How to Read CONVERGE Data Primer

Overall Notes about the data:

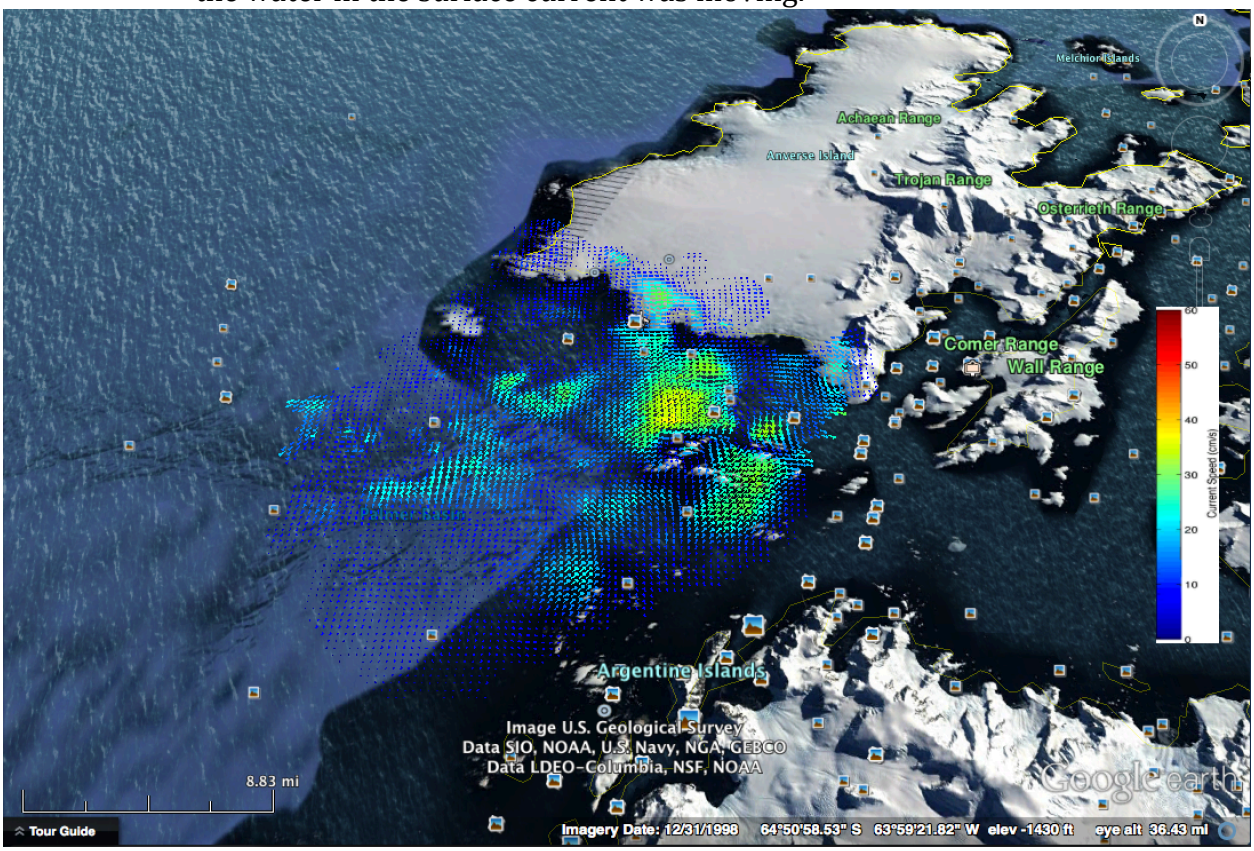
- Everything is in Greenwich Mean Time (GMT), which is 5 hours ahead of the east cost.
- All time is presented in military time, which means it is from 0:00 (12:00am) to 23:59 (11:59pm).
- Wind measurements are in m/s and surface current measurements are in cm/s, check the units carefully when looking at arrowed maps to know which you are looking at.

1) Google Earth Layers

Notes about Google Earth: to see the distance scale bar go to View and select Scale Legend. This will add a scale bar in the bottom left corner of the screen (you may need to minimize the Tour Guide of pictures along the bottom if that is showing).

a) CODAR

a. *Latest map and latest 25 hour average map updated in real-time* – This layer is a map that updates in real time an average of the surface currents over the last 25 hours. These data are compiled from three CODAR stations. Blue arrows mean slower surface currents and red arrows mean faster surface currents. The direction the arrow is pointing indicates the direction in which the water in the surface current was moving.



This Broader Impact project is part of the National Science Foundation's Grant No. OPP-1327248. The education and outreach aspects of this project are supported by Rutgers University, Liberty Science Center, and COSEE Networked Ocean World.

a. *Daily files with hourly raw maps with time slider (still to come)* - This will be a directory of daily files. Each file will contain 24 surface current maps, one for each hour of the day. These data are compiled from the three CODAR stations. Blue arrows mean slower surface currents and red arrows mean faster surface currents. The direction the arrow is pointing indicates the direction in which the water in the surface current was moving.

b) Glider

a. *Mission tracks with time slider and depth averaged velocity vector per segment* – This layer is a map that plots the location of the four gliders over time in the project. The speed of the glider movement is calculated by averaging the velocity of the glider per segment while it was "at depth," aka underwater. A segment is the time and distance the glider travels between each waypoint at the surface to relay data back to the scientists. The glider tail fins (yellow with the glider name) indicate the location of the glider when it last called into the scientists at the ocean surface. The white/blue/red/yellow targets indicate the deployment location, last surfacing location, and/or current waypoint for each glider (depending on what time period you look at). The time period of the glider movement is in the time series bar in the upper left corner of the screen (you can drag the carrot back and forth to change the time or select the clock with an arrow icon to play the time slider animation). The four gliders are represented by different colors:
   i. Yellow – blue_hen/UD134
   ii. Purple – RU24
   iii. White – RU05
   iv. Grey – RU191

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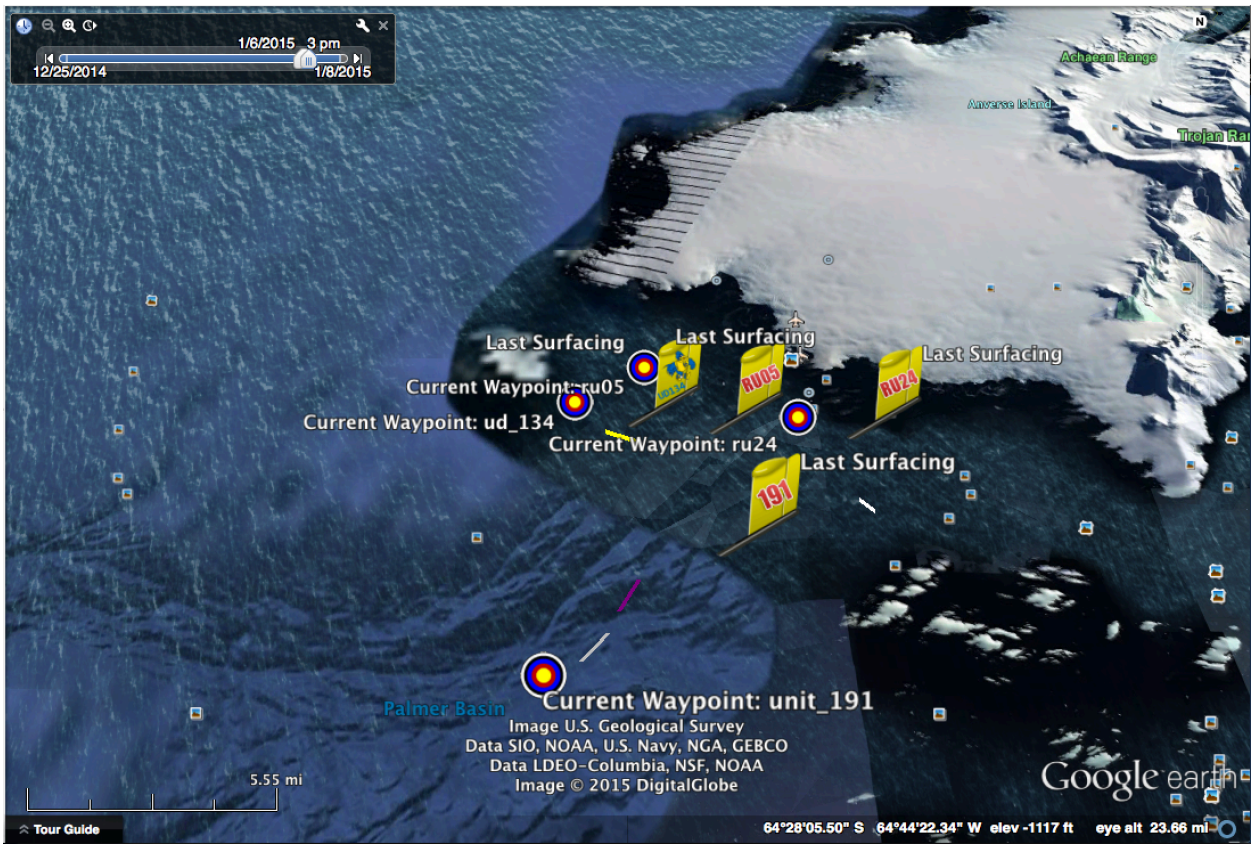

a. *Along-track segment averaged fluorescence (upper 30 m) and bottom temperature* – This layer plots some of the water quality data the gliders are recording. Each dot represents the average value for either temperature or fluorescence for each segment. A segment is the time and distance the glider travels between each waypoint at the surface to relay data back to the scientists. The average temperature data are calculated from all of the temperatures along the bottom portion of the gliders path (at 100 m). Fluorescence is the measurement scientists take to quantify the amount of phytoplankton in the water. The average fluorescence data are calculated from all of the fluorescence data the glider collected when it was between the surface and 30 m deep. If you click on a dot, two dots with attached lines to the dot you selected will appear. For every dot you can see which glider the data point is from, the location (latitude, longitude, and depth) or the glider during that segment and the time it traveled through that segment (timestamp). The upper dot is the calculated average temperature data and the lower dot is the calculated average fluorescence data. Red dots indicate warmer temperatures or higher fluorescence values. Blue dots indicate cooler temperatures or lower fluorescence values.

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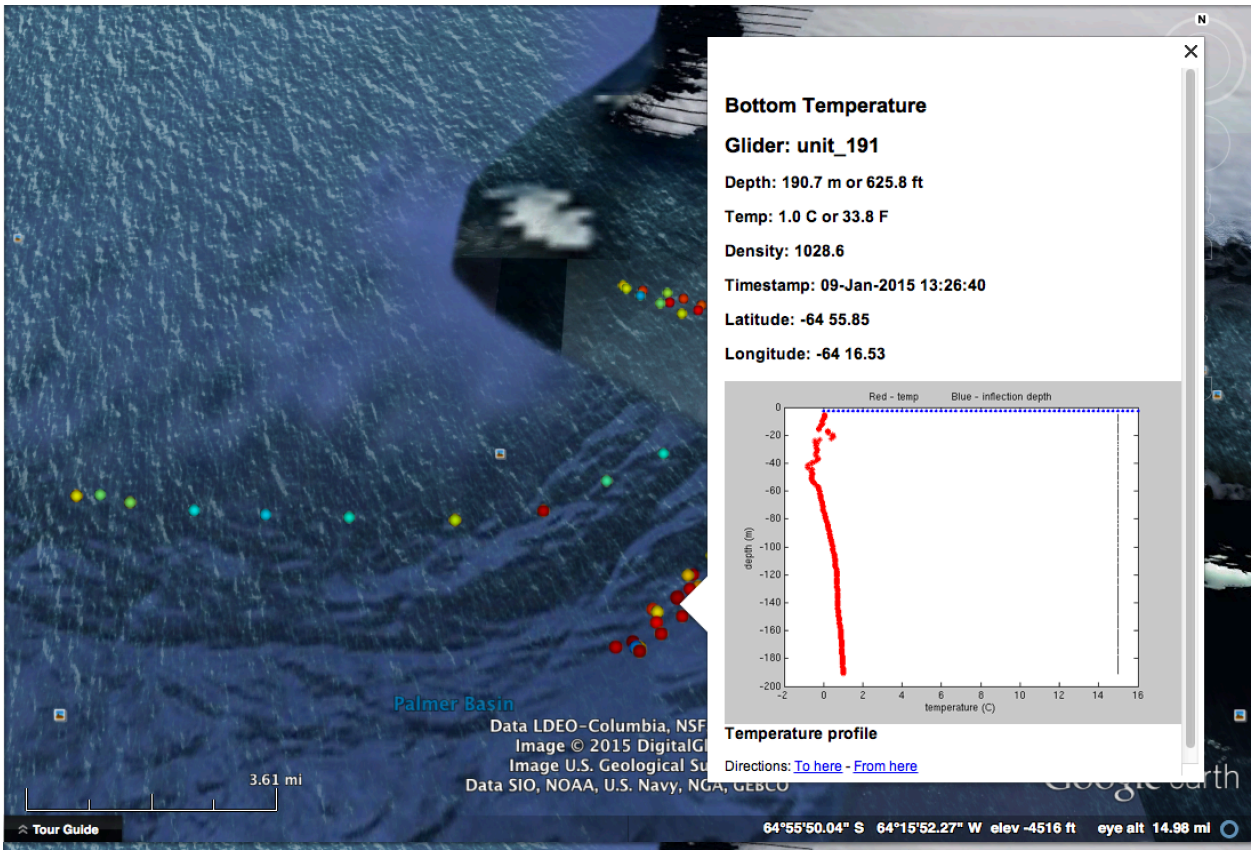

