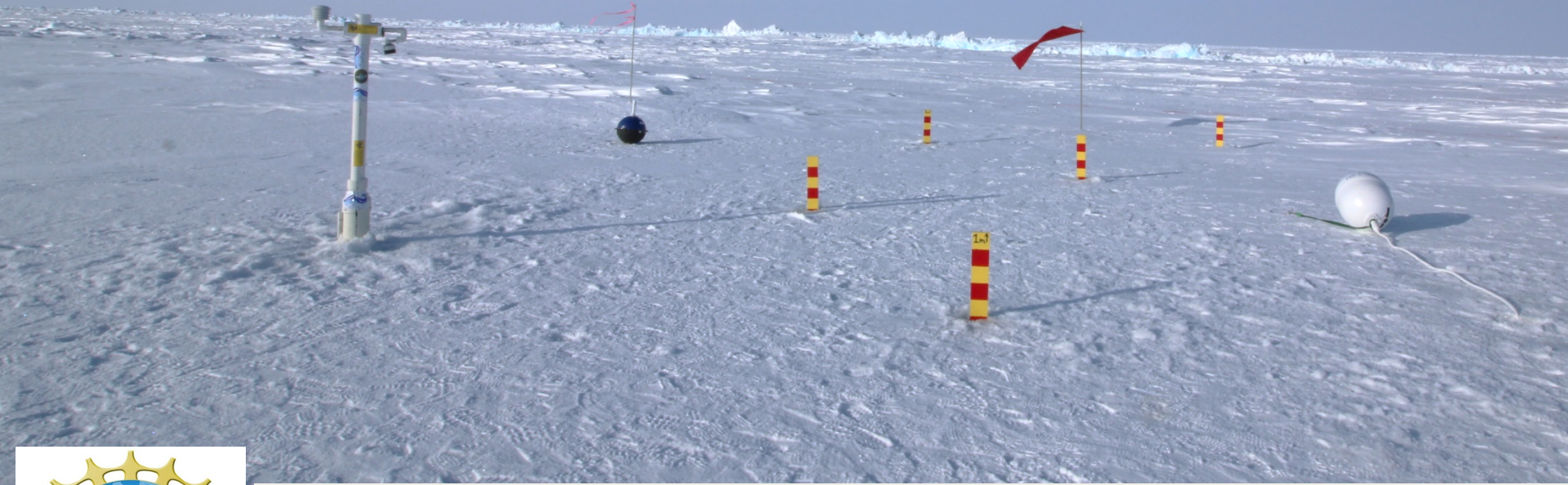


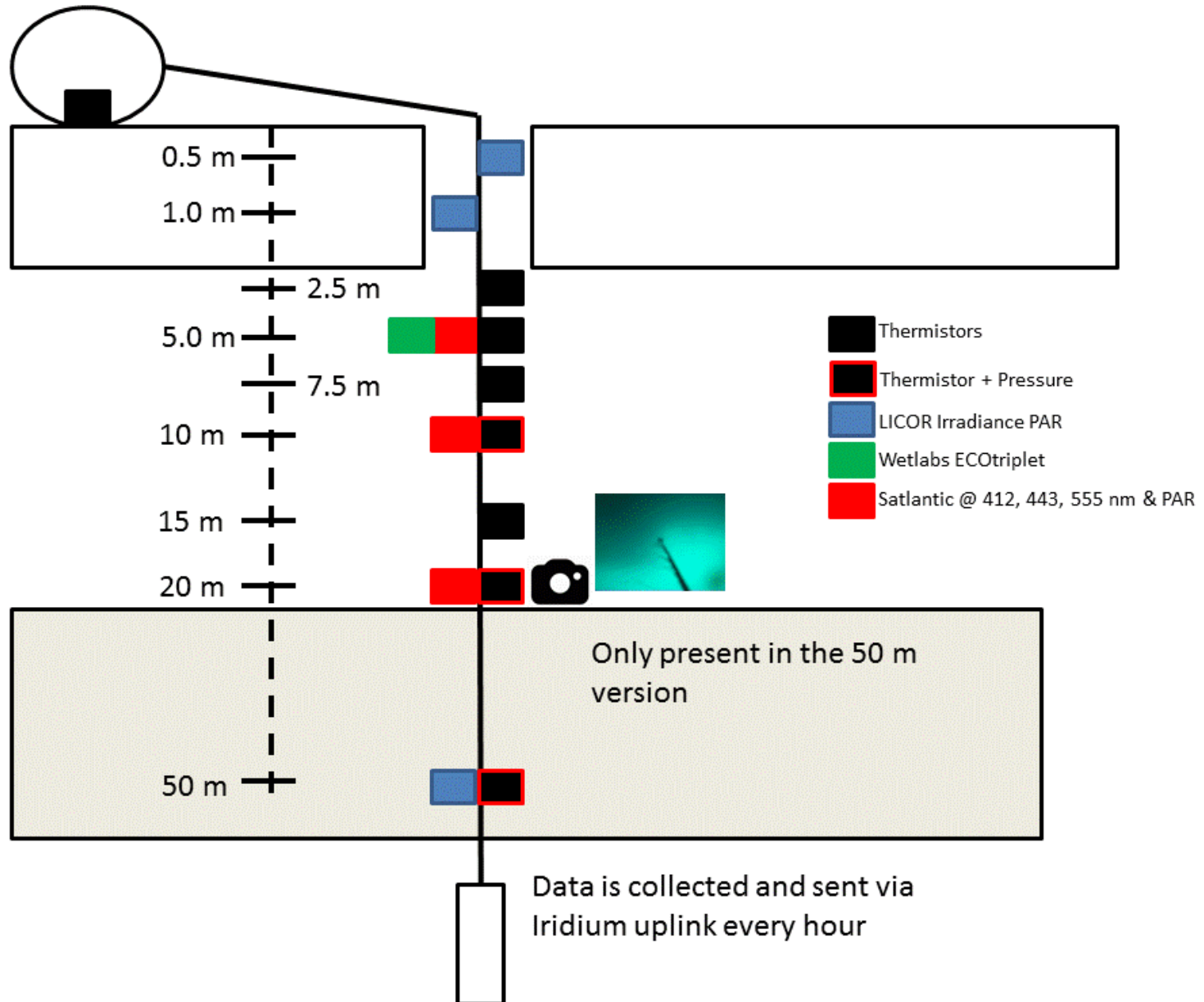
Measurements of solar radiation, temperature, and phytoplankton biomass in upper Arctic Ocean waters via autonomous buoys.



