

# VIIRS Eureka Site

OSU 9 October 2014

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# outline

- Code Rewrite
- Time Series (June-Sept @ Platform Eureka)
- In-Situ data from 7-8 October 2014

# Complete rewriting of image browser & match up codes

All codes now in Matlab and allow straight roll-out to additional sites.

Three Layers:

- Automated daily grabs from
  - NOAA VIIRS Class
  - NASA VIIRS
  - NASA Aeronet

Making of Images and Matchups

Presentation Layer

- Cover Flow
- Image Zooms
- Time Series

This file uses Cell Mode. For information, see the [rapid code iteration](#) video, the [publishing](#) video, or [help](#).

# main.m

```

1 % main program to run all of the necessary scripts to create
2 % 1) VIIRS NOAA CLASS images
3 % 2) VIIRS NOAA CLASS time series data
4 % 3) VIIRS NASA time-series data
5 % for a given site and month
6 %
7 % usage:
8 %   main
9 %
10 % jsn and nbt
11 % oregon state university
12 % aug 20 2014
13
14 %% PREP
15
16 % empty the workspace
17 close all; clear all;
18
19 % user variables
20 my_site='eureka';
21 my_aero_level='1.5'; % AERONET data level; choices are 1.0, 1.5, and 2.0
22 my_image_action='skip'; % 'skip' or 'replace' if output image already exists
23 my_data_action='skip'; % 'skip' or 'replace' if extracted 5x5 box already exists
24 my_boxsize=5; % box size to be used in plots (this doesn't affect the box data extraction which is always 5x5 and 3x3)
25
26 % date range of data to be processed (for image creation and plots)
27 my_syear=2014;
28 my_smonth=5;
29 my_sday=1;
30 my_eyear=2014;
31 my_emonth=5;
32 my_eday=31;
33
34
35 % load the paths for all of the processing and data files
36 load_viirs_paths;
37
38 %% NOAA CLASS
39 % create the NOAA CLASS VIIRS images and pull out the boxes
40 %noaa_viirs(my_site,my_syear,my_smonth,my_sday,my_eyear,my_emonth,my_eday,my_data_action,my_image_action);
41
42 %% NASA
43 % pull out the boxes for the NASA VIIRS data
44 %nasa_viirs(my_site,my_syear,my_smonth,my_sday,my_eyear,my_emonth,my_eday,my_data_action);
45
46
47 %% AERONET
48 % pull out the AERONET timeseries data (will pull out all dates, not just the chosen month)
49 system([AERO_PRGS_PATH 'make_aeronet_tables.sh ' my_site ' ' my_aero_level ' ' AERO_DATA_PATH ' ' AERO_PRGS_PATH]);
50
51
52 %% MATCHING
53 %%%% THIS code needs to be updated to use the new *.mat 5x5 box files,
54 %%%% instead of the old site files
55 plot_all(my_site,my_boxsize,my_syear,my_smonth,my_sday,my_eyear,my_emonth,my_eday,my_aero_level)
56

```

# Making Images and Time Series

## noaa\_viirs.m

```

x  _  □ /Volumes/disk_1/Users/nbt/viirs/viirs_match/prgs/viirs_noaa_processing/noaa_viirs.m
1  % function for VIIRS SVM data to extract 5x5 boxes and generate images
2  % usage:
3  %   noaa_viirs(site,syear,smonth,sday,eyear,emonth,eday,data_action,image_action)
4  % site:   'eureka'
5  % syear:  2014
6  % smonth: 5
7  % sday:   1
8  % eyear:  2014
9  % emonth: 9
10 % eday:   30
11 % data_action: 'skip' or 'replace' (action to take if output 5x5 box already exists)
12 % image_action: 'skip' or 'replace' (action to take if output image already exists)
13 %
14 % nbt and jsn
15 % oregon state university
16 % aug 15 2014
17
18 function []=noaa_viirs(site,syear,smonth,sday,eyear,emonth,eday,data_action,image_action)
19
20     noaa_viirs_SVM_range(site,syear,smonth,sday,eyear,emonth,eday,data_action,image_action);
21     noaa_viirs_NLW_range(site,syear,smonth,sday,eyear,emonth,eday,data_action,image_action);
22     noaa_viirs_CHL_range(site,syear,smonth,sday,eyear,emonth,eday,data_action,image_action);
23
24 end
25
```

## noaa\_viirs\_NLW\_range.m

```

1  % makes VIIRS nLw images
2  % usage:
3  %   noaa_viirs_NLW_range(site,year,smmonth,sday,eyear,emonth,eday,data_action,image_action)
4  % site   : 'eureka'
5  % year:   2014
6  % smmonth: 5
7  % sday:   1
8  % eyear:  2014
9  % emonth: 9
10 % eday:   30
11 % data_action : 'skip' or 'replace' (action to take if output 5x5 box already exists)
12 % image_action : 'skip' or 'replace' (action to take if output image already exists)
13 %
14 % nbt and jsn
15 % oregon state university
16 % sep 18 2014
17
18
19 function []=noaa_viirs_NLW_range(fullsite,year,smmonth,sday,eyear,emonth,eday,data_action,image_action)
20
21 % set the paths
22 load_viirs_paths;
23
24 % get the site information
25 [site, lat, lon, rad]=sites(fullsite);
26
27 % get the date range
28 sdatenum=datenum([num2str(year) sprintf('%02d',smmonth) sprintf('%02d',sday)], 'yyyymmdd');
29 edatenum=datenum([num2str(eyear) sprintf('%02d',emonth) sprintf('%02d',eday)], 'yyyymmdd');
30
31 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
32 % main loop over all dates
33 for daynum = sdatenum:edatenum,
34
35     thisyear=datestr(daynum, 'yyyy');
36     thismonth=datestr(daynum, 'mm');
37     thisday=datestr(daynum, 'dd');
38
39     data_path = [NOAA_DATA_PATH '/' fullsite '/' site '_' thisyear '_' thismonth '/occ/'];
40     FILES     = dir([data_path 'hdf5/*GMTCO-VOCCO_npp_d' thisyear thismonth thisday '*.h5']);
41     numofFILES = length(FILES);
42
43
44     for cnt=1:numofFILES,
45         viirs_file = FILES(cnt).name
46         noaa_viirs_NLW_single(fullsite, data_path, viirs_file, data_action, image_action);
47     end
48
49
50 end
51
52 %if (~exist([data_path 'tmp'],'dir')), mkdir([data_path 'tmp']); end
53 %save([data_path 'tmp/OUTPUT'], 'FILES', 'numofFILES');
54
55