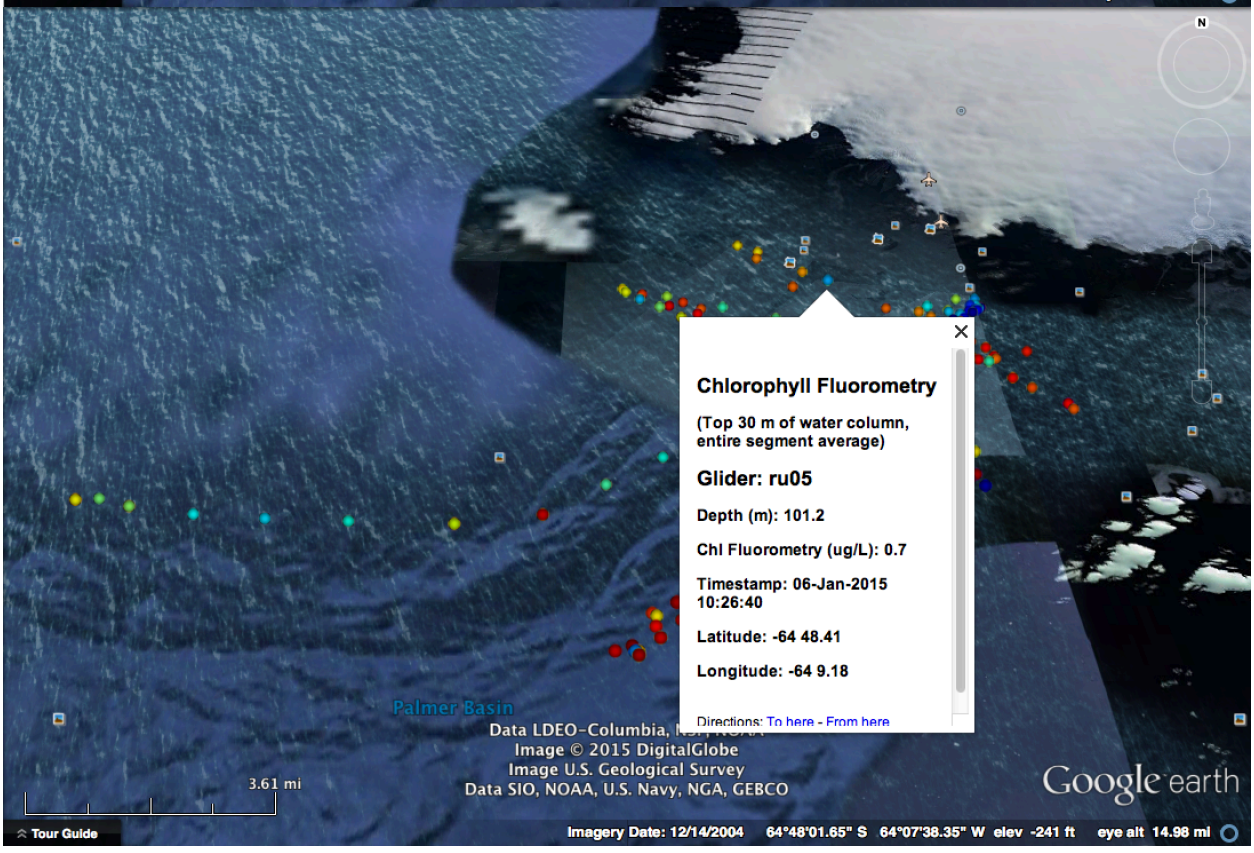

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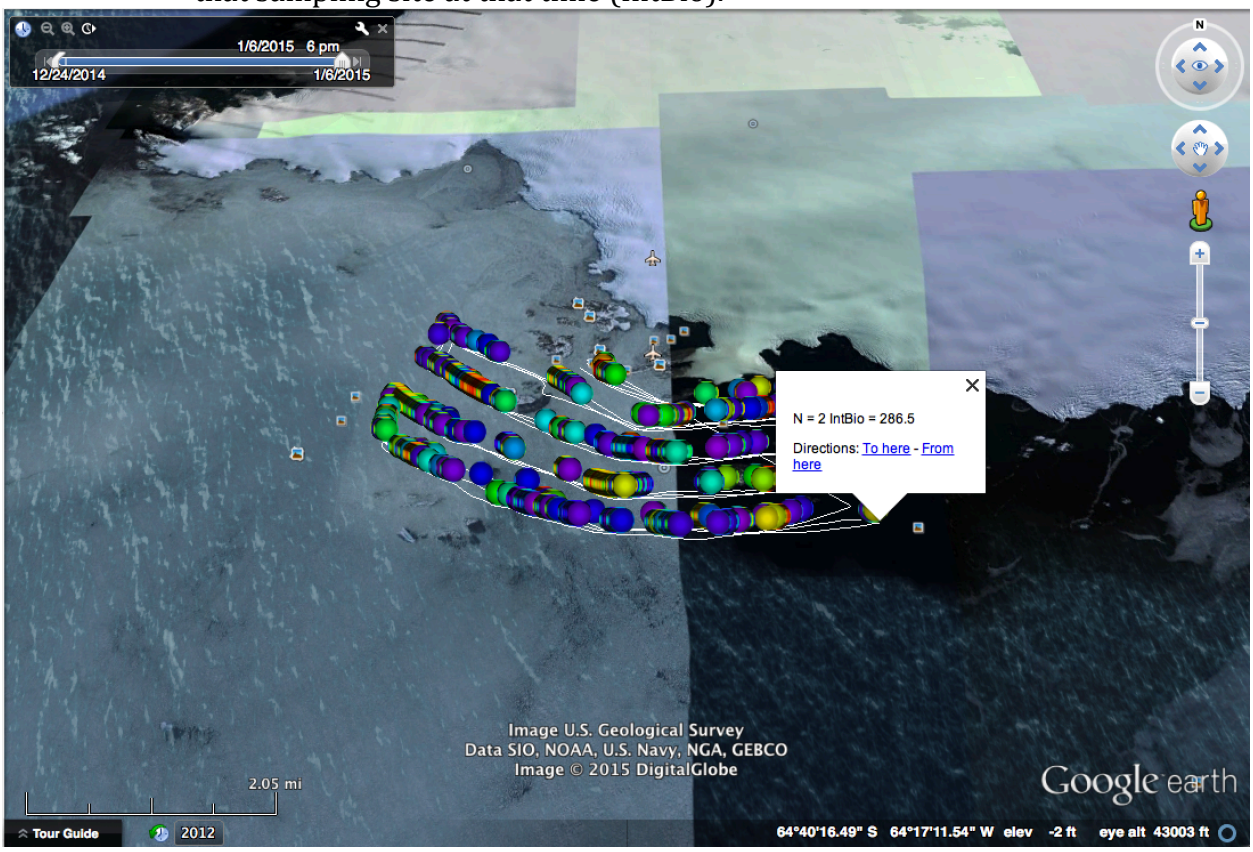
c) Krill acoustic surveys –

a. *Track location with depth average krill integrated biomass* - This layer is displaying all of the paths that they are taking in the zodiac (small boat) to do the acoustic surveys with the echosounder. The path that the boat traveled is called the track location and is shown in the white lines. There are multiple track lines each representing a different time they conducted a survey. The time of the survey is in the time series bar in the upper left corner of the screen (you can drag the carrot back and forth to change the time or select the clock with an arrow icon to play the time slider animation). Along the track location line there are dots that represent different sampling sites from the survey. The blue dots indicate lower krill biomass and the red dots indicate higher krill biomass in that sample. If you click on a dot you can see the sampling site number (N) and the averaged integrated biomass of krill at that sampling site at that time (IntBio).



d) Penguin Tracks

a. *All individual penguin tracks* – This link will take you to a directory of all of the maps of the track locations for each penguin. For the time during which each penguin was tagged there will be a track of where the penguin went. Moving the time slider will show when each penguin started and ended its track. You can adjust the time slider to show specific time ranges for these data. On the left hand side bar, this Google Earth layer will list each penguin by species and sex. The species identifiers are: ADPE = Adélie Penguin and

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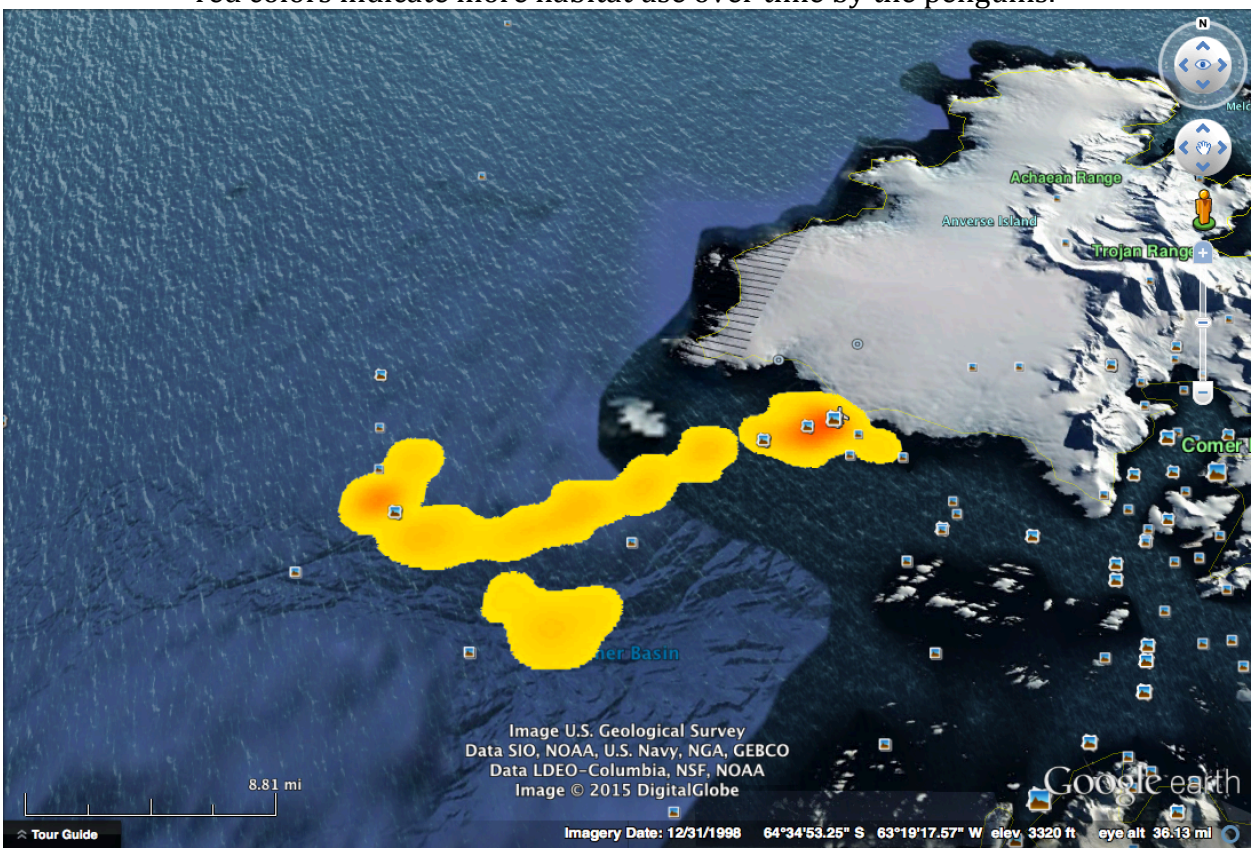
GEPE = Gentoo Penguin. The M or F following the species identifier stands for Male and Female. As penguins are tagged during the season, this layer will become more and more populated as each new penguin's track is added.

b. *Mean kernel density – Adelies (yellow)* – This layer plots the mean kernel density (habitat use) of the tagged Adelie penguins over a one hour time period. Yellow colors indicate less habitat use over time by the penguins and red colors indicate more habitat use over time by the penguins.



a. *Mean kernel density – Gentoos (green)* – This layer will plot the mean kernel density (habitat use) of the tagged Gentoo penguins over a one hour time period (once the science team tags Gentoo penguins after the chicks get bigger). Green colors indicate low habitat use over time by the penguins and yellow colors indicate high habitat use over time by the penguins.

**All the following will be archived on our website **

2) CODAR Imagery

- *Current Map Viewer* – This website allows you to select a specific date and hour time range to see the data from all of the three CODAR stations. You can use the Date and Hour fields to input specific timeframes in which you want to plot the data. You also can use the << Play (back) and Play >> (forward) buttons to have the data be animated through time (using Faster and Slower to change the speed with which the hourly graphs switch on the screen and the Stop button to stop the animation). Or

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you can use the Back and Forward buttons to self-select what time period/map you are interested in looking at.

The black arrows in the water represent the direction and speed that the surface water was moving. The color of the water under the arrows represents the different data being viewed in the map (the color scale bar on the right and title provide the units for the data). The black carrot arrow in the upper right corner is the North arrow. The three CODAR stations are marked with green shapes: triangle is at Palmer Station, square is at Joubin Island, and the diamond is at Wauwermans Island. In the zoomed in data files, the black line denotes the boating limit (this is the maximum distance the scientists can go in small boats from Palmer Station). The red vector plotted at the location of the CODAR stations (green shapes) indicates the wind speed and direction at the station. The red arrow at the bottom of some maps is the scale bar for the wind measurements and represents 10 m/s.

