

**Limnological parameters in Skarvsnes lakes between the 50th and 51st Japanese  
Antarctic Research Expeditions in 2009–2010  
—Long-term monitoring study—**

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## **1. Introduction**

This is a report on the limnological parameters which were continuously recorded by means of mooring data-logger arrays in two Skarvsnes lakes, Oyako Ike and Naga Ike (Fig. 1) during the 50th and 51st Japanese Antarctic Research Expeditions (JARE) in 2009–2010. This study was one of our “Long-term monitoring studies on Antarctic terrestrial ecosystem” which were started in 2006, under the umbrella of the VII term of Antarctic research expedition plans. Water temperature, photosynthetically active radiation (PAR), chlorophyll fluorescence and turbidity in lakes were measured and recorded automatically at intervals of 60 min. Trials of similar continuous observation of limnological parameters in shallow lakes using prototype mooring arrays have been reported by Kudoh et al. (2003), and Tanabe *et al.* (2008).

## **2. Materials and Methods**

*Design of the mooring array:* The mooring array consisted of temperature loggers (NWT, Nichiyu Giken Kogyo), PAR loggers (ALW-CMP, JFE Advantech) and chlorophyll-turbidity loggers (ACLW-CMP, JFE Advantech). These were attached at given depths of a rope which was connected to a plastic float and a sinker on both sides, as shown in Fig. 2. The array was moored at the lake center where the nearly-maximum depth was detected. Exact depths at the mooring sites were 7.5 m and 10.0 m in Oyako Ike and Naga Ike, respectively. The positions measured by a portable GPS (GPSMAP 60CSx, Garmin) were 69°28.514'S, 39°36.154'E and 69°29.240'S, 39°35.854'E in Lake Oyako Ike and L. Naga Ike, respectively.

*Settings of the data loggers:* Temperature data were sampled every 60 minutes from 0:00 (local

time) on 1 January 2009 to 11:00 on 13 January 2010 in Oyako Ike, and from 0:00 on 1 January 2009 to 15:00 on 22 January 2010 in Naga Ike. PAR data were recorded at 60 minute intervals, and the chlorophyll fluorescence and turbidity data were recorded at 60 minute intervals during the same periods of the temperature loggers in both lakes. All loggers were pre- and post-calibrated by the manufacturers, who found no significant drifts in the measurements over the course of the study. Units of recorded data were °C and  $\mu\text{mol}/\text{m}^2/\text{s}$  for temperature and PAR, respectively. Fluorescence from chlorophyll *a* was recorded as relative intensity against fluorescein sodium (Uranine) concentration, and turbidity was recorded as Formazin Nephelometric Units (FTU).

### 3. Data

Temperature data collected at three different depths in Oyako Ike are illustrated in Fig. 3, and the monthly summarized data are listed in Tables 1-1 to 1-13. From the beginning of January to the end of March in 2009, and from the end of September to the end of the present observation in 2010, temperature at two different upper depths took almost the same values, the three lines in Fig. 3 during these periods overlapped. Temperature data at six different depths of Naga Ike are illustrated in Fig. 4, and listed in Tables 2-1 to 2-13. Temperatures at four separate deeper depths took almost the same values from the beginning of January to the middle of March in 2009, and from the middle of November in 2009 to the end of the present observation in 2010. PAR data at 6.1 m depth in Oyako Ike are illustrated in Fig. 5, and the monthly summarized data are listed in Tables 3-1 to 3-12. PAR at 1.5 m depths in Naga Ike are illustrated in Fig. 6, and the monthly summarized data are listed in Tables 4-1 to 4-12. Chlorophyll fluorescence and turbidity data in Oyako Ike are illustrated in Fig. 7, and the monthly summarized data are listed in Tables 5-1 to 5-12. Those for Naga Ike data are in Fig. 8 and Tables 6-1 to 6-12. Extra-ordinary high values and low values of chlorophyll fluorescence and turbidity data were recorded from the beginning of June to the end of December and during the whole observation period, respectively, in Oyako Ike. In Naga Ike, such extra-ordinary values of chlorophyll fluorescence and turbidity were also recorded from the end of August to mid-November and the beginning of September to the end of December 2009, respectively. These invalid values were omitted from the summarized process and are not listed in Tables 5 and 6, nor are they illustrated in Figs 7 and 8. Temperature data at 1.0 m depth in Naga Ike recorded sub-zero values from 8 May 2009 to mid-June 2010. A few values which exceeded the measurement limits were omitted and are not listed in the Table. Possible reasons for such high fluorescence and turbidity were that, firstly, some photobenthos mats lifted-off and floated in the water column, and those might have attached to the wiper of the chlorophyll-turbidity logger for a while. Lift-off mat assemblages are commonly recognized feature in Skarvsnes lakes and also in Antarctic lakes even in ice-covered seasons (Quesada *et al.*, 2008). Secondly, the loggers might be incorporated into the developed ice cover on the lake surface.

#### **4. Scientists who carried out the field study**

Installation of the mooring arrays was carried out by Yukiko Tanabe and Sakae Kudoh (the 49th JARE members) and the retrieval of the arrays was carried out by Yukiko Tanabe, Takashi Osono, Masaki Uchida, and Sakae Kudoh (the 51st JARE members).

#### **5. Data policy**

Before using the data for publication or presentation in any media, please request permission in writing. Inquiries should be addressed to:

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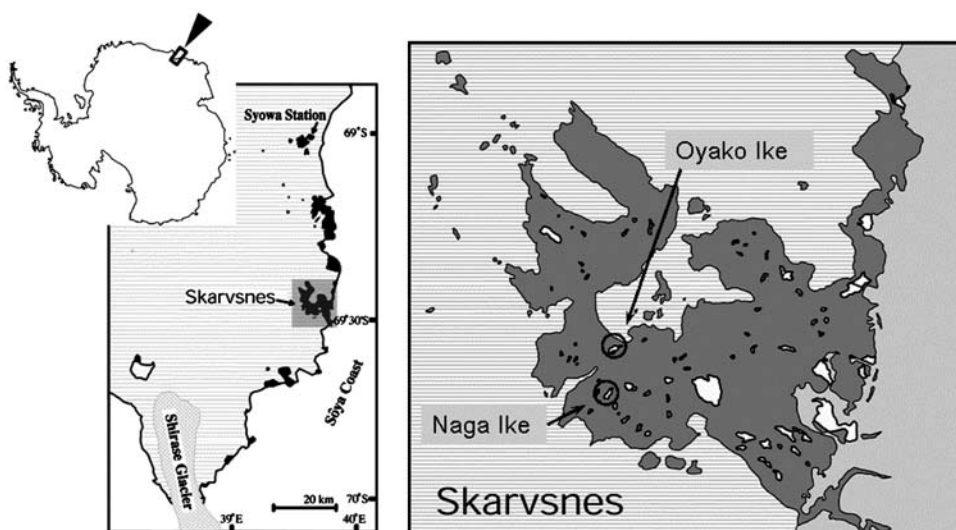


Fig. 1. Maps of studied lakes.

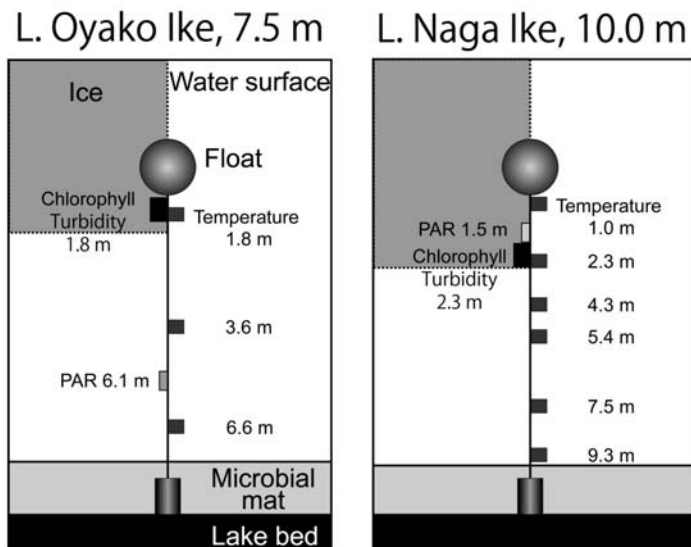


Fig. 2. Designs of mooring arrays set in Oyako Ike (left) and Naga Ike (right).

# L Oyako Ike

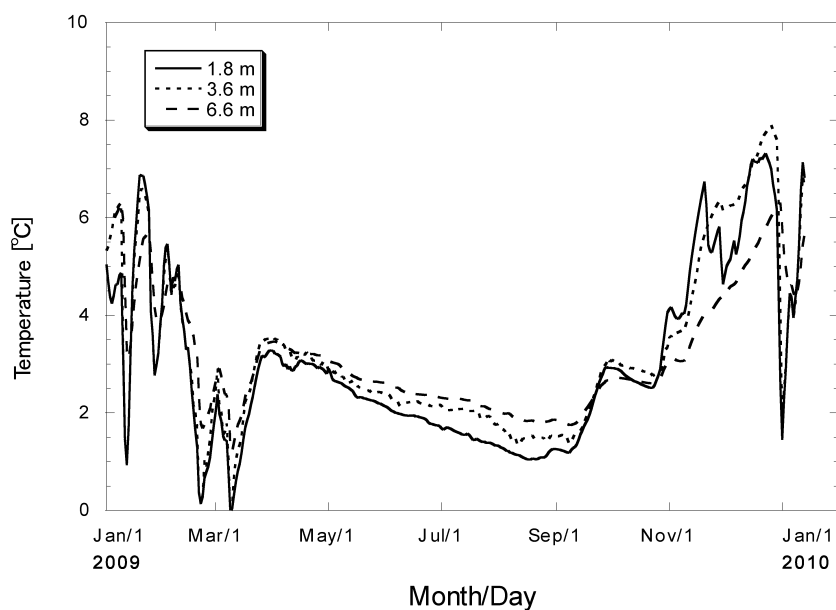


Fig. 3. Seasonal changes of water temperature at three depths in Oyako Ike (2009–2010).  
Daily average data.

Table 1-1. Water temperature data (°C) at 3 depths in Oyako Ike, January 2009.

Depth Date	1.8 m			3.6 m			6.6 m		
	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum
2009/1/1	5.042	4.561	5.203	5.328	5.138	5.622	5.803	5.792	5.817
2009/1/2	4.693	4.389	5.131	5.413	5.283	5.517	5.810	5.799	5.822
2009/1/3	4.379	4.009	4.676	5.589	5.481	5.737	5.836	5.825	5.867
2009/1/4	4.243	3.805	4.575	5.734	5.599	5.851	5.888	5.871	5.920
2009/1/5	4.409	3.973	4.896	5.986	5.776	6.134	5.955	5.924	6.013
2009/1/6	4.630	4.330	5.045	6.189	6.103	6.296	6.048	6.017	6.094
2009/1/7	4.634	4.279	4.909	6.203	6.080	6.279	6.123	6.098	6.172
2009/1/8	4.812	4.574	5.093	6.264	6.220	6.332	6.205	6.176	6.254
2009/1/9	4.868	4.242	5.235	6.304	6.236	6.392	6.290	6.258	6.341
2009/1/10	3.222	2.488	5.113	3.498	2.515	6.366	5.982	5.368	6.361
2009/1/11	1.455	1.040	2.355	1.461	0.976	2.405	4.579	3.992	5.321
2009/1/12	0.932	0.577	1.185	0.915	0.574	1.197	3.277	2.679	3.953
2009/1/13	1.694	1.034	2.709	1.753	1.017	2.794	3.122	3.076	3.196
2009/1/14	3.178	2.586	4.092	3.240	2.745	3.986	3.394	3.216	3.597
2009/1/15	4.549	3.894	5.449	4.411	3.918	5.361	3.814	3.618	4.040
2009/1/16	5.342	4.644	6.401	5.164	4.598	5.734	4.267	4.064	4.440
2009/1/17	5.818	5.168	6.737	5.548	5.004	5.972	4.613	4.456	4.758
2009/1/18	6.396	5.893	7.259	5.934	5.724	6.262	4.888	4.771	5.011
2009/1/19	6.875	6.221	7.582	6.435	5.991	7.013	5.131	5.023	5.255
2009/1/20	6.862	6.212	7.541	6.603	6.135	6.998	5.383	5.264	5.513
2009/1/21	6.857	6.519	7.215	6.515	6.243	6.908	5.577	5.524	5.595
2009/1/22	6.658	6.345	6.959	6.441	6.126	6.695	5.609	5.596	5.644
2009/1/23	6.429	6.139	6.726	6.280	5.997	6.556	5.669	5.648	5.692
2009/1/24	6.144	5.561	6.587	6.047	5.516	6.363	5.683	5.659	5.707
2009/1/25	4.078	3.788	5.187	4.073	3.779	5.185	5.297	4.983	5.649
2009/1/26	3.597	3.291	3.771	3.591	3.288	3.765	4.713	4.318	4.962
2009/1/27	2.768	2.566	3.192	2.765	2.547	3.158	4.165	4.007	4.292
2009/1/28	2.978	2.782	3.244	2.979	2.779	3.271	3.913	3.847	4.000
2009/1/29	3.220	2.912	3.650	3.222	2.919	3.613	3.852	3.848	3.865
2009/1/30	3.780	3.594	4.072	3.752	3.557	4.083	3.905	3.868	3.962
2009/1/31	4.207	3.869	4.675	4.121	3.799	4.560	4.028	3.970	4.100
Monthly	4.476	4.041	5.047	4.766	4.441	5.239	4.994	4.857	5.136

Table 1-2. Water temperature data (°C) at 3 depths in Oyako Ike, February 2009.