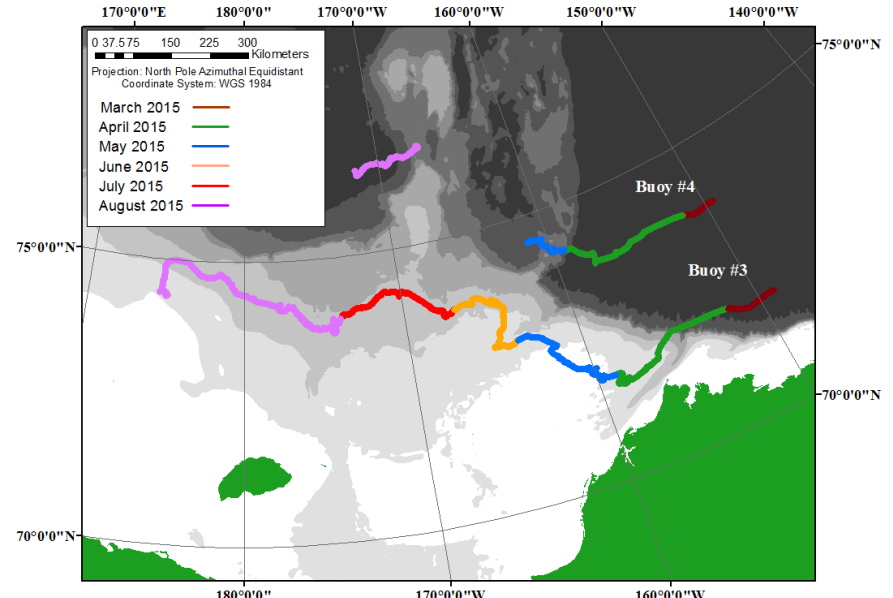
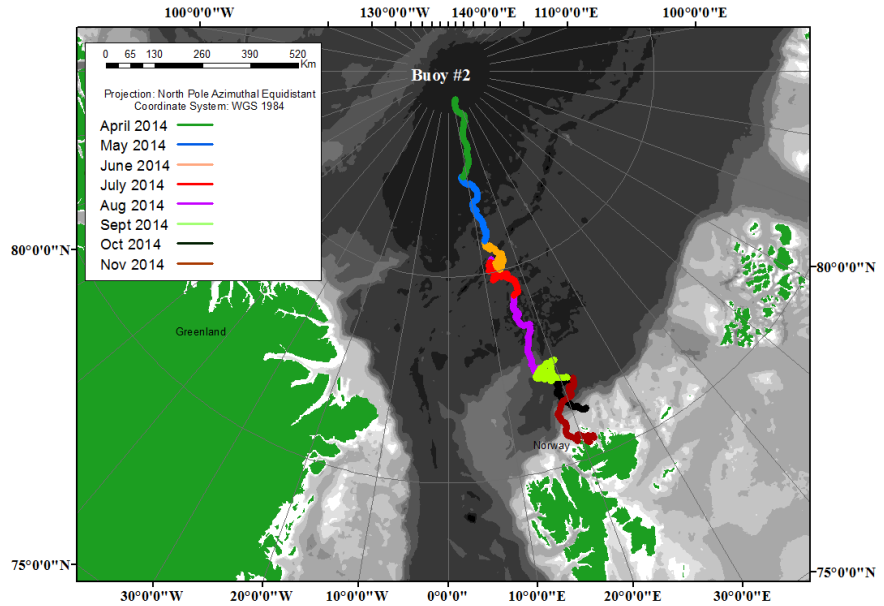
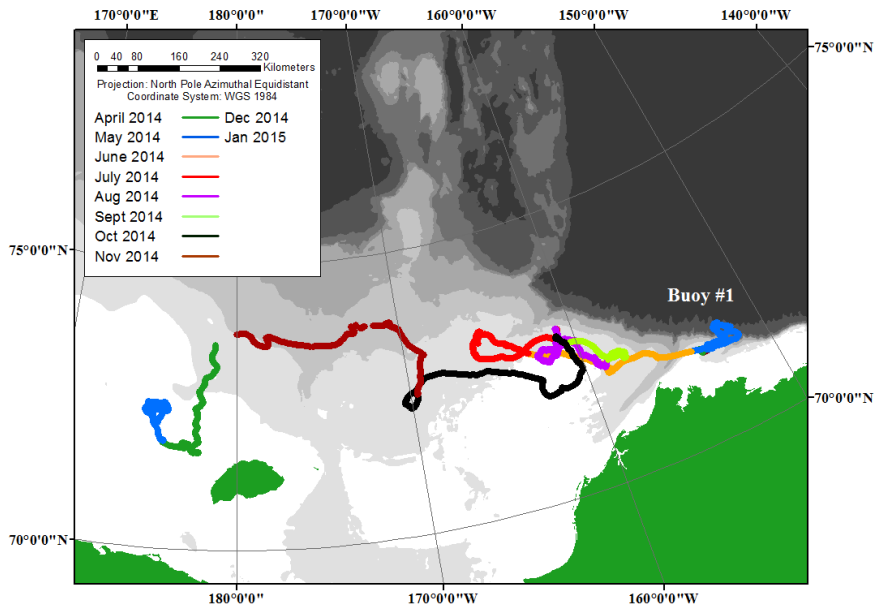
Victoria J. Hill¹, Mike Steele², Bonnie Light²

¹Old Dominion University; ²Polar Science Center / Applied Physics

Combination of temp, light and biological sensors



Four buoys deployed, over 1000 days of observations.



The data is available in near real-time



The screenshot shows a web browser window with the URL `psc.apl.washington.edu/UpTempO/Data.php`. The page features a dark blue header with the title "UpTempO" and the subtitle "Measuring the Upper layer Temperature of the Polar Oceans". Below the subtitle is a row of logos for the Polar Science Center, APDL, University of Washington, NSF, ONR, NASA, and NOAA. A navigation menu contains links for HOME, ABOUT UPTEMPO, PEOPLE, DATA & GRAPHICS, OTHER BUOYS, and LINKS. The main content area is titled "DATA SUMMARY PAGE" and includes a section for "Available Data" with a list of three data types.