The PLDP drop down menu allows you to select the type of CODAR data you are looking at:

- Raw Vectors: This is the base observation from the CODAR data. It is a plot the net movement of water at the surface with all variables that could impact the water movement included like tide, wind, density currents, etc.
- Raw Vectors – Zoom: This is the zoomed in image of the Raw Vectors CODAR data around Palmer Station.
- Divergence: This is a processing that estimates divergence and convergence from the Raw Vectors CODAR data. Convergence and divergence are presented from the vertical movement of water from the surface to 1 m down. CODAR does not have a depth resolution (it cannot read down into the water column). Rather, convergence or divergence is inferred from changes in the horizontal movement/velocity of water. If currents are crashing into each other, scientists assume (which is a good assumption) that water has to be forced down at a speed that is directly related to the horizontal speeds of the water at the surface measured by CODAR. If currents are accelerating away from each other, we assume that water comes from deeper layers to replace it at a speed that is directly related to the horizontal speeds of the water at the surface measured by CODAR. So, vertical movements of water are calculated based on the measured horizontal movements of water. A positive vertical movement of the water indicates water coming from the deeper ocean to replace water that is moving away (divergence zone, red areas). Negative vertical movement of the water indicates water that is going down toward the deeper ocean as water builds up in one place because it is being pushed there (convergence zone, blue areas).
- Divergence Zoom: This is the zoomed in image of the Divergence CODAR data around Palmer Station.
- Divergence Trend: This is a processing that estimates the persistence if divergence over the last three days from the Divergence processed CODAR data. A Divergent Trend value of 1 (red) indicates that the area was always divergent over three days, and a value of -1 (blue) indicates that the area was

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always convergent over three days. This is helpful in detecting regions of persistent convergence or divergence zones that the penguins might be using.

- Divergence Trend – Zoom: This is the zoomed in image of the Divergence Trend CODAR data around Palmer Station.
- Vorticity: This is an estimate the rotation a particle would feel if it were moving through the Raw Vectors CODAR data current map. Positive values indicate that the currents are causing a particle to spin in the clockwise direction. Negative values indicate that the currents are causing a particle to spin in the clockwise direction. Scientists calculate vorticity because it helps them identify regions of spinning water, which allows us to identify regions where currents slide past each other (shear) and/or currents form circular patterns (eddies) that might be important for aggregations of krill and phytoplankton.
- Vorticity – Zoom: This is the zoomed in image of the Vorticity CODAR data around Palmer Station.
- Detided: This is a processing of the Raw Vectors CODAR data that has the influence of tides on the movement of water subtracted out.
- Filtered: This is a processing of the Detided CODAR data that has removed any movement of the water that happens over a time period shorter than 30 hours to remove longer term background movement of the water.
- Tidal: This is an estimate of the portion of the water movement in the Raw Vectors CODAR data current map that is due to tides. The maps show the tidal current only over the coverage area. The blue and yellow colors indicate the velocity of the tidal currents measured by CODAR. Yellow are faster currents, and blue are slower currents.

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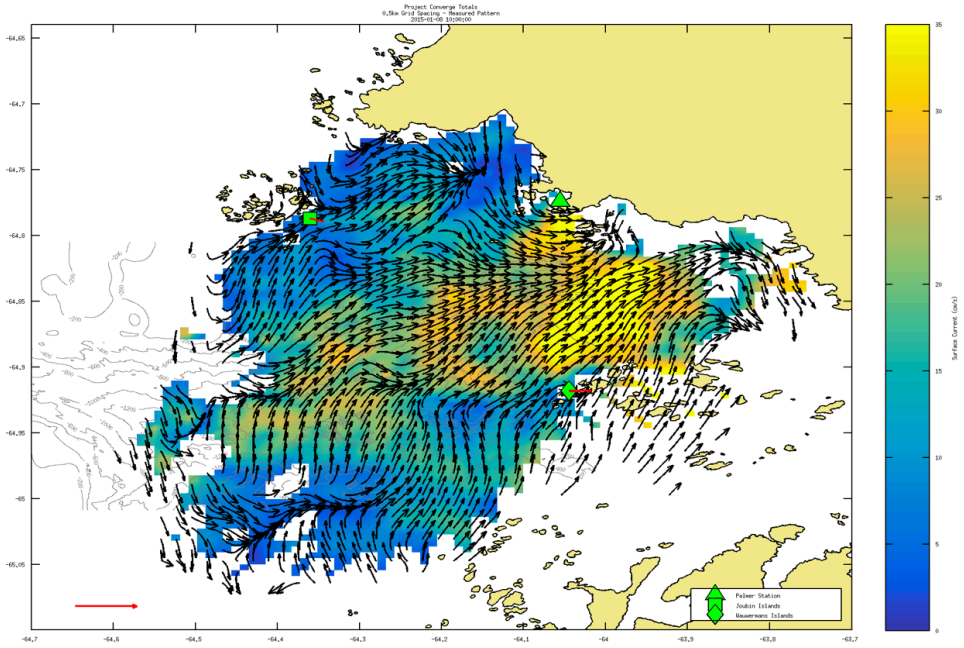
Antarctica Archive Totals Viewer

Current archived images are available between **05/27/2011** and **1/8/2015 10:00**. Images are available every hour.

Date: 01/08/2015 Hour: 10 Goto

PLDP : Raw Vectors

<< Play | < Back | Stop | Forward > | Play >> | Faster | Slower



- *Current Map Images* – This links to a directory of folders and files of the different CODAR raw and processed data over time from the project that you can toggle through using the Current Map Viewer. The folders include:
    a. 2014_11/ - This includes all of the November 2014 Measured Pattern of the CODAR raw data that enables scientists to determine how the data needs to be corrected for the naturally occurring variation due to the fact that the data is being triangulated from three CODAR stations and the potential aspects of the environment that would distort the data. These data are then processed to make the Raw Vectors CODAR data maps. The files are labeled as: OI_PLDP_YYYY_MM_DD_HHMM.png.
    b. 2014_12/ - This includes all of the December 2014 Measured Pattern of the CODAR raw data.
    c. 2015_01/ - This includes all of the January 2015 Measured Pattern of the CODAR raw data.

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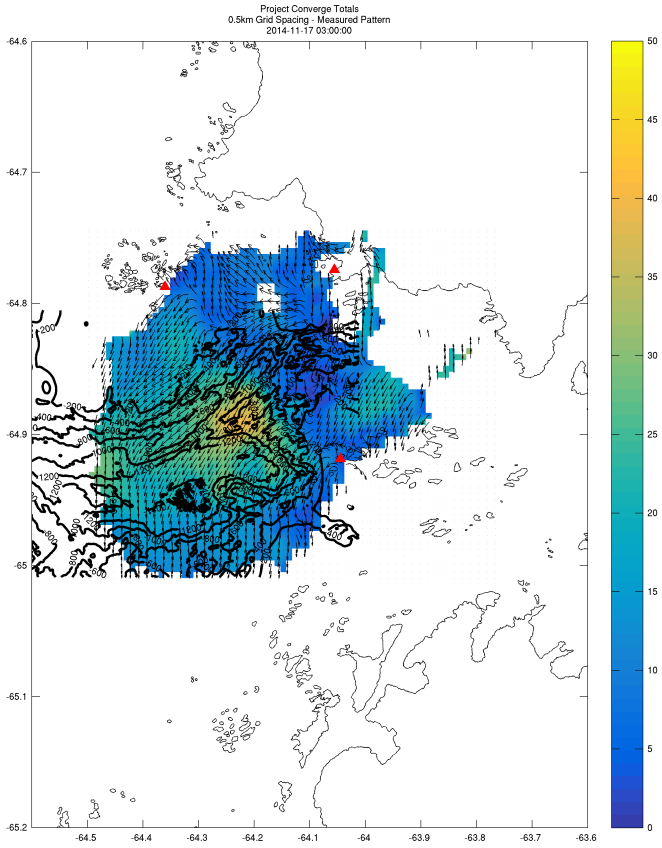

d. detided/ (by each month) - This is a processing of the Raw Vectors CODAR data that has the influence of tides on the movement of water subtracted out. The files are labeled as: OI_PLDP_YYYY_MM_DD_HHMM-detided.png.

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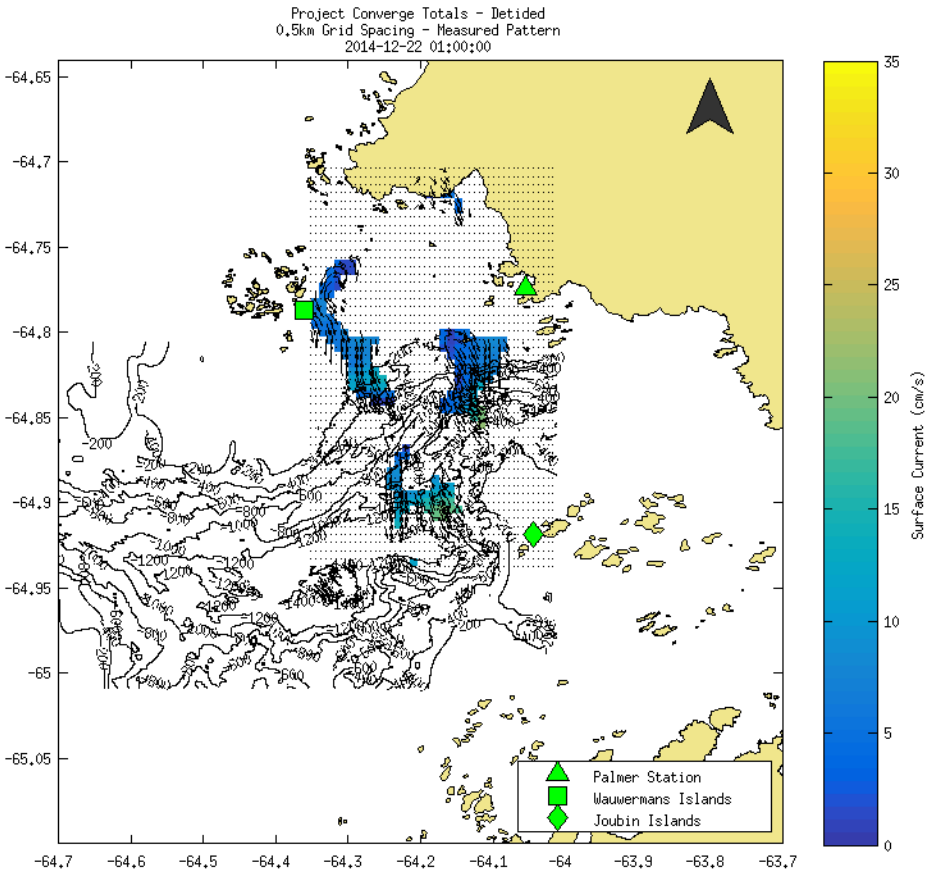

e. divergence/ (by each month) - This is a processing that estimates divergence and convergence from the Raw Vectors CODAR data. Convergence and divergence are presented from the vertical movement of water from the surface to 1 m down. CODAR does not have a depth resolution (it cannot read down into the water column). Rather, convergence or divergence is inferred from changes in the horizontal movement/velocity of water. If currents are crashing into each other, scientists assume (which is a good assumption) that water has to be forced down at a speed that is directly related to the horizontal speeds of the water at the surface measured by CODAR. If currents are accelerating away from each other, we assume that water comes from deeper layers to replace it at a speed that is directly related to the horizontal speeds of the water at the surface measured by CODAR. So, vertical movements of water are calculated based on the measured horizontal movements of water. A positive vertical movement of the water indicates water coming from the deeper ocean to replace water that is moving away (divergence zone, red areas). Negative vertical movement of the water indicates water that is going down toward the deeper ocean as water builds up in one place because it is being pushed there (convergence zone, blue areas). The files are labeled as: OI_PLDP_YYYY_MM_DD_HHMM-divergence.png.

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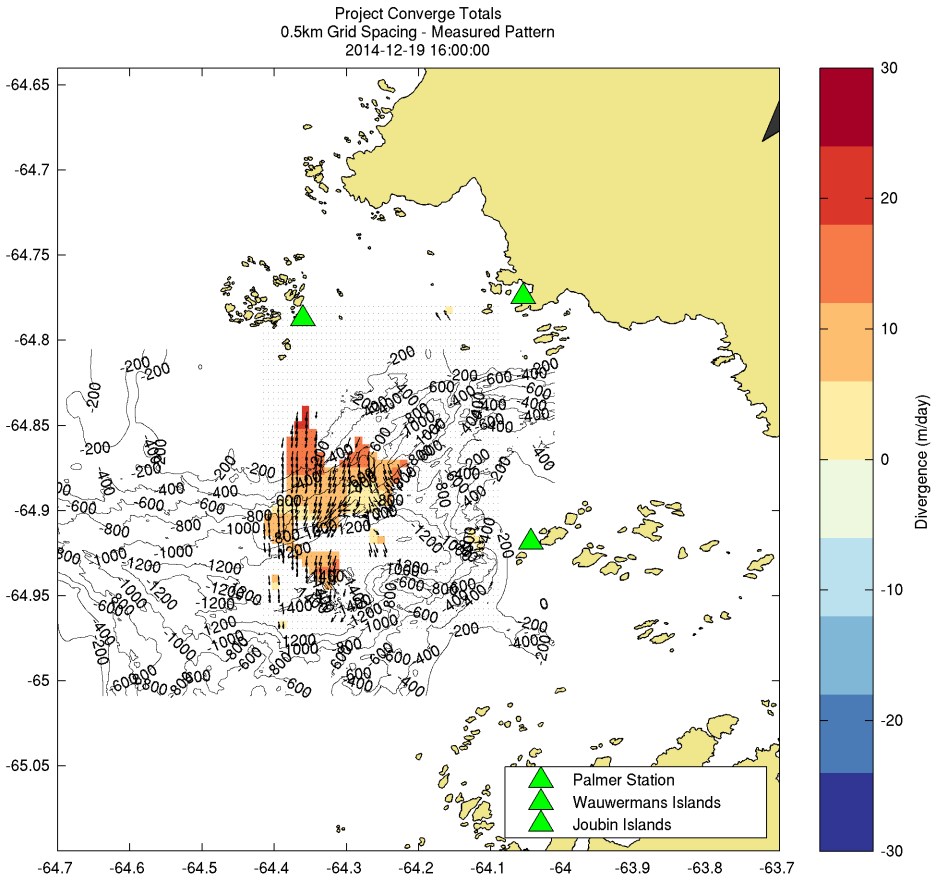

f. divergenceTrend/ (by each month) - This is a processing that estimates the persistence if divergence over the last three days from the Divergence processed CODAR data. A Divergent Trend value of 1 (red) indicates that the area was always divergent over three days, and a value of -1 (blue) indicates that the area was always convergent over three days. This is helpful in detecting regions of persistent convergence or divergence zones that the penguins might be using. The files are labeled as: OI_PLDP_YYYY_MM_DD_HHMM-divergenceTrend.png.