Depth Date	1.8 m			3.6 m			6.6 m		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/2/1	5.006	4.386	6.006	4.795	4.321	5.408	4.195	4.107	4.300
2009/2/2	5.380	4.820	6.054	5.130	4.756	5.501	4.434	4.310	4.550
2009/2/3	5.463	5.203	5.639	5.392	5.161	5.587	4.647	4.559	4.751
2009/2/4	5.032	4.383	5.499	5.024	4.358	5.502	4.814	4.761	4.864
2009/2/5	4.466	4.025	5.063	4.396	3.985	4.992	4.628	4.553	4.764
2009/2/6	4.784	4.630	4.953	4.751	4.611	4.889	4.601	4.570	4.611
2009/2/7	4.704	4.195	5.348	4.588	4.122	5.103	4.570	4.538	4.610
2009/2/8	4.936	4.514	5.232	4.809	4.421	5.219	4.589	4.571	4.608
2009/2/9	5.036	4.677	5.503	4.909	4.358	5.418	4.633	4.615	4.650
2009/2/10	4.258	3.702	5.087	4.229	3.690	5.097	4.603	4.485	4.667
2009/2/11	3.938	3.550	4.566	3.891	3.608	4.382	4.353	4.308	4.470
2009/2/12	3.683	3.285	4.131	3.675	3.230	4.158	4.253	4.169	4.325
2009/2/13	3.295	2.803	3.709	3.297	2.889	3.773	4.057	3.955	4.166
2009/2/14	3.350	2.973	3.756	3.329	2.978	3.755	3.901	3.862	3.955
2009/2/15	2.983	2.778	3.582	3.011	2.810	3.574	3.838	3.752	3.887
2009/2/16	2.480	2.300	2.812	2.758	2.379	2.913	3.679	3.649	3.743
2009/2/17	2.055	1.675	2.332	2.154	1.808	2.596	3.578	3.451	3.674
2009/2/18	1.664	1.177	2.005	2.038	1.871	2.189	3.312	3.251	3.438
2009/2/19	1.313	0.987	1.765	1.738	1.019	2.133	3.208	2.888	3.303
2009/2/20	0.362	0.153	0.874	0.354	0.138	0.886	2.338	1.662	3.063
2009/2/21	0.148	-0.057	0.324	0.133	-0.072	0.307	1.782	1.515	2.030
2009/2/22	0.286	0.079	0.642	0.319	0.056	0.800	1.687	1.646	1.756
2009/2/23	0.675	0.317	1.001	1.031	0.746	1.575	1.770	1.680	1.922
2009/2/24	0.798	0.484	1.131	0.900	0.536	1.629	1.930	1.868	2.004
2009/2/25	0.904	0.626	1.087	1.212	1.019	1.375	1.982	1.898	2.057
2009/2/26	1.096	0.820	1.322	1.495	1.280	1.874	2.089	2.060	2.178
2009/2/27	1.424	1.256	1.640	1.982	1.853	2.146	2.287	2.189	2.394
2009/2/28	1.753	1.531	1.999	2.239	2.089	2.344	2.470	2.401	2.581
<i>Monthly</i>	2.903	2.545	3.324	2.985	2.644	3.397	3.508	3.403	3.619

Table 1-3. Water temperature data (°C) at 3 depths in Oyako Ike, March 2009.

Depth Date	1.8 m			3.6 m			6.6 m		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/3/1	1.320	1.303	1.362	1.798	1.780	1.812	2.022	2.019	2.027
2009/3/2	1.294	1.282	1.301	1.743	1.672	1.792	2.020	2.007	2.028
2009/3/3	1.279	1.267	1.294	1.665	1.648	1.696	1.996	1.989	2.006
2009/3/4	1.258	1.214	1.274	1.646	1.551	1.732	1.984	1.982	1.989
2009/3/5	1.226	1.210	1.248	1.546	1.538	1.560	1.986	1.983	1.993
2009/3/6	1.219	1.193	1.248	1.585	1.563	1.616	1.994	1.991	1.997
2009/3/7	1.187	1.179	1.195	1.529	1.397	1.619	1.976	1.956	1.991
2009/3/8	1.181	1.174	1.184	1.412	1.395	1.427	1.935	1.919	1.954
2009/3/9	1.161	1.151	1.173	1.455	1.430	1.479	1.909	1.901	1.919
2009/3/10	1.146	1.141	1.150	1.468	1.423	1.486	1.893	1.887	1.900
2009/3/11	1.142	1.139	1.144	1.346	1.309	1.412	1.883	1.880	1.887
2009/3/12	1.135	1.125	1.142	1.363	1.313	1.402	1.880	1.880	1.882
2009/3/13	1.108	1.096	1.122	1.426	1.403	1.460	1.884	1.882	1.886
2009/3/14	1.089	1.084	1.096	1.481	1.463	1.488	1.860	1.846	1.880
2009/3/15	1.071	1.058	1.083	1.482	1.477	1.486	1.839	1.835	1.845
2009/3/16	1.053	1.048	1.064	1.481	1.475	1.492	1.834	1.832	1.838
2009/3/17	1.047	1.039	1.055	1.519	1.485	1.552	1.839	1.836	1.842
2009/3/18	1.047	1.037	1.058	1.542	1.536	1.548	1.843	1.840	1.847
2009/3/19	1.065	1.055	1.074	1.542	1.536	1.546	1.845	1.842	1.847
2009/3/20	1.061	1.054	1.067	1.479	1.454	1.532	1.833	1.827	1.841
2009/3/21	1.049	1.044	1.054	1.457	1.454	1.465	1.820	1.816	1.826
2009/3/22	1.061	1.052	1.070	1.456	1.450	1.462	1.810	1.806	1.815
2009/3/23	1.082	1.063	1.108	1.471	1.460	1.492	1.800	1.794	1.805
2009/3/24	1.091	1.070	1.122	1.496	1.475	1.523	1.804	1.797	1.818
2009/3/25	1.086	1.066	1.108	1.494	1.443	1.527	1.813	1.806	1.822
2009/3/26	1.103	1.080	1.133	1.408	1.390	1.437	1.818	1.809	1.827
2009/3/27	1.141	1.111	1.173	1.417	1.386	1.451	1.824	1.815	1.834
2009/3/28	1.199	1.158	1.252	1.473	1.443	1.520	1.830	1.822	1.841
2009/3/29	1.238	1.205	1.281	1.533	1.515	1.574	1.845	1.837	1.861
2009/3/30	1.258	1.234	1.284	1.521	1.512	1.549	1.864	1.859	1.872
2009/3/31	1.261	1.256	1.269	1.514	1.510	1.519	1.865	1.861	1.871
<i>Monthly</i>	1.150	1.135	1.167	1.508	1.480	1.537	1.882	1.876	1.890

Table 1-4. Water temperature data (°C) at 3 depths in Oyako Ike, April 2009.

Depth Date	1.8 m			3.6 m			6.6 m		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/4/1	1.320	1.303	1.362	1.798	1.780	1.812	2.022	2.019	2.027
2009/4/2	1.294	1.282	1.301	1.743	1.672	1.792	2.020	2.007	2.028
2009/4/3	1.279	1.267	1.294	1.665	1.648	1.696	1.996	1.989	2.006
2009/4/4	1.258	1.214	1.274	1.646	1.551	1.732	1.984	1.982	1.989
2009/4/5	1.226	1.210	1.248	1.546	1.538	1.560	1.986	1.983	1.993
2009/4/6	1.219	1.193	1.248	1.585	1.563	1.616	1.994	1.991	1.997
2009/4/7	1.187	1.179	1.195	1.529	1.397	1.619	1.976	1.956	1.991
2009/4/8	1.181	1.174	1.184	1.412	1.395	1.427	1.935	1.919	1.954
2009/4/9	1.161	1.151	1.173	1.455	1.430	1.479	1.909	1.901	1.919
2009/4/10	1.146	1.141	1.150	1.468	1.423	1.486	1.893	1.887	1.900
2009/4/11	1.142	1.139	1.144	1.346	1.309	1.412	1.883	1.880	1.887
2009/4/12	1.135	1.125	1.142	1.363	1.313	1.402	1.880	1.880	1.882
2009/4/13	1.108	1.096	1.122	1.426	1.403	1.460	1.884	1.882	1.886
2009/4/14	1.089	1.084	1.096	1.481	1.463	1.488	1.860	1.846	1.880
2009/4/15	1.071	1.058	1.083	1.482	1.477	1.486	1.839	1.835	1.845
2009/4/16	1.053	1.048	1.064	1.481	1.475	1.492	1.834	1.832	1.838
2009/4/17	1.047	1.039	1.055	1.519	1.485	1.552	1.839	1.836	1.842
2009/4/18	1.047	1.037	1.058	1.542	1.536	1.548	1.843	1.840	1.847
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2009/4/20	1.061	1.054	1.067	1.479	1.454	1.532	1.833	1.827	1.841
2009/4/21	1.049	1.044	1.054	1.457	1.454	1.465	1.820	1.816	1.826
2009/4/22	1.061	1.052	1.070	1.456	1.450	1.462	1.810	1.806	1.815
2009/4/23	1.082	1.063	1.108	1.471	1.460	1.492	1.800	1.794	1.805
2009/4/24	1.091	1.070	1.122	1.496	1.475	1.523	1.804	1.797	1.818
2009/4/25	1.086	1.066	1.108	1.494	1.443	1.527	1.813	1.806	1.822
2009/4/26	1.103	1.080	1.133	1.408	1.390	1.437	1.818	1.809	1.827
2009/4/27	1.141	1.111	1.173	1.417	1.386	1.451	1.824	1.815	1.834
2009/4/28	1.199	1.158	1.252	1.473	1.443	1.520	1.830	1.822	1.841
2009/4/29	1.238	1.205	1.281	1.533	1.515	1.574	1.845	1.837	1.861
2009/4/30	1.258	1.234	1.284	1.521	1.512	1.549	1.864	1.859	1.872
<i>Monthly</i>	1.146	1.131	1.164	1.508	1.479	1.538	1.883	1.877	1.891

Table 1-5. Water temperature data (°C) at 3 depths in Oyako Ike, May 2009.