Download x

psc.apl.washington.edu/UpTempO/Data.php

timer - Google Search Pacific Gyre - GPS D... Index of /WEB_CAM... Data Download Google Scholar Calendars Google News Bookmarks Weather Health ODU stuff Other bo

UpTempO

Measuring the **U**pper layer **T**emperature of the Polar **O**ceans



[HOME](#) [ABOUT UPTEMPO](#) [PEOPLE](#) [DATA & GRAPHICS](#) [OTHER BUOYS](#) [LINKS](#)

DATA SUMMARY PAGE

Available Data

Click on "GO" to see more info, basic graphics, and to download data for each buoy. The following quantities (reported hourly) are available:

- 1) Temperature at nominal depths (typically between 2.5 and 60 m).
- 2) Ocean Pressure at 1 or 2 nominal depths (typically 20m and 60m).
- 3) Sea Level Pressure

The data is available in near real-time

psc.apl.washington.edu/UpTempO/Data.php

timer - Google Search Pacific Gyre - GPS D... Index of /WEB_CAM... Data Download Google Scholar Calendars Google News Bookmarks Weather Health ODU stuff Other

J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D

UpTempO Buoy Data and Graphics

UpTempO Buoys reporting in the week prior to 11/ 9/2015

IMEI	WMO	Buoy ID	Deployment Vessel	Date Deployed	Position Deployed	Graphics Info., & Data
300234011245950	48541	2013-14	Araon	8/30/2013	76.43N 178.87W	GO
300234060341390	48675	2014-9	Amundsen	8/27/2014	73.34N 128.28W	GO
300234060340370	48673	2014-11	Amundsen	8/30/2014	73.29N 128.55W	GO
300234060236150	48678	2014-13	Mirai	9/ 6/2014	74.38N 162.96W	GO
300234061655460	48650	2015-2	SIZRS	7/28/2015	72.75N 141.60W	GO
300234062656350	48655	2015-5	SIZRS	8/11/2015	71.88N 142.20W	GO
300234062955990	48527	2015-8	SIZRS	9/10/2015	70.43N 165.29W	GO
300234062951960	NA	W-3	WARM	3/22/2015	70.20N 148.45W	GO
300234062957970	NA	W-4	WARM	3/22/2015	70.20N 148.45W	GO

UpTempO 2015 Non-Reporting Buoys

IMEI	WMO	Buoy ID 2015	Deployment Vessel	Date Deployed	Position Deployed	Date of last Report	Position of last Report	Graphics info. & Data
300234062958970	48511	2015-1	Healy	7/11/2015	71.07N 164.60W	11/ 2/2015	47.59N 122.34W	GO
300234062065260	48651	2015-3	SIZRS	7/29/2015	71.25N 140.51W	10/15/2015	75.27N 165.85W	GO
300234062061010	48672	2015-4	SIZRS	8/11/2015	72.95N 142.05W	9/24/2015	73.03N 157.53W	GO
300234062490470	48648	2015-6	Healy	8/18/2015	73.41N 168.81W	8/24/2015	73.38N 169.88W	GO
300234062492480	NA	2015-7	Healy	8/19/2015	74.99N 170.19W	8/26/2015	75.01N 176.00W	GO

UpTempO 2014 Non-Reporting Buoys

IMEI	WMO	Buoy ID 2014	Deployment Vessel	Date Deployed	Position Deployed	Date of last Report	Position of last Report	Graphics info. &
------	-----	--------------	-------------------	---------------	-------------------	---------------------	-------------------------	------------------

The data is available in near real-time

Download x

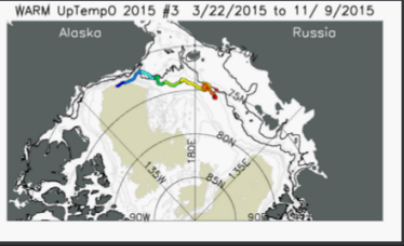
psc.apl.washington.edu/UpTempO/BuoyInfo.php?cbuoy=51960&bname1=UpTempO%202015

timer - Google Search Pacific Gyre - GPS D... Index of /WEB_CAM... Data Download Google Scholar Calendars Google News Bookmarks Weather

SUMMARY

The plot below shows the path of WARM 2015 #W-3 colored by month. The flag marks the buoy's current location. Black contours show two isobaths: 28 m ("short buoy" max depth: e.g., 2011 APLIS buoy) and 60 m ("standard buoy" max depth).

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec



WARM UpTempO 2015 #3 3/22/2015 to 11/ 9/2015

Alaska Russia

Buoy Name: WARM 2015 #W-3
Modem ID (last 4 digits): 51960

DEPLOYED

Date: 3/22/2015
Position: 70.20N 148.45W
Vessel: WARM

LAST UPDATE

Date: 11/ 9/2015
Position: 75.42N 170.33E
Battery Voltage: 11.60V

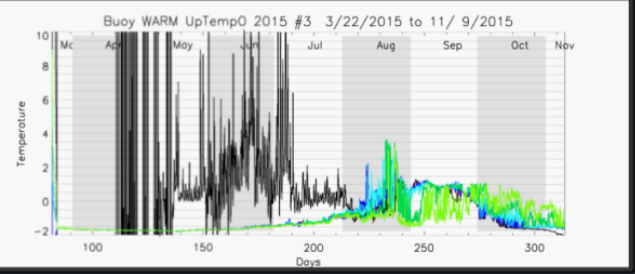
DOWNLOAD DATA
Data File Size: 1085.045 kb

TEMPERATURE TIME SERIES

The temperature time series for each thermistor is shown below, plotted against day of the year. Shading on the plot delineates months.

Nominal Temperature Sensor Depths (m)

0	2.5	5	7.5	10	15	20
---	-----	---	-----	----	----	----



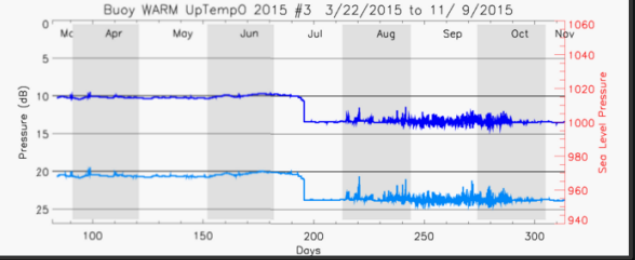
Buoy WARM UpTempO 2015 #3 3/22/2015 to 11/ 9/2015

Temperature

Days

OCEAN PRESSURE AND SEA LEVEL PRESSURE

This plot shows the ocean pressure(s) from the barometers placed at nominal depths (blue), and sea level pressure in red.



