SeaWiFS Bio-Optical Algorithm and Product Validation in U.S. Coastal Waters

1999 Annual Report

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1999 SIMBIOS Activities Summary Table

Dates of Cruise	Name of Cruise	Latitude Range	Longitude Range	# of Stations	Type of Data Collected	Number of Samples	# of Files Submitted	Date of Submission
July 6-10 1999	JUL98NAN	40-43 N	69-71 W	19*	Spectroradiometeric	17	2	12-Oct-98
					HPLC	14	1	21-Oct-98
					Fluorometric chl	19	1	21-Oct-98
					Sunphotometer**	**	**	
					SIMBAD**	**	**	
Oct 27-Nov 23 1998	NOV98SAB	29-35 N	76-82 W	50***	Spectroradiometeric	26	26	29-Dec-98
					HPLC	33	1	19-Jul-99
					Fluorometric chl	44	1	19-Jul-99
					TSS	27	1	19-Jul-99
					Sunphotometer	160	1	19-Jul-99****
					SIMBAD	14	1	19-Jul-99****
Jan 27-Feb 24 1999	FEB99SAB	29-35 N	76-82 W	9	Spectroradiometeric	9	9	15-Apr-99
					HPLC			due 24 aug 99
					Fluorometric chl			due 24 aug 99
Jun 14 1999^	JUN99MAS	41-43 N	70-71 W	3	Sunphotometer**	**	**	**
					SIMBAD**	**	**	**

* Includes 2 underway stations where only chl data was collected (within 1 hour of overpass)

** Data collected was not downloaded from instrument and was downloaded at the project office

*** Includes 21 underway stations where only chl data was collected (within 4 hours of overpass)

**** Data was originally submitted when the instrument was returned to project office

^ An aborted cruise. Data was downloaded from instrument after returning to project office

Evaluation of SeaWiFS OC2 Algorithm in the South Atlantic Bight

Data Used

| Cruise	Dates	Number of Stations	Location
FEB96LIT	2/22-23/96	3	Georgia Bight
APR96BF	4/3-5/96	2	Georgia Bight
APR96FER	4/22-25/96	12	Georgia Bight
MAY97OB	5/5/97 5/8/97	5 4	Onslow Bay, NC Pamlico Sound, NC
SEP97SAB	9/5-24/97	8	South Atlantic Bight
NOV97SAR	11/4-5/97	5	Sargasso Sea
APR98SAB	4/5-27/98	17	South Atlantic Bight
NOV98SAB	10/27 – 11/23/98	24	South Atlantic Bight

Methods

- R_{rs} calculated from L_u/E_d
- Radiometric Chl (OC2) calculated from R_{rs} using OC2 SeaWiFS algorithm
- *In-Situ* Chl (ChlF) determined fluorometrically

In-Situ Chlorophyll Concentration - Distribution

- Mean: 1.5 µg/L
- Median: 1.03 µg/L
- Range: 0.16 - 5.2 µg/L
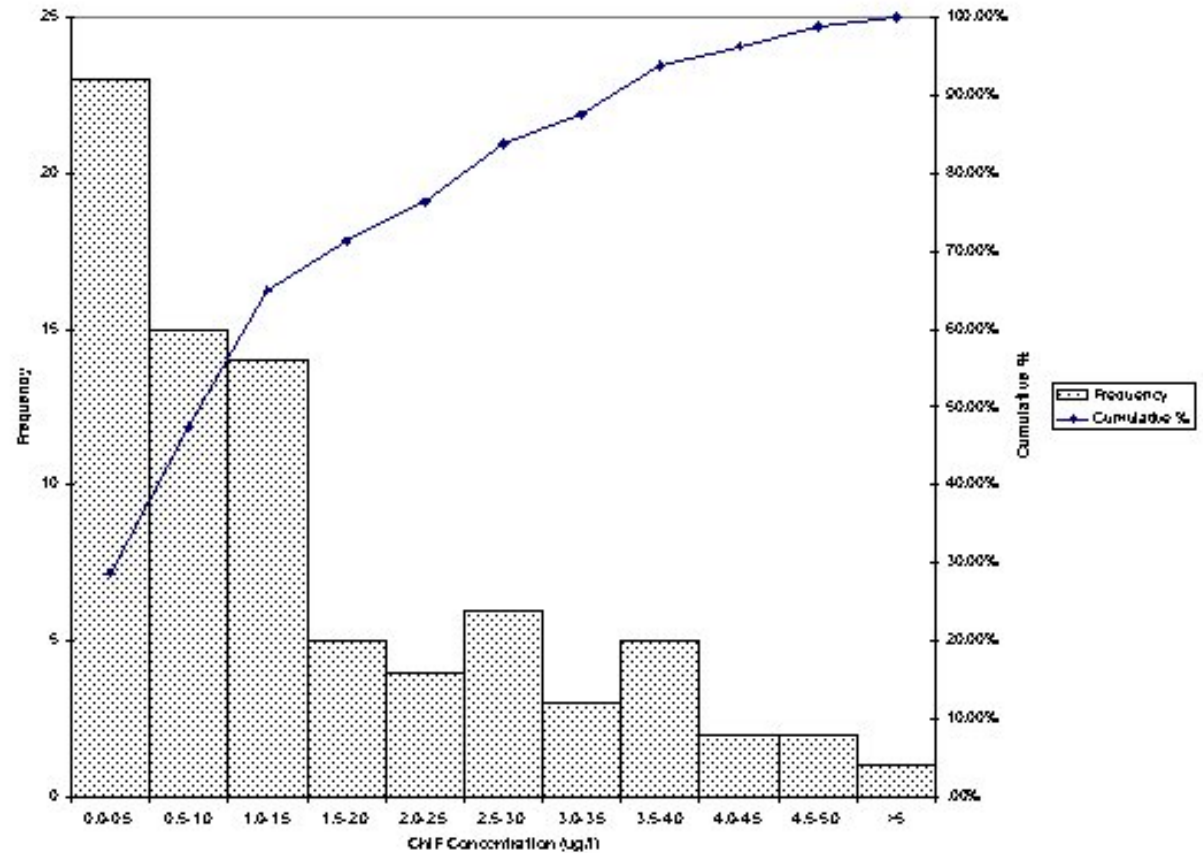
In-Situ Chlorophyll Concentration
Spatial Pattern