Depth Date	1.8 m			3.6 m			6.6 m		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/5/1	1.320	1.303	1.362	1.798	1.780	1.812	2.022	2.019	2.027
2009/5/2	1.294	1.282	1.301	1.743	1.672	1.792	2.020	2.007	2.028
2009/5/3	1.279	1.267	1.294	1.665	1.648	1.696	1.996	1.989	2.006
2009/5/4	1.258	1.214	1.274	1.646	1.551	1.732	1.984	1.982	1.989
2009/5/5	1.226	1.210	1.248	1.546	1.538	1.560	1.986	1.983	1.993
2009/5/6	1.219	1.193	1.248	1.585	1.563	1.616	1.994	1.991	1.997
2009/5/7	1.187	1.179	1.195	1.529	1.397	1.619	1.976	1.956	1.991
2009/5/8	1.181	1.174	1.184	1.412	1.395	1.427	1.935	1.919	1.954
2009/5/9	1.161	1.151	1.173	1.455	1.430	1.479	1.909	1.901	1.919
2009/5/10	1.146	1.141	1.150	1.468	1.423	1.486	1.893	1.887	1.900
2009/5/11	1.142	1.139	1.144	1.346	1.309	1.412	1.883	1.880	1.887
2009/5/12	1.135	1.125	1.142	1.363	1.313	1.402	1.880	1.880	1.882
2009/5/13	1.108	1.096	1.122	1.426	1.403	1.460	1.884	1.882	1.886
2009/5/14	1.089	1.084	1.096	1.481	1.463	1.488	1.860	1.846	1.880
2009/5/15	1.071	1.058	1.083	1.482	1.477	1.486	1.839	1.835	1.845
2009/5/16	1.053	1.048	1.064	1.481	1.475	1.492	1.834	1.832	1.838
2009/5/17	1.047	1.039	1.055	1.519	1.485	1.552	1.839	1.836	1.842
2009/5/18	1.047	1.037	1.058	1.542	1.536	1.548	1.843	1.840	1.847
2009/5/19	1.065	1.055	1.074	1.542	1.536	1.546	1.845	1.842	1.847
2009/5/20	1.061	1.054	1.067	1.479	1.454	1.532	1.833	1.827	1.841
2009/5/21	1.049	1.044	1.054	1.457	1.454	1.465	1.820	1.816	1.826
2009/5/22	1.061	1.052	1.070	1.456	1.450	1.462	1.810	1.806	1.815
2009/5/23	1.082	1.063	1.108	1.471	1.460	1.492	1.800	1.794	1.805
2009/5/24	1.091	1.070	1.122	1.496	1.475	1.523	1.804	1.797	1.818
2009/5/25	1.086	1.066	1.108	1.494	1.443	1.527	1.813	1.806	1.822
2009/5/26	1.103	1.080	1.133	1.408	1.390	1.437	1.818	1.809	1.827
2009/5/27	1.141	1.111	1.173	1.417	1.386	1.451	1.824	1.815	1.834
2009/5/28	1.199	1.158	1.252	1.473	1.443	1.520	1.830	1.822	1.841
2009/5/29	1.238	1.205	1.281	1.533	1.515	1.574	1.845	1.837	1.861
2009/5/30	1.258	1.234	1.284	1.521	1.512	1.549	1.864	1.859	1.872
2009/5/31	1.261	1.256	1.269	1.514	1.510	1.519	1.865	1.861	1.871
<i>Monthly</i>	1.150	1.135	1.167	1.508	1.480	1.537	1.882	1.876	1.890

Table 1-6. Water temperature data (°C) at 3 depths in Oyako Ike, June 2009.

Depth Date	1.8 m			3.6 m			6.6 m		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/6/1	1.320	1.303	1.362	1.798	1.780	1.812	2.022	2.019	2.027
2009/6/2	1.294	1.282	1.301	1.743	1.672	1.792	2.020	2.007	2.028
2009/6/3	1.279	1.267	1.294	1.665	1.648	1.696	1.996	1.989	2.006
2009/6/4	1.258	1.214	1.274	1.646	1.551	1.732	1.984	1.982	1.989
2009/6/5	1.226	1.210	1.248	1.546	1.538	1.560	1.986	1.983	1.993
2009/6/6	1.219	1.193	1.248	1.585	1.563	1.616	1.994	1.991	1.997
2009/6/7	1.187	1.179	1.195	1.529	1.397	1.619	1.976	1.956	1.991
2009/6/8	1.181	1.174	1.184	1.412	1.395	1.427	1.935	1.919	1.954
2009/6/9	1.161	1.151	1.173	1.455	1.430	1.479	1.909	1.901	1.919
2009/6/10	1.146	1.141	1.150	1.468	1.423	1.486	1.893	1.887	1.900
2009/6/11	1.142	1.139	1.144	1.346	1.309	1.412	1.883	1.880	1.887
2009/6/12	1.135	1.125	1.142	1.363	1.313	1.402	1.880	1.880	1.882
2009/6/13	1.108	1.096	1.122	1.426	1.403	1.460	1.884	1.882	1.886
2009/6/14	1.089	1.084	1.096	1.481	1.463	1.488	1.860	1.846	1.880
2009/6/15	1.071	1.058	1.083	1.482	1.477	1.486	1.839	1.835	1.845
2009/6/16	1.053	1.048	1.064	1.481	1.475	1.492	1.834	1.832	1.838
2009/6/17	1.047	1.039	1.055	1.519	1.485	1.552	1.839	1.836	1.842
2009/6/18	1.047	1.037	1.058	1.542	1.536	1.548	1.843	1.840	1.847
2009/6/19	1.065	1.055	1.074	1.542	1.536	1.546	1.845	1.842	1.847
2009/6/20	1.061	1.054	1.067	1.479	1.454	1.532	1.833	1.827	1.841
2009/6/21	1.049	1.044	1.054	1.457	1.454	1.465	1.820	1.816	1.826
2009/6/22	1.061	1.052	1.070	1.456	1.450	1.462	1.810	1.806	1.815
2009/6/23	1.082	1.063	1.108	1.471	1.460	1.492	1.800	1.794	1.805
2009/6/24	1.091	1.070	1.122	1.496	1.475	1.523	1.804	1.797	1.818
2009/6/25	1.086	1.066	1.108	1.494	1.443	1.527	1.813	1.806	1.822
2009/6/26	1.103	1.080	1.133	1.408	1.390	1.437	1.818	1.809	1.827
2009/6/27	1.141	1.111	1.173	1.417	1.386	1.451	1.824	1.815	1.834
2009/6/28	1.199	1.158	1.252	1.473	1.443	1.520	1.830	1.822	1.841
2009/6/29	1.238	1.205	1.281	1.533	1.515	1.574	1.845	1.837	1.861
2009/6/30	1.258	1.234	1.284	1.521	1.512	1.549	1.864	1.859	1.872
<i>Monthly</i>	1.146	1.131	1.164	1.508	1.479	1.538	1.883	1.877	1.891

Table 1-7. Water temperature data (°C) at 3 depths in Oyako Ike, July 2009.

Depth Date	1.8 m			3.6 m			6.6 m		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/7/1	1.320	1.303	1.362	1.798	1.780	1.812	2.022	2.019	2.027
2009/7/2	1.294	1.282	1.301	1.743	1.672	1.792	2.020	2.007	2.028
2009/7/3	1.279	1.267	1.294	1.665	1.648	1.696	1.996	1.989	2.006
2009/7/4	1.258	1.214	1.274	1.646	1.551	1.732	1.984	1.982	1.989
2009/7/5	1.226	1.210	1.248	1.546	1.538	1.560	1.986	1.983	1.993
2009/7/6	1.219	1.193	1.248	1.585	1.563	1.616	1.994	1.991	1.997
2009/7/7	1.187	1.179	1.195	1.529	1.397	1.619	1.976	1.956	1.991
2009/7/8	1.181	1.174	1.184	1.412	1.395	1.427	1.935	1.919	1.954
2009/7/9	1.161	1.151	1.173	1.455	1.430	1.479	1.909	1.901	1.919
2009/7/10	1.146	1.141	1.150	1.468	1.423	1.486	1.893	1.887	1.900
2009/7/11	1.142	1.139	1.144	1.346	1.309	1.412	1.883	1.880	1.887
2009/7/12	1.135	1.125	1.142	1.363	1.313	1.402	1.880	1.880	1.882
2009/7/13	1.108	1.096	1.122	1.426	1.403	1.460	1.884	1.882	1.886
2009/7/14	1.089	1.084	1.096	1.481	1.463	1.488	1.860	1.846	1.880
2009/7/15	1.071	1.058	1.083	1.482	1.477	1.486	1.839	1.835	1.845
2009/7/16	1.053	1.048	1.064	1.481	1.475	1.492	1.834	1.832	1.838
2009/7/17	1.047	1.039	1.055	1.519	1.485	1.552	1.839	1.836	1.842
2009/7/18	1.047	1.037	1.058	1.542	1.536	1.548	1.843	1.840	1.847
2009/7/19	1.065	1.055	1.074	1.542	1.536	1.546	1.845	1.842	1.847
2009/7/20	1.061	1.054	1.067	1.479	1.454	1.532	1.833	1.827	1.841
2009/7/21	1.049	1.044	1.054	1.457	1.454	1.465	1.820	1.816	1.826
2009/7/22	1.061	1.052	1.070	1.456	1.450	1.462	1.810	1.806	1.815
2009/7/23	1.082	1.063	1.108	1.471	1.460	1.492	1.800	1.794	1.805
2009/7/24	1.091	1.070	1.122	1.496	1.475	1.523	1.804	1.797	1.818
2009/7/25	1.086	1.066	1.108	1.494	1.443	1.527	1.813	1.806	1.822
2009/7/26	1.103	1.080	1.133	1.408	1.390	1.437	1.818	1.809	1.827
2009/7/27	1.141	1.111	1.173	1.417	1.386	1.451	1.824	1.815	1.834
2009/7/28	1.199	1.158	1.252	1.473	1.443	1.520	1.830	1.822	1.841
2009/7/29	1.238	1.205	1.281	1.533	1.515	1.574	1.845	1.837	1.861
2009/7/30	1.258	1.234	1.284	1.521	1.512	1.549	1.864	1.859	1.872
2009/7/31	1.261	1.256	1.269	1.514	1.510	1.519	1.865	1.861	1.871
<i>Monthly</i>	1.150	1.135	1.167	1.508	1.480	1.537	1.882	1.876	1.890



Table 1-8. Water temperature data (°C) at 3 depths in Oyako Ike, August 2009.

Depth Date	1.8 m			3.6 m			6.6 m		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/8/1	1.320	1.303	1.362	1.798	1.780	1.812	2.022	2.019	2.027
2009/8/2	1.294	1.282	1.301	1.743	1.672	1.792	2.020	2.007	2.028
2009/8/3	1.279	1.267	1.294	1.665	1.648	1.696	1.996	1.989	2.006
2009/8/4	1.258	1.214	1.274	1.646	1.551	1.732	1.984	1.982	1.989
2009/8/5	1.226	1.210	1.248	1.546	1.538	1.560	1.986	1.983	1.993
2009/8/6	1.219	1.193	1.248	1.585	1.563	1.616	1.994	1.991	1.997
2009/8/7	1.187	1.179	1.195	1.529	1.397	1.619	1.976	1.956	1.991
2009/8/8	1.181	1.174	1.184	1.412	1.395	1.427	1.935	1.919	1.954
2009/8/9	1.161	1.151	1.173	1.455	1.430	1.479	1.909	1.901	1.919
2009/8/10	1.146	1.141	1.150	1.468	1.423	1.486	1.893	1.887	1.900
2009/8/11	1.142	1.139	1.144	1.346	1.309	1.412	1.883	1.880	1.887
2009/8/12	1.135	1.125	1.142	1.363	1.313	1.402	1.880	1.880	1.882
2009/8/13	1.108	1.096	1.122	1.426	1.403	1.460	1.884	1.882	1.886
2009/8/14	1.089	1.084	1.096	1.481	1.463	1.488	1.860	1.846	1.880
2009/8/15	1.071	1.058	1.083	1.482	1.477	1.486	1.839	1.835	1.845
2009/8/16	1.053	1.048	1.064	1.481	1.475	1.492	1.834	1.832	1.838
2009/8/17	1.047	1.039	1.055	1.519	1.485	1.552	1.839	1.836	1.842
2009/8/18	1.047	1.037	1.058	1.542	1.536	1.548	1.843	1.840	1.847
2009/8/19	1.065	1.055	1.074	1.542	1.536	1.546	1.845	1.842	1.847
2009/8/20	1.061	1.054	1.067	1.479	1.454	1.532	1.833	1.827	1.841
2009/8/21	1.049	1.044	1.054	1.457	1.454	1.465	1.820	1.816	1.826
2009/8/22	1.061	1.052	1.070	1.456	1.450	1.462	1.810	1.806	1.815
2009/8/23	1.082	1.063	1.108	1.471	1.460	1.492	1.800	1.794	1.805
2009/8/24	1.091	1.070	1.122	1.496	1.475	1.523	1.804	1.797	1.818
2009/8/25	1.086	1.066	1.108	1.494	1.443	1.527	1.813	1.806	1.822
2009/8/26	1.103	1.080	1.133	1.408	1.390	1.437	1.818	1.809	1.827
2009/8/27	1.141	1.111	1.173	1.417	1.386	1.451	1.824	1.815	1.834
2009/8/28	1.199	1.158	1.252	1.473	1.443	1.520	1.830	1.822	1.841
2009/8/29	1.238	1.205	1.281	1.533	1.515	1.574	1.845	1.837	1.861
2009/8/30	1.258	1.234	1.284	1.521	1.512	1.549	1.864	1.859	1.872
2009/8/31	1.261	1.256	1.269	1.514	1.510	1.519	1.865	1.861	1.871
<i>Monthly</i>	1.150	1.135	1.167	1.508	1.480	1.537	1.882	1.876	1.890

Table 1-9. Water temperature data (°C) at 3 depths in Oyako Ike, September 2009.