Buoy WARM UpTempO 2015 #3 3/22/2015 to 11/ 9/2015

Pressure (dB)

Sea Level Pressure

Days

QC/QA data from 2014 is on ACADIS

2015 data is ready to be submitted

ACADIS Gateway
An Arctic Data Repository

A Service Of
ACADIS



[Home](#) [Get Data](#) [Contribute Data](#) [About](#) [Contact](#)

Dataset

[Warming and irradiance measurements in the Arctic: Determining the link between solar energy absorption and surface warming through long term observations](#)

Light and temperature measurements - WARM buoy #1

[Metadata](#)

[Download Data](#)

Principal Investigator: Victoria Hill

Description: Data collected at hourly intervals from an ice tethered buoy. Sensors placed at discrete depths collect irradiance, temperature, chlorophyll concentration, fluorescence, dissolved organic material via fluorescence, and backscatter at 532 nm. Buoy deployed in 2 m thick ice on 9th March 2014, transmission terminated on 4th January 2015.

Progress: Completed - Dataset fully collected/analyzed.

Time Coverage: Mar 9, 2014 - Jan 4, 2015

Northernmost Latitude: 73.827

Southernmost Latitude: 71.507

Westernmost Longitude: -179.987

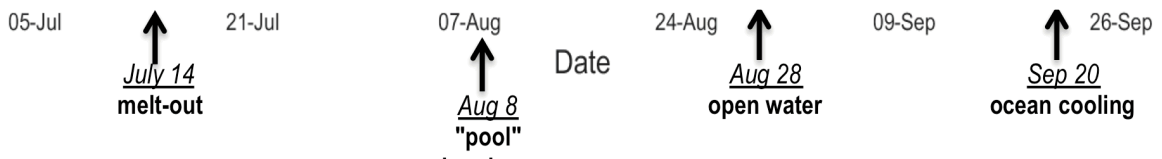
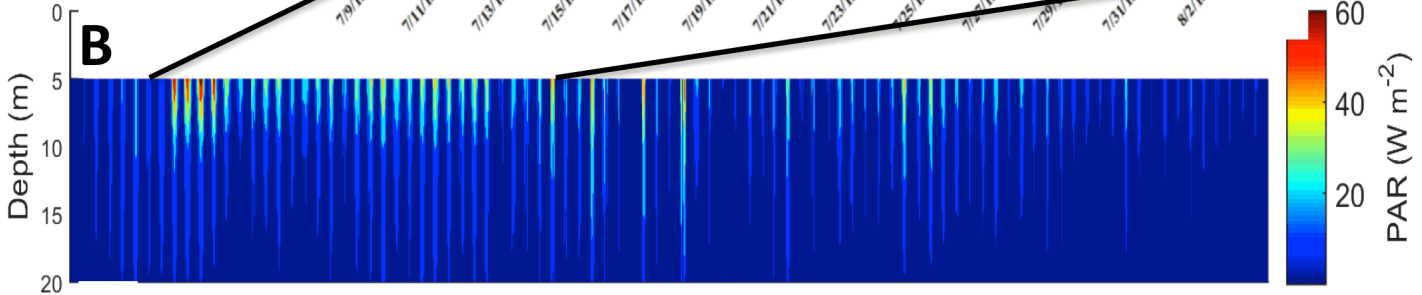
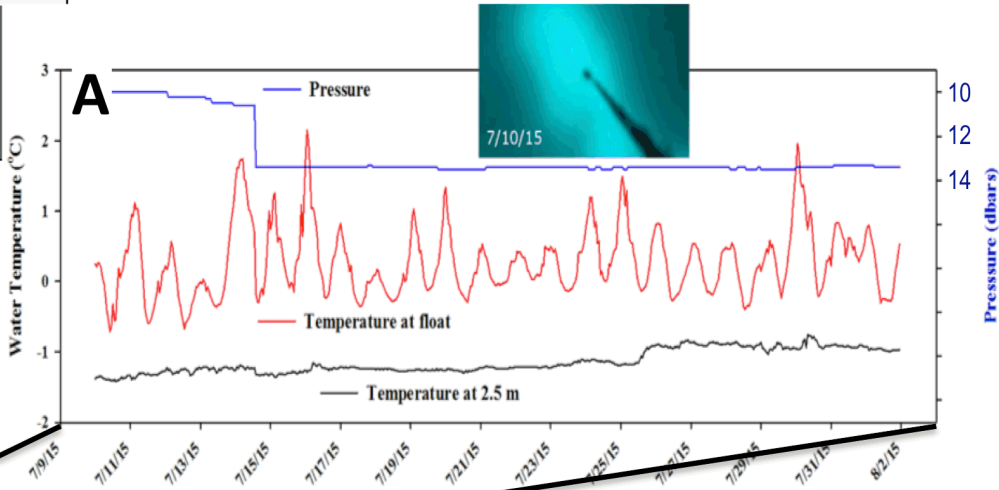
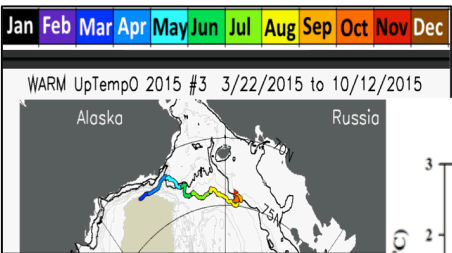
Easternmost Longitude: -153.071



