

# SeaPRISM Operations at the COVE Site

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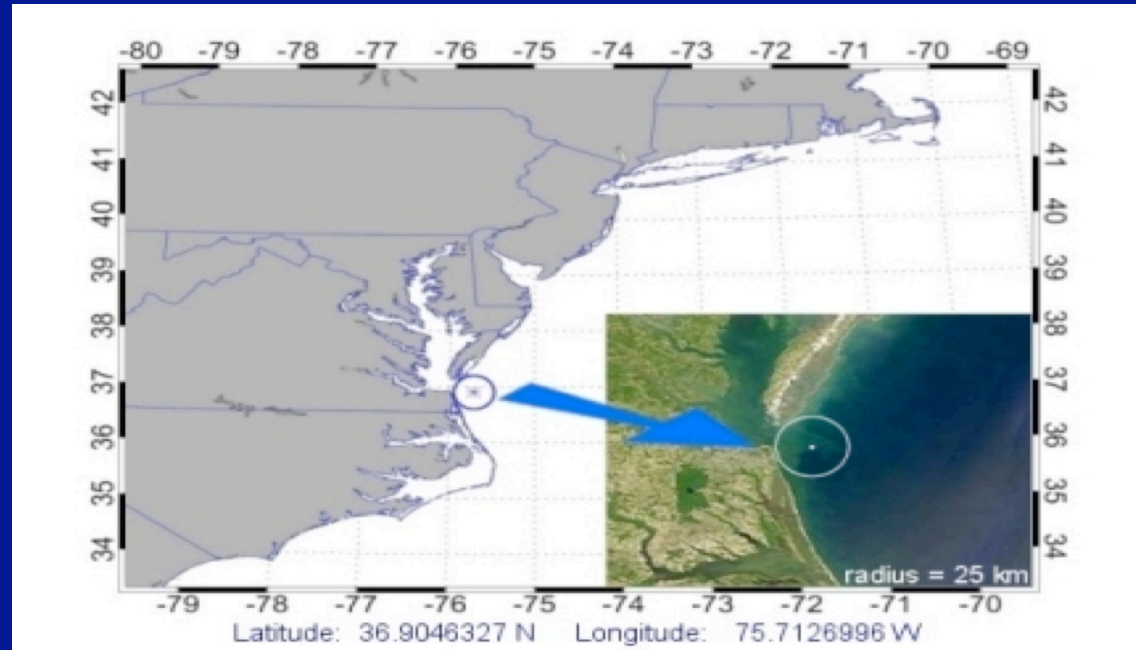
# Introduction

- History and Logistics of the COVE SeaPRISM cimel.
- Basic Statistics on the number of measurements collected by the SeaPRISM cimel.
- Tower effect problems when the SeaPRISM is located on the flight deck.
- Fire events affected SeaPRISM cimel measurements as well as measurements from other spectral instruments.
- COVE chlorophyll-a (Chla) measurements resemble bay area locations than open ocean locations.

# CERES Ocean Validation Experiment (COVE)



<http://cove.larc.nasa.gov>



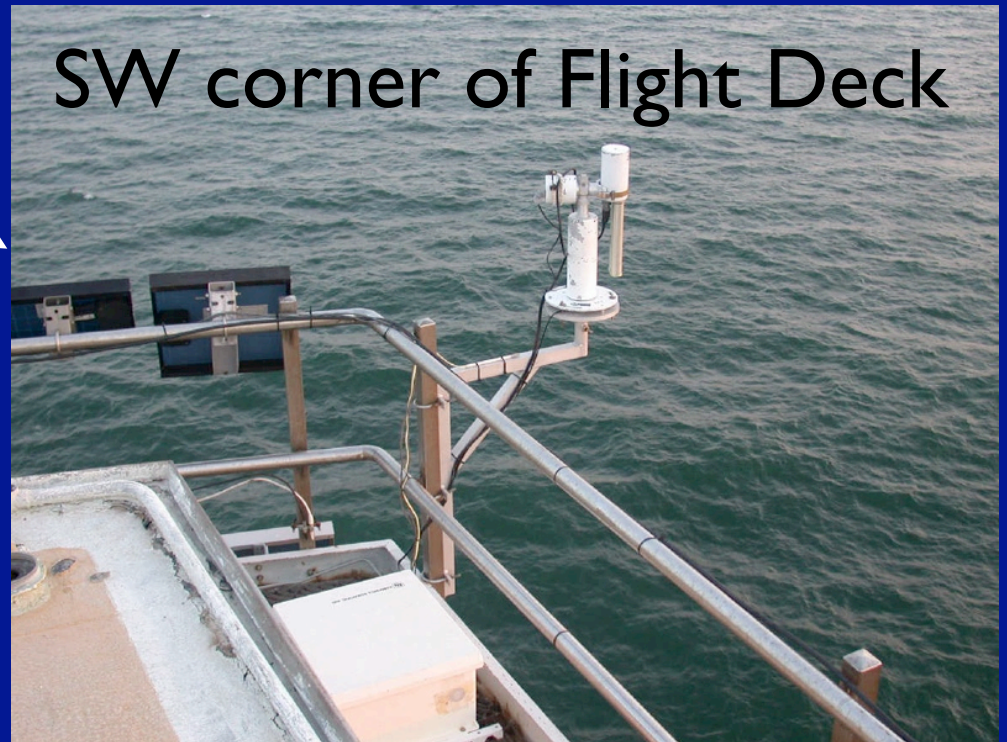
**Coordinates:**  
**36.90 N**  
**75.71 W**



