinder Version 5.3 L3-Collated (L3C) SST, Global, 0.0417°, 1981-present, Daytime (1 Day Composite)	?	F I M	background ↗
data			graph	M	files	public	AVHRR Pathfinder Version 5.3 L3-Collated (L3C) SST, Global, 0.0417°, 1981-present, Nighttime (1 Day Composite)	?	F I M	background ↗
data			graph			public	AVISO Model Output, obs4MIPs NASA-JPL, Global, 1 Degree, 1992-2010, Monthly	?	F I M	background ↗
data			graph	M		public	AVISO Model Output, obs4MIPs NASA-JPL, Global, 1 Degree, 1992-2010, Monthly, Lon+/-180	?	F I M	background ↗
data			graph	M	files	public	C-HARM 1-Day Advanced Forecast: Pseudo-Nitzschia, cellular domoic acid, and particulate domoic acid probability, California and Southern Oregon coast	?	F I M	background ↗
data			graph	M	files	public	C-HARM 2-Day Advanced Forecast: Pseudo-Nitzschia, cellular domoic acid, and particulate domoic acid probability, California and Southern Oregon coast	?	F I M	background ↗



## ERDDAP > griddap

Griddap lets you use the OPeNDAP hyperslab protocol to request data subsets, graphs, and maps from gridded datasets (for example, satellite data and climate model data). For details, see [ERDDAP's griddap Documentation](#).

1071 matching datasets, listed in alphabetical order. View page: 1 (current) [2](#).  
(Or, refine this search with [Advanced Search](#)

Grid DAP Data	Sub-set	Table DAP Data	Make A Graph	W M S	Source Data Files	Accessible	Title
<a href="#">data</a>			<a href="#">graph</a>			public	AMSRE Model Output, obs4MIPs NASA-JPL, Global, 1 Degree, 2002-2010, Monthly
<a href="#">data</a>			<a href="#">graph</a>	M		public	AMSRE Model Output, obs4MIPs NASA-JPL, Global, 1 Degree, 2002-2010, Monthly, L
<a href="#">data</a>			<a href="#">graph</a>	M		public	Aquarius Sea Surface Salinity, L3 SMI, Version 5, 1.0°, Global, 2011-2015, 3-Month
<a href="#">data</a>			<a href="#">graph</a>	M		public	Aquarius Sea Surface Salinity, L3 SMI, Version 5, 1.0°, Global, 2011-2015, 7-Day
<a href="#">data</a>			<a href="#">graph</a>	M		public	Aquarius Sea Surface Salinity, L3 SMI, Version 5, 1.0°, Global, 2011-2015, Daily
<a href="#">data</a>			<a href="#">graph</a>	M		public	Aquarius Sea Surface Salinity, L3 SMI, Version 5, 1.0°, Global, 2011-2015, Monthly
<a href="#">data</a>			<a href="#">graph</a>		files	public	Audio data from a local source.
<a href="#">data</a>			<a href="#">graph</a>	M	files	public	AVHRR Pathfinder Version 5.3 L3-Collated (L3C) SST, Global, 0.0417°, 1981-present, I Day Composite)
<a href="#">data</a>			<a href="#">graph</a>	M	files	public	AVHRR Pathfinder Version 5.3 L3-Collated (L3C) SST, Global, 0.0417°, 1981-present, Nighttime (1 Day Composite)
<a href="#">data</a>			<a href="#">graph</a>			public	AVISO Model Output. obs4MIPs NASA-JPL. Global. 1 Dearee. 1992-2010. Monthly



## ERDDAP > Advanced Search

**Directions:** Specify as many or as few search criteria as you want, then click Search.

Only the datasets that match **all** of the search criteria will appear in the results.

### Full Text Search for Datasets

#### Search for Datasets by Category

protocol	=	griddap	▼
cdm_data_type	=	(ANY)	▼
institution	=	(ANY)	▼
ioos_category	=	(ANY)	▼
keywords	=	(ANY)	▼
long_name	=	✓ (ANY)	▼
standard_name	=	✓ (ANY)	▼
variableName	=	(ANY)	▼

#### Search for Datasets that have

Maximum Latitude	=	
Min and Max Longitude	=	
Minimum Latitude	=	



- air\_potential\_temperature
- air\_pressure
- air\_pressure\_at\_sea\_level
- air\_temperature
- altitude
- atmosphere\_mass\_content\_of\_water
- chlorophyll\_concentration\_in\_sea\_water
- cloud\_area\_fraction
- cloud\_binary\_mask
- concentration\_of\_chlorophyll\_in\_sea\_water
- convective\_rainfall\_amount
- depth