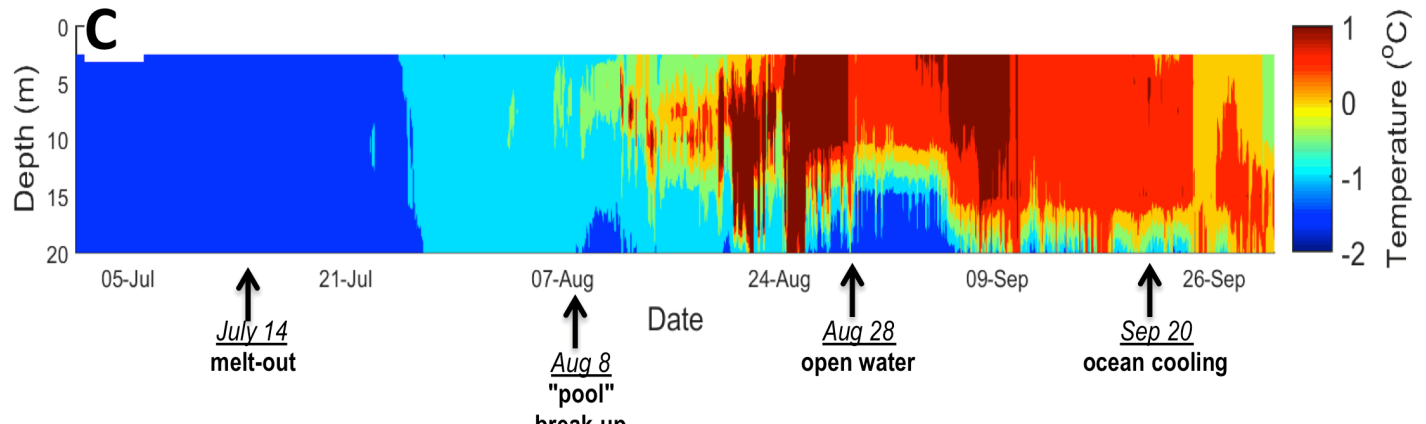
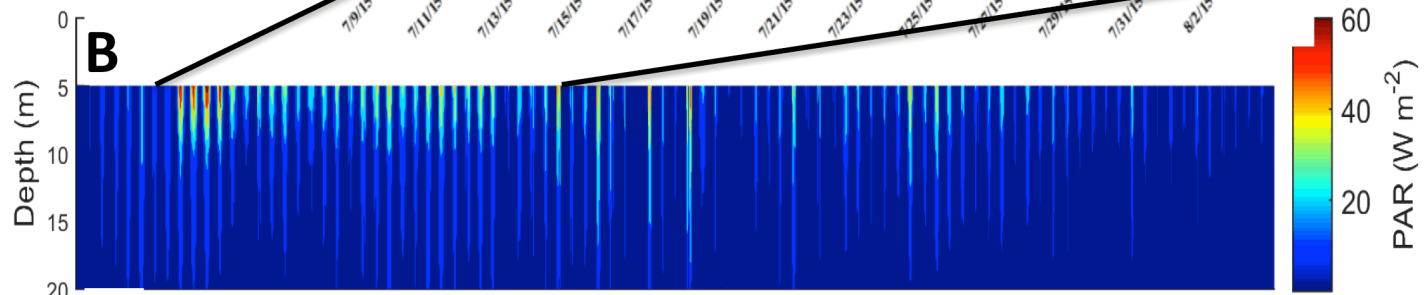
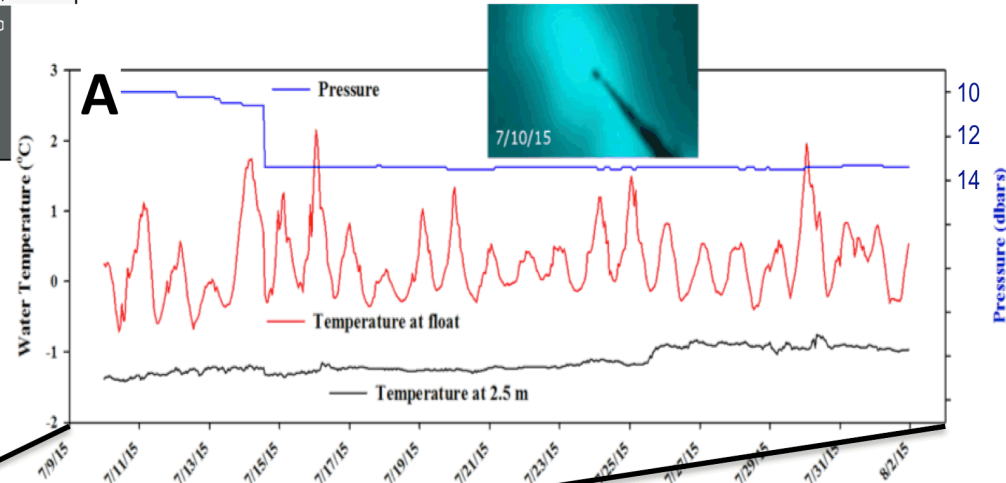
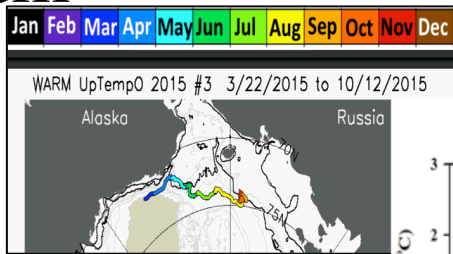
Award Numbers: [1203784](#)
[1203440](#)