South-side of Tower



SW corner of Flight Deck



# HISTORY

- SeaPRISM Cimed - Located on Tower, Sept. 2005 - Sep. 2006
- SeaPRISM Cimed - Located on Flight deck, Sept. 2006 - May 2010
- SeaPRISM Cimed - Located on Tower top, May 2010 - Dec. 2010
- SeaPRISM Cimed - Located on Flight deck, Dec. 2010 - Present

Note: Standard Cimed - Located on Tower top (North side), Oct. 1999 - Jan. 2008



# Number of OC Measurements by LI.0, LI.5 and L2.0

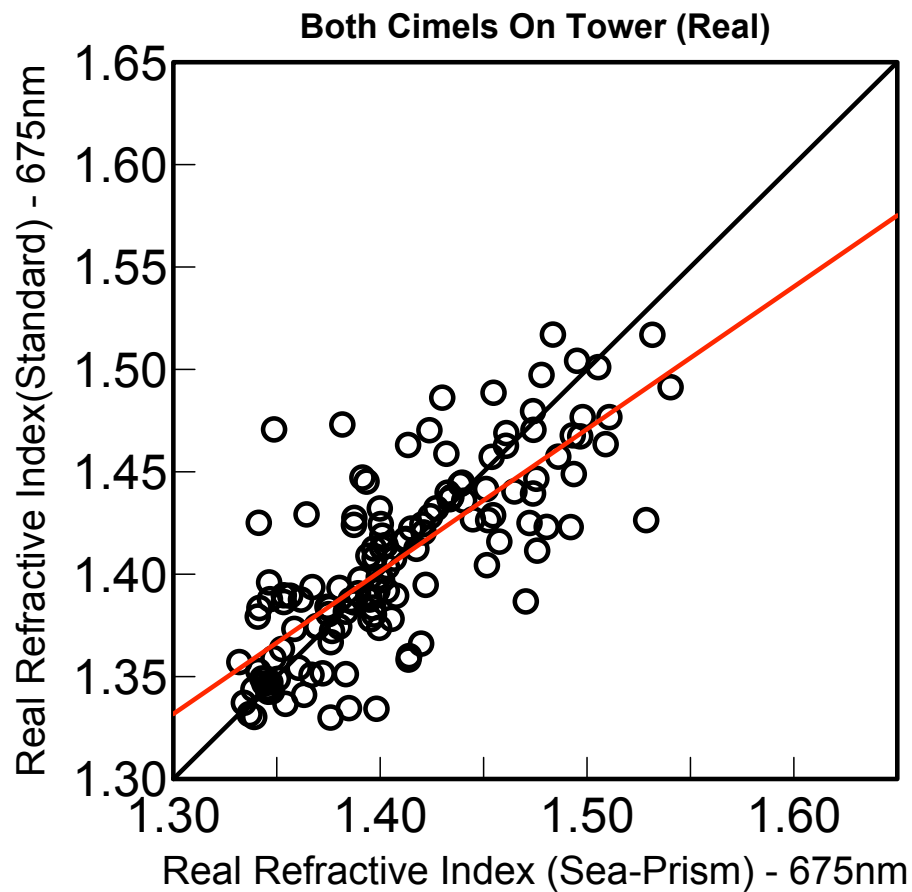
	Lev1.0	Lev1.5	Lev2.0
2005	21	18	0
2006	302	240	193
2007	216	186	134
2008	313	211	134
2009	7	4	4
2010	18	14	0
2011	34	30	0
Total=2079	911(43.8%)	703(33.8%)	465(22.4%)

## Number of OC measurements by location (FD or TWR)

	FD	TWR
Lev1.0	743	168
Lev1.5	563	140
Lev2.0	386	79
Total=2079	1692(81.4%)	387(18.6%)

Comparison of the real refractive index for the two instruments indicates much better correlation when both instruments are located on the tower.