ChlF Conc (ug/l)

×   0 - 0.5
■   0.5 - 1
+   1 - 2
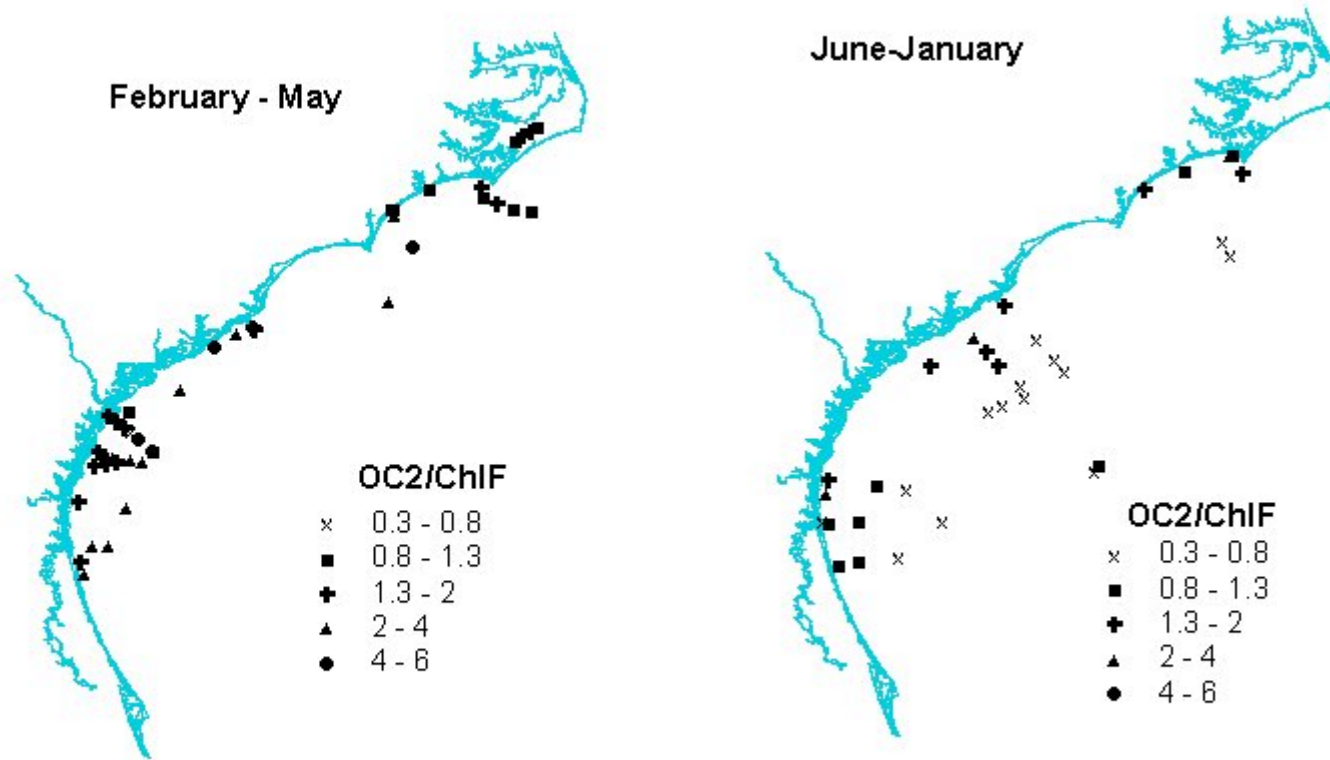▲   2 - 4
◆   4 - 5
■   5 - 6
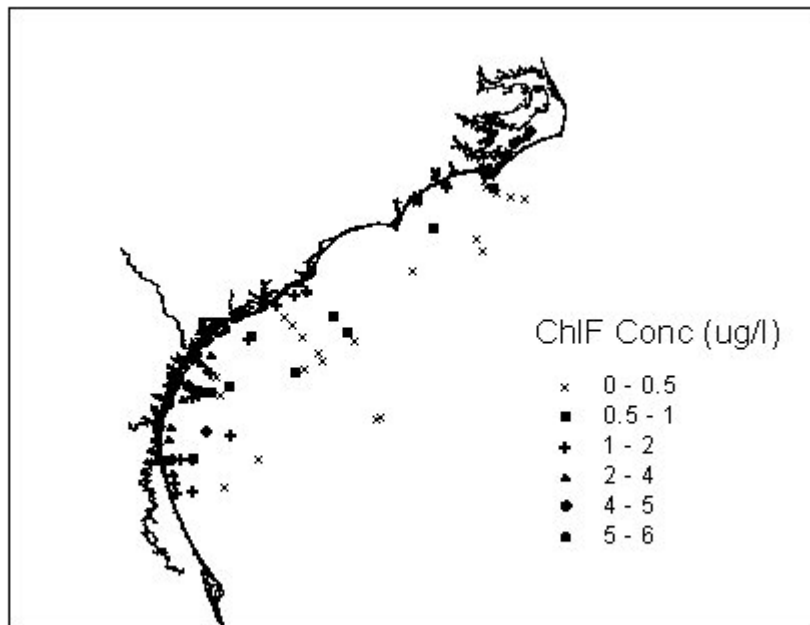
- No distinct spatial pattern of *in-situ* chlorophyll concentration

