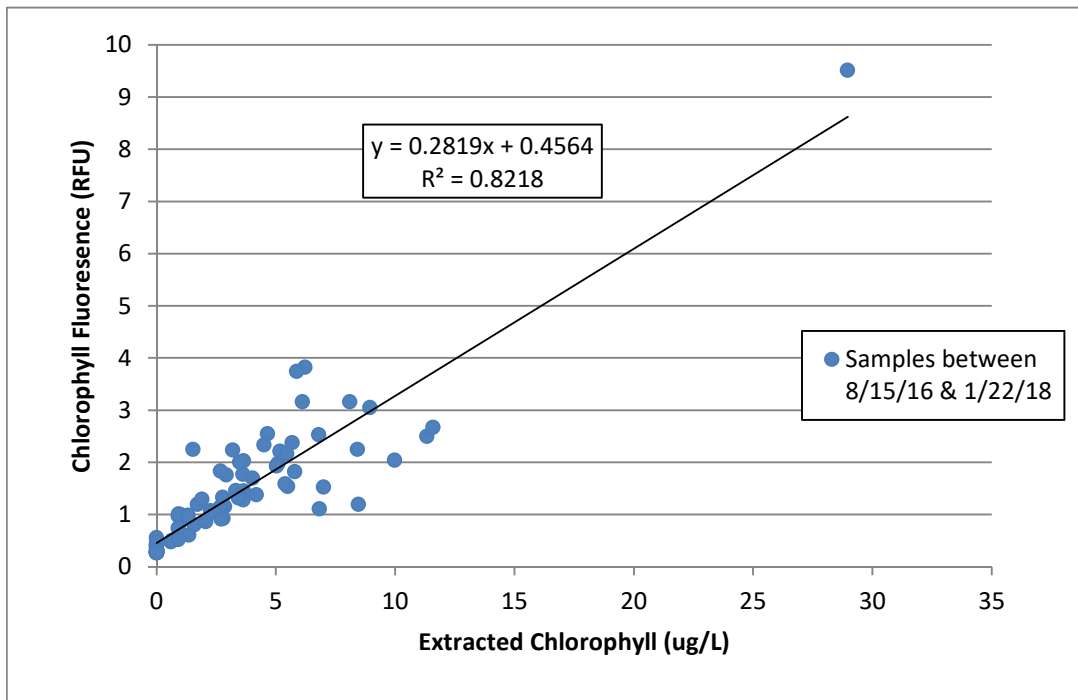


# SATURN-03 Chlorophyll Sensor Field Calibration

## (8/10/16 – 1/31/18)

**Calibration Details:**

A Turner Designs Cyclops 7 chlorophyll fluorometer replaced the T.D. AlgaeWatch fluorometer at SATURN-03 in mid-August. The new sensor was calibrated against extracted chlorophyll samples taken from field samples collected between August 2016 and January 2018. The corresponding sensor reading was determined by interpolating the *in situ* sensor data to the grab sample time-point. Data from 59 grab samples and 26 *in-situ* DI readings made at SATURN-03 were used to calculate the relationship between sensor response and extracted chlorophyll concentration (see figure & table below). The data were fit with the sensor output as the dependent variable and then translated to the following calibration equation: Chlorophyll ( $\mu\text{g/L}$ ) = 3.55 \* rfu – 1.62.



**Field Sample Data for calibration:**

Sample Date	Level (m)	Replicates	Extracted Chlorophyll ( $\mu\text{g/L}$ )	Ex. Chl std. dev.	Ex. Chl. % c.v.	Station Chlorophyll (rfu)
8/15/16 0:00	0.0		0.003			0.389
8/15/16 8:53	2.4	2	6.119	0.026	0.422	3.160
8/15/16 8:55	8.2	2	5.681	0.047	0.822	2.380
8/15/16 8:59	13.0	2	6.796	0.348	5.126	2.530
8/22/16 0:00	0.0		0.003			
8/22/16 8:54	2.4	2	2.857	0.112	3.911	1.150
8/22/16 8:57	8.2	2	3.630	0.000	0.002	1.280