Lev. 1.5, SZA > 50, Scat Angles > 20

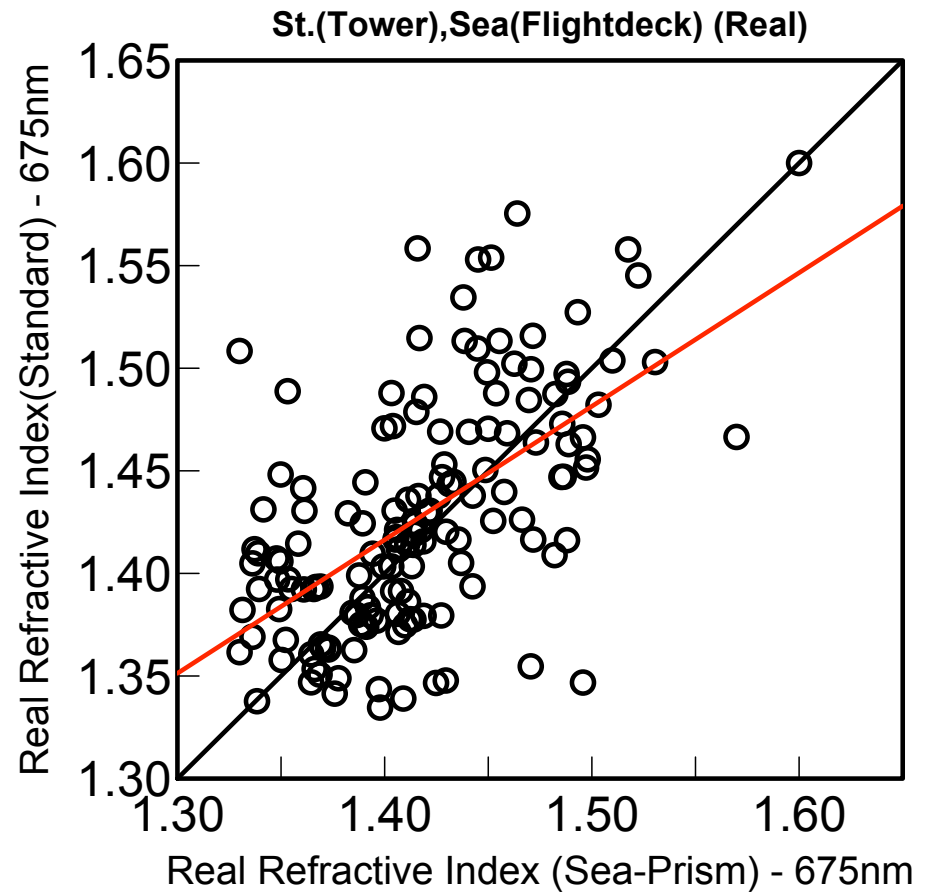


$$Y = 0.4277 + 0.6954x$$

$$R^2 = 0.5971$$

Residual SE = 0.0290 on 136 d.o.f.