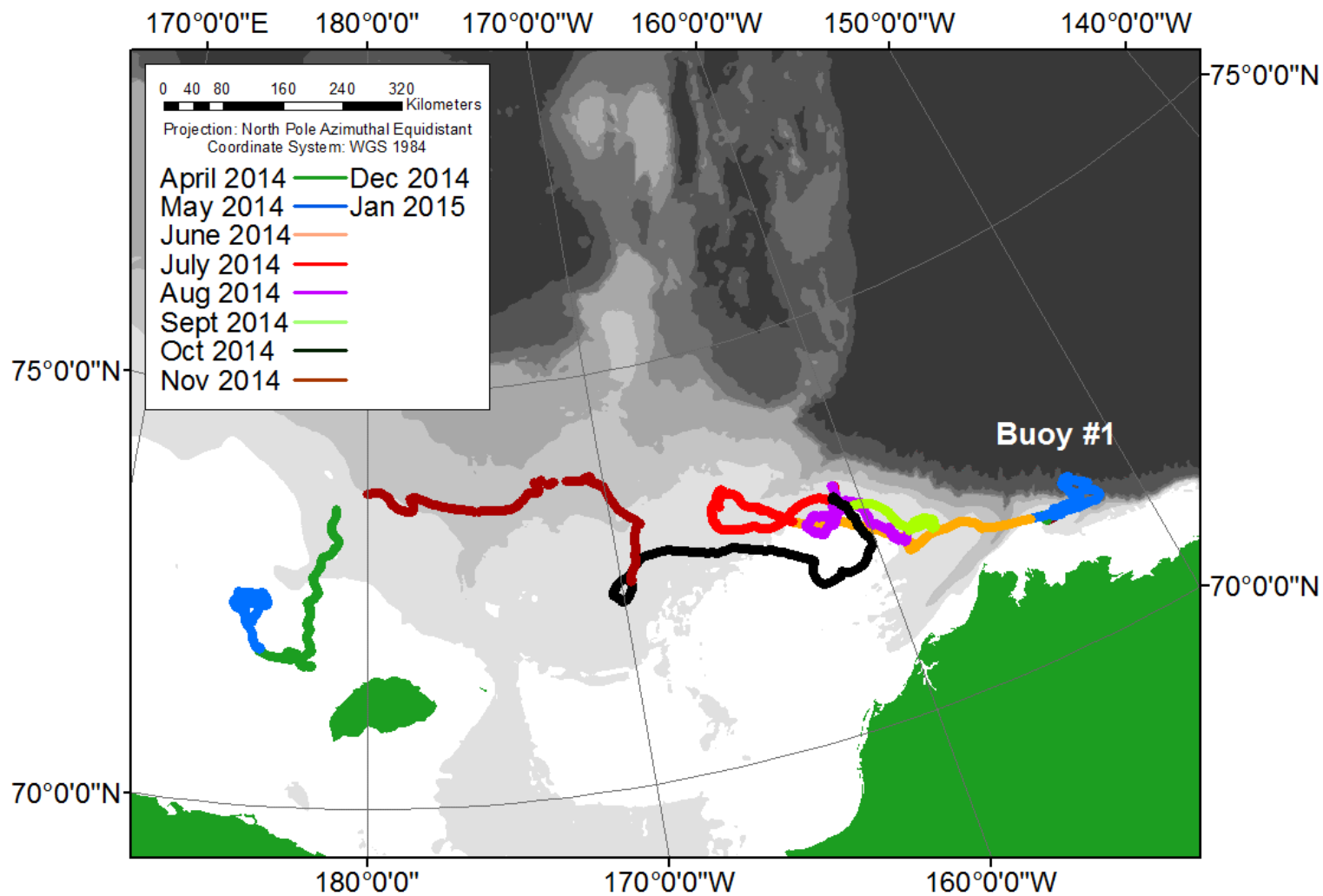
Science Keywords: Oceans > Ocean Circulation > Ocean Mixed Layer
Oceans > Sea Ice
Oceans > Ocean Optics > Attenuation/Transmission

Captured daily warming in melt ponds.

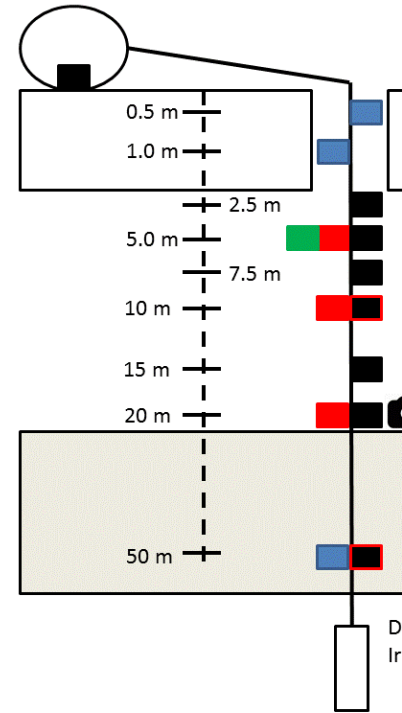
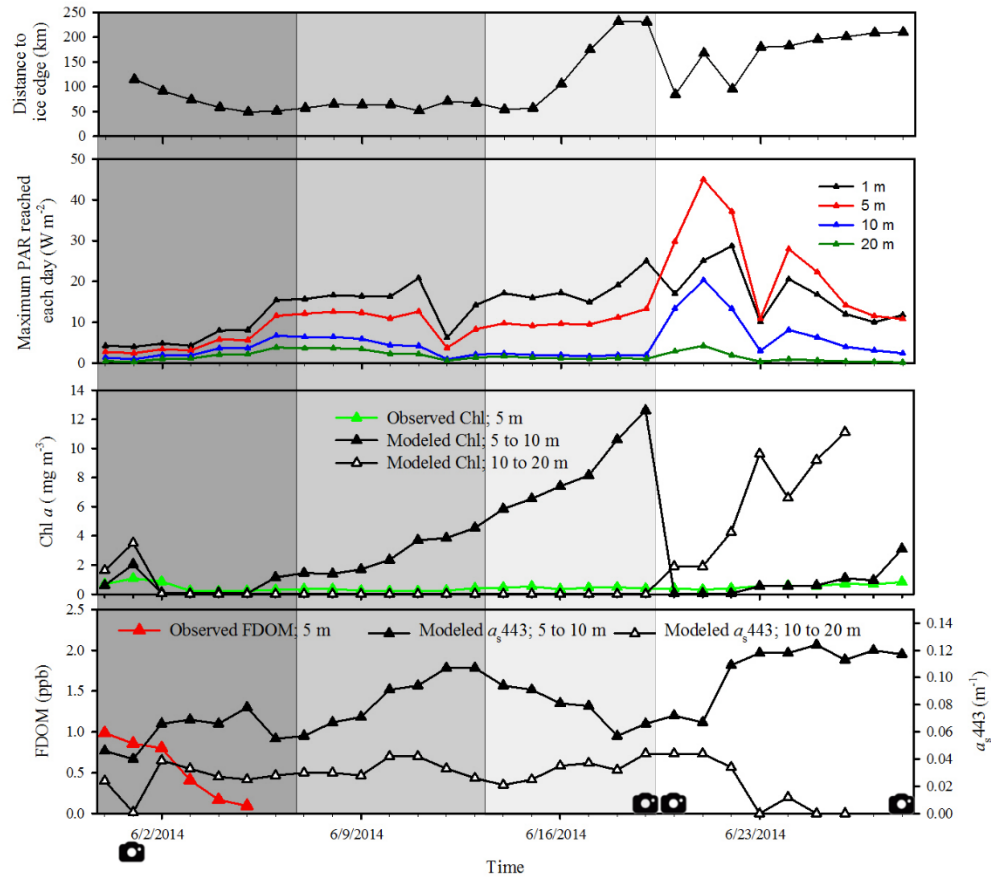
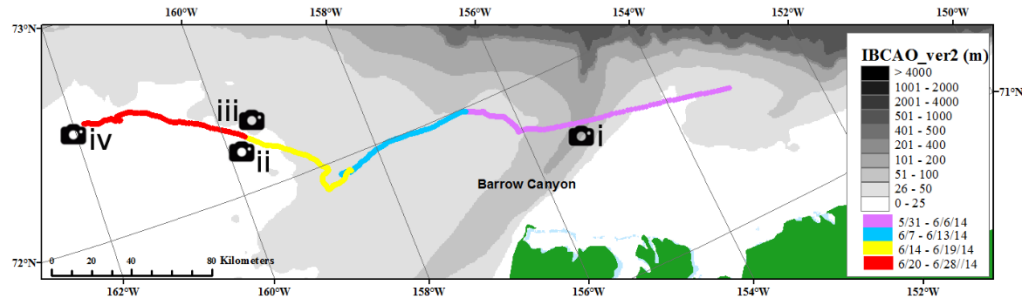