```

```

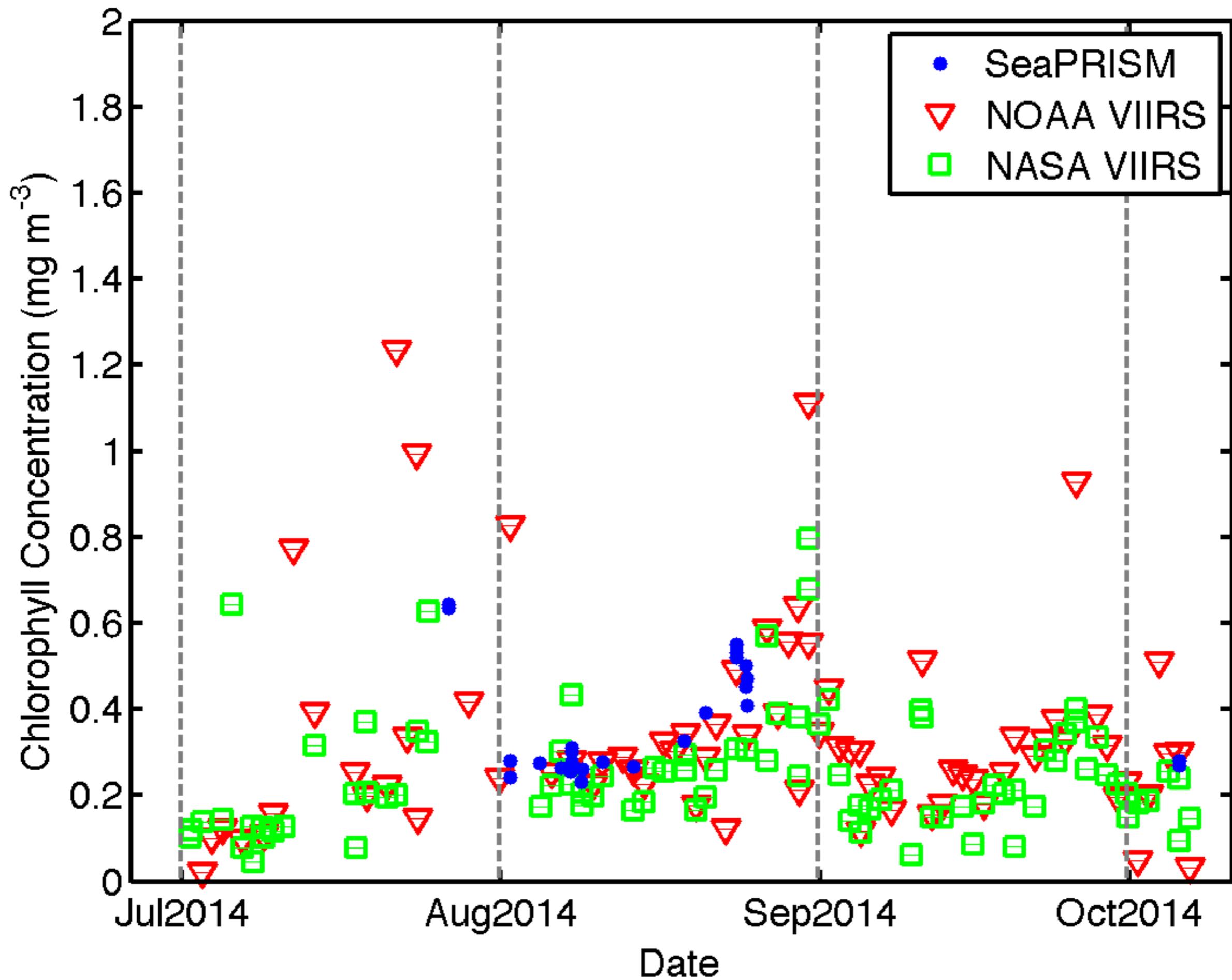
1 % does matchups of NOAA CLASS and NASA VIIRS OCC data with AERONET data
2 %
3 % usage:
4 % plot_all(site,boxsize,startyear,startmonth,startday,stopyear,stopmonth,stopday,aero_level)
5 %   site:      'eureka'
6 %   boxsize:   1 (or 3 or 5)
7 %   startyear: 2014
8 %   startmonth: 5
9 %   startday:  1
10 %  endyear:   2014
11 %  endmonth:  5
12 %  endday:    31
13 %  aerolevel: '1.5'
14 %
15 % nbt and jsn
16 % oregon state university
17 % aug 19 2014
18
19 function []=plot_all(fullsite,boxsize,start_year,start_month,start_day,stop_year,stop_month,stop_day,aero_level)
20
21 %% Preliminary setup and preferences
22
23 load_viirs_paths;
24
25 % site info
26 [site, lat, lon, rad]=sites(fullsite);
27
28 % Set time window for matches
29 TWH = 1; % Time Window Hours;
30 TW = TWH/24; % Time Window Fraction of a Day
31 HIGHCHL = 3;
32 HIGHNLW = [20 20 20 20];
33
34 % figure preferences
35 iptsetpref('ImshowBorder','tight');
36 set(0,'DefaultFigureMenu','none');
37 format compact;
38 FS = 16; % font size
39 MS = 10; % marker size
40 LT = 2; % line width
41 CPM = 1; % CHL PLOT MAX
42 format long;
43
44 % calculate day numbers
45 start_daynum = datenum(start_year,start_month,start_day);
46 stop_daynum = datenum(stop_year,stop_month,stop_day);
47
48 % month breaks for the plot (add 5 days on each side so can see month lines)
49 all_daynums=[start_daynum-5:stop_daynum+5];
50 all_mnthdays=str2num(datestr(all_daynums,'dd'));
51 monthbreaks=all_daynums(all_mnthdays==1);
52
53
54
55 % date range string for figure titles
56 daterange = [sprintf('%02d',start_month) '/' sprintf('%02d',start_day) '/' num2str(start_year) ...
57             '- ' sprintf('%02d',stop_month) '/' sprintf('%02d',stop_day) '/' num2str(stop_year)];
58
59 % output filename tail
60 filename_tail = ['_', site, '_', num2str(start_year) sprintf('%02d',start_month) sprintf('%02d',start_day) '_' ...
61                num2str(stop_year) sprintf('%02d',stop_month) sprintf('%02d',stop_day) '_H' num2str(TWH), '_C', num2str(HIGHCHL), '_B', num2str(boxsize)];
62
63 % boxsize text needed for filenames
64 boxtext = [boxsize 'x' boxsize];
65