Depth Date	1.8 m			3.6 m			6.6 m		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/9/1	1.451	1.053	2.284	1.920	1.503	2.480	5.793	5.482	6.181
2009/9/2	2.290	1.881	2.744	2.513	2.285	2.925	5.260	5.102	5.462
2009/9/3	2.941	2.530	3.611	3.007	2.625	3.755	4.954	4.833	5.092
2009/9/4	3.798	3.173	4.468	3.771	3.279	4.413	4.677	4.605	4.818
2009/9/5	4.452	4.168	4.813	4.335	4.117	4.706	4.597	4.568	4.628
2009/9/6	4.361	4.102	4.775	4.340	4.155	4.682	4.615	4.577	4.632
2009/9/7	3.951	3.748	4.195	3.947	3.708	4.179	4.468	4.396	4.572
2009/9/8	4.341	3.664	5.289	4.200	3.598	5.181	4.357	4.308	4.400
2009/9/9	4.703	4.180	5.213	4.647	4.143	5.164	4.488	4.418	4.554
2009/9/10	5.455	4.900	6.163	5.280	4.841	5.942	4.681	4.565	4.827
2009/9/11	6.570	5.799	7.644	6.134	5.739	6.649	5.020	4.840	5.260
2009/9/12	7.136	6.760	7.441	6.847	6.508	7.234	5.437	5.277	5.614
2009/9/13	6.823	6.616	7.176	6.642	6.296	7.113	5.681	5.627	5.708
2009/9/14	1.451	1.053	2.284	1.920	1.503	2.480	5.793	5.482	6.181
2009/9/15	2.290	1.881	2.744	2.513	2.285	2.925	5.260	5.102	5.462
2009/9/16	2.941	2.530	3.611	3.007	2.625	3.755	4.954	4.833	5.092
2009/9/17	3.798	3.173	4.468	3.771	3.279	4.413	4.677	4.605	4.818
2009/9/18	4.452	4.168	4.813	4.335	4.117	4.706	4.597	4.568	4.628
2009/9/19	4.361	4.102	4.775	4.340	4.155	4.682	4.615	4.577	4.632
2009/9/20	3.951	3.748	4.195	3.947	3.708	4.179	4.468	4.396	4.572
2009/9/21	4.341	3.664	5.289	4.200	3.598	5.181	4.357	4.308	4.400
2009/9/22	4.703	4.180	5.213	4.647	4.143	5.164	4.488	4.418	4.554
2009/9/23	5.455	4.900	6.163	5.280	4.841	5.942	4.681	4.565	4.827
2009/9/24	6.570	5.799	7.644	6.134	5.739	6.649	5.020	4.840	5.260
2009/9/25	7.136	6.760	7.441	6.847	6.508	7.234	5.437	5.277	5.614
2009/9/26	6.823	6.616	7.176	6.642	6.296	7.113	5.681	5.627	5.708
2009/9/27	1.451	1.053	2.284	1.920	1.503	2.480	5.793	5.482	6.181
2009/9/28	2.290	1.881	2.744	2.513	2.285	2.925	5.260	5.102	5.462
2009/9/29	2.941	2.530	3.611	3.007	2.625	3.755	4.954	4.833	5.092
2009/9/30	3.798	3.173	4.468	3.771	3.279	4.413	4.677	4.605	4.818
<i>Monthly</i>	4.234	3.793	4.825	4.213	3.843	4.747	4.958	4.841	5.102

Table 1-10. Water temperature data (°C) at 3 depths in Oyako Ike, October 2009.

Depth Date	1.8 m			3.6 m			6.6 m		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/10/1	1.451	1.053	2.284	1.920	1.503	2.480	5.793	5.482	6.181
2009/10/2	2.290	1.881	2.744	2.513	2.285	2.925	5.260	5.102	5.462
2009/10/3	2.941	2.530	3.611	3.007	2.625	3.755	4.954	4.833	5.092
2009/10/4	3.798	3.173	4.468	3.771	3.279	4.413	4.677	4.605	4.818
2009/10/5	4.452	4.168	4.813	4.335	4.117	4.706	4.597	4.568	4.628
2009/10/6	4.361	4.102	4.775	4.340	4.155	4.682	4.615	4.577	4.632
2009/10/7	3.951	3.748	4.195	3.947	3.708	4.179	4.468	4.396	4.572
2009/10/8	4.341	3.664	5.289	4.200	3.598	5.181	4.357	4.308	4.400
2009/10/9	4.703	4.180	5.213	4.647	4.143	5.164	4.488	4.418	4.554
2009/10/10	5.455	4.900	6.163	5.280	4.841	5.942	4.681	4.565	4.827
2009/10/11	6.570	5.799	7.644	6.134	5.739	6.649	5.020	4.840	5.260
2009/10/12	7.136	6.760	7.441	6.847	6.508	7.234	5.437	5.277	5.614
2009/10/13	6.823	6.616	7.176	6.642	6.296	7.113	5.681	5.627	5.708
2009/10/14	1.451	1.053	2.284	1.920	1.503	2.480	5.793	5.482	6.181
2009/10/15	2.290	1.881	2.744	2.513	2.285	2.925	5.260	5.102	5.462
2009/10/16	2.941	2.530	3.611	3.007	2.625	3.755	4.954	4.833	5.092
2009/10/17	3.798	3.173	4.468	3.771	3.279	4.413	4.677	4.605	4.818
2009/10/18	4.452	4.168	4.813	4.335	4.117	4.706	4.597	4.568	4.628
2009/10/19	4.361	4.102	4.775	4.340	4.155	4.682	4.615	4.577	4.632
2009/10/20	3.951	3.748	4.195	3.947	3.708	4.179	4.468	4.396	4.572
2009/10/21	4.341	3.664	5.289	4.200	3.598	5.181	4.357	4.308	4.400
2009/10/22	4.703	4.180	5.213	4.647	4.143	5.164	4.488	4.418	4.554
2009/10/23	5.455	4.900	6.163	5.280	4.841	5.942	4.681	4.565	4.827
2009/10/24	6.570	5.799	7.644	6.134	5.739	6.649	5.020	4.840	5.260
2009/10/25	7.136	6.760	7.441	6.847	6.508	7.234	5.437	5.277	5.614
2009/10/26	6.823	6.616	7.176	6.642	6.296	7.113	5.681	5.627	5.708
2009/10/27	1.451	1.053	2.284	1.920	1.503	2.480	5.793	5.482	6.181
2009/10/28	2.290	1.881	2.744	2.513	2.285	2.925	5.260	5.102	5.462
2009/10/29	2.941	2.530	3.611	3.007	2.625	3.755	4.954	4.833	5.092
2009/10/30	3.798	3.173	4.468	3.771	3.279	4.413	4.677	4.605	4.818
2009/10/31	4.452	4.168	4.813	4.335	4.117	4.706	4.597	4.568	4.628
<i>Monthly</i>	4.241	3.805	4.824	4.216	3.852	4.746	4.946	4.832	5.086

Table 1-11. Water temperature data (°C) at 3 depths in Oyako Ike, November 2009.

Depth Date	1.8 m			3.6 m			6.6 m		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/11/1	1.451	1.053	2.284	1.920	1.503	2.480	5.793	5.482	6.181
2009/11/2	2.290	1.881	2.744	2.513	2.285	2.925	5.260	5.102	5.462
2009/11/3	2.941	2.530	3.611	3.007	2.625	3.755	4.954	4.833	5.092
2009/11/4	3.798	3.173	4.468	3.771	3.279	4.413	4.677	4.605	4.818
2009/11/5	4.452	4.168	4.813	4.335	4.117	4.706	4.597	4.568	4.628
2009/11/6	4.361	4.102	4.775	4.340	4.155	4.682	4.615	4.577	4.632
2009/11/7	3.951	3.748	4.195	3.947	3.708	4.179	4.468	4.396	4.572
2009/11/8	4.341	3.664	5.289	4.200	3.598	5.181	4.357	4.308	4.400
2009/11/9	4.703	4.180	5.213	4.647	4.143	5.164	4.488	4.418	4.554
2009/11/10	5.455	4.900	6.163	5.280	4.841	5.942	4.681	4.565	4.827
2009/11/11	6.570	5.799	7.644	6.134	5.739	6.649	5.020	4.840	5.260
2009/11/12	7.136	6.760	7.441	6.847	6.508	7.234	5.437	5.277	5.614
2009/11/13	6.823	6.616	7.176	6.642	6.296	7.113	5.681	5.627	5.708
2009/11/14	1.451	1.053	2.284	1.920	1.503	2.480	5.793	5.482	6.181
2009/11/15	2.290	1.881	2.744	2.513	2.285	2.925	5.260	5.102	5.462
2009/11/16	2.941	2.530	3.611	3.007	2.625	3.755	4.954	4.833	5.092
2009/11/17	3.798	3.173	4.468	3.771	3.279	4.413	4.677	4.605	4.818
2009/11/18	4.452	4.168	4.813	4.335	4.117	4.706	4.597	4.568	4.628
2009/11/19	4.361	4.102	4.775	4.340	4.155	4.682	4.615	4.577	4.632
2009/11/20	3.951	3.748	4.195	3.947	3.708	4.179	4.468	4.396	4.572
2009/11/21	4.341	3.664	5.289	4.200	3.598	5.181	4.357	4.308	4.400
2009/11/22	4.703	4.180	5.213	4.647	4.143	5.164	4.488	4.418	4.554
2009/11/23	5.455	4.900	6.163	5.280	4.841	5.942	4.681	4.565	4.827
2009/11/24	6.570	5.799	7.644	6.134	5.739	6.649	5.020	4.840	5.260
2009/11/25	7.136	6.760	7.441	6.847	6.508	7.234	5.437	5.277	5.614
2009/11/26	6.823	6.616	7.176	6.642	6.296	7.113	5.681	5.627	5.708
2009/11/27	1.451	1.053	2.284	1.920	1.503	2.480	5.793	5.482	6.181
2009/11/28	2.290	1.881	2.744	2.513	2.285	2.925	5.260	5.102	5.462
2009/11/29	2.941	2.530	3.611	3.007	2.625	3.755	4.954	4.833	5.092
2009/11/30	3.798	3.173	4.468	3.771	3.279	4.413	4.677	4.605	4.818
<i>Monthly</i>	4.234	3.793	4.825	4.213	3.843	4.747	4.958	4.841	5.102

Table 1-12. Water temperature data (°C) at 3 depths in Oyako Ike, December 2009.