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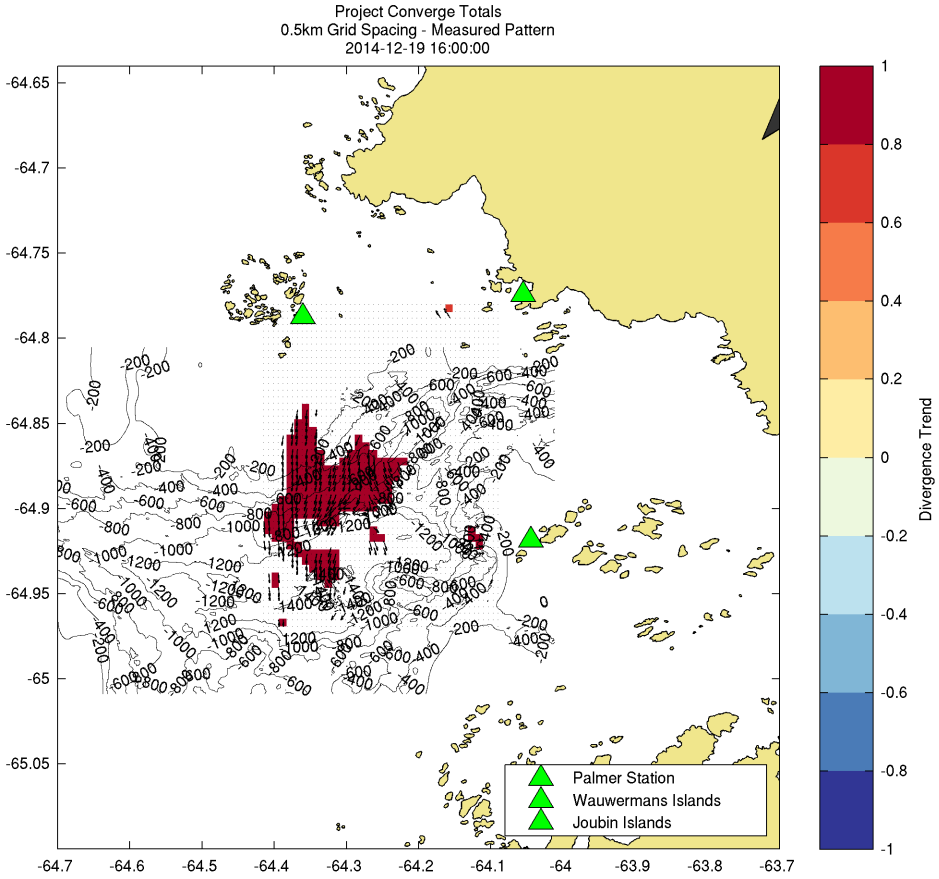

g. divergenceTrendZoom/ (by each month) - This is the zoomed in image of the Divergence Trend CODAR data around Palmer Station. The files are labeled as: OI_PLDP_YYYY_MM_DD_HHMM- divergenceTrendZoom.png.

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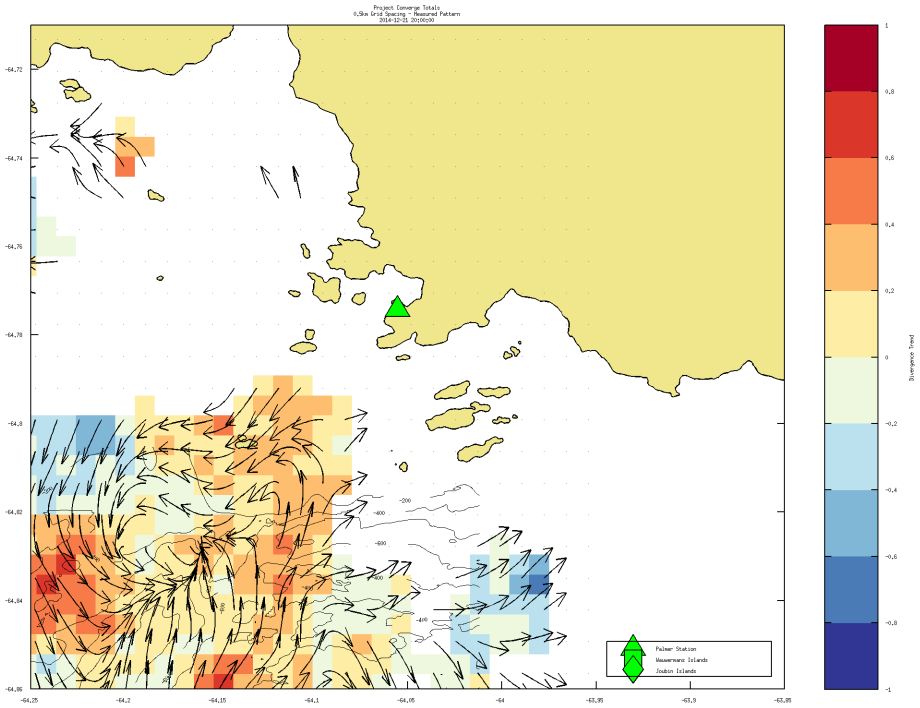
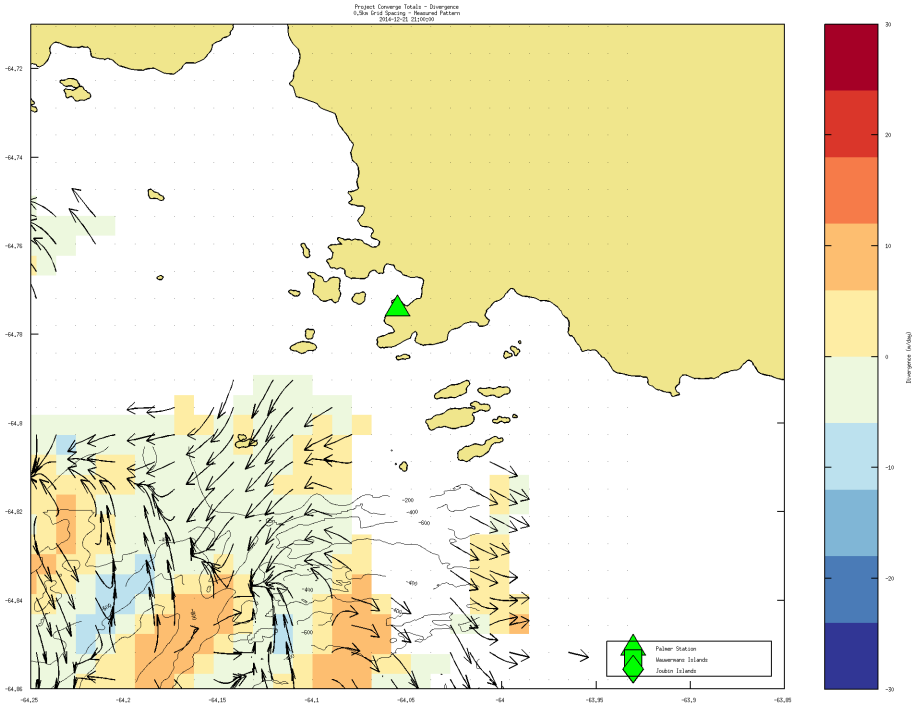


h. divergenceZoom/ (by each month) - This is the zoomed in image of the Divergence CODAR data around Palmer Station. The files are labeled as: OI_PLDP_YYYY_MM_DD_HHMM- divergenceZoom.png.



i. rawZoom/ (by each month) - This is the zoomed in image of the Raw Vectors CODAR data around Palmer Station. The files are labeled as: OI_PLDP_YYYY_MM_DD_HHMM- rawZoom.png.

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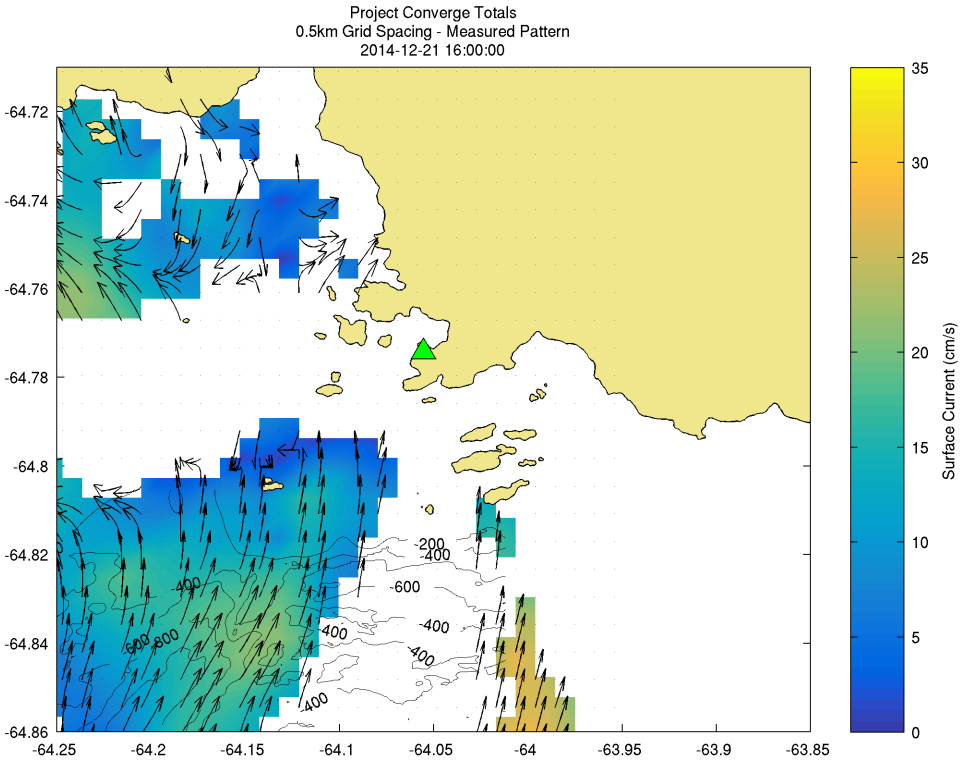

j. tidal/ (by each month) - This is an estimate of the portion of the water movement in the Raw Vectors CODAR data current map that is due to tides. The maps show the tidal current only over the coverage area. The blue and yellow colors indicate the velocity of the tidal currents measured by CODAR. Yellow are faster currents, and blue are slower currents. The files are labeled as: OI_PLDP_YYYY_MM_DD_HHMM-tidal.png.

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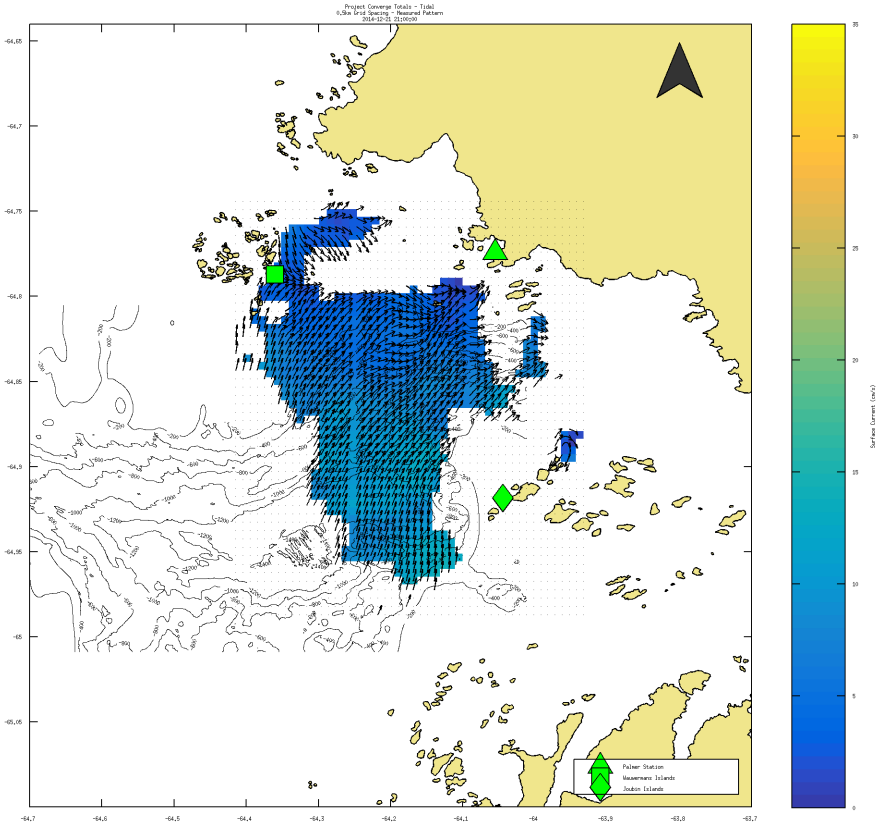

k. vorticity/ (by each month) - This is an estimate the rotation a particle would feel if it were moving through the Raw Vectors CODAR data current map. Positive values indicate that the currents are causing a particle to spin in the clockwise direction. Negative values indicate that the currents are causing a particle to spin in the clockwise direction. Scientists calculate vorticity because it helps them identify regions of spinning water, which allows us to identify regions where currents slide past each other (shear) and/or currents form circular patterns (eddies) that might be important for aggregations of krill and phytoplankton. The files are labeled as: OI_PLDP_YYYY_MM_DD_HHMM- vorticity.png.