... all processing queries in the same format and delivering data with  
consistent metadata and standards compliance  
... and the capability to search across multiple distributed ERDDAPs

coastwatch.pfeg.noaa.gov/erddap/download/SearchMultipleERDDAPs.html

**ERDDAP**  
Easier access to scientific data

Brought to you by NOAA NMFS SWFSC ERD

## Search Multiple ERDDAPs [?](#)

Do a full text search for datasets:  [Submit](#)

Or, do an advanced search:  [Submit](#)

<https://coastwatch.pfeg.noaa.gov/erddap/download/SearchMultipleERDDAPs.html>

### Results

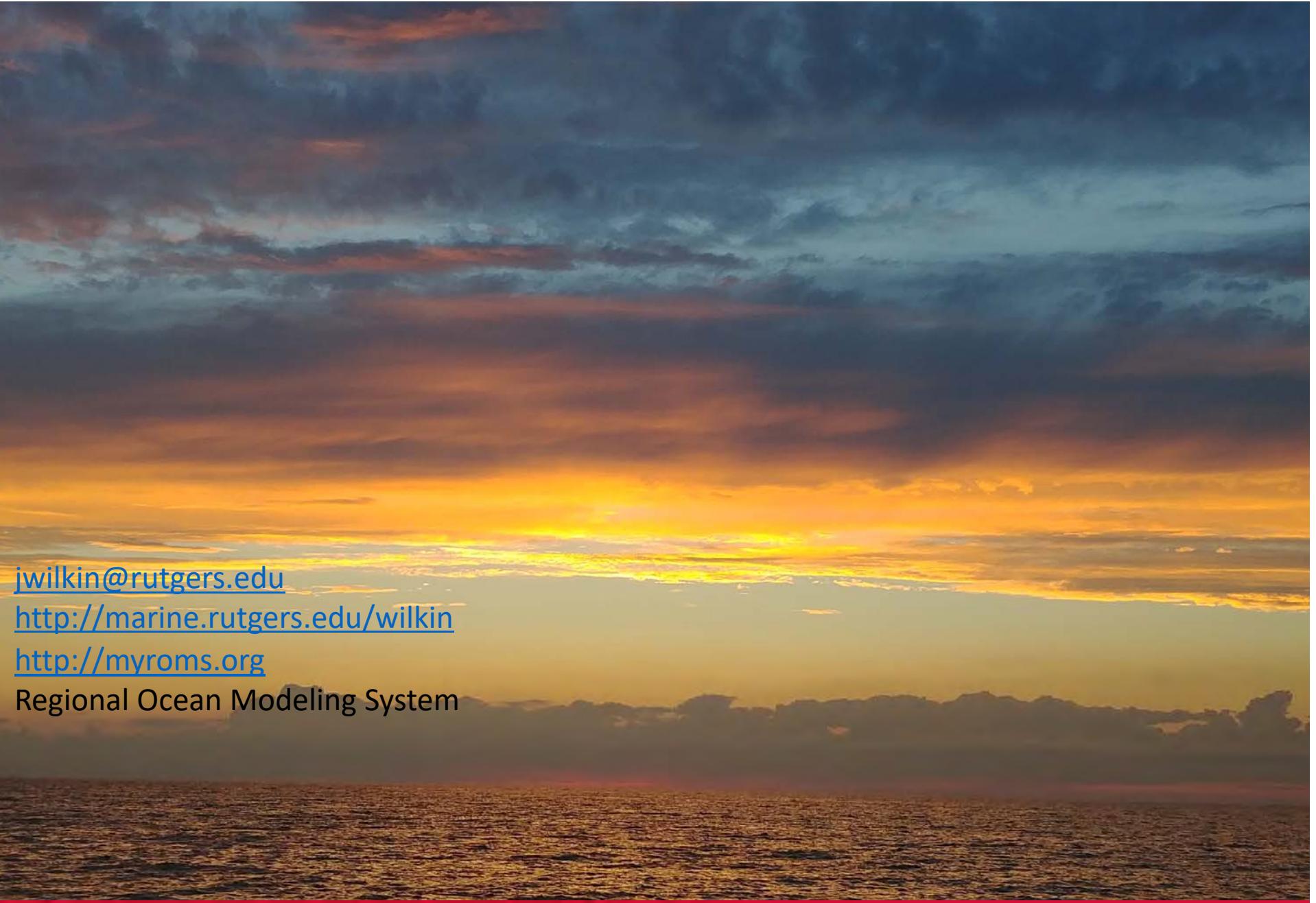
griddap	Subset	tabledap	graph	wms	files	Accessible	Title	Summary	ISO19115	Info	BackgroundInfo	RSS	Email
		tabledap	graph		files	public	Biological samples of Isotope concentrations of Cesium 134 and 137, Silver 110m, and Potassium 40 from cruise KOK1108 in June 2011 in the Western equatorial Pacific and Kurushio Extension (Fukushima Radionuclide Levels project)	<a href="#">?</a>	<a href="#">ISO19115</a>	<a href="#">Info</a>	<a href="#">BackgroundInfo</a>	<a href="#">RSS</a>	<a href="#">Email</a>
		tabledap	graph		files	public	Nitrate, nitrite, and nitrous oxide isotope measurements from the Eastern Tropical South Pacific ocean collected on RVIB Nathaniel B. Palmer cruise NBP1305 from June to July 2013	<a href="#">?</a>	<a href="#">ISO19115</a>	<a href="#">Info</a>	<a href="#">BackgroundInfo</a>	<a href="#">RSS</a>	<a href="#">Email</a>
		tabledap			files	public	Data from: Iacchei, M., E. Butcher, E. Portner, Goetze, E. (in press) It <u>u2019s about time: Insights into temporal genetic patterns in oceanic zooplankton from biodiversity indices.</u>	<a href="#">?</a>	<a href="#">ISO19115</a>	<a href="#">Info</a>	<a href="#">BackgroundInfo</a>	<a href="#">RSS</a>	<a href="#">Email</a>