```

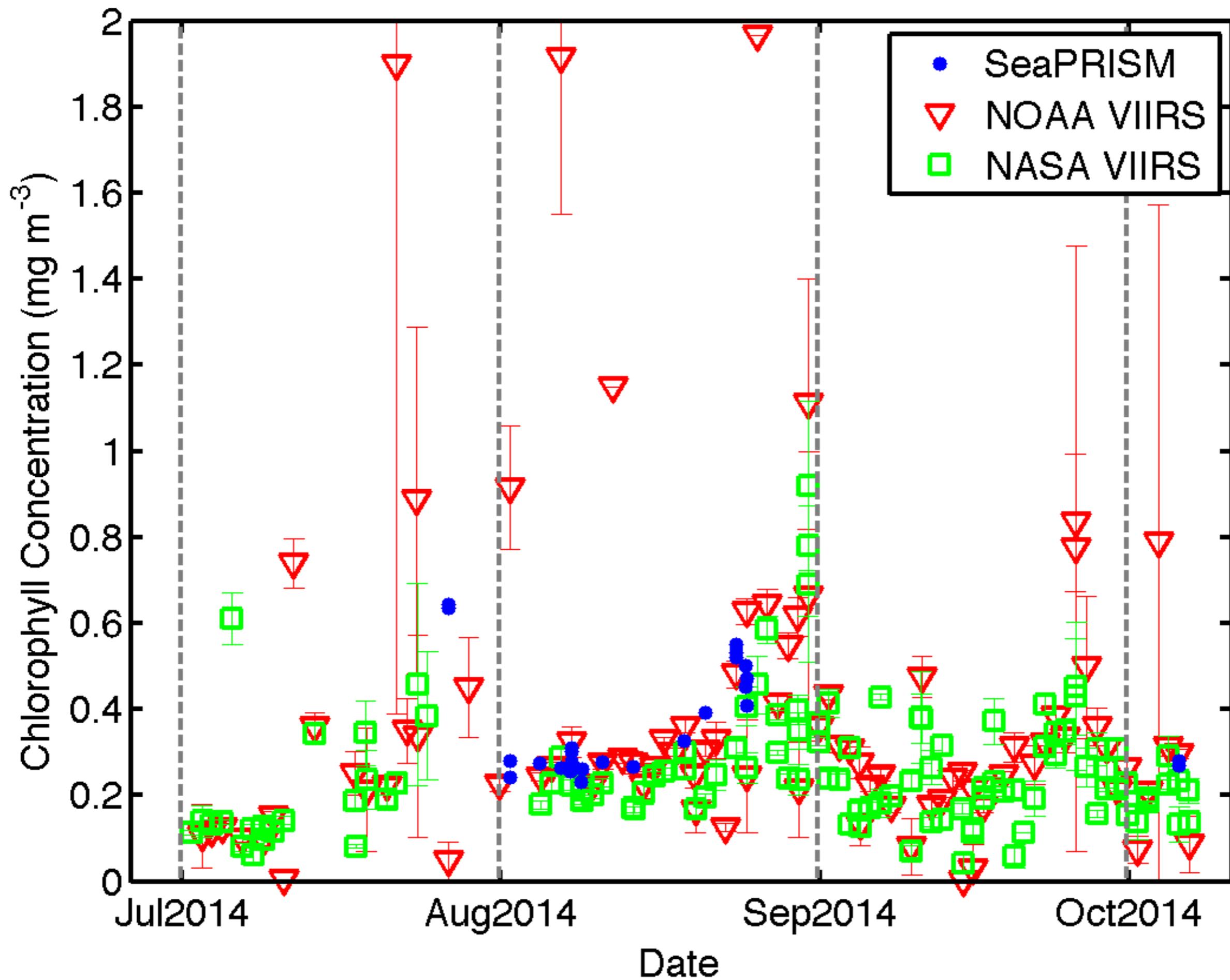
# Presentation Layer

## plot\_all.m

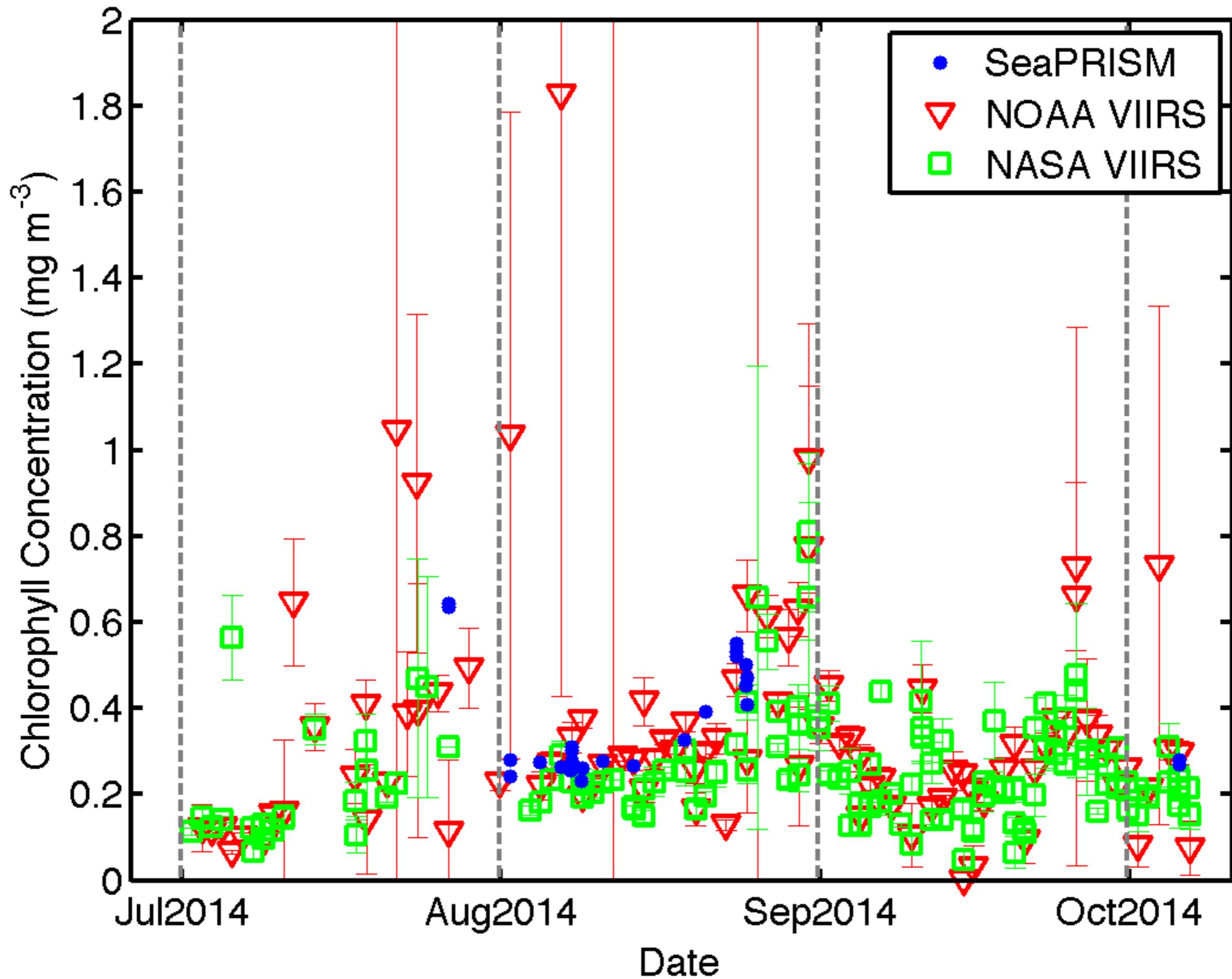
eureka Chlorophyll (box size 1x1)



eureka Chlorophyll (box size 3x3)