n = 138



$$Y = 0.5053 + 0.6508x$$

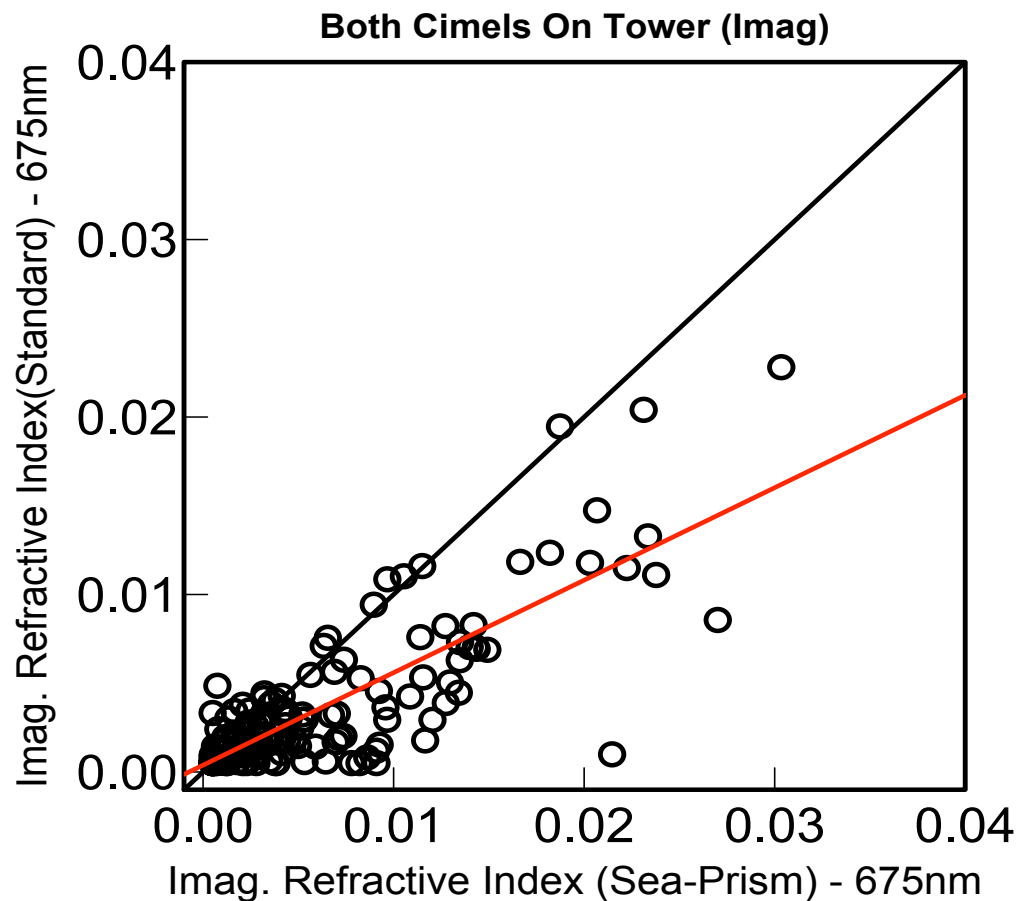
$$R^2 = 0.3465$$

Residual SE = 0.0464 on 145 d.o.f.

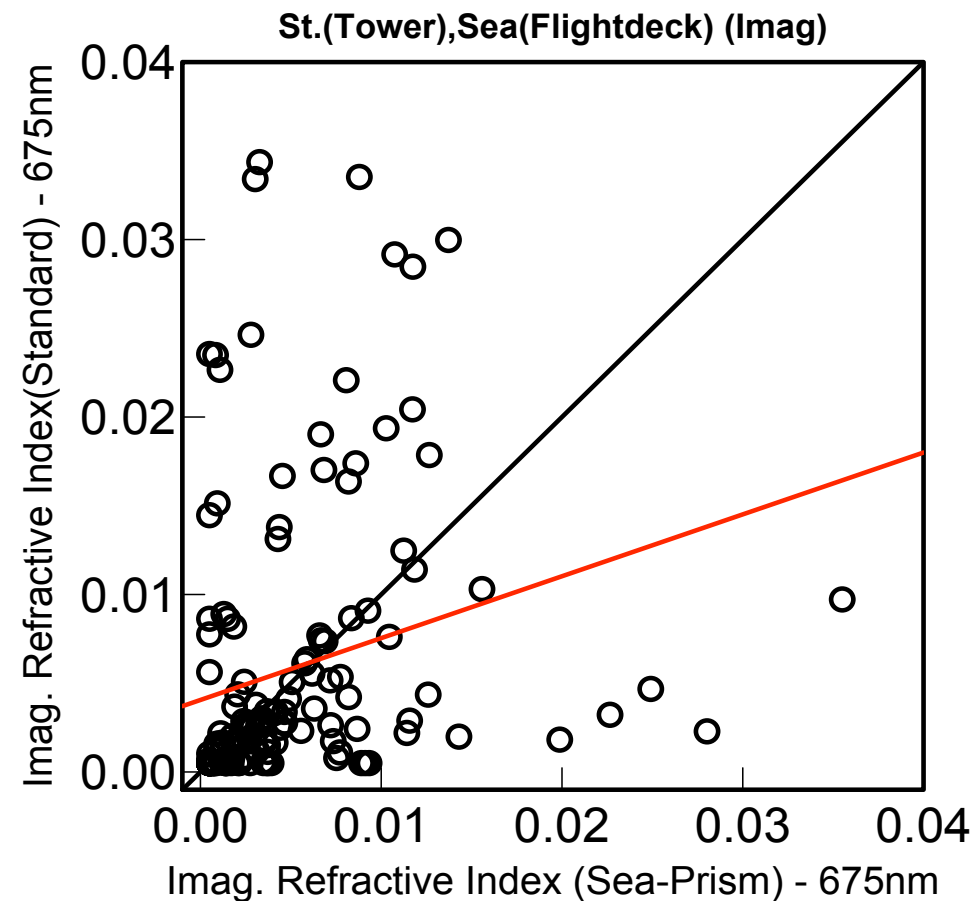
n = 147

Imaginary refractive index is well correlated when both instruments are located on the tower, but uncorrelated when one is on the tower and the other is on the flight deck.