Formation of the near surface temperature maximum

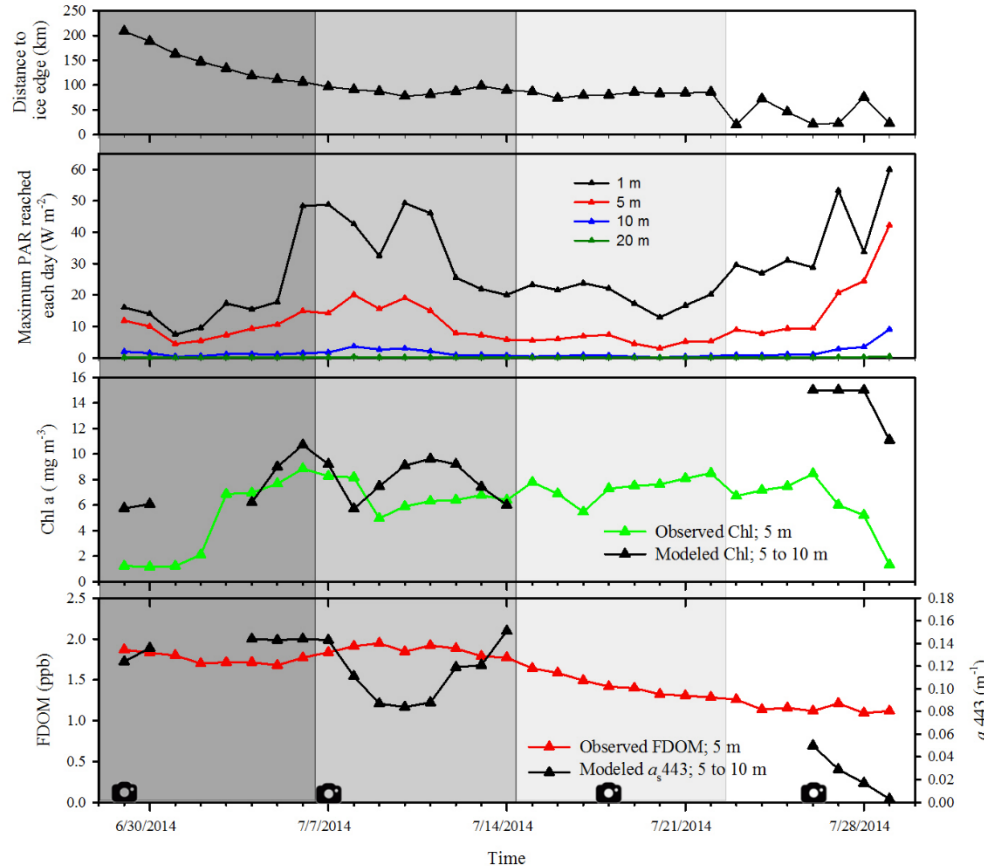
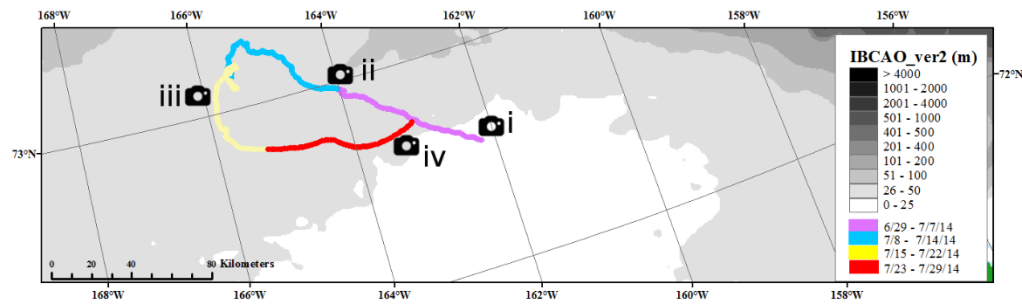