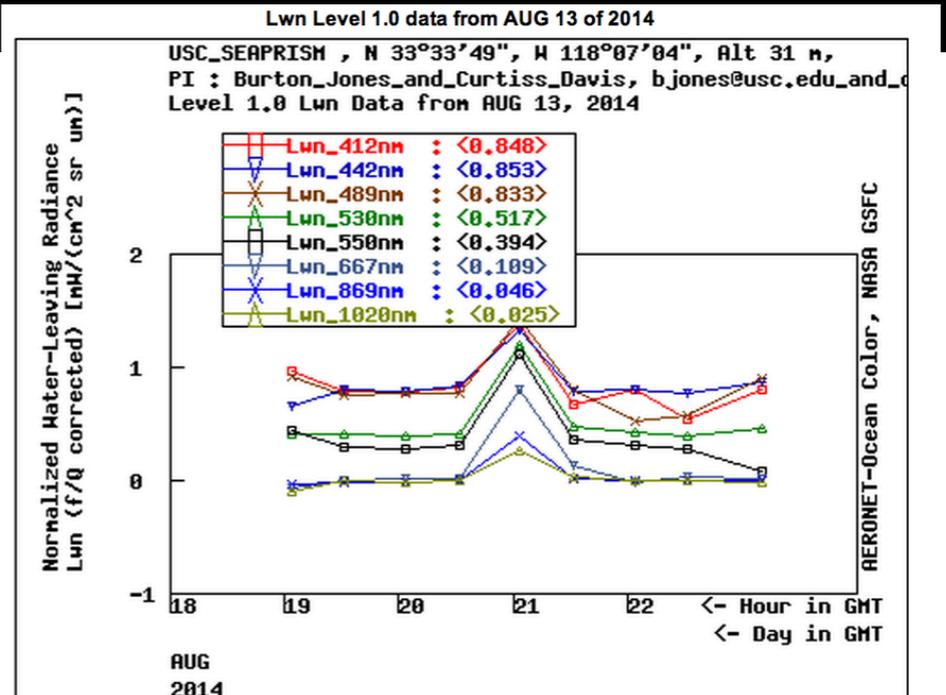
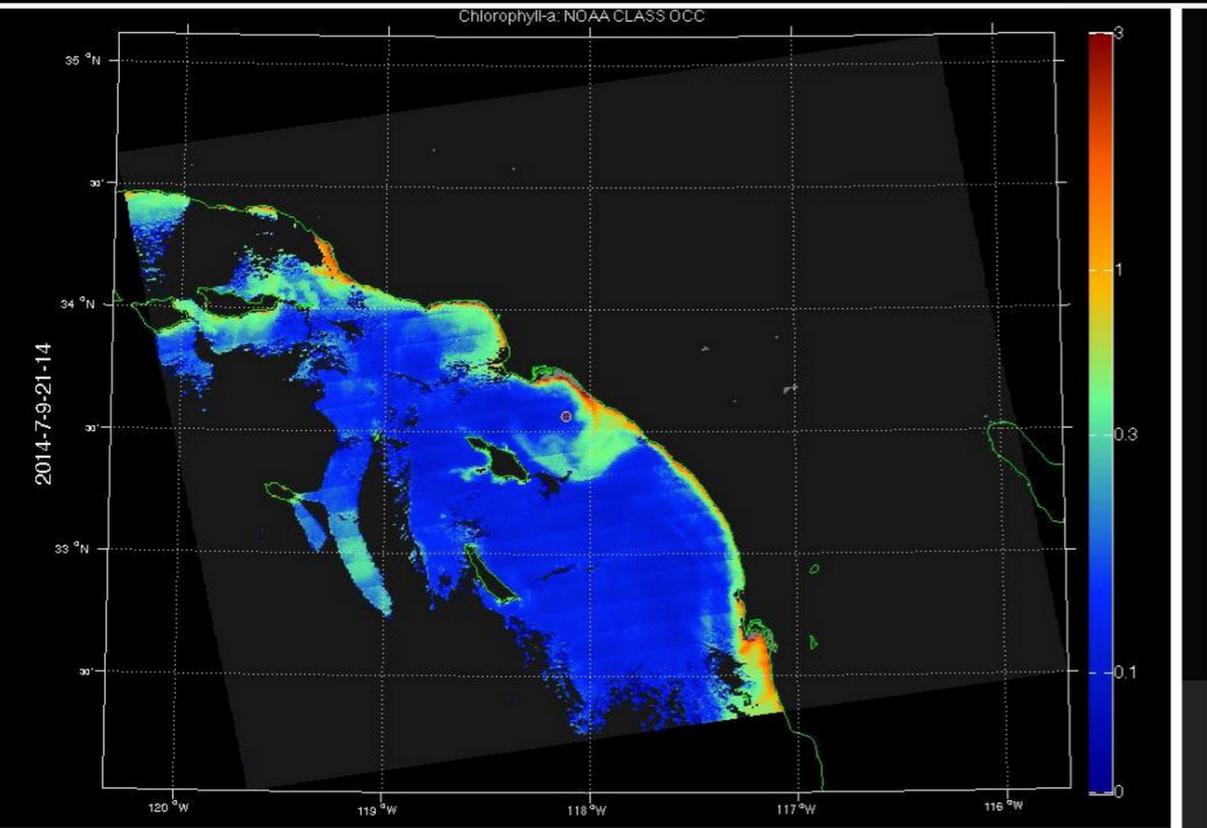
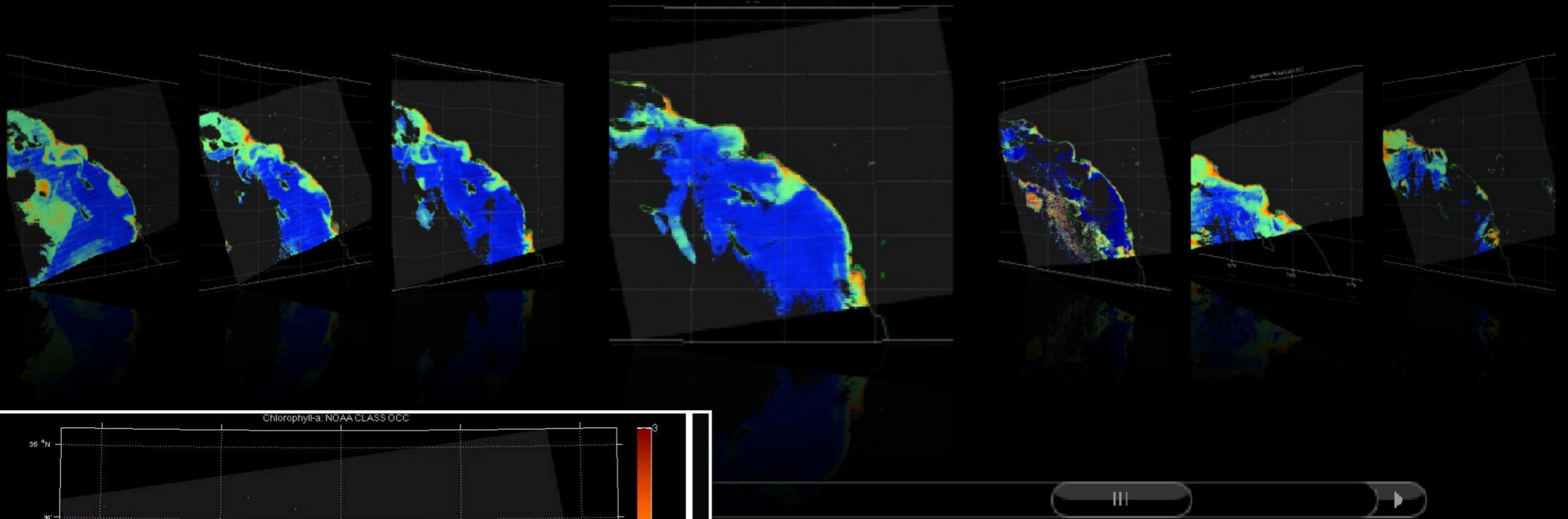


eureka Chlorophyll (box size 5x5)