Lev. 1.5, SZA > 50, Scat Angles > 20



$Y = 0.0004 + 0.5211x$   
 $R^2 = 0.6437$   
Residual SE = 0.0025 on 136 d.o.f.  
n = 138



$Y = 0.0041 + 0.3486x$   
 $R^2 = 0.0590$   
Residual SE = 0.0077 on 145 d.o.f.  
n = 147

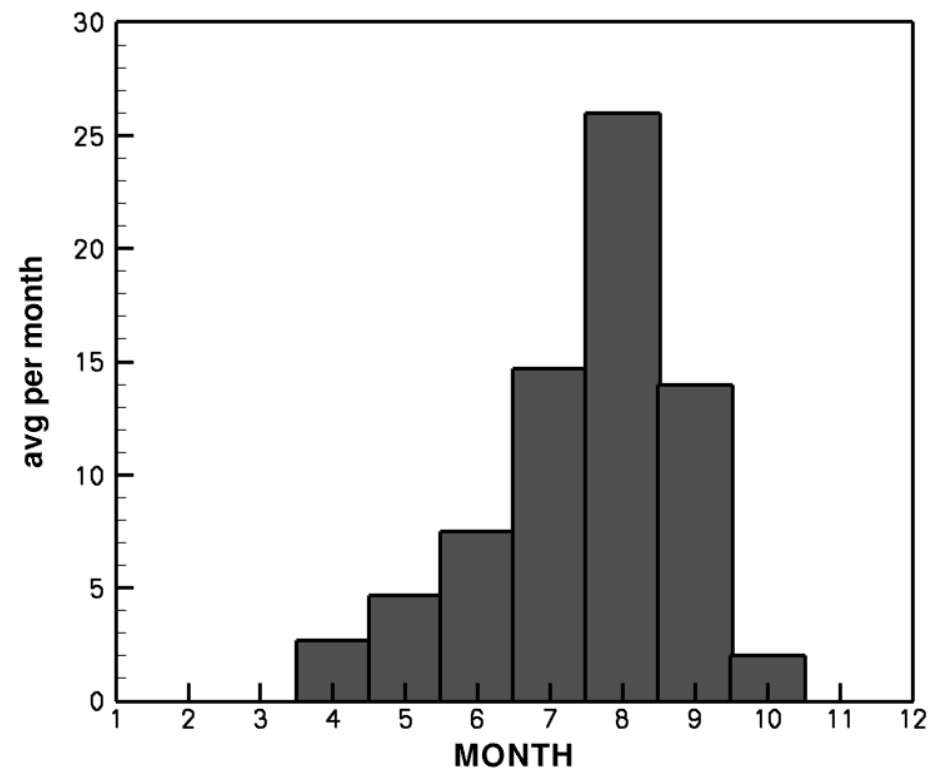


# Fish-eye Lens photo at flight deck location



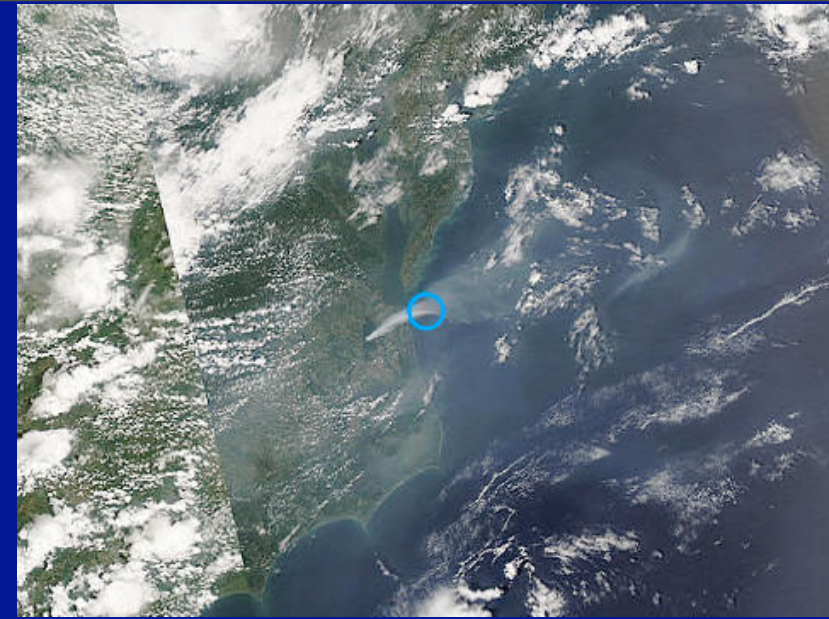
**COVE is clean in the  
winter months compared  
to summer months**