griddap	Subset	tabledap	graph	wms	files	Title	Summary	FGDC	ISO19115	Info	BackgroundInfo	RSS	Email	Institution	DatasetID
	Subset	tabledap	graph			sp020-20140802T1347	<a href="#">?</a>	<a href="#">FGDC</a>	<a href="#">ISO19115</a>	<a href="#">Info</a>	<a href="#">BackgroundInfo</a>	<a href="#">RSS</a>	<a href="#">Email</a>	Scripps Institution of Oceanography	sp020-20140802T1347
	Subset	tabledap	graph			sp020-20151216T1259	<a href="#">?</a>	<a href="#">FGDC</a>	<a href="#">ISO19115</a>	<a href="#">Info</a>	<a href="#">BackgroundInfo</a>	<a href="#">RSS</a>	<a href="#">Email</a>	Scripps Institution of Oceanography	sp020-20151216T1259
	Subset	tabledap	graph			sp031-20140405T1440	<a href="#">?</a>	<a href="#">FGDC</a>	<a href="#">ISO19115</a>	<a href="#">Info</a>	<a href="#">BackgroundInfo</a>	<a href="#">RSS</a>	<a href="#">Email</a>	Scripps Institution of Oceanography	sp031-20140405T1440
	Subset	tabledap	graph			sp031-20150910T1442	<a href="#">?</a>	<a href="#">FGDC</a>	<a href="#">ISO19115</a>	<a href="#">Info</a>	<a href="#">BackgroundInfo</a>	<a href="#">RSS</a>	<a href="#">Email</a>	Scripps Institution of Oceanography	sp031-20150910T1442
	Subset	tabledap	graph			sp050-20150206T1231	<a href="#">?</a>	<a href="#">FGDC</a>	<a href="#">ISO19115</a>	<a href="#">Info</a>	<a href="#">BackgroundInfo</a>	<a href="#">RSS</a>	<a href="#">Email</a>	Scripps Institution of Oceanography	sp050-20150206T1231
	Subset	tabledap	graph			sp050-20160330T1301	<a href="#">?</a>	<a href="#">FGDC</a>	<a href="#">ISO19115</a>	<a href="#">Info</a>	<a href="#">BackgroundInfo</a>	<a href="#">RSS</a>	<a href="#">Email</a>	Scripps Institution of Oceanography	sp050-20160330T1301
	Subset	tabledap	graph			sp053-20160720T1210	<a href="#">?</a>	<a href="#">FGDC</a>	<a href="#">ISO19115</a>	<a href="#">Info</a>	<a href="#">BackgroundInfo</a>	<a href="#">RSS</a>	<a href="#">Email</a>	Scripps Institution of Oceanography	sp053-20160720T1210
	Subset	tabledap	graph			sp036-20191009T0135	<a href="#">?</a>	<a href="#">FGDC</a>	<a href="#">ISO19115</a>	<a href="#">Info</a>	<a href="#">BackgroundInfo</a>	<a href="#">RSS</a>	<a href="#">Email</a>	Scripps Institution of Oceanography	sp036-20191009T0135

griddap	Subset	tabledap	graph	wms	files	Title	Summary	FGDC	ISO19115	Info	BackgroundInfo	RSS	Email	Institution
	Subset	tabledap	graph		files	Solomon Sea Ocean Transport from Gliders	<a href="#">?</a>	<a href="#">FGDC</a>	<a href="#">ISO19115</a>	<a href="#">Info</a>	<a href="#">BackgroundInfo</a>	<a href="#">RSS</a>	<a href="#">Email</a>	University of California - San Diego; Scripps Institution of Oceanography



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