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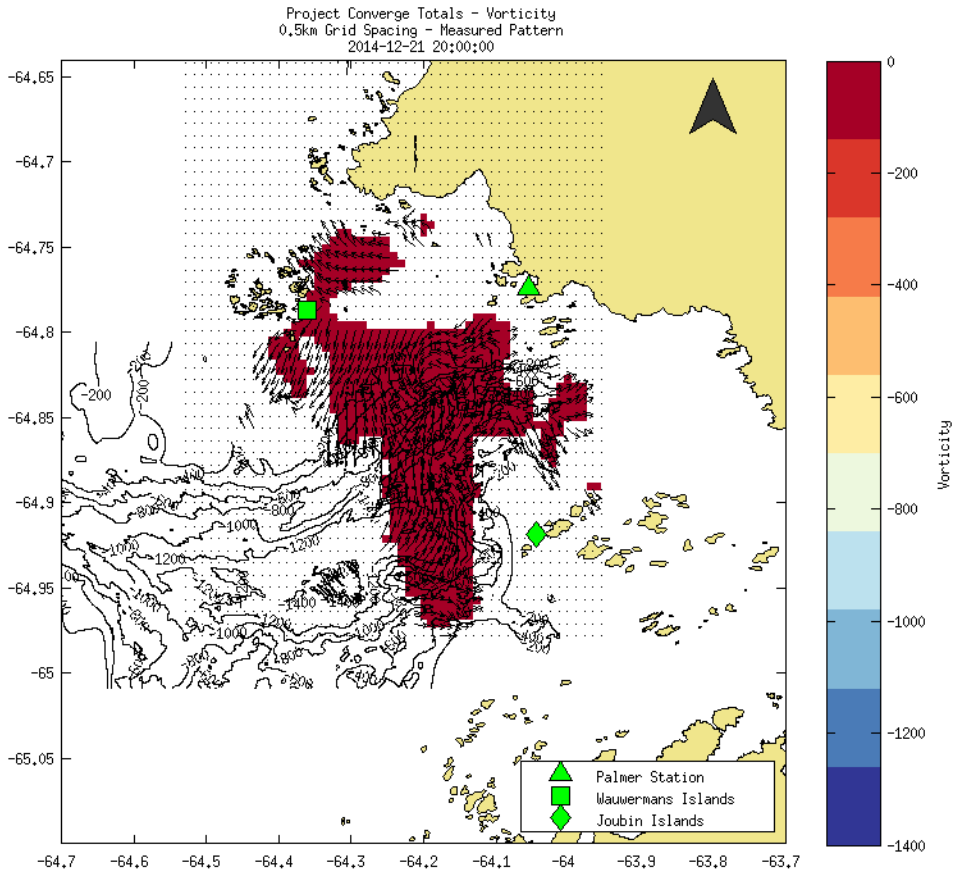

l. vorticityZoom/ (by each month) - This is the zoomed in image of the Vorticity CODAR data around Palmer Station. The files are labeled as: OI_PLDP_YYYY_MM_DD_HHMM- vorticityZoom.png.

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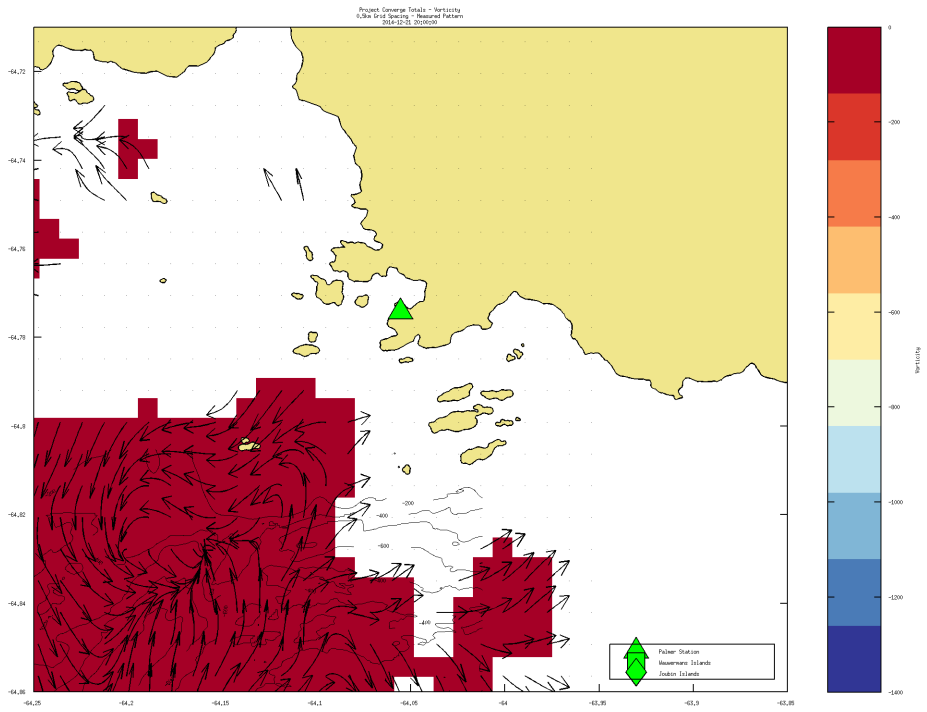

- *24 Hour Average Currents* – This map represents that average surface currents speed and direction over the past 25 hours. The date and time range of the map is listed in the title. The color of the arrows indicates the speed (cm/s) the surface current was traveling, so blue arrows indicate slower speeds and yellow arrows indicate faster speeds. The three black triangles denote the location of the three CODAR stations. North is up on these maps. The "NOTE: Data outside color range will be saturated" means that if the surface current speed was lower or higher than the scale bar of 0-30 cm/s then that data would not be included in the figure.

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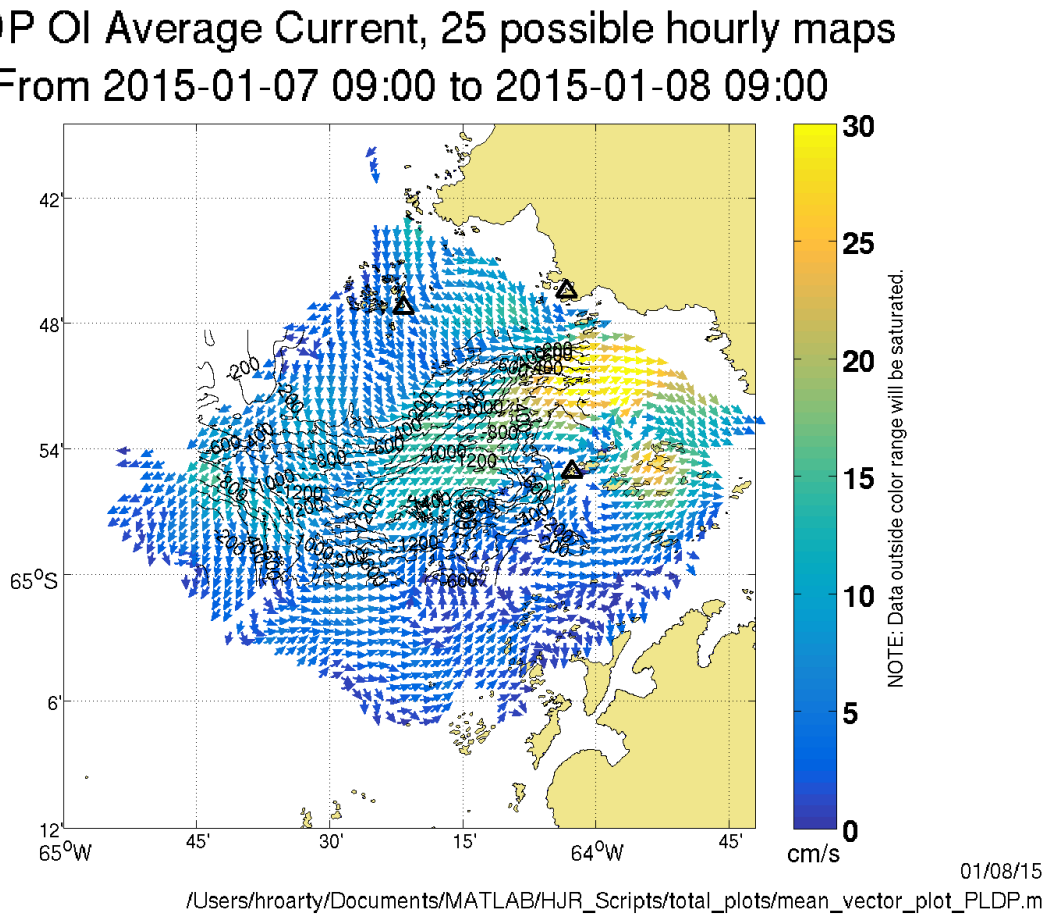

- *Animation of Simulated Drifter Trajectories* – This link shows a daily estimate of the movement of virtual particles released in the Raw Vectors CODAR data current maps. The red triangle labeled PALM is at the Palmer CODAR station, the red triangle labeled JOUB is at Joubin Island, and the red triangle labeled WAUW is at the Wauwermans Island. The red dots are the locations of the drifters. If they move outside the range of our data coverage they turn blue and stop moving. The black line trailing behind the dots indicates the path the virtual drifter took since its release. The scientists create these simulations because they show them what a drifter might do if acted upon by the surface currents over 24 hours. This is useful if scientists want to know what a drifting particle (like a krill or phytoplankton patch) might experience. It is also very useful for understanding why certain gliders might drift in certain directions over time.

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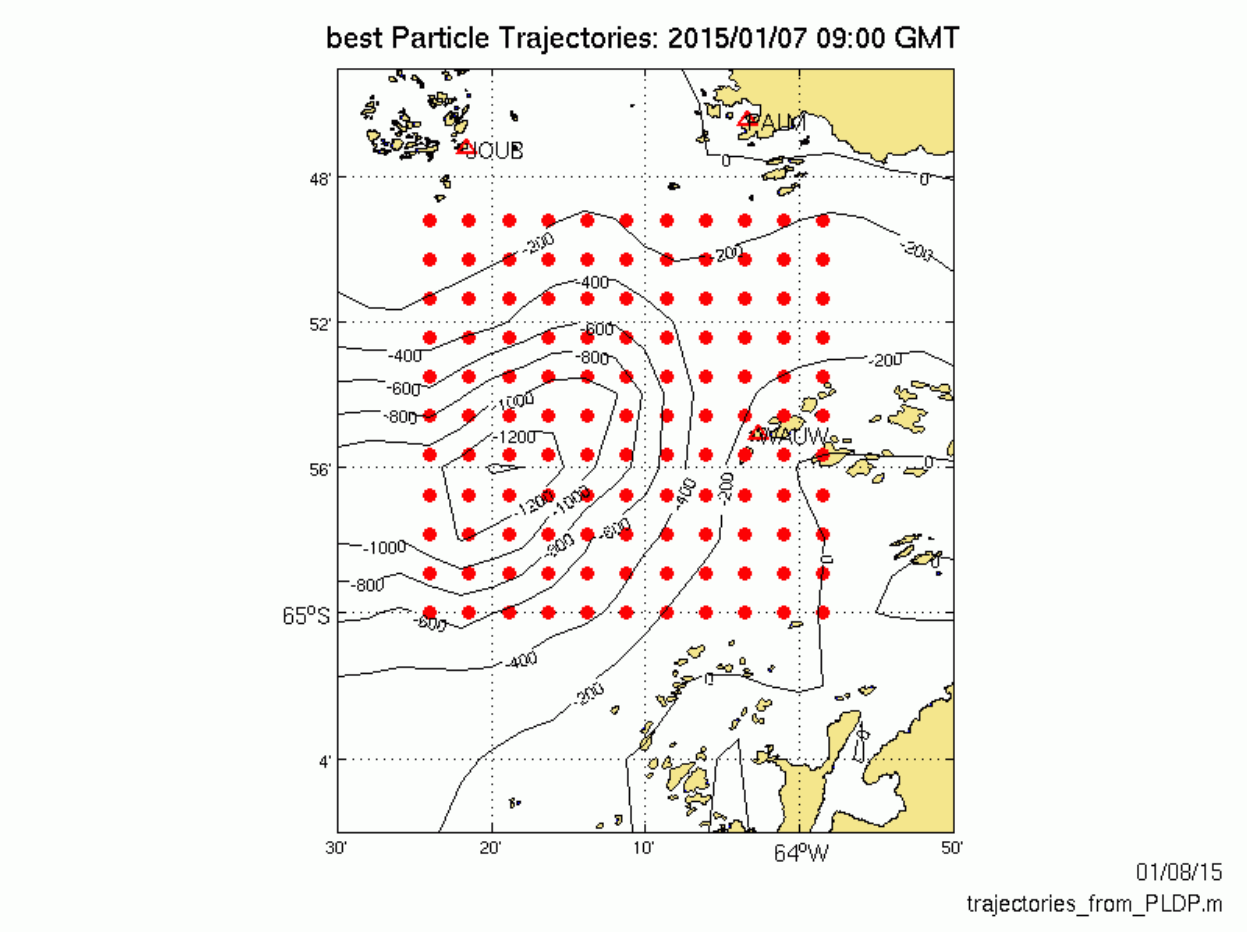
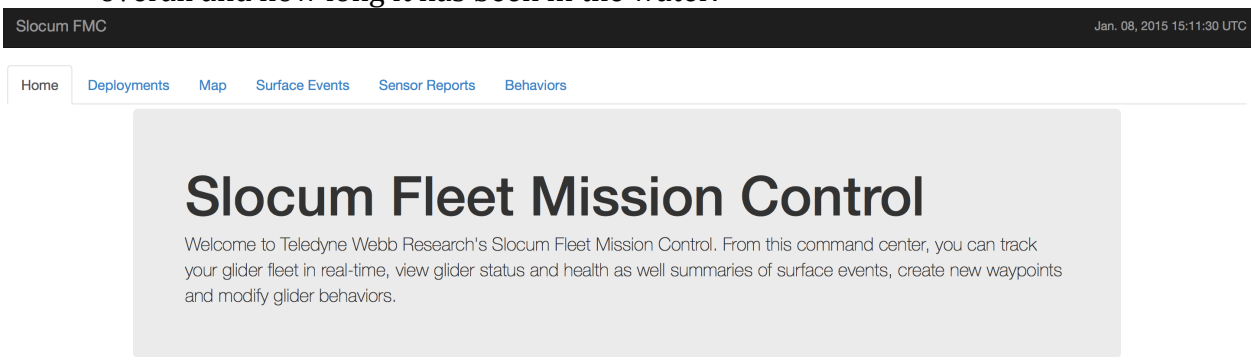


3) Glider Imagery

- *Real-time Glider Positions* – This is a link to the Slocum glider mission control page, where you can access data about all of the Slocum gliders out in the water at a given period in time. If you select Deployments you can choose a particular glider (CONVERGE is our project and LTER stands for Long-Term Ecological Research the team of scientists that are currently on the LMG collecting data). If you select Map you can see the track path of each glider, when it surfaced last, how far it has gone overall and how long it has been in the water.