Avg. number of inversions per month (SeaPrism) - Lev2 - Apr.2005-Jul.2008

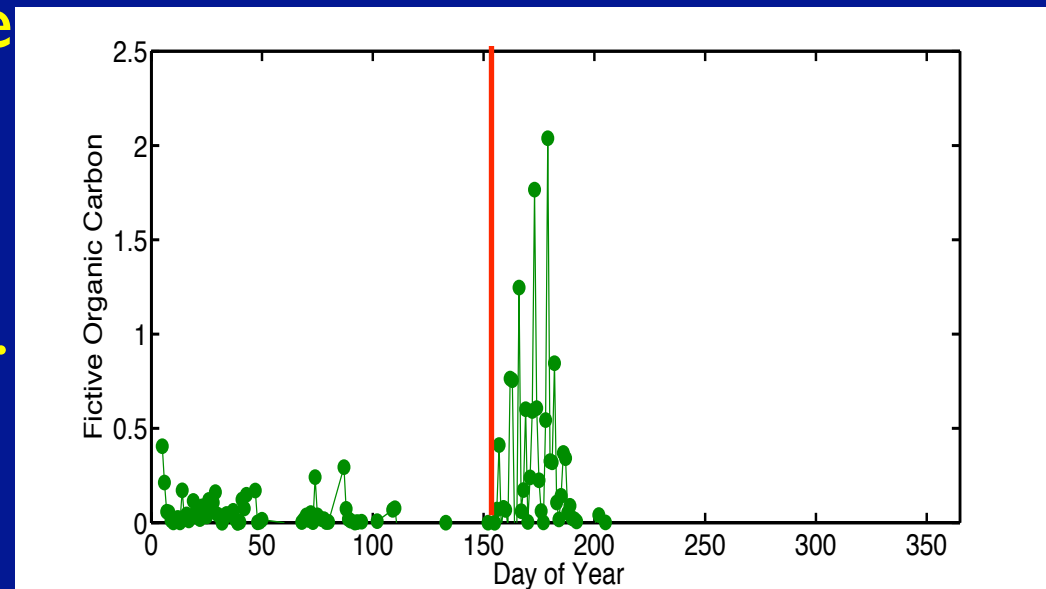
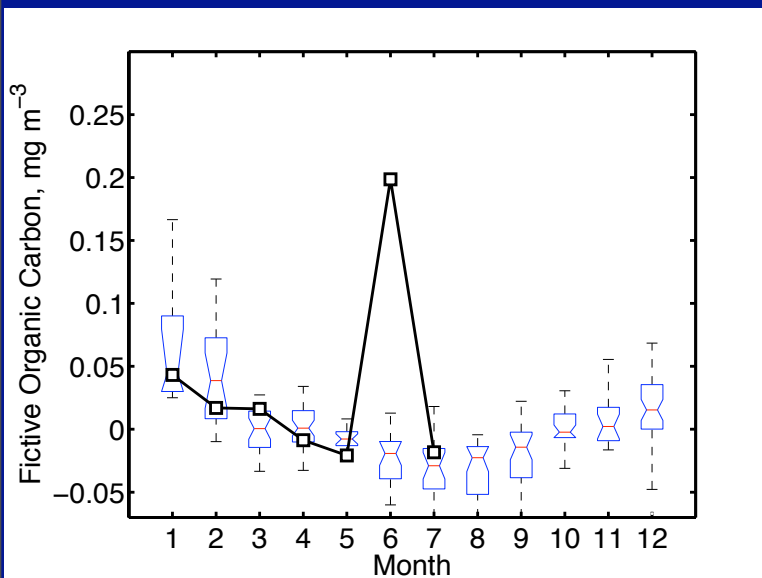