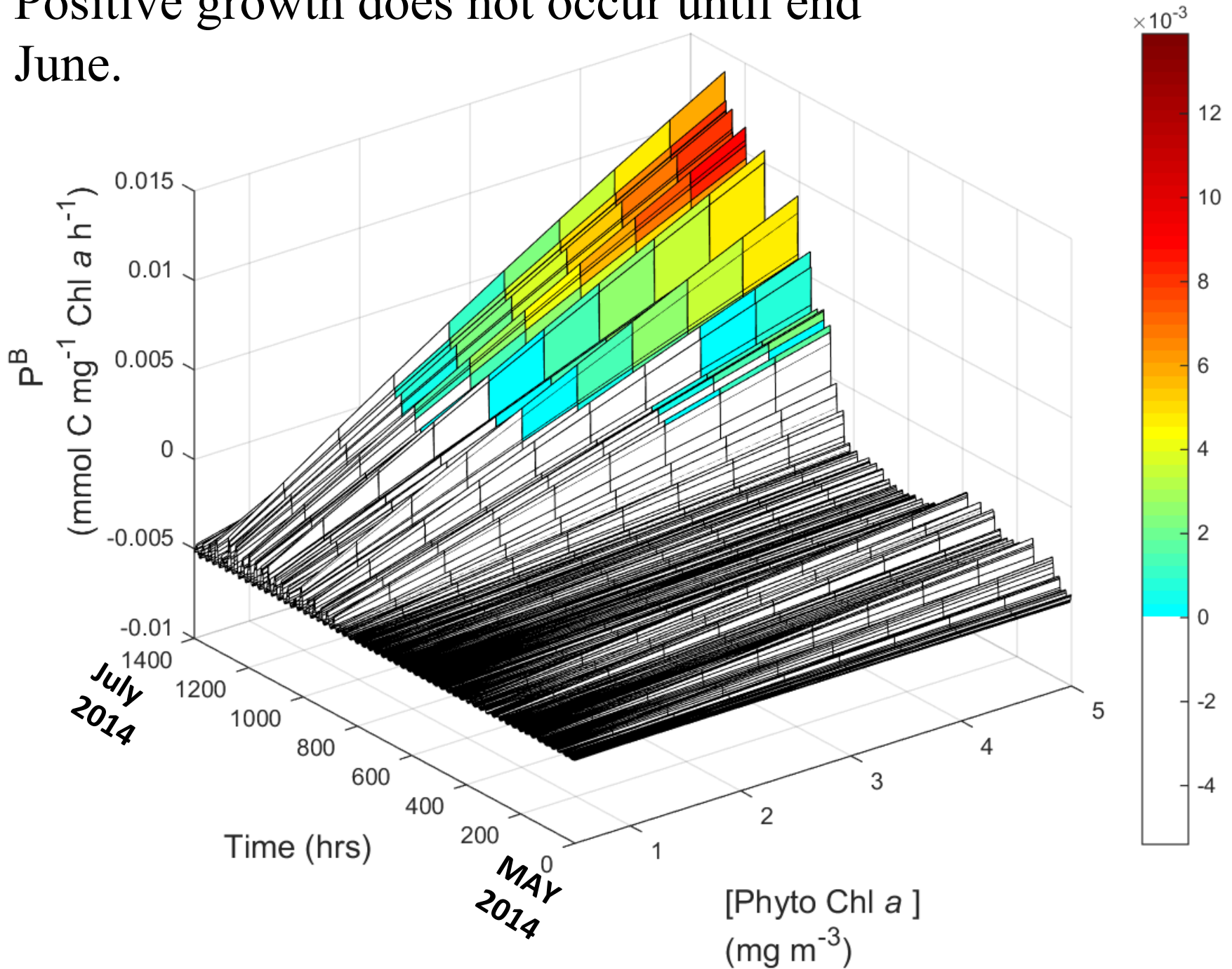




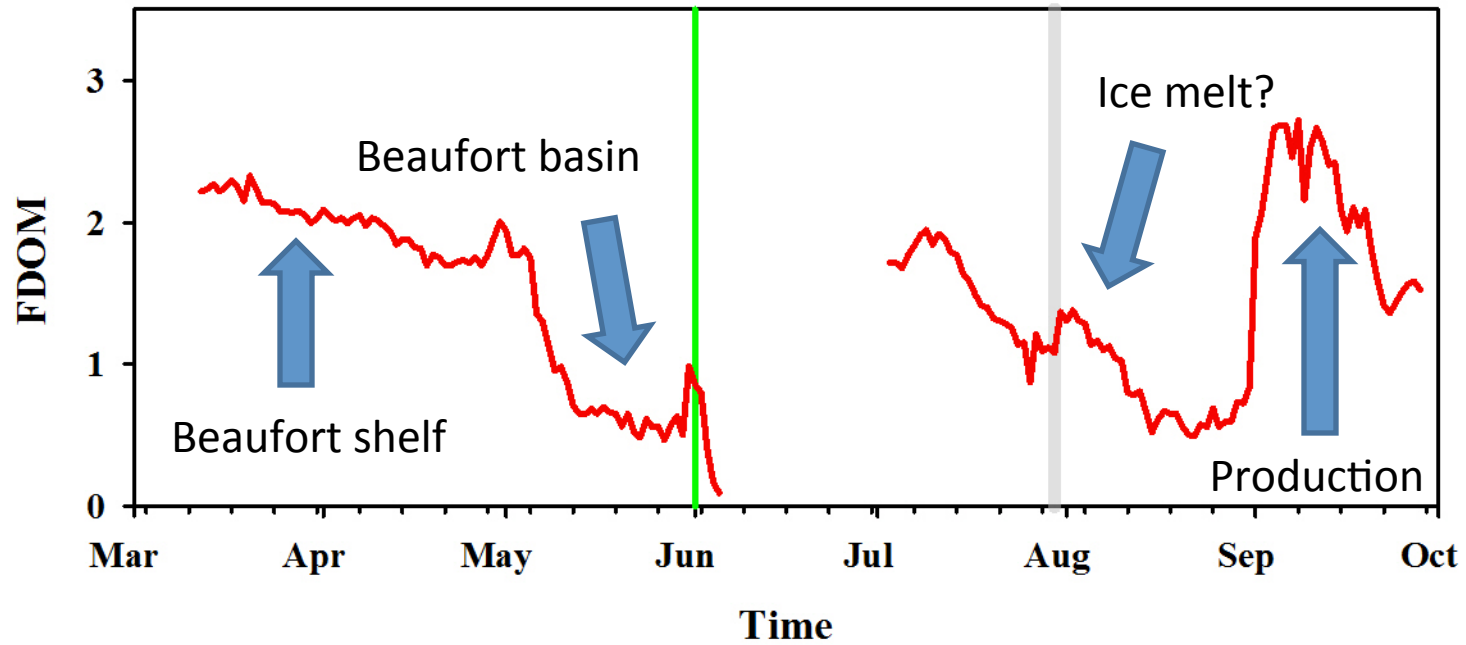
All this biomass is invisible to remote sensing



Positive growth does not occur until end
June.



Large seasonal and spatial differences in FDOM are observed.



Measurements of solar radiation, temperature, and phytoplankton biomass in upper Arctic Ocean waters via autonomous buoys.

1. High temporal resolution measurements of light, temperature and bio-optics, in first year ice.

Link to moorings, cruises, models.

2. Observed warming and formation of a NSTM with accompanying light measurements.

3. Observed high Chl a under the ice, and used the light field to estimate potential phytoplankton growth.

***Invisible to remote sensing.**

Determine the impacts of under ice PP on open water PP.

4. Seasonal patterns of DOC were observed on the shelf, removal of material through photo-oxidation can be estimated.

Capable of surviving ice melt, providing observations throughout the year.