Depth	1.8 m			3.6 m			6.6 m		
Date	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/12/1	1.451	1.053	2.284	1.920	1.503	2.480	5.793	5.482	6.181
2009/12/2	2.290	1.881	2.744	2.513	2.285	2.925	5.260	5.102	5.462
2009/12/3	2.941	2.530	3.611	3.007	2.625	3.755	4.954	4.833	5.092
2009/12/4	3.798	3.173	4.468	3.771	3.279	4.413	4.677	4.605	4.818
2009/12/5	4.452	4.168	4.813	4.335	4.117	4.706	4.597	4.568	4.628
2009/12/6	4.361	4.102	4.775	4.340	4.155	4.682	4.615	4.577	4.632
2009/12/7	3.951	3.748	4.195	3.947	3.708	4.179	4.468	4.396	4.572
2009/12/8	4.341	3.664	5.289	4.200	3.598	5.181	4.357	4.308	4.400
2009/12/9	4.703	4.180	5.213	4.647	4.143	5.164	4.488	4.418	4.554
2009/12/10	5.455	4.900	6.163	5.280	4.841	5.942	4.681	4.565	4.827
2009/12/11	6.570	5.799	7.644	6.134	5.739	6.649	5.020	4.840	5.260
2009/12/12	7.136	6.760	7.441	6.847	6.508	7.234	5.437	5.277	5.614
2009/12/13	6.823	6.616	7.176	6.642	6.296	7.113	5.681	5.627	5.708
2009/12/14	1.451	1.053	2.284	1.920	1.503	2.480	5.793	5.482	6.181
2009/12/15	2.290	1.881	2.744	2.513	2.285	2.925	5.260	5.102	5.462
2009/12/16	2.941	2.530	3.611	3.007	2.625	3.755	4.954	4.833	5.092
2009/12/17	3.798	3.173	4.468	3.771	3.279	4.413	4.677	4.605	4.818
2009/12/18	4.452	4.168	4.813	4.335	4.117	4.706	4.597	4.568	4.628
2009/12/19	4.361	4.102	4.775	4.340	4.155	4.682	4.615	4.577	4.632
2009/12/20	3.951	3.748	4.195	3.947	3.708	4.179	4.468	4.396	4.572
2009/12/21	4.341	3.664	5.289	4.200	3.598	5.181	4.357	4.308	4.400
2009/12/22	4.703	4.180	5.213	4.647	4.143	5.164	4.488	4.418	4.554
2009/12/23	5.455	4.900	6.163	5.280	4.841	5.942	4.681	4.565	4.827
2009/12/24	6.570	5.799	7.644	6.134	5.739	6.649	5.020	4.840	5.260
2009/12/25	7.136	6.760	7.441	6.847	6.508	7.234	5.437	5.277	5.614
2009/12/26	6.823	6.616	7.176	6.642	6.296	7.113	5.681	5.627	5.708
2009/12/27	1.451	1.053	2.284	1.920	1.503	2.480	5.793	5.482	6.181
2009/12/28	2.290	1.881	2.744	2.513	2.285	2.925	5.260	5.102	5.462
2009/12/29	2.941	2.530	3.611	3.007	2.625	3.755	4.954	4.833	5.092
2009/12/30	3.798	3.173	4.468	3.771	3.279	4.413	4.677	4.605	4.818
2009/12/31	4.452	4.168	4.813	4.335	4.117	4.706	4.597	4.568	4.628
<i>Monthly</i>	4.241	3.805	4.824	4.216	3.852	4.746	4.946	4.832	5.086

Table 1-13. Water temperature data (°C) at 3 depths in Oyako Ike, January 2010.

Depth	1.8 m			3.6 m			6.6 m		
Date	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2010/1/1	1.451	1.053	2.284	1.920	1.503	2.480	5.793	5.482	6.181
2010/1/2	2.290	1.881	2.744	2.513	2.285	2.925	5.260	5.102	5.462
2010/1/3	2.941	2.530	3.611	3.007	2.625	3.755	4.954	4.833	5.092
2010/1/4	3.798	3.173	4.468	3.771	3.279	4.413	4.677	4.605	4.818
2010/1/5	4.452	4.168	4.813	4.335	4.117	4.706	4.597	4.568	4.628
2010/1/6	4.361	4.102	4.775	4.340	4.155	4.682	4.615	4.577	4.632
2010/1/7	3.951	3.748	4.195	3.947	3.708	4.179	4.468	4.396	4.572
2010/1/8	4.341	3.664	5.289	4.200	3.598	5.181	4.357	4.308	4.400
2010/1/9	4.703	4.180	5.213	4.647	4.143	5.164	4.488	4.418	4.554
2010/1/10	5.455	4.900	6.163	5.280	4.841	5.942	4.681	4.565	4.827
2010/1/11	6.570	5.799	7.644	6.134	5.739	6.649	5.020	4.840	5.260
2010/1/12	7.136	6.760	7.441	6.847	6.508	7.234	5.437	5.277	5.614
2010/1/13	6.823	6.616	7.176	6.642	6.296	7.113	5.681	5.627	5.708
<i>Monthly</i>	4.482	4.044	5.063	4.429	4.061	4.956	4.925	4.815	5.058

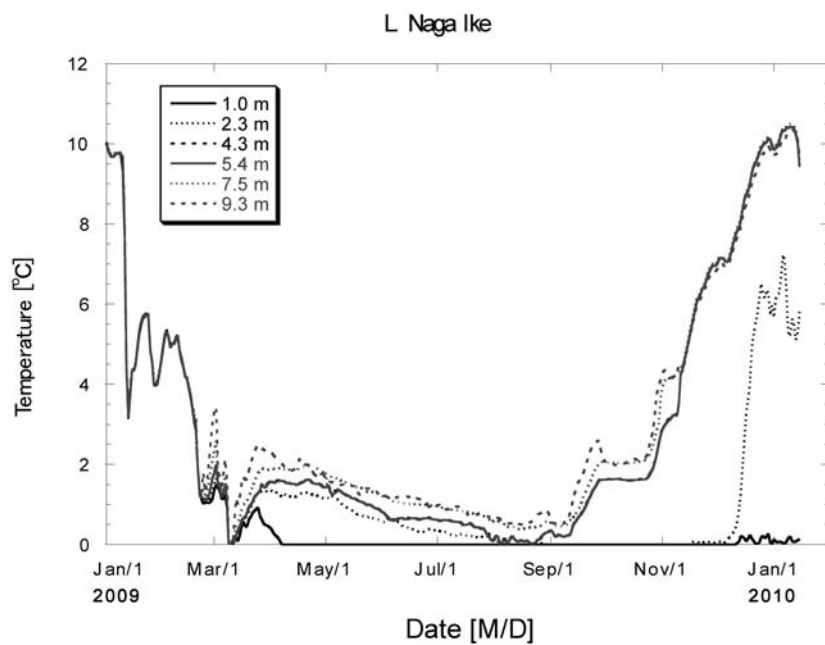


Fig. 4. Seasonal changes of water temperature at six depths in Naga Ike (2009–2010). Daily average data.

Table 2-1. Water temperature data (°C) at 6 depths in Naga Ike, January 2009.

Depth	1.0 m			2.3 m			4.3 m			5.35 m			7.5 m			9.3 m		
Date	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum
2009/1/1	10.011	9.963	10.058	10.024	9.977	10.088	10.010	9.988	10.078	10.006	9.964	10.076	10.038	9.983	10.086	9.989	9.958	10.072
2009/1/2	9.854	9.795	9.944	9.870	9.814	9.966	9.857	9.803	9.955	9.852	9.798	9.952	9.890	9.852	9.968	9.851	9.807	9.960
2009/1/3	9.729	9.664	9.781	9.748	9.676	9.806	9.736	9.663	9.796	9.735	9.667	9.793	9.772	9.704	9.882	9.720	9.657	9.801
2009/1/4	9.674	9.623	9.722	9.695	9.644	9.744	9.671	9.620	9.732	9.673	9.624	9.727	9.703	9.642	9.771	9.664	9.620	9.735
2009/1/5	9.691	9.616	9.769	9.703	9.621	9.789	9.689	9.615	9.764	9.687	9.611	9.760	9.720	9.630	9.827	9.677	9.593	9.761
2009/1/6	9.730	9.683	9.778	9.742	9.700	9.817	9.734	9.690	9.800	9.729	9.685	9.802	9.765	9.706	9.871	9.728	9.645	9.788
2009/1/7	9.774	9.712	9.831	9.785	9.724	9.844	9.772	9.714	9.841	9.770	9.708	9.853	9.816	9.733	9.924	9.760	9.644	9.824
2009/1/8	9.767	9.733	9.817	9.776	9.735	9.806	9.762	9.712	9.810	9.758	9.701	9.804	9.796	9.722	9.876	9.748	9.666	9.802
2009/1/9	9.735	9.686	9.786	9.746	9.671	9.802	9.730	9.673	9.795	9.730	9.665	9.813	9.764	9.672	9.900	9.697	9.556	9.788
2009/1/10	9.335	8.792	9.706	9.546	9.069	9.724	9.664	9.454	9.728	9.657	9.449	9.722	9.733	9.670	9.787	9.678	9.556	9.737
2009/1/11	7.699	6.748	8.865	7.708	6.744	9.010	7.884	6.690	9.660	7.895	6.728	9.671	7.797	6.513	9.738	7.640	6.494	9.728
2009/1/12	4.404	2.882	6.568	4.440	2.913	6.572	4.416	2.926	6.452	4.404	2.895	6.448	4.399	2.936	6.403	4.411	2.972	6.229
2009/1/13	3.135	2.837	3.656	3.153	2.844	3.619	3.164	2.836	3.613	3.164	2.842	3.607	3.236	2.874	3.614	3.303	2.915	3.674
2009/1/14	3.720	3.380	4.205	3.761	3.431	4.233	3.811	3.511	4.182	3.800	3.528	4.200	3.936	3.526	4.364	3.943	3.647	4.172
2009/1/15	4.346	4.030	4.679	4.361	4.079	4.690	4.340	4.097	4.678	4.331	4.012	4.665	4.377	4.008	4.779	4.350	3.990	4.675
2009/1/16	4.353	3.999	4.653	4.362	4.000	4.647	4.340	3.997	4.630	4.339	3.993	4.626	4.382	4.009	4.675	4.377	4.015	4.616
2009/1/17	4.492	4.139	4.907	4.483	4.167	4.899	4.483	4.176	4.862	4.480	4.186	4.858	4.526	4.214	4.822	4.497	4.234	4.803
2009/1/18	4.911	4.625	5.296	4.915	4.647	5.272	4.890	4.634	5.192	4.876	4.630	5.191	4.908	4.586	5.222	4.832	4.685	5.091
2009/1/19	5.298	4.976	5.769	5.291	4.999	5.723	5.251	4.982	5.581	5.245	4.973	5.581	5.276	5.001	5.566	5.222	4.947	5.543
2009/1/20	5.523	5.144	5.970	5.511	5.146	5.931	5.466	5.149	5.796	5.465	5.130	5.791	5.493	5.173	5.780	5.460	5.142	5.755
2009/1/21	5.691	5.475	5.914	5.681	5.474	5.855	5.646	5.440	5.802	5.643	5.443	5.779	5.667	5.435	5.829	5.620	5.307	5.775
2009/1/22	5.728	5.583	5.907	5.728	5.602	5.901	5.700	5.527	5.868	5.696	5.502	5.867	5.713	5.491	5.862	5.680	5.483	5.838
2009/1/23	5.775	5.618	6.015	5.786	5.632	5.974	5.760	5.617	5.919	5.757	5.611	5.923	5.792	5.616	5.927	5.729	5.581	5.849
2009/1/24	5.705	5.476	5.917	5.718	5.504	5.935	5.692	5.488	5.874	5.691	5.490	5.868	5.712	5.502	5.847	5.677	5.498	5.810
2009/1/25	4.851	4.677	5.398	4.871	4.697	5.436	4.866	4.690	5.410	4.860	4.684	5.422	4.884	4.699	5.432	4.860	4.700	5.437
2009/1/26	4.556	4.339	4.676	4.573	4.366	4.688	4.566	4.367	4.687	4.562	4.353	4.687	4.590	4.384	4.700	4.577	4.385	4.692
2009/1/27	3.966	3.846	4.277	3.983	3.867	4.306	3.977	3.861	4.299	3.972	3.854	4.288	4.026	3.894	4.318	3.992	3.876	4.315
2009/1/28	3.965	3.887	4.023	3.983	3.907	4.042	3.976	3.893	4.032	3.972	3.888	4.035	4.002	3.918	4.053	3.994	3.905	4.074
2009/1/29	4.018	3.820	4.275	4.050	3.884	4.260	4.051	3.904	4.254	4.043	3.899	4.252	4.113	3.970	4.274	4.088	3.988	4.239
2009/1/30	4.300	4.194	4.468	4.313	4.193	4.513	4.289	4.160	4.495	4.285	4.156	4.479	4.133	4.170	4.493	4.255	4.182	4.443
2009/1/31	4.592	4.361	4.979	4.600	4.377	4.921	4.570	4.374	4.819	4.565	4.370	4.819	4.601	4.389	4.897	4.561	4.368	4.767
Monthly	6.398	6.139	6.731	6.416	6.165	6.736	6.411	6.166	6.723	6.408	6.163	6.721	6.444	6.184	6.758	6.408	6.161	6.703

Table 2-2. Water temperature data (°C) at 6 depths in Naga Ike, February 2009.