- Great Dismal Swamp and Evans Road Fires

➔ Began early June 2008

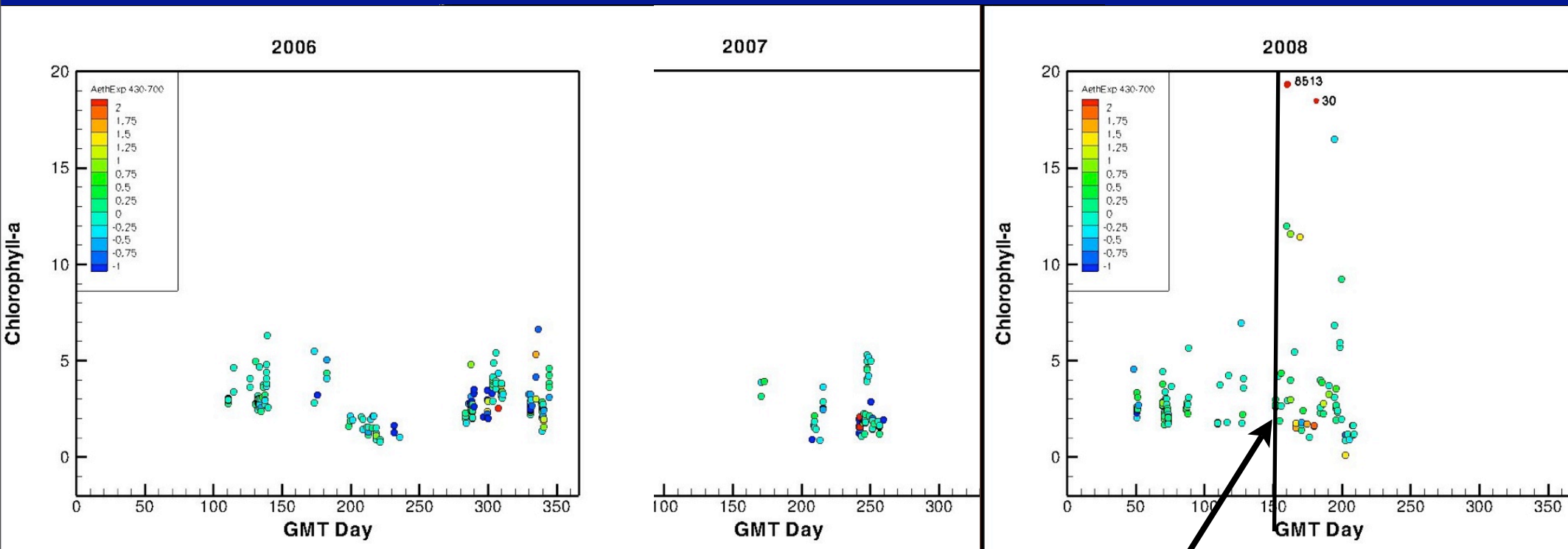


- COVE was influenced by smoke for nearly all of June, 2008.
- Data ends around mid July, 2008 due to instrument failure.

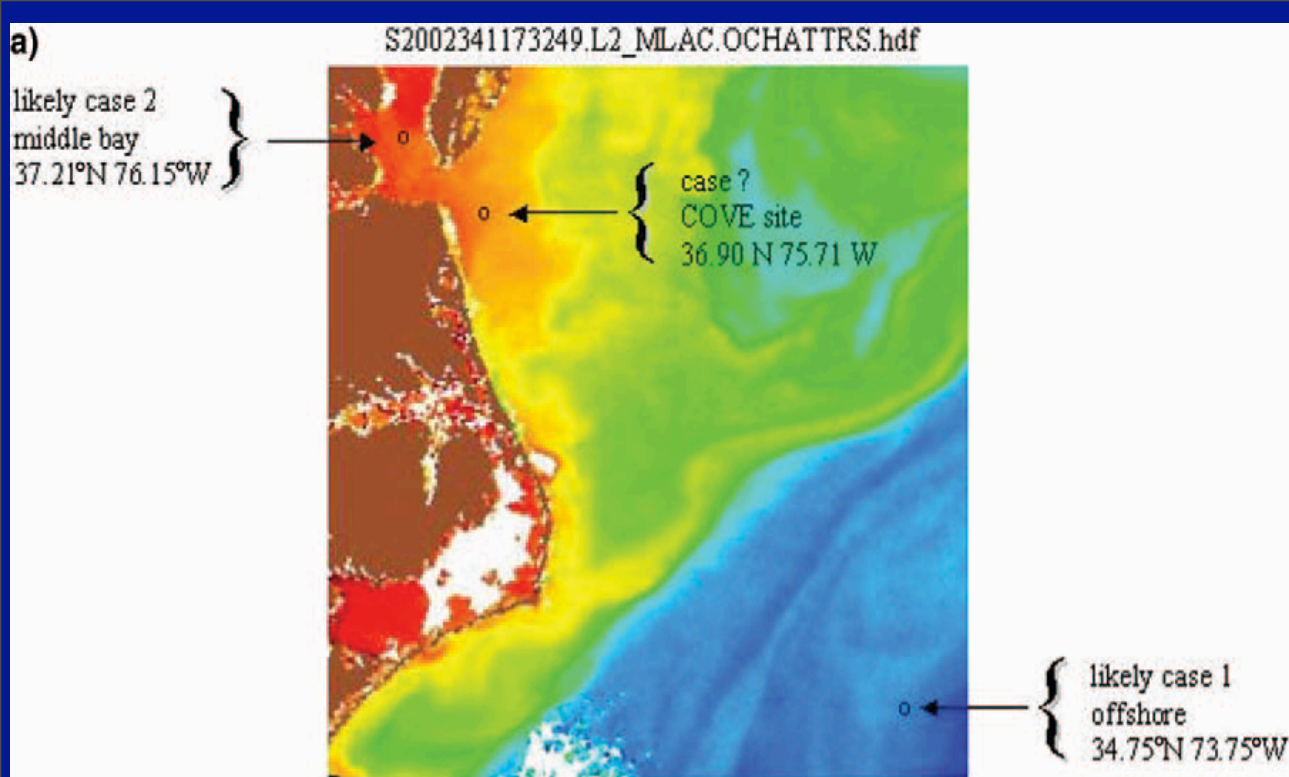


- Fictive Organic Carbon is highly elevated
- Box plots are 2006 and 2007.
- Black lines are monthly medians for 2008.