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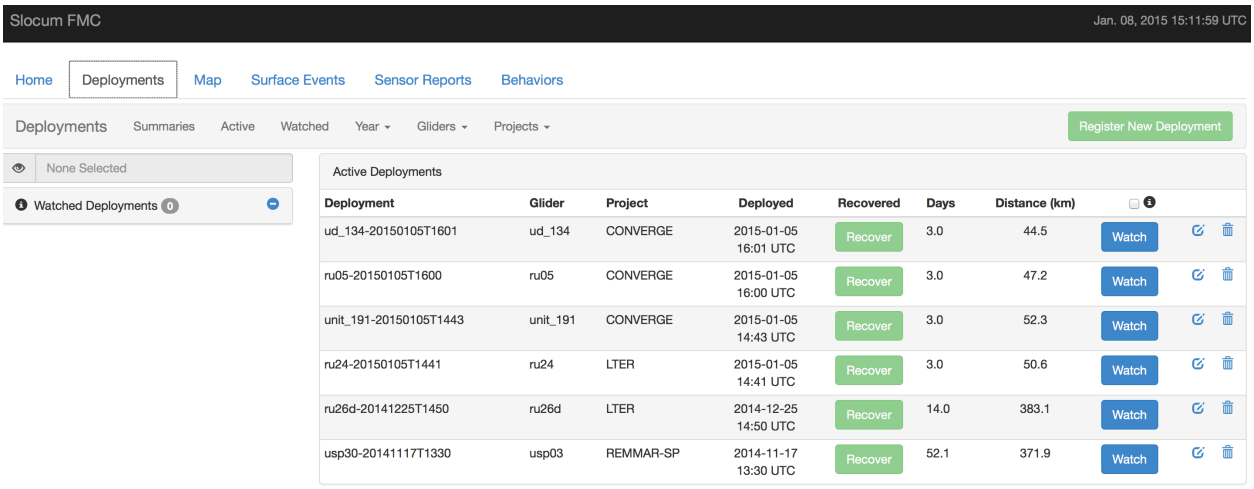

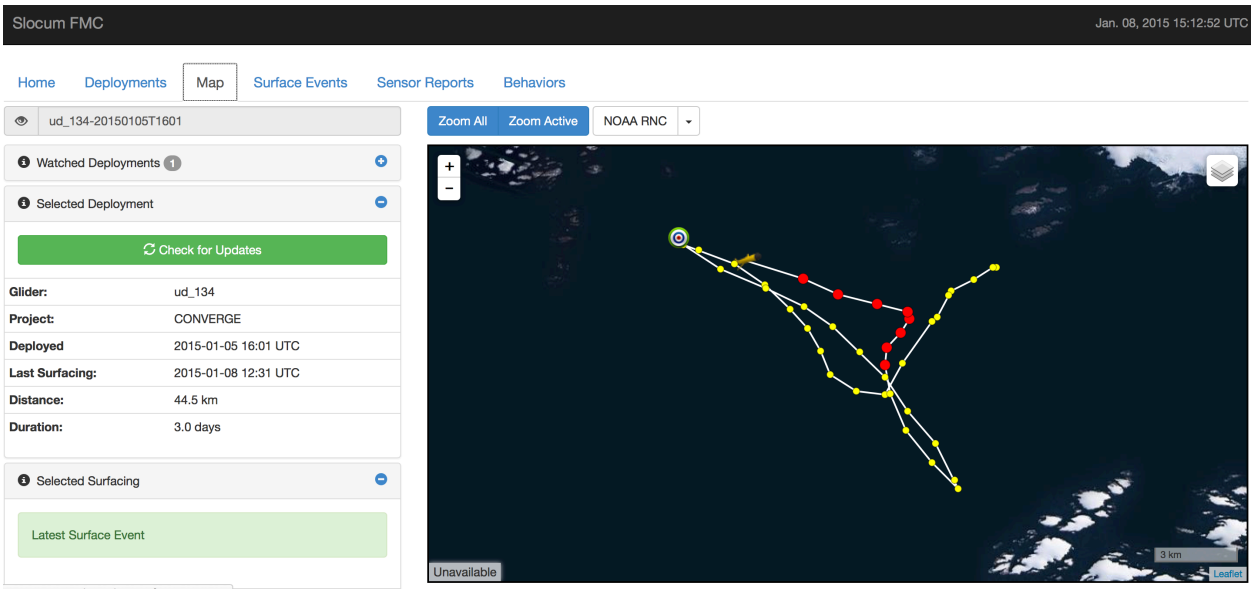

- *Real-time Glider Data* – This is a link to the Rutgers COOL Lab data portal in which you can get access to data about the different gliders that are out in the water at a given period of time in terms of their location and their location with respect to currents.

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Active Deployments

Jan. 08, 2015 15:10:56 UTC

Home Deployed Gliders Years Projects Statistics

Deployed Glider KMZ Files

Gliders	Gliders & Currents	Gliders w/ Time Slider	Gliders & Currents w/ Time Slider

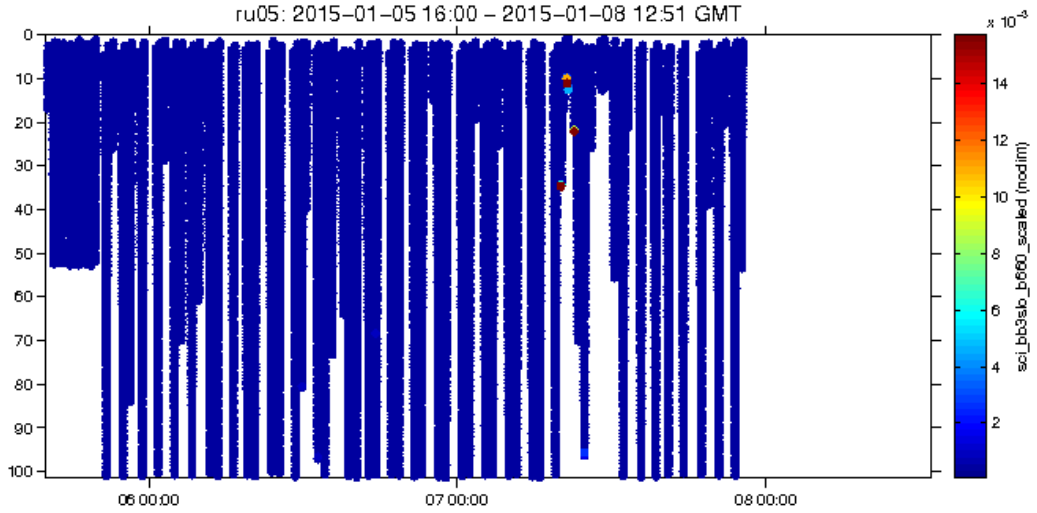
Glider Status

ID	Project	Deployed	Last Call	Hours Ago	Location	# Days	Distance	Waypoint	Range	Battery	Vacuum	POC	Notes
ru05-442	CONVERGE	2015-01-05 16:00 GMT	2015-01-08 12:50 GMT	2:20 hours	64°49.37'S 64°09.60'W	2.9	46.2 km	64°47.26'S 64°13.55'W	5.0 km	13.47 Volts	9.0 inHg	Haskins Aragon Haldeman	3
ru24-441	LTER	2015-01-05 14:41 GMT	2015-01-08 15:00 GMT	0:10 hours	64°49.31'S 64°02.62'W	3.0	49.3 km	64°49.20'S 64°04.00'W	1.1 km	13.42 Volts	9.1 inHg	Haskins Aragon Haldeman	5
ru26d-439	LTER	2014-12-25 14:50 GMT	2015-01-08 14:14 GMT	0:56 hours	64°04.19'S 65°25.30'W	14.0	379.6 km	64°15.86'S 65°47.80'W	28.3 km	10.96 Volts	11.0 inHg	Cimino Haskins Aragon	6
ud_134-443	CONVERGE	2015-01-05 16:01 GMT	2015-01-08 12:31 GMT	2:39 hours	64°49.12'S 64°14.70'W	2.9	42.3 km	64°48.65'S 64°17.96'W	2.7 km	13.25 Volts	10.3 inHg	Haskins Aragon Haldeman	2
unit_191-440	CONVERGE	2015-01-05 14:43 GMT	2015-01-08 14:25 GMT	0:45 hours	64°53.40'S 64°09.62'W	3.0	50.7 km	64°57.02'S 64°18.83'W	9.9 km	N/A	0.0 inHg	Haskins Aragon Haldeman	4

Page Loaded: 2015-01-08 15:10 GMT

- *Real-time Glider Transect Images* – This link takes you to a directory of maps of all the track locations for each of the gliders in the CONVERGE project (RU05, RU24, UAF, and blue_hen/UD134). In the folders for each glider in the directory there are these types of files with different water quality data that the glider recorded since it was deployed (note – not every glider folder has every type of file):
    a. GLIDERNAME_mat.mat – This is a data file of the gliders data for scientists to access the raw data.

    b. GLIDERNAME_bb.png (with and without numbers in file name) - This is a glider profile of optical backscatter (a way to measure how many particles are in the water) in the water column across the glider transect since it was deployed. The surface of the water is the top of the profile and the bottom of the profile is 100 m, the deepest the glider dove down to. The x-axis is time. The units for backscatter are 1/meters. Higher values (red) indicate more suspended particles (like phytoplankton) are in the water scattering light back toward the glider and lower values (blue) indicate fewer suspended particles in the water.



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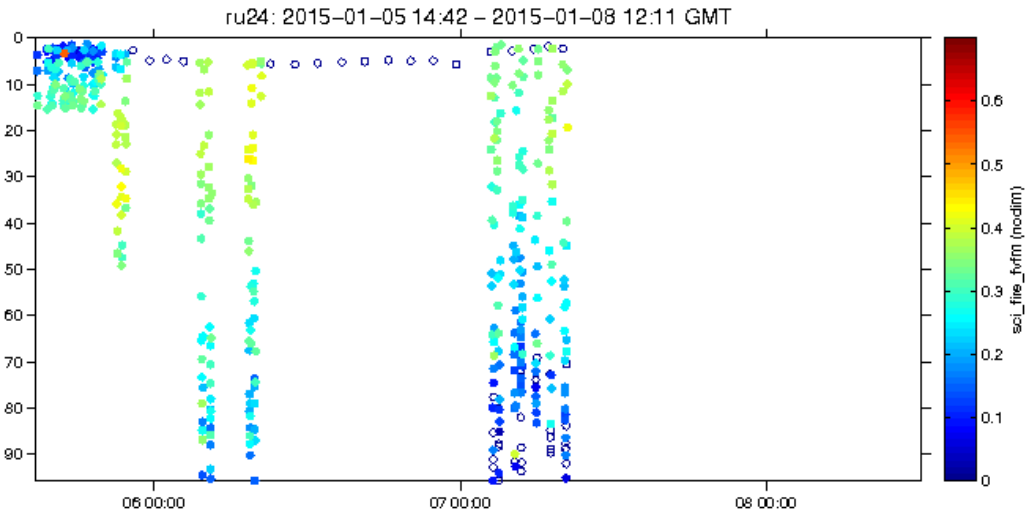
c. GLIDERNAME_fvfm.png - This is a glider profile of phytoplankton health in the water column across the glider transect since the glider was deployed. The surface of the water is the top of the profile and the bottom of the profile is 100 m, the deepest the glider dove down to. The x-axis is time. This is a ratio of fluorescence of measured fluorescent response (Fv) and maximum fluorescent response (Fm) so the values have no units. The instrument works by probing the phytoplankton population with a low level light to measure the phytoplanktons' ability to fluoresce. If the instrument detects fluorescence at very low light, that means the phytoplankton are ready to do photosynthesis. Then the instrument sends a very fast series of bright light pulses, and measures the fluorescent response. The instrument measures how much fluorescent response there is (Fv) and the maximum fluorescent response (Fm). The ratio of Fv to Fm indicates that the phytoplankton were able to handle the bright light pulses, and they are healthy. A low ratio indicates that phytoplankton are not ready for bright light, and are not healthy. An analogy: One way to measure the fitness of a boxer would be to see how many punches the boxer can take before s/he falls down. The more punches, the healthier the boxer was. Same thing here…the more light pulses the phytoplankton can handle, the healthier they are. Red indicates healthier cells and blue indicates less healthy cells.



d. GLIDERNAME_chlor.png – This is a glider profile of chlorophyll in the water column across the glider transect since it was deployed. The surface of the water is the top of the profile and the bottom of the profile is 100 m, the deepest the glider dove down to. The x-axis is time. The units are micrograms per liter of ocean water. Red indicates higher concentrations of chlorophyll and blue indicates lower concentrations to zero chlorophyll.