Depth	1.0 m			2.3 m			4.3 m			5.35 m			7.5 m			9.3 m		
Date	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum
2009/2/1	4.953	4.458	5.553	4.946	4.673	5.311	4.912	4.646	5.270	4.903	4.640	5.225	4.934	4.665	5.280	4.875	4.630	5.206
2009/2/2	5.210	4.948	5.592	5.215	4.968	5.515	5.183	4.921	5.465	5.171	4.909	5.480	5.188	4.928	5.482	5.139	4.883	5.405
2009/2/3	5.356	5.247	5.460	5.367	5.258	5.484	5.332	5.249	5.460	5.327	5.242	5.454	5.353	5.282	5.448	5.325	5.249	5.432
2009/2/4	5.176	4.827	5.396	5.191	4.847	5.407	5.181	4.830	5.395	5.176	4.838	5.400	5.198	4.848	5.409	5.190	4.852	5.402
2009/2/5	4.967	4.676	5.356	4.964	4.667	5.377	4.910	4.621	5.261	4.907	4.617	5.247	4.958	4.652	5.254	4.858	4.615	5.278
2009/2/6	5.028	4.913	5.135	5.046	4.945	5.150	5.033	4.941	5.146	5.028	4.939	5.143	5.048	4.960	5.146	5.024	4.941	5.088
2009/2/7	5.027	4.800	5.366	5.024	4.799	5.310	4.997	4.749	5.249	4.890	4.737	5.248	5.026	4.894	5.365	4.976	4.690	5.288
2009/2/8	5.142	4.851	5.417	5.157	4.989	5.383	5.128	4.994	5.346	5.121	4.974	5.348	5.156	4.987	5.499	5.115	4.944	5.284
2009/2/9	5.232	5.049	5.485	5.249	5.045	5.489	5.210	5.058	5.416	5.208	5.050	5.425	5.231	5.088	5.472	5.180	4.991	5.403
2009/2/10	4.845	4.524	5.262	4.867	4.545	5.310	4.850	4.537	5.303	4.845	4.528	5.295	4.858	4.541	5.311	4.830	4.514	5.291
2009/2/11	4.858	4.437	4.996	4.637	4.442	4.890	4.610	4.460	4.824	4.608	4.452	4.822	4.645	4.477	4.871	4.602	4.455	4.826
2009/2/12	4.446	4.236	4.806	4.472	4.267	4.826	4.443	4.242	4.812	4.442	4.242	4.812	4.480	4.277	4.825	4.451	4.248	4.808
2009/2/13	4.204	3.957	4.514	4.218	3.973	4.500	4.197	3.955	4.471	4.193	3.965	4.431	4.222	3.990	4.452	4.207	3.998	4.441
2009/2/14	4.150	3.942	4.341	4.169	3.974	4.351	4.158	3.961	4.349	4.152	3.963	4.349	4.191	3.981	4.504	4.143	3.964	4.328
2009/2/15	3.926	3.824	4.267	3.948	3.851	4.296	3.933	3.834	4.289	3.926	3.827	4.270	3.955	3.854	4.315	3.942	3.845	4.316
2009/2/16	3.893	3.549	3.885	3.734	3.580	3.903	3.725	3.589	3.885	3.721	3.587	3.883	3.753	3.612	3.885	3.755	3.620	3.882
2009/2/17	3.384	3.258	3.577	3.408	3.276	3.619	3.405	3.253	3.643	3.402	3.252	3.636	3.442	3.281	3.681	3.470	3.311	3.693
2009/2/18	3.111	2.918	3.353	3.159	3.014	3.386	3.173	3.028	3.387	3.164	3.002	3.383	3.243	3.103	3.403	3.278	3.089	3.414
2009/2/19	2.973	2.560	3.056	2.946	2.693	3.183	2.974	2.683	3.266	2.971	2.679	3.258	3.058	2.694	3.504	3.205	2.683	3.554
2009/2/20	1.922	1.556	2.583	1.945	1.593	2.608	1.936	1.589	2.591	1.934	1.573	2.586	1.954	1.596	2.610	1.949	1.582	2.617
2009/2/21	1.261	1.175	1.508	1.277	1.190	1.523	1.269	1.183	1.530	1.268	1.182	1.517	1.286	1.203	1.538	1.280	1.190	1.527
2009/2/22	1.146	1.032	1.294	1.164	1.057	1.355	1.165	1.052	1.383	1.163	1.041	1.379	1.218	1.085	1.634	1.315	1.091	2.081
2009/2/23	1.015	0.844	1.144	1.082	0.923	1.242	1.181	0.986	1.397	1.178	0.988	1.427	1.424	1.134	1.796	1.794	1.356	2.523
2009/2/24	1.068	0.922	1.221	1.085	0.940	1.239	1.097	0.941	1.303	1.087	0.927	1.291	1.183	0.973	1.681	1.305	0.972	2.107
2009/2/25	1.038	0.928	1.144	1.098	0.986	1.319	1.144	1.088	1.245	1.134	1.017	1.234	1.290	1.120	1.523	1.539	1.236	2.052
2009/2/26	1.040	0.897	1.215	1.123	0.953	1.331	1.216	0.980	1.433	1.209	0.977	1.413	1.566	1.245	1.955	2.039	1.599	2.896
2009/2/27	1.070	0.834	1.233	1.214	1.102	1.394	1.416	1.232	1.596	1.413	1.239	1.615	1.860	1.596	2.149	2.552	2.164	3.581
2009/2/28	1.141	1.000	1.450	1.327	1.161	1.503	1.664	1.451	1.946	1.652	1.442	1.954	2.112	1.892	2.401	3.032	2.453	3.790
Monthly	2.122	0.844	4.341	2.179	0.923	4.351	2.230	0.941	4.349	2.225	0.927	4.349	2.369	0.973	4.504	2.573	0.972	4.328

Table 2-3. Water temperature data (°C) at 6 depths in Naga Ike, March 2009.

Depth	1.0 m				2.3 m				4.3 m				5.35 m				7.5 m				9.3 m			
Date	daily average	minimum	maximum		daily average	minimum	maximum		daily average	minimum	maximum		daily average	minimum	maximum		daily average	minimum	maximum		daily average	minimum	maximum	
2009/3/1	0.405	0.379	0.445		1.358	1.325	1.399		1.593	1.568	1.632		1.575	1.544	1.612		1.903	1.862	1.963		2.299	2.268	2.323	
2009/3/2	0.323	0.261	0.384		1.308	1.291	1.326		1.592	1.588	1.596		1.557	1.535	1.580		1.898	1.875	1.930		2.261	2.226	2.306	
2009/3/3	0.250	0.209	0.275		1.304	1.289	1.328		1.571	1.565	1.588		1.540	1.521	1.562		1.877	1.851	1.912		2.195	2.160	2.219	
2009/3/4	0.209	0.177	0.231		1.303	1.280	1.321		1.601	1.586	1.620		1.577	1.553	1.597		1.900	1.866	1.944		2.163	2.143	2.188	
2009/3/5	0.165	0.131	0.198		1.227	1.183	1.271		1.609	1.592	1.621		1.591	1.572	1.608		1.909	1.876	1.941		2.132	2.116	2.160	
2009/3/6	0.084	0.028	0.142		1.227	1.183	1.280		1.612	1.598	1.628		1.585	1.562	1.614		1.909	1.889	1.939		2.074	2.060	2.111	
2009/3/7	0.000	-0.031	0.034		1.201	1.181	1.222		1.605	1.589	1.629		1.594	1.580	1.611		1.897	1.862	1.930		2.026	1.990	2.057	
2009/3/8	-0.052	-0.086	-0.022		1.277	1.230	1.308		1.591	1.568	1.622		1.587	1.555	1.622		1.884	1.865	1.900		1.961	1.946	1.982	
2009/3/9	-0.170	-0.278	-0.088		1.240	1.227	1.256		1.552	1.530	1.567		1.549	1.529	1.574		1.870	1.854	1.908		1.931	1.916	1.943	
2009/3/10	-0.410	-0.466	-0.293		1.213	1.200	1.232		1.528	1.509	1.551		1.527	1.513	1.546		1.878	1.853	1.914		1.922	1.909	1.935	
2009/3/11	-0.570	-0.657	-0.472		1.209	1.169	1.234		1.542	1.511	1.565		1.541	1.512	1.582		1.869	1.846	1.895		1.884	1.864	1.906	
2009/3/12	-0.433	-0.540	-0.205		1.193	1.168	1.242		1.515	1.498	1.536		1.511	1.497	1.537		1.868	1.818	1.892		1.841	1.794	1.905	
2009/3/13	-0.649	-0.859	-0.499		1.216	1.155	1.273		1.525	1.504	1.567		1.520	1.499	1.556		1.925	1.829	1.979		1.864	1.792	1.920	
2009/3/14	-0.888	-0.985	-0.838		1.179	1.147	1.228		1.518	1.499	1.549		1.511	1.491	1.549		1.853	1.767	1.912		1.893	1.827	1.974	
2009/3/15	-1.176	-1.561	-0.946		1.209	1.183	1.243		1.498	1.476	1.528		1.487	1.460	1.515		1.840	1.780	1.928		1.999	1.969	2.043	
2009/3/16	-1.861	-2.067	-1.610		1.257	1.219	1.349		1.519	1.481	1.608		1.508	1.472	1.602		1.899	1.801	2.027		2.077	2.019	2.153	
2009/3/17	-2.218	-2.279	-2.089		1.277	1.239	1.363		1.535	1.509	1.571		1.527	1.495	1.605		1.937	1.851	2.031		2.182	2.108	2.193	
2009/3/18	-2.068	-2.231	-1.928		1.279	1.260	1.333		1.560	1.542	1.588		1.545	1.524	1.583		1.954	1.930	2.009		2.131	2.096	2.179	
2009/3/19	-2.304	-2.647	-2.092		1.287	1.266	1.317		1.590	1.570	1.614		1.577	1.553	1.606		1.950	1.931	1.987		2.033	1.995	2.091	
2009/3/20	-3.736	-3.736	-2.583		1.303	1.272	1.382		1.624	1.599	1.661		1.604	1.575	1.648		1.955	1.935	2.019		1.987	1.953	2.019	
2009/3/21	-3.730	-3.860	-3.620		1.283	1.254	1.364		1.636	1.603	1.659		1.621	1.597	1.643		1.953	1.925	2.008		2.001	1.975	2.021	
2009/3/22	-3.474	-3.662	-3.144		1.271	1.238	1.329		1.626	1.596	1.667		1.621	1.588	1.683		1.957	1.932	2.023		1.961	1.932	2.003	
2009/3/23	-2.974	-3.109	-2.933		1.273	1.234	1.316		1.579	1.529	1.610		1.575	1.526	1.613		1.904	1.721	1.977		1.860	1.830	1.922	
2009/3/24	-2.758	-2.919	-2.676		1.229	1.207	1.251		1.527	1.514	1.538		1.522	1.510	1.542		1.810	1.716	1.858		1.799	1.779	1.826	
2009/3/25	-3.072	-3.072	-2.769		1.224	1.208	1.239		1.537	1.510	1.561		1.526	1.501	1.545		1.845	1.786	1.876		1.738	1.718	1.778	
2009/3/26	-3.855	-3.808	-2.989		1.214	1.190	1.236		1.521	1.504	1.542		1.510	1.493	1.533		1.901	1.875	1.919		1.712	1.690	1.733	
2009/3/27	-4.401	-5.671	-3.542		1.231	1.205	1.268		1.528	1.509	1.560		1.517	1.495	1.557		1.875	1.843	1.911		1.690	1.630	1.746	
2009/3/28	-6.724	-7.085	-5.836		1.212	1.183	1.263		1.505	1.476	1.538		1.493	1.462	1.526		1.776	1.647	1.885		1.748	1.728	1.772	
2009/3/29	-7.138	-7.278	-7.044		1.167	1.133	1.228		1.468	1.423	1.505		1.454	1.416	1.482		1.737	1.648	1.847		1.769	1.757	1.780	
2009/3/30	0.405	0.379	0.445		1.198	1.111	1.158		1.429	1.394	1.459		1.422	1.390	1.463		1.870	1.846	1.915		1.740	1.708	1.775	
2009/3/31	-1.677	-1.870	-1.502		1.358	1.325	1.399		1.593	1.568	1.632		1.575	1.544	1.612		1.903	1.862	1.963		2.299	2.268	2.323	
Monthly					1.250	1.221	1.292		1.555	1.531	1.584		1.543	1.518	1.578		1.887	1.837	1.945		1.972	1.941	2.009	

Table 2-4. Water temperature data (°C) at 6 depths in Naga Ike, April 2009.