In June-July 2008, smoke from North Carolina wildfires caused some anomalously high Chl-a retrievals for the SeaPRISM retrieval

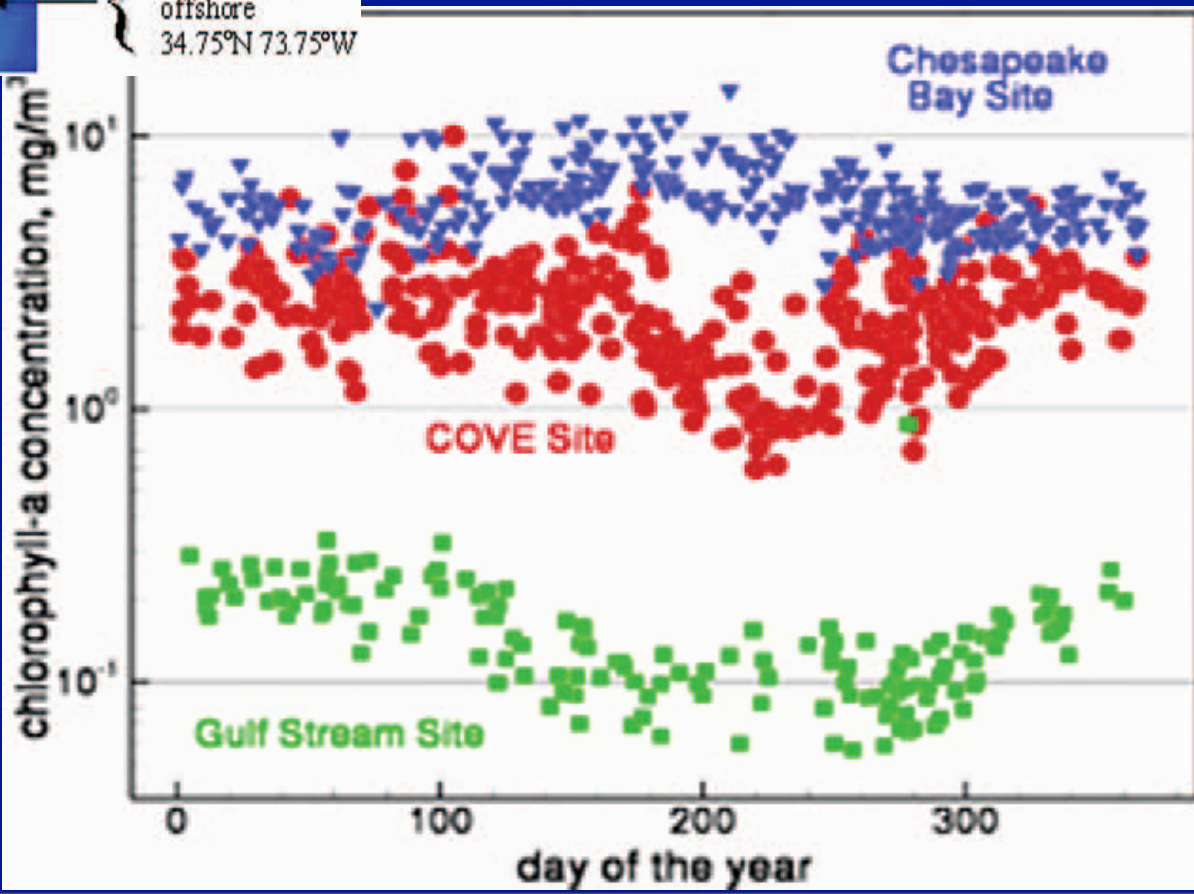


Line denotes when fires started in 2008



- False Color image of typical Chla retrieval from SeaWiFS instrument

- 6 years of clear sky Chla retrievals from SeaWiFS for 3 sites
- COVE Chla is comparable to the bay site (case 2) than open ocean site (case 1)



# Conclusions:

- Measurements of Ocean Color have been taken since September 2005.
- Most measurements of Ocean Color have been made at the flight deck location than the tower.
- Smoke can be troublesome for radiometric retrievals of Chla.
- Refractive index absorption retrievals are affected when the SeaPRISM is located on the flight deck.
- COVE's Chla retrievals resemble bay water (case 2) more closely than open ocean (case 1).

Thank You



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