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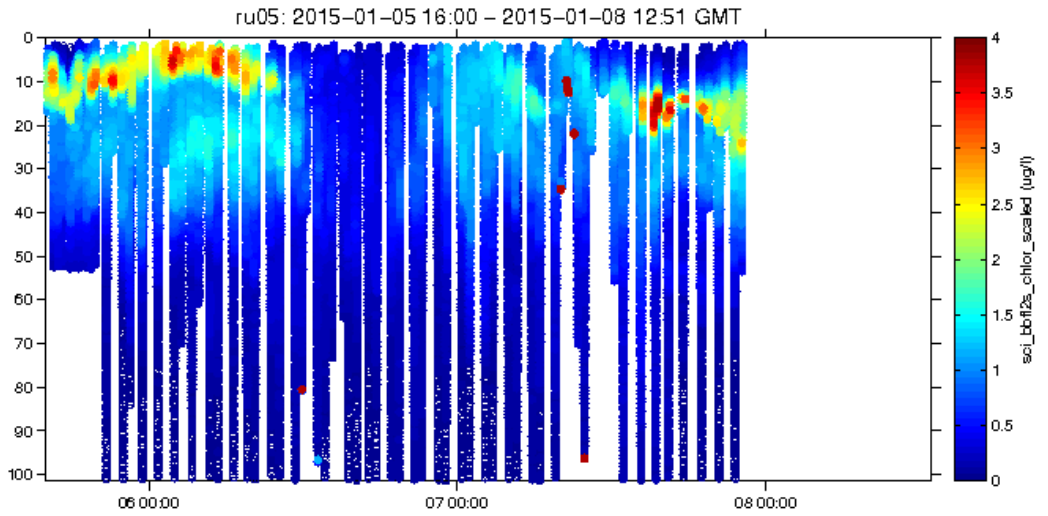
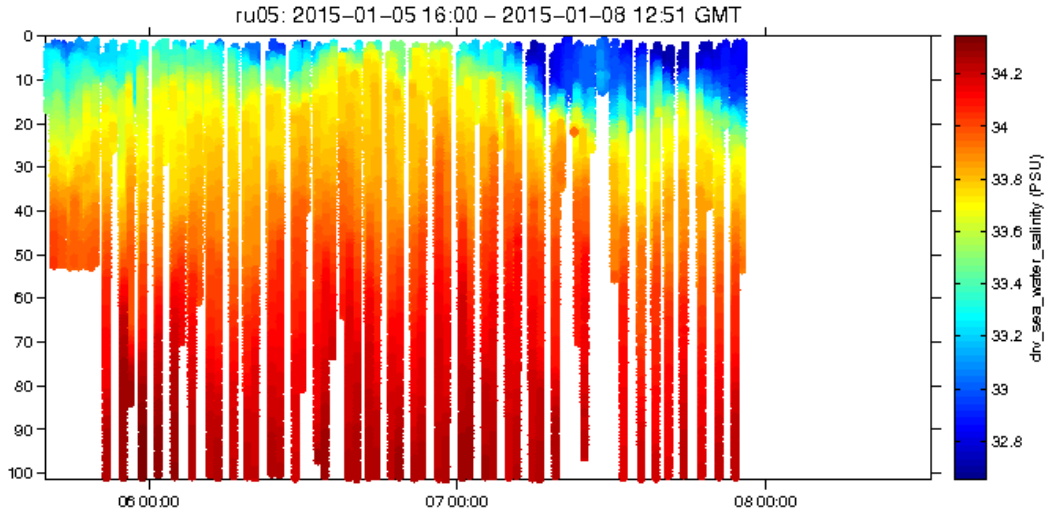


e. GLIDERNAME_salinity.png - This is a glider profile of salinity in the water column across the glider transect since it was deployed. The surface of the water is the top of the profile and the bottom of the profile is 100 m, the deepest the glider dove down to. The x-axis is time. The units are PSU which stands for Practical Salinity Units, which is roughly equivalent to ppt. Red indicates higher salinity and blue indicates lower salinity.



f. GLIDERNAME_temp.png - This is a glider profile of temperature in the water column across the glider transect since it was deployed. The surface of the water is the top of the profile and the bottom of the profile is 100 m, the deepest the glider dove down to. The x-axis is time. The units are degrees Celsius. Red indicates warmer temperatures (but still not warm) and blue indicates cooler temperatures.

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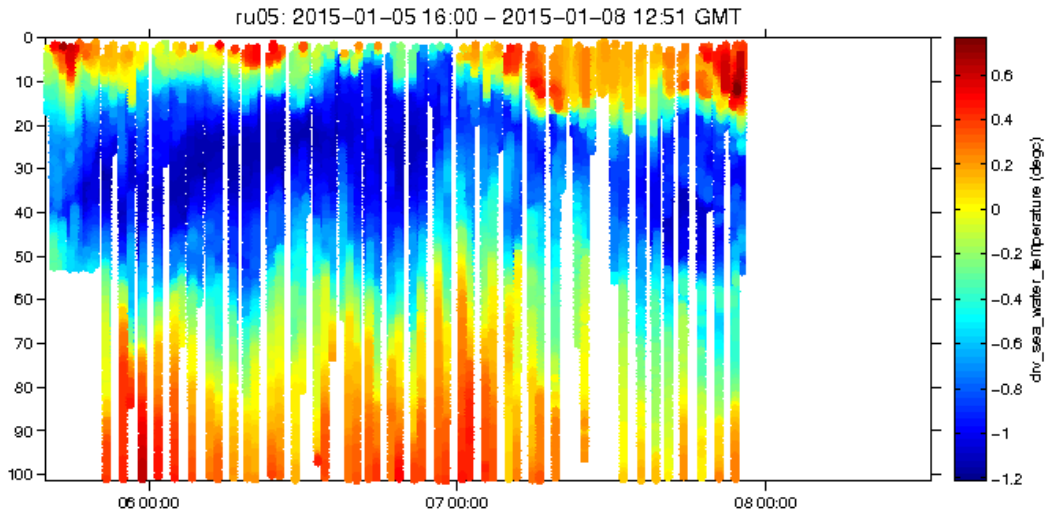
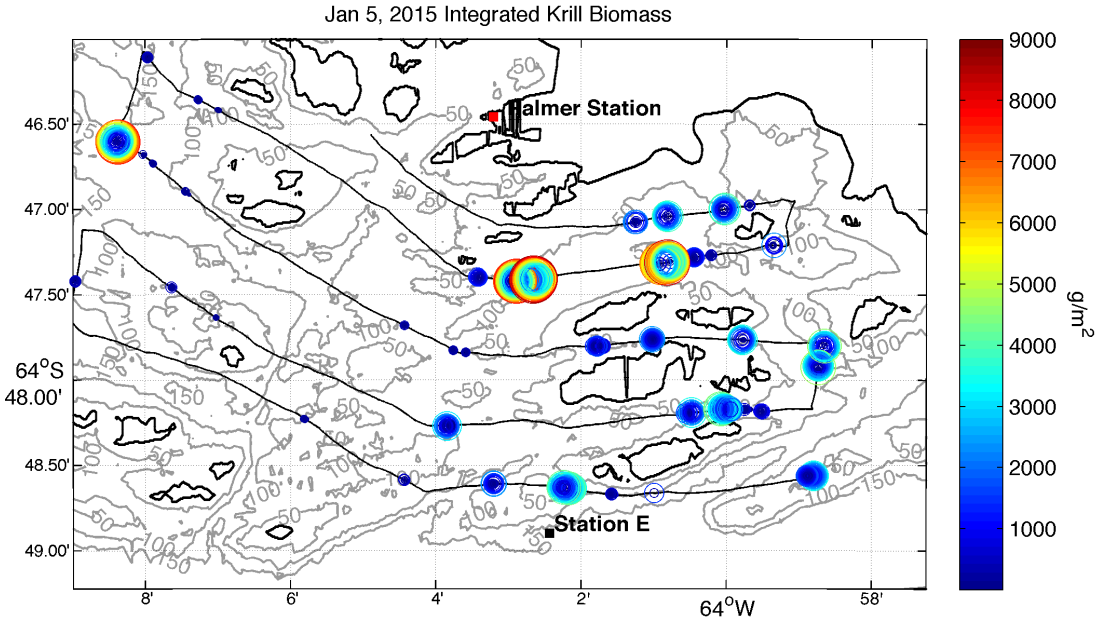


4) Acoustic krill surveys –

- *Survey images* – This link takes you to a directory of all the maps created for each acoustic survey by day. In the directory there are these types of files:
    a. YYYYMMDD_Krill.png – The path that the boat traveled is called the track location and is shown in the black line. The date of the survey is listed in the title for the map. Along the track location line there are open circles that represent different places that the scientists saw krill. The bigger the open circle the more krill they saw. Also, the blue circles indicate lower krill biomass and the red circles indicate higher krill biomass at that location. The units for the biomass of krill are grams of krill per meter squared of ocean water.



    b. YYYYMMDD_chl.png – The path that the boat traveled is called the track location and is shown as the string of dots. The date of the survey is listed in the title for the map. These are data from a fluorometer that is collecting information

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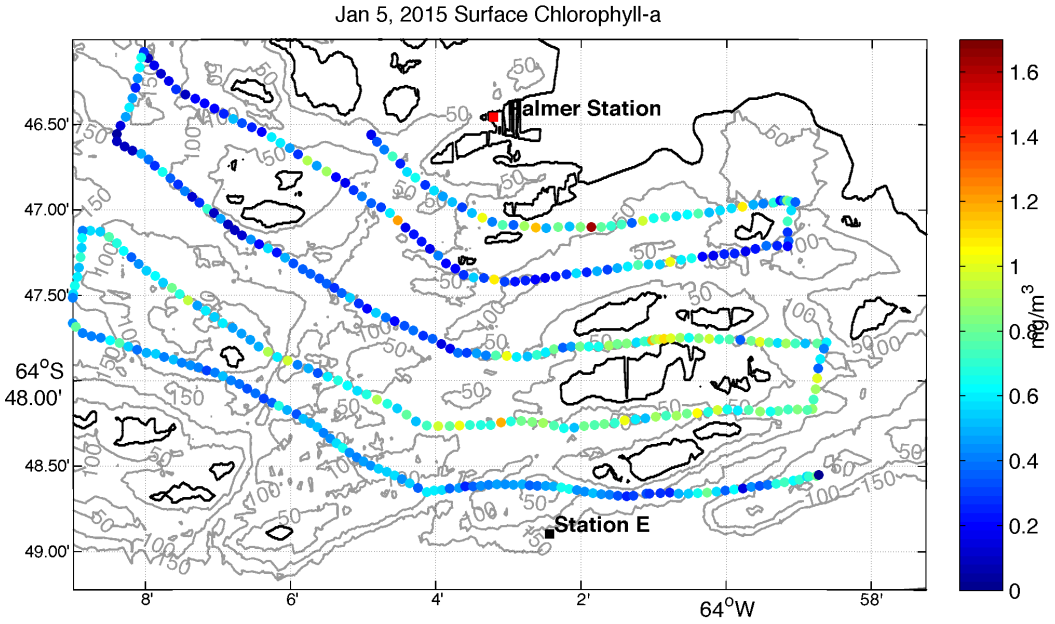
about how much chlorophyll is at the surface of the water where the scientists are conducting the acoustic surveys for krill. The circles represent the chlorophyll data they received. The blue dots indicate lower chlorophyll concentration and the red dots indicate higher chlorophyll concentration at that location. The units for the chlorophyll concentration are milligrams of chlorophyll per meter cubed of ocean water.



c. YYYYMMDD_temp.png – The path that the boat traveled is called the track location and is shown as the string of dots. The date of the survey is listed in the title for the map. These are data from a Conductivity Temperature Depth (CTD) sensor that is collecting information about the temperature at the surface of the water where the scientists are conducting the acoustic surveys for krill. The circles represent the water temperature data they received. The blue dots indicate lower temperatures and the red dots indicate higher temperatures at that location. The units for the surface water temperature are degrees Celsius.