Depth	1.0 m		2.3 m		4.3 m		5.35 m		7.5 m		9.3 m	
Date	daily average	minimum maximum	daily average	minimum maximum	daily average	minimum maximum	daily average	minimum maximum	daily average	minimum maximum	daily average	minimum maximum
2009/4/1	0.405	0.379 0.445	1.358	1.325 1.399	1.593	1.568 1.632	1.575	1.544 1.612	1.903	1.862 1.963	2.299	2.268 2.323
2009/4/2	0.323	0.261 0.384	1.308	1.291 1.326	1.582	1.558 1.599	1.557	1.535 1.580	1.898	1.875 1.930	2.261	2.226 2.306
2009/4/3	0.250	0.209 0.275	1.304	1.289 1.328	1.571	1.555 1.588	1.540	1.521 1.562	1.877	1.851 1.912	2.195	2.180 2.219
2009/4/4	0.209	0.177 0.231	1.303	1.280 1.321	1.601	1.586 1.620	1.577	1.553 1.597	1.896	1.866 1.944	2.163	2.143 2.188
2009/4/5	0.165	0.131 0.198	1.294	1.271 1.322	1.609	1.592 1.621	1.591	1.572 1.608	1.900	1.876 1.941	2.132	2.116 2.160
2009/4/6	0.084	0.028 0.142	1.227	1.183 1.280	1.612	1.588 1.628	1.585	1.562 1.614	1.909	1.889 1.939	2.074	2.060 2.111
2009/4/7	0.000	-0.031 0.034	1.201	1.181 1.222	1.605	1.588 1.629	1.594	1.580 1.611	1.897	1.862 1.930	2.026	1.990 2.057
2009/4/8	-0.052	-0.066 -0.022	1.277	1.230 1.308	1.591	1.568 1.622	1.567	1.555 1.622	1.884	1.865 1.900	1.961	1.946 1.982
2009/4/9	-0.170	-0.278 -0.088	1.240	1.227 1.256	1.552	1.530 1.567	1.549	1.529 1.574	1.870	1.854 1.908	1.931	1.916 1.943
2009/4/10	-0.410	-0.466 -0.293	1.213	1.200 1.232	1.528	1.509 1.551	1.527	1.513 1.546	1.878	1.853 1.914	1.922	1.909 1.935
2009/4/11	-0.570	-0.657 -0.472	1.209	1.169 1.234	1.542	1.511 1.565	1.541	1.512 1.582	1.869	1.846 1.895	1.884	1.864 1.906
2009/4/12	-0.851	-0.913 -0.789	1.193	1.168 1.242	1.515	1.488 1.536	1.511	1.497 1.537	1.868	1.818 1.932	1.841	1.794 1.905
2009/4/13	-0.433	-0.540 -0.205	1.216	1.155 1.273	1.525	1.504 1.567	1.520	1.499 1.556	1.925	1.829 1.979	1.864	1.792 1.920
2009/4/14	-0.649	-0.859 -0.499	1.179	1.147 1.228	1.518	1.499 1.549	1.511	1.491 1.549	1.853	1.767 2.012	1.883	1.827 1.974
2009/4/15	-0.888	-0.885 -0.946	1.209	1.183 1.243	1.498	1.476 1.528	1.487	1.460 1.515	1.840	1.780 1.928	1.999	1.969 2.043
2009/4/16	-1.176	-1.561 -0.946	1.257	1.219 1.349	1.519	1.481 1.608	1.508	1.472 1.602	1.899	1.801 2.027	2.077	2.019 2.153
2009/4/17	-1.861	-2.067 -1.610	1.277	1.239 1.383	1.535	1.509 1.571	1.527	1.495 1.605	1.937	1.851 2.031	2.152	2.108 2.193
2009/4/18	-2.218	-2.279 -2.089	1.279	1.260 1.333	1.560	1.542 1.588	1.545	1.524 1.583	1.954	1.930 2.009	2.131	2.096 2.179
2009/4/19	-2.068	-2.231 -1.928	1.287	1.266 1.317	1.590	1.570 1.614	1.577	1.553 1.606	1.950	1.931 1.987	2.033	1.985 2.091
2009/4/20	-2.304	-2.647 -2.092	1.303	1.272 1.382	1.624	1.599 1.661	1.604	1.575 1.646	1.955	1.935 2.019	1.987	1.953 2.019
2009/4/21	-3.108	-3.736 -2.583	1.293	1.254 1.364	1.636	1.603 1.659	1.621	1.597 1.643	1.953	1.925 2.008	2.001	1.975 2.021
2009/4/22	-3.730	-3.860 -3.620	1.271	1.238 1.329	1.626	1.596 1.667	1.621	1.588 1.663	1.957	1.932 2.023	1.961	1.932 2.003
2009/4/23	-3.474	-3.662 -3.144	1.273	1.234 1.316	1.579	1.529 1.610	1.575	1.526 1.613	1.904	1.721 1.977	1.860	1.830 1.922
2009/4/24	-2.974	-3.109 -2.933	1.229	1.207 1.251	1.538	1.514 1.538	1.522	1.510 1.542	1.810	1.716 1.858	1.799	1.779 1.826
2009/4/25	-2.758	-2.919 -2.676	1.224	1.208 1.239	1.537	1.510 1.561	1.526	1.501 1.545	1.845	1.788 1.876	1.738	1.718 1.778
2009/4/26	-2.982	-3.072 -2.769	1.214	1.190 1.236	1.521	1.504 1.542	1.510	1.493 1.533	1.901	1.875 1.919	1.712	1.690 1.733
2009/4/27	-3.185	-3.808 -2.989	1.231	1.205 1.268	1.528	1.509 1.560	1.517	1.495 1.557	1.875	1.843 1.911	1.690	1.630 1.746
2009/4/28	-4.401	-5.542 -3.542	1.212	1.183 1.263	1.505	1.476 1.538	1.493	1.462 1.526	1.776	1.647 1.885	1.748	1.728 1.772
2009/4/29	-6.724	-7.085 -5.836	1.167	1.133 1.228	1.468	1.423 1.505	1.454	1.416 1.492	1.737	1.648 1.847	1.769	1.757 1.780
2009/4/30	-7.138	-7.278 -7.044	1.138	1.111 1.158	1.429	1.394 1.459	1.422	1.390 1.463	1.870	1.846 1.915	1.740	1.708 1.775
Monthly	-1.747	-1.945 -1.567	1.246	1.217 1.288	1.554	1.530 1.583	1.542	1.517 1.577	1.886	1.836 1.944	1.961	1.931 1.999



Table 2-5. Water temperature data (°C) at 6 depths in Naga Ike, May 2009.

Depth	1.0 m			2.3 m			4.3 m			5.35 m			7.5 m			9.3 m		
Date	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum
2009/5/1	—	—	—	0.571	0.565	0.577	0.814	0.798	0.834	0.810	0.795	0.829	1.208	1.200	1.219	1.234	1.226	1.238
2009/5/2	—	—	—	0.565	0.556	0.576	0.797	0.788	0.823	0.790	0.757	0.816	1.212	1.203	1.217	1.234	1.227	1.232
2009/5/3	-11.086	-12.186	-10.025	0.567	0.545	0.606	0.797	0.696	0.760	0.720	0.695	0.756	1.183	1.161	1.200	1.201	1.189	1.214
2009/5/4	-9.567	-9.951	-9.301	0.653	0.593	0.694	0.683	0.652	0.711	0.677	0.649	0.705	1.170	1.167	1.173	1.180	1.177	1.187
2009/5/5	-9.740	-9.947	-9.318	0.621	0.588	0.649	0.634	0.599	0.692	0.624	0.595	0.670	1.158	1.127	1.174	1.191	1.179	1.207
2009/5/6	-8.499	-9.681	-7.374	0.591	0.585	0.604	0.616	0.574	0.673	0.596	0.570	0.649	1.098	1.079	1.126	1.193	1.177	1.204
2009/5/7	-6.516	-7.297	-5.817	0.591	0.577	0.601	0.671	0.654	0.686	0.652	0.645	0.669	1.082	1.078	1.084	1.157	1.149	1.174
2009/5/8	-5.276	-5.764	-4.890	0.576	0.565	0.595	0.605	0.583	0.646	0.590	0.568	0.635	1.073	1.061	1.084	1.161	1.152	1.169
2009/5/9	-4.466	-4.860	-4.074	0.570	0.564	0.578	0.623	0.593	0.656	0.607	0.572	0.637	1.061	1.055	1.067	1.185	1.171	1.193
2009/5/10	-3.721	-4.044	-3.418	0.563	0.539	0.574	0.667	0.668	0.676	0.647	0.639	0.655	1.059	1.054	1.062	1.188	1.186	1.192
2009/5/11	-3.137	-3.395	-2.896	0.539	0.528	0.551	0.679	0.666	0.690	0.659	0.649	0.669	1.056	1.040	1.063	1.190	1.186	1.195
2009/5/12	-2.670	-2.877	-2.483	0.458	0.417	0.535	0.685	0.677	0.692	0.665	0.657	0.673	1.031	1.025	1.037	1.197	1.195	1.200
2009/5/13	-2.369	-2.470	-2.326	0.440	0.432	0.447	0.657	0.648	0.674	0.633	0.621	0.656	1.031	1.030	1.032	1.198	1.196	1.200
2009/5/14	-2.389	-2.330	-2.450	0.432	0.418	0.439	0.655	0.652	0.663	0.630	0.627	0.636	1.023	1.015	1.031	1.188	1.186	1.201
2009/5/15	-2.486	-2.545	-2.425	0.423	0.416	0.448	0.654	0.649	0.672	0.632	0.625	0.654	1.012	1.007	1.019	1.203	1.196	1.214
2009/5/16	-2.805	-2.941	-2.483	0.422	0.406	0.439	0.675	0.659	0.684	0.660	0.643	0.667	1.009	1.002	1.015	1.174	1.144	1.207
2009/5/17	-3.260	-3.402	-2.992	0.382	0.375	0.400	0.673	0.660	0.687	0.654	0.642	0.667	1.006	1.003	1.008	1.123	1.117	1.142
2009/5/18	-3.118	-3.403	-2.846	0.388	0.374	0.419	0.673	0.662	0.683	0.656	0.644	0.668	1.008	1.001	1.014	1.118	1.104	1.133
2009/5/19	-3.745	-4.440	-3.149	0.388	0.351	0.382	0.675	0.666	0.683	0.660	0.652	0.670	1.015	1.010	1.017	1.141	1.120	1.159
2009/5/20	-4.816	-5.511	-4.465	0.331	0.323	0.348	0.645	0.631	0.667	0.632	0.618	0.653	1.013	1.007	1.016	1.156	1.146	1.162
2009/5/21	-6.975	-8.378	-5.622	0.323	0.311	0.334	0.628	0.622	0.642	0.616	0.610	0.630	1.000	0.994	1.007	1.136	1.129	1.145
2009/5/22	-9.958	-10.795	-8.513	0.315	0.303	0.326	0.650	0.641	0.658	0.636	0.629	0.644	1.000	0.995	1.007	1.128	1.125	1.130
2009/5/23	-10.927	-11.463	-10.822	0.319	0.312	0.324	0.664	0.658	0.669	0.646	0.643	0.650	1.001	0.994	1.007	1.120	1.114	1.126
2009/5/24	-11.921	-12.137	-11.525	0.324	0.310	0.339	0.673	0.666	0.680	0.655	0.644	0.664	0.988	0.984	0.992	1.104	1.091	1.114
2009/5/25	-9.233	-11.558	-6.977	0.365	0.334	0.389	0.672	0.662	0.680	0.657	0.647	0.663	0.994	0.984	1.003	1.047	0.988	1.090
2009/5/26	-5.738	-6.860	-4.744	0.375	0.363	0.388	0.676	0.668	0.681	0.660	0.651	0.669	0.995	0.990	1.002	0.967	0.936	1.008
2009/5/27	-4.353	-4.711	-3.987	0.383	0.376	0.402	0.670	0.660	0.678	0.656	0.650	0.663	0.982	0.971	0.991	0.928	0.909	0.949
2009/5/28	-3.864	-3.963	-3.813	0.398	0.393	0.405	0.643	0.625	0.657	0.635	0.620	0.648	0.958	0.941	0.969	0.931	0.909	0.953
2009/5/29	-4.633	-5.059	-3.975	0.359	0.340	0.391	0.632	0.626	0.637	0.621	0.619	0.624	0.957	0.943	0.970	0.933	0.923	0.949
2009/5/30	-4.873	-5.028	-4.803	0.357	0.344	0.368	0.633	0.619	0.647	0.626	0.613	0.644	0.976	0.971	0.979	0.945	0.928	0.962
2009/5/31	—	—	—	0.571	0.565	0.577	0.814	0.798	0.834	0.810	0.795	0.829	1.208	1.201	1.219	1.234	1.226	1.238
Monthly	-5.785	-6.325	-5.264	0.456	0.441	0.474	0.673	0.657	0.691	0.658	0.645	0.676	1.050	1.042	1.058	1.132	1.120	1.145