8/30/16 0:00	0.0		0.003			
8/30/16 9:22	2.4	2	5.795	0.191	3.290	1.820
8/30/16 9:24	8.2	2	11.335	0.172	1.513	2.500
8/30/16 9:29	13.0	2	11.583	0.265	2.287	2.670
9/12/16 0:00	0.0		0.005			0.404
9/12/16 9:07	2.4	2	8.095	0.353	4.355	3.160
9/12/16 9:09	8.2	2	6.217	0.051	0.827	3.820
9/12/16 9:15	13.0	2	5.871	0.081	1.383	3.740
9/19/16 0:00	0.0		0.004			0.561
9/19/16 9:35	2.4	2	2.665	0.047	1.761	1.140
9/27/16 0:00	0.0		0.003			0.434
9/27/16 9:11	2.4		2.272			1.070
9/27/16 9:14	8.2		3.323			1.460
9/27/16 9:23	13.0		4.180			1.380
10/24/16 0:00	0.0		0.002			0.310
10/24/16 9:20	2.4		1.089			0.893
10/24/16 9:25	8.6		0.915			0.977
10/24/16 9:33	13.0		0.999			1.000
11/7/16 0:00	0.0		0.002			0.282
11/21/16 0:00	0.0		0.002			0.273
1/17/17 0:00	0.0		0.002			0.282
1/19/17 10:44	2.4		0.913			0.740
1/19/17 10:49	8.6		0.925			1.012
1/30/17 0:00	0.0		0.003			0.281
1/30/17 10:27	2.4		2.387			1.050
1/30/17 10:30	8.6		1.585			0.806
1/30/17 10:38	13.0		1.332			0.989
2/13/17 0:00	0.0		0.003			0.277
2/13/17 10:14	2.4		1.530			2.246
2/13/17 10:18	8.6		3.197			2.234
2/13/17 10:24	13.0		5.175			2.209
2/27/17 0:00	0.0		0.002			0.279
2/27/17 10:48	2.4		2.925			1.758
2/27/17 10:51	8.6		4.502			2.332
2/27/17 10:59	13.0		8.947			3.052
3/14/17 0:00	0.0		0.003			0.344
3/14/17 9:02	8.6		3.653			1.453
3/20/17 0:00	0.0		0.004			0.268
3/20/17 9:10	2.4		1.712			1.196
3/20/17 9:13	8.6		1.910			1.294
3/20/17 9:21	13.0		2.783			0.928
4/10/17 0:00	0.0		0.003			0.271
4/10/17 9:12	2.4		3.622			1.770
4/10/17 9:14	13.0		3.651			2.026
4/10/17 9:17	8.6		2.681			1.831
5/1/17 0:00	0.0		0.000			0.276
5/1/17 10:33	2.4		5.090			1.978
5/1/17 10:35	8.6		3.494			1.367
5/1/17 10:42	13.0		4.028			1.697
5/15/17 0:00	0.0		0.013			0.279
5/15/17 10:27	2.4		5.029			1.929
5/15/17 10:30	8.6		5.464			2.161
5/15/17 10:38	13.0		4.657			2.551
6/5/17 0:00	0.0		0.013			0.312
6/5/17 10:10	2.4		5.506			1.538
6/5/17 10:15	8.6		3.482			2.002

6/5/17 10:17	13.0		28.97			9.509
6/19/17 0:00	0.0		0.014			0.478
6/19/17 10:11	13.0		9.977			2.039
6/19/17 10:12	8.6		8.468			1.196
7/31/17 0:00	0.0		0.013			0.318
7/31/17 10:22	2.4		2.712			0.916
7/31/17 10:24	8.6		5.391			1.587
8/28/17 0:00	0.0		0.018			0.312
8/28/17 10:07	2.4	2	8.421	0.070	0.829	2.246
8/28/17 10:09	8.6	2	3.434	0.001	0.019	1.318
8/28/17 10:11	13.0		2.777			1.331
9/25/17 0:00	0.0		0.014			0.308
9/25/17 9:01	2.4		1.354			0.610
9/25/17 9:04	8.6		2.064			0.867
10/16/17 9:39	2.4		6.827			1.111
10/16/17 9:43	8.6		7.001			1.526
11/27/17 0:00	0.0		0.013			0.273
11/27/17 10:09	2.4	2	0.607	0.021	3.499	0.476
1/8/18 0:00	0.0		0.013			0.270
1/8/18 9:53	2.4	2	0.645	0.024	3.696	0.500
1/22/18 0:00	0.0		0.014			0.278
1/22/18 9:53	2.4	2	0.909	0.004	0.465	0.525