OC2 vs. ChlF
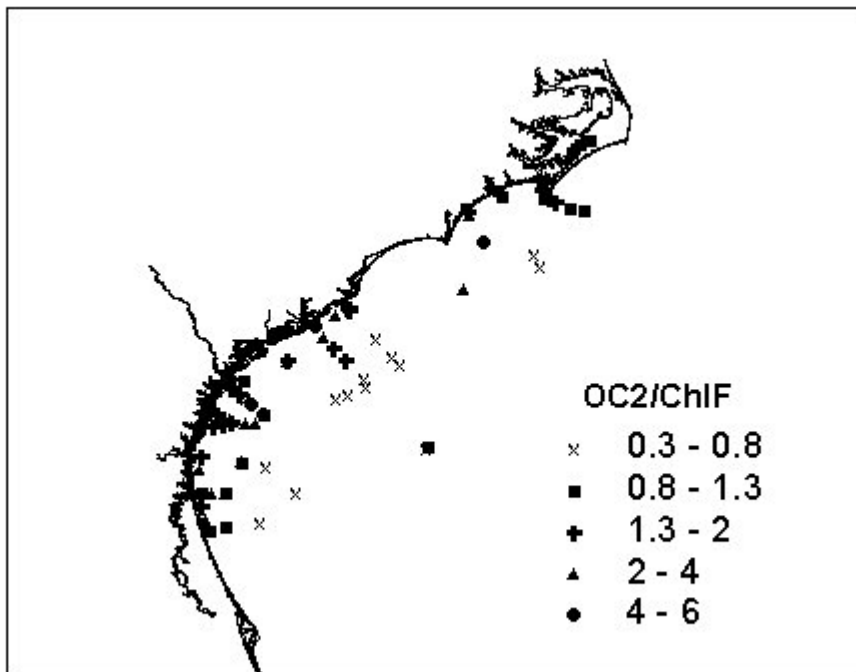
- OC2 agrees with or underestimates *in-situ* chlorophyll in midshelf waters and at shelf break
- OC2 agrees with or overestimates *in-situ* chlorophyll nearshore

Seasonal Comparison

February - May

June-January

OC2/ChlF

×	0.3 - 0.8
■	0.8 - 1.3
+	1.3 - 2
▲	2 - 4
●	4 - 6

OC2/ChlF

×	0.3 - 0.8
■	0.8 - 1.3
+	1.3 - 2
▲	2 - 4
●	4 - 6

Conclusions

- Seasonal variation in accuracy of OC2
  - Poor in Spring (Feb - May): $R^2 = 0.67$
    - CDOM?
  - "OK" During Remainder of Year (June - January): $R^2 = 0.86$
- Evenly distributed sampling, both in time and space, required in SAB