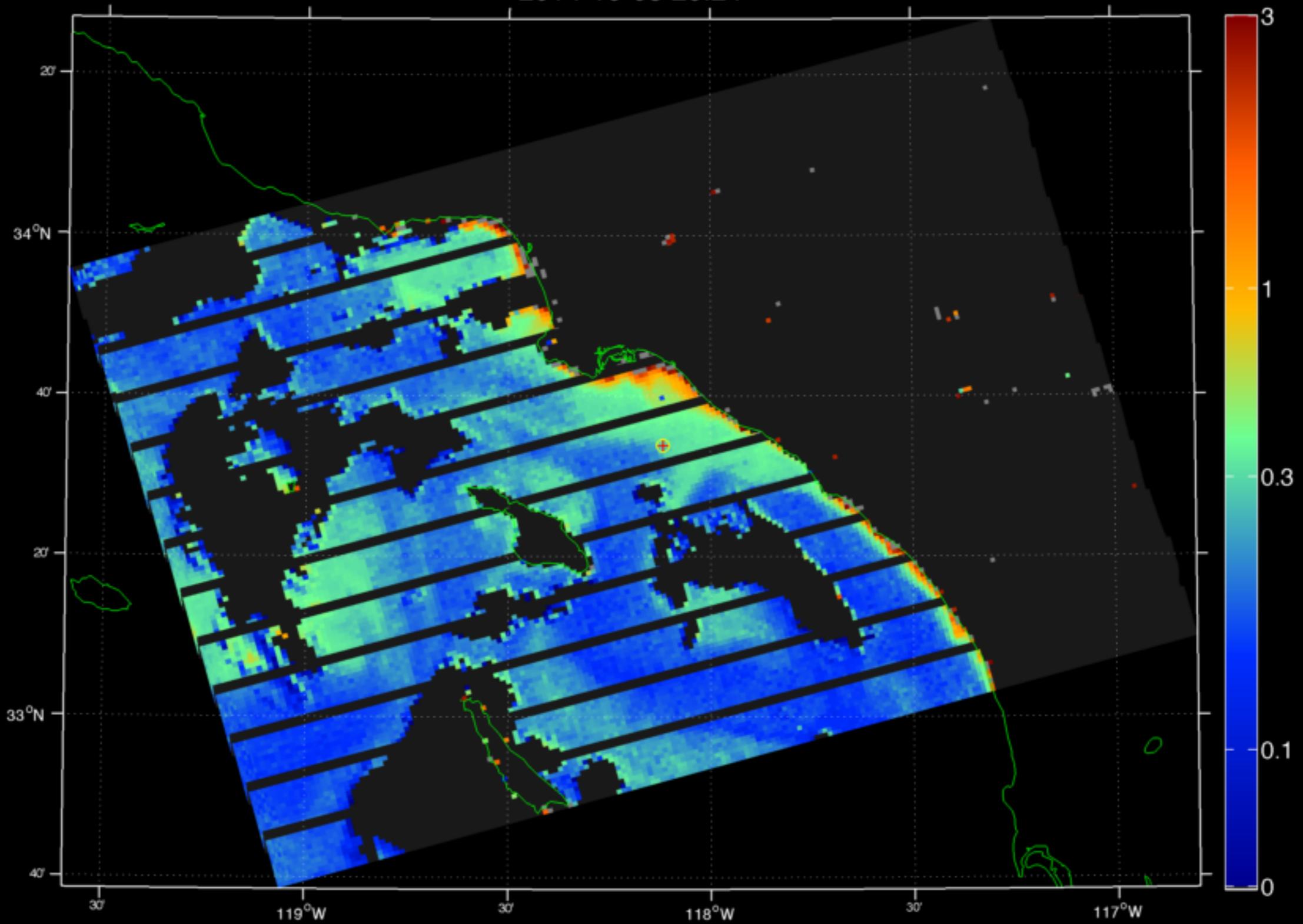


chl\_d20140709\_t2114107\_size\_200

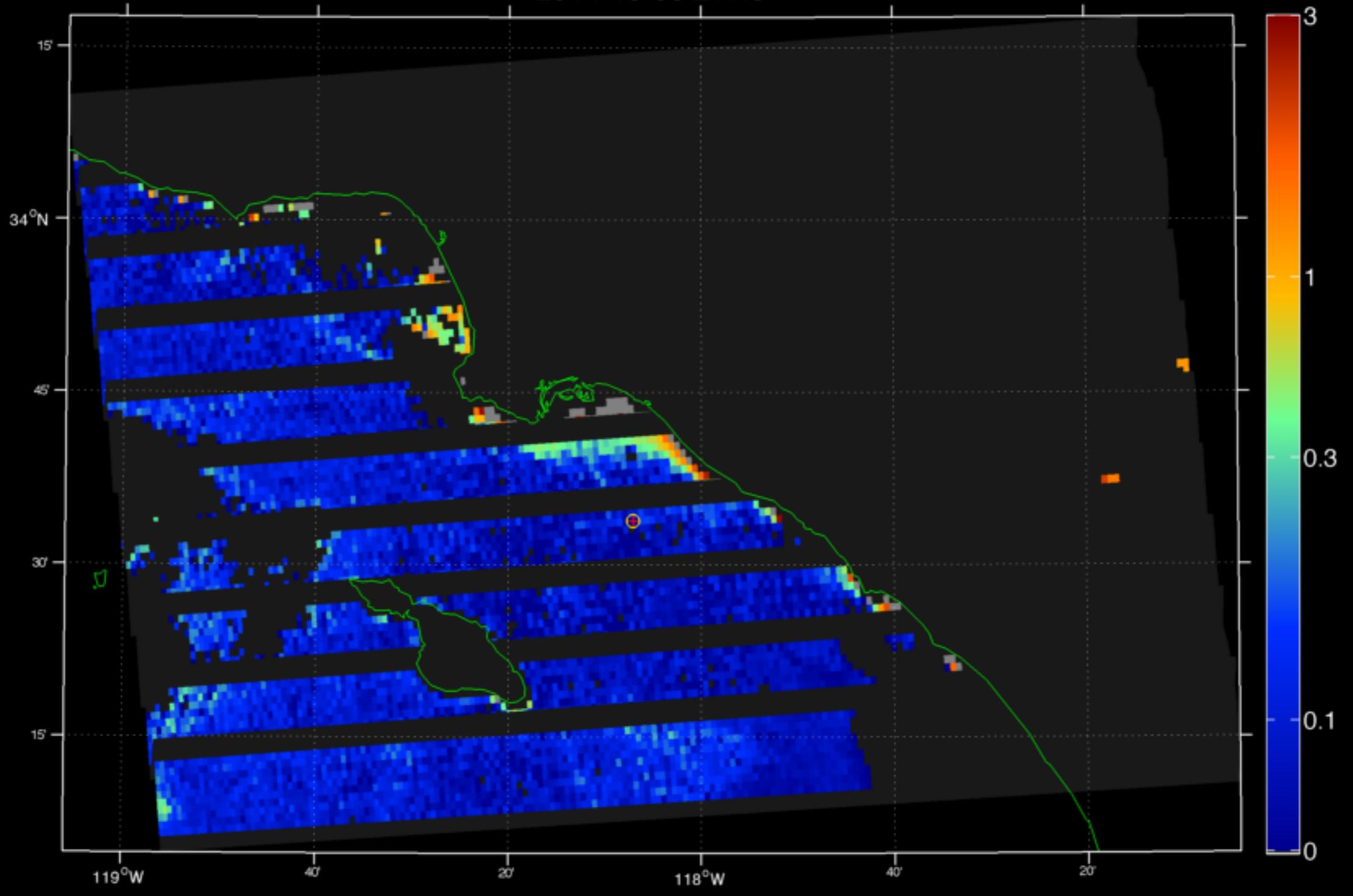
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Chlorophyll-a  
NOAA CLASS OCC  
2014-10-05 20:24



Chlorophyll-a  
NOAA CLASS OCC  
2014-10-06 21:49



Platform Eureka  
SeaPrism



# Matt and Curt Deploying Hyperpro



File Setup Log  
View Window Help

### SatView - davis\_profiler\_data\_logging.sat

Logging Status: ● Ready ● Active

Logging:

Log Timer: 00:10:13

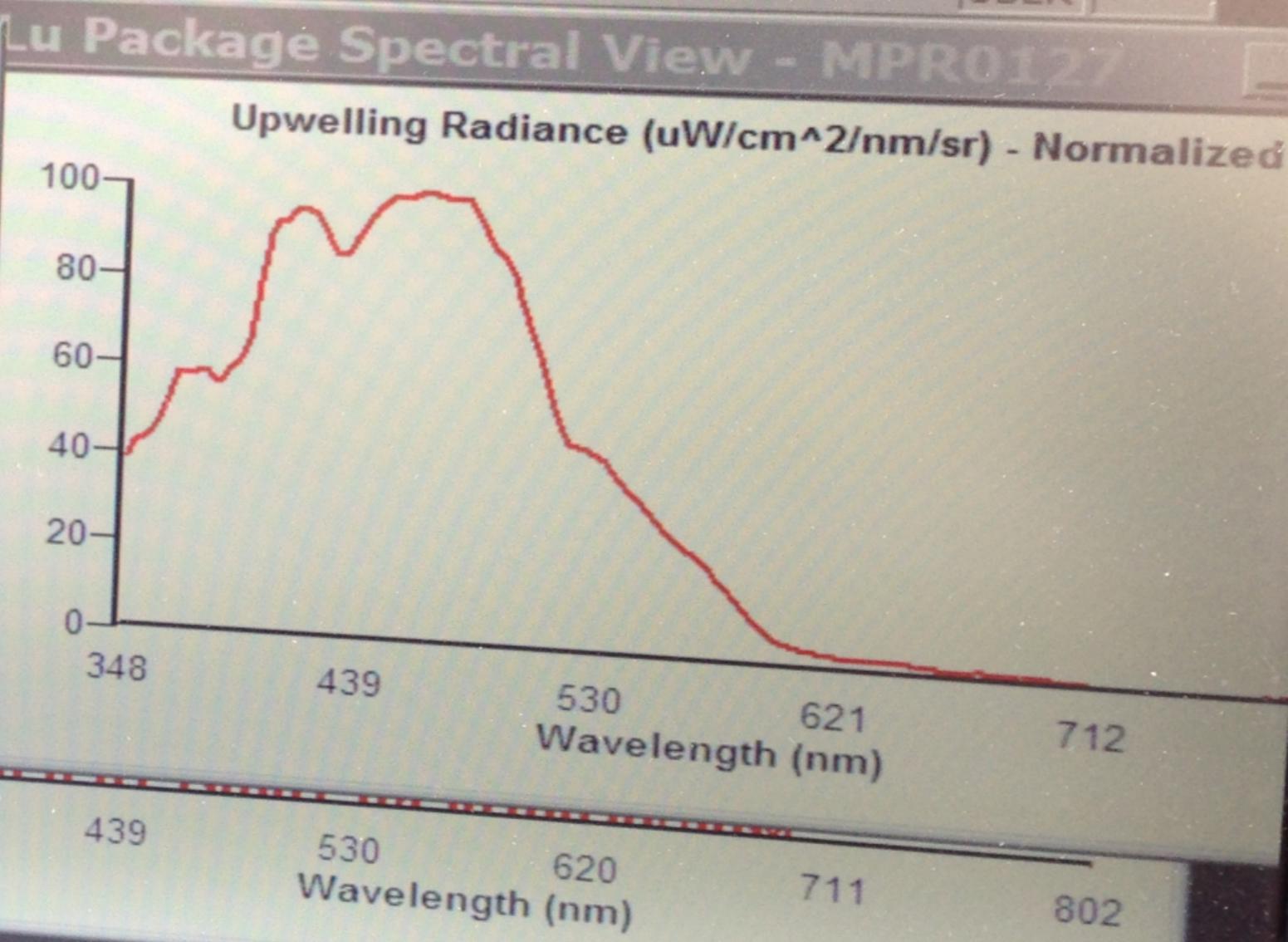
For Help, press F1

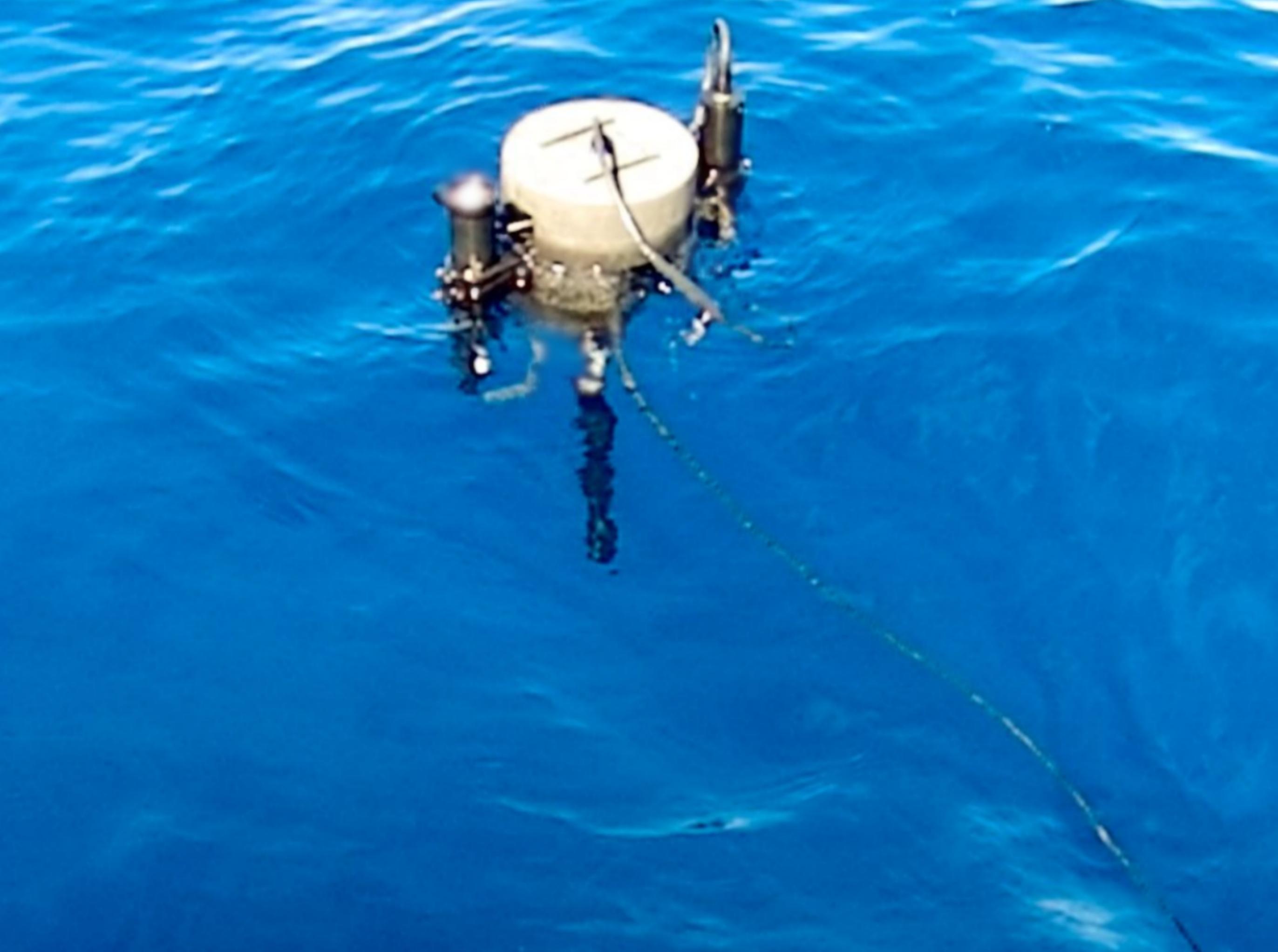
HSE0344	COM1
MPR0127	COM5
SATMPR0127	
SATBB2F633	
SATPLD0285	
SATHPL0285	

### Package Ancillary View...

Ancillary View

Pressure Tare		
TILT	4.83	deg
DEPTH	1.08	m
VELOCITY	-0.30	m/s
T (W)	22.90	°C
SALINITY	33.69	psu
PAR(Z)	95.20	uMol/m <sup>2</sup> /s
LIGHT SATURATION	6.07	%
BETAp(470)	0.000076	1/(m*sr)
bbp(470)	0.000524	1/m
bb(470)	0.002429	1/m
BETAp(700)	0.000104	1/(m*sr)
bbp(700)	0.000722	1/m





## Summary

Re-write and rollout of images and time series almost done, and preparing to add other west coast sites.

Analysis and matchup of in-situ data from 7-8 October started.

Unusually 'clear' blue water during these measurements.

# Mailbu Pier

Flying into Long Beach

6 Oct 2014

~3:30 PDT