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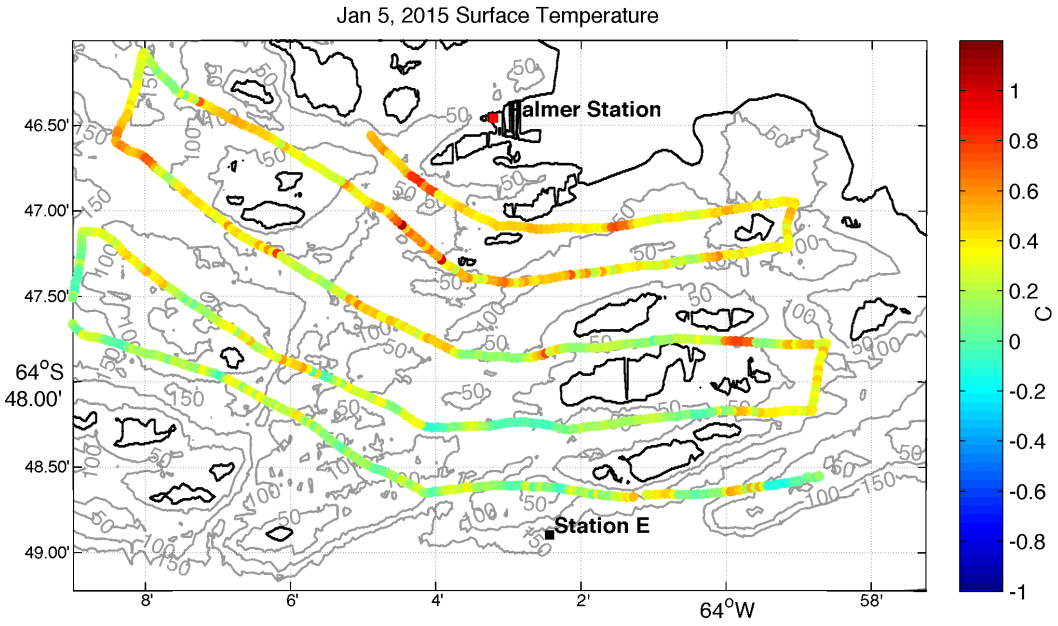

5) Penguin Track Data

- *Penguin Kernel Density Movies* – This link will be an animation of the penguin kernel densities over time with the same color scheme included in the google earth layers (Penguin Tracks: Mean Kernel Density – Adelies & Mean Kernel Density – Gentoos).
    - *Adelies* – This links to the mean kernel density (habitat use) of the tagged Adelie penguins over the season. Yellow colors indicate less habitat use over time by the penguins and red colors indicate more habitat use over time by the penguins. The date and time of the data are included in the figure title and indicated by the blue bar moving across the top. The top graph represents the tide height (m) throughout time.

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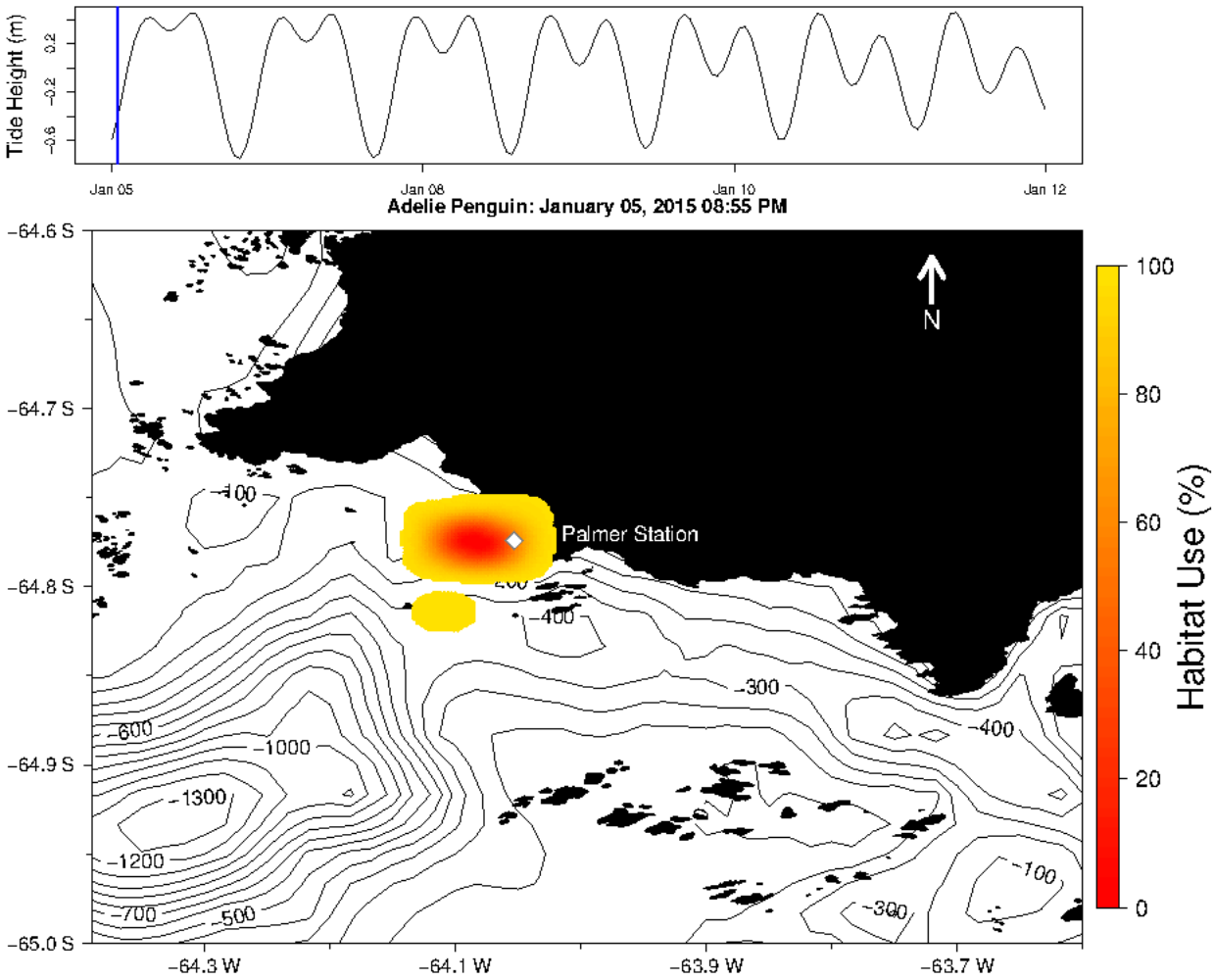

- *Gentoos* – This link will lead to the mean kernel density (habitat use) of the tagged Gentoo penguins over the season (once Gentoo penguins are tagged when the chicks get bigger). Yellow colors indicate less habitat use over time by the penguins and green colors indicate more habitat use over time by the penguins. The date and time of the data are included in the figure title and indicated by the blue bar moving across the top. The top graph represents the tide height (m) throughout time.

- *Data file of Tracks* – This links to a directory of penguin data hosted by the University of Delaware. Select the Palmer_Penguins.csv file in the list of files to download the data file of the penguin tracks (which can be used to import into ArcGIS Online to easily see the track data). For the time during which each penguin was tagged there will be data of where the penguin went. The columns of data include:
  - PTT – Is an identifying number that combines the tag ID and the unique ID for each individual penguin tagged.
  - Lat – Latitude

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- Lon – Longitude
- Time – Date and time the data point is from.
- Qual – Is how the scientists quantify the quality of the location data point on a scale from high to low quality (highest - 3, 2, 1, 0, A, B, lowest - Z). *This is a category that you can ignore when interacting with the data, as the scientists in their complete penguin movement analyses use it.
- Spp – Species. ADPE = Adélie Penguin and GEPE = Gentoo Penguin.
- Sex – Gender of tagged penguin. M – Male, F – Female.
- Isl – Island colony in which the penguin was tagged. TOR – Torgesen Island, BIS – Biscoe Point.

	A	B	C	D	E	F	G	H	I
1		PTT	Lat	Lon	Time	Qual	Spp	Sex	Isl
2	1	134759.1	-64.775	-64.091	1/5/15 20:55	3	ADPE	M	TOR
3	2	134759.1	-64.773	-64.087	1/5/15 22:15	2	ADPE	M	TOR
4	3	134759.1	-64.777	-64.081	1/5/15 23:52	2	ADPE	M	TOR

6) Other Datasets

Local Winds - This will be a time series plot of wind measurements at Palmer Station. The horizontal axis is time and the vertical axis is wind speed in m/s.

- *Predicted Local Water Level* - This link shows the predicted water level around Palmer Station for the month of January (aka this provides information about the tides). Each row is a week of the predicted water level, with the dates along the x-axis and the water level along the y-axis in m above the reference point 0 which is the annual mean tidal level at the Palmer station dock. The yellow line indicates daytime hours and the blue line indicates nighttime hours.

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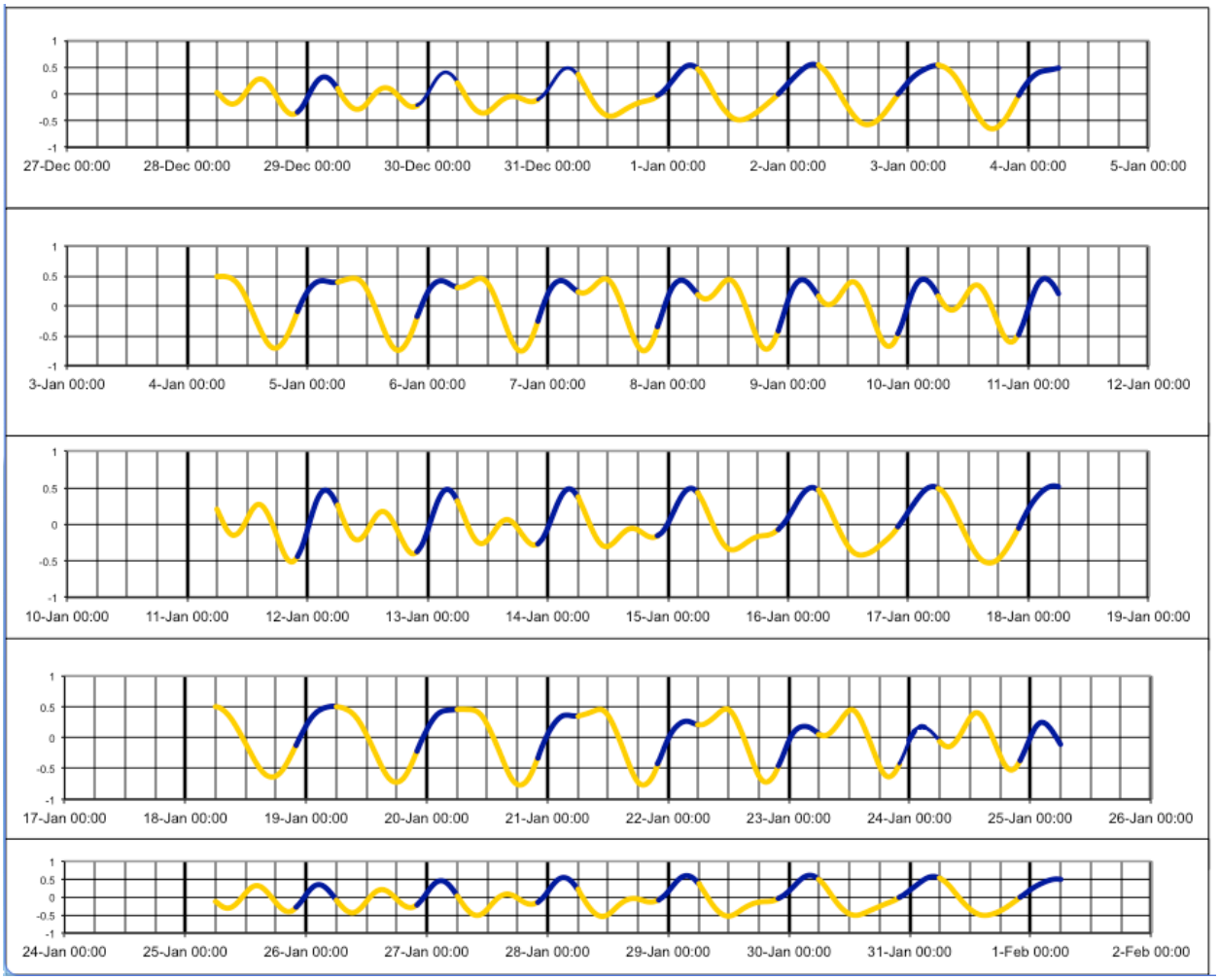

- *Remote Sensing* – This link directs you to a data portal provided by the University of Delaware, using the NOAA ERDDAP interface to allow you to plot different satellite data (SST- Sea Surface Temperature or Chl_oc3 – chlorophyll) in the Palmer Station region during different periods. Using the buttons you can select different graph settings. If you scroll your mouse over the buttons a descriptive text pops up explaining what the button is in relation to on the map. NOTE: This region is very cloudy, so satellite data are rare. If your plot looks all deep purple or all white, there is no valid satellite data for that day.

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ERDDAP
Easier access to scientific data

Brought to you by NOAA NMFS SWFSC ERD

ERDDAP > griddap > Make A Graph

Dataset Title: **Modis Aqua Satellite Data**
Institution: University of Delaware (Dataset ID: palmer1Day)
Information: Summary | FGDC | ISO 19115 | Metadata | Background | Data Access Form

Graph Type: surface
X Axis: longitude
Y Axis: latitude
Color: chl_oc3

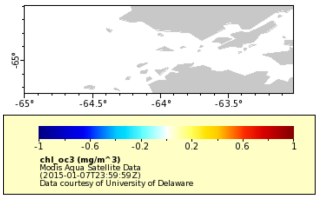
Dimensions	Start	Stop
time (UTC)	specify just 1 value →	2015-01-07T23:59:59Z
latitude (degrees_north)	-64.5999984741211	-65.24421691894531
longitude (degrees_east)	-65.0	-63.01472473144531

Graph Settings
Color Bar: Continuity: Scale:
Min: Max: N Sections:
Draw the land mask:

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

Optional:
Then set the File Type: .htmlTable and Download the Data or an Image
or view the URL: http://thredds.demac.udel.edu:8080/erddap/griddap/palmer1Day.htmlTable?chl_oc3[(2015-
(Documentation / Bypass this form) (File Type information)

Click on the map to specify a new center point.
Zoom: Data Out 8x Out 2x Out In In 2x In 8x



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