Table 2-6. Water temperature data (°C) at 6 depths in Naga Ike, June 2009.

Depth	1.0 m			2.3 m			4.3 m			5.35 m			7.5 m			9.3 m		
Date	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum
2009/6/1	-	-	-	0.571	0.565	0.577	0.814	0.798	0.834	0.795	0.810	0.829	1.208	1.200	1.219	1.234	1.226	1.238
2009/6/2	-	-	-	0.565	0.556	0.576	0.797	0.758	0.823	0.790	0.757	0.816	1.212	1.201	1.217	1.234	1.217	1.232
2009/6/3	-11.086	-12.186	-10.025	0.567	0.545	0.606	0.723	0.696	0.760	0.695	0.720	0.756	1.183	1.161	1.200	1.201	1.189	1.214
2009/6/4	-9.567	-9.951	-9.301	0.653	0.593	0.694	0.683	0.652	0.711	0.677	0.649	0.705	1.170	1.167	1.173	1.180	1.177	1.187
2009/6/5	-9.740	-9.947	-9.318	0.621	0.588	0.649	0.634	0.599	0.692	0.624	0.595	0.670	1.158	1.127	1.174	1.191	1.179	1.207
2009/6/6	-8.499	-9.681	-7.374	0.591	0.585	0.604	0.616	0.574	0.673	0.596	0.570	0.649	1.098	1.079	1.126	1.193	1.177	1.204
2009/6/7	-6.516	-7.297	-5.817	0.591	0.577	0.601	0.671	0.654	0.686	0.652	0.645	0.689	1.082	1.078	1.084	1.157	1.149	1.174
2009/6/8	-5.276	-5.764	-4.890	0.576	0.565	0.595	0.605	0.583	0.646	0.590	0.568	0.635	1.073	1.061	1.084	1.161	1.152	1.169
2009/6/9	-4.466	-4.860	-4.074	0.570	0.564	0.578	0.623	0.593	0.656	0.607	0.572	0.637	1.061	1.055	1.067	1.165	1.171	1.193
2009/6/10	-3.721	-4.044	-3.418	0.563	0.539	0.574	0.667	0.658	0.676	0.647	0.639	0.685	1.059	1.054	1.062	1.188	1.186	1.192
2009/6/11	-3.137	-3.395	-2.896	0.539	0.528	0.551	0.679	0.666	0.690	0.659	0.649	0.689	1.056	1.040	1.063	1.190	1.186	1.195
2009/6/12	-2.670	-2.877	-2.483	0.458	0.417	0.535	0.685	0.677	0.692	0.665	0.657	0.673	1.031	1.025	1.037	1.197	1.195	1.200
2009/6/13	-2.369	-2.470	-2.326	0.440	0.432	0.447	0.657	0.648	0.674	0.633	0.621	0.656	1.031	1.030	1.032	1.198	1.196	1.200
2009/6/14	-2.369	-2.420	-2.330	0.432	0.418	0.439	0.655	0.652	0.663	0.630	0.627	0.636	1.023	1.015	1.031	1.198	1.196	1.201
2009/6/15	-2.486	-2.545	-2.425	0.423	0.416	0.448	0.654	0.649	0.672	0.632	0.625	0.654	1.012	1.007	1.019	1.203	1.198	1.214
2009/6/16	-2.805	-2.941	-2.483	0.422	0.406	0.439	0.675	0.659	0.684	0.660	0.643	0.667	1.009	1.002	1.015	1.174	1.144	1.207
2009/6/17	-3.260	-3.402	-2.992	0.382	0.375	0.400	0.673	0.660	0.687	0.654	0.642	0.667	1.006	1.003	1.008	1.123	1.117	1.142
2009/6/18	-3.118	-3.403	-2.846	0.388	0.374	0.419	0.673	0.662	0.683	0.656	0.644	0.668	1.008	1.001	1.014	1.118	1.104	1.133
2009/6/19	-3.745	-4.440	-3.149	0.368	0.351	0.382	0.675	0.666	0.683	0.660	0.652	0.670	1.015	1.010	1.017	1.141	1.120	1.159
2009/6/20	-4.816	-5.511	-4.465	0.331	0.323	0.348	0.645	0.631	0.667	0.632	0.618	0.653	1.013	1.007	1.016	1.156	1.146	1.162
2009/6/21	-8.975	-8.378	-5.622	0.323	0.311	0.334	0.628	0.622	0.642	0.616	0.610	0.630	1.000	0.994	1.007	1.126	1.129	1.145
2009/6/22	-9.958	-10.795	-8.513	0.315	0.303	0.326	0.650	0.641	0.658	0.636	0.629	0.644	1.000	0.995	1.007	1.128	1.125	1.130
2009/6/23	-10.997	-11.463	-10.822	0.319	0.312	0.324	0.664	0.658	0.669	0.646	0.643	0.660	1.001	0.994	1.007	1.120	1.114	1.126
2009/6/24	-11.921	-12.137	-11.525	0.324	0.310	0.339	0.673	0.666	0.680	0.655	0.644	0.664	0.988	0.984	0.992	1.104	1.091	1.114
2009/6/25	-9.233	-11.558	-6.977	0.365	0.334	0.389	0.672	0.662	0.680	0.657	0.647	0.663	0.994	0.984	1.003	1.047	0.998	1.090
2009/6/26	-5.388	-6.860	-4.744	0.375	0.363	0.388	0.676	0.668	0.681	0.660	0.651	0.669	0.995	0.990	1.002	0.967	0.936	1.008
2009/6/27	-4.353	-4.711	-3.987	0.383	0.376	0.402	0.670	0.660	0.678	0.656	0.650	0.663	0.982	0.971	0.991	0.928	0.909	0.949
2009/6/28	-3.864	-3.813	-3.813	0.398	0.393	0.405	0.643	0.625	0.657	0.635	0.620	0.648	0.958	0.941	0.969	0.931	0.909	0.953
2009/6/29	-4.633	-5.059	-3.975	0.359	0.340	0.391	0.642	0.626	0.637	0.621	0.619	0.624	0.957	0.943	0.970	0.933	0.923	0.949
2009/6/30	-4.873	-5.028	-4.803	0.357	0.344	0.368	0.633	0.619	0.647	0.626	0.613	0.644	0.976	0.971	0.979	0.945	0.928	0.962
Monthly	-5.785	-6.325	-5.264	0.453	0.437	0.471	0.668	0.653	0.686	0.653	0.640	0.671	1.045	1.036	1.053	1.128	1.116	1.142

Table 2-7. Water temperature data (°C) at 6 depths in Naga Ike, July 2009.

Depth	1.0 m			2.3 m			4.3 m			5.35 m			15 m			9.3 m		
Date	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum
2009/7/1	-4.923	-4.940	-4.888	0.358	0.353	0.364	0.625	0.608	0.641	0.620	0.599	0.644	0.960	0.935	0.980	0.976	0.963	0.988
2009/7/2	-4.873	-4.825	-4.824	0.345	0.334	0.352	0.594	0.590	0.607	0.587	0.582	0.599	0.930	0.924	0.936	0.992	0.989	0.994
2009/7/3	-4.872	-4.865	-4.400	0.329	0.312	0.348	0.598	0.590	0.618	0.590	0.581	0.607	0.920	0.912	0.931	0.977	0.952	0.992
2009/7/4	-4.584	-4.976	-4.310	0.318	0.311	0.329	0.623	0.616	0.633	0.614	0.608	0.621	0.927	0.923	0.932	0.886	0.854	0.948
2009/7/5	-5.334	-5.491	-5.018	0.315	0.308	0.323	0.627	0.623	0.632	0.615	0.611	0.623	0.923	0.920	0.927	0.884	0.873	0.893
2009/7/6	-4.710	-5.241	-4.327	0.318	0.311	0.326	0.619	0.615	0.625	0.608	0.601	0.615	0.909	0.900	0.918	0.875	0.864	0.882
2009/7/7	-4.079	-4.297	-3.976	0.302	0.279	0.331	0.618	0.605	0.634	0.609	0.598	0.621	0.866	0.841	0.901	0.874	0.851	0.898
2009/7/8	-4.646	-4.974	-4.203	0.254	0.242	0.278	0.597	0.588	0.608	0.584	0.577	0.594	0.830	0.790	0.889	0.905	0.896	0.911
2009/7/9	-6.136	-7.899	-4.993	0.242	0.232	0.250	0.582	0.577	0.597	0.582	0.580	0.581	0.890	0.884	0.893	0.910	0.907	0.915
2009/7/10	-8.919	-9.351	-8.054	0.233	0.228	0.237	0.589	0.585	0.593	0.576	0.570	0.581	0.879	0.874	0.884	0.929	0.916	0.938
2009/7/11	-10.171	-11.375	-9.374	0.226	0.219	0.239	0.582	0.577	0.584	0.568	0.566	0.571	0.871	0.863	0.878	0.947	0.938	0.952
2009/7/12	-	-	-	0.225	0.217	0.234	0.582	0.570	0.585	0.569	0.566	0.572	0.857	0.851	0.863	0.956	0.952	0.960
2009/7/13	-	-	-	0.248	0.227	0.265	0.570	0.559	0.582	0.559	0.550	0.568	0.843	0.830	0.849	0.935	0.916	0.955
2009/7/14	-10.471	-11.680	-9.666	0.263	0.245	0.274	0.552	0.526	0.560	0.540	0.510	0.550	0.831	0.828	0.835	0.891	0.877	0.915
2009/7/15	-10.123	-10.777	-9.688	0.228	0.218	0.242	0.495	0.478	0.528	0.481	0.467	0.514	0.833	0.824	0.839	0.868	0.862	0.876
2009/7/16	-11.474	-11.733	-10.854	0.235	0.221	0.240	0.508	0.494	0.519	0.496	0.479	0.508	0.821	0.811	0.829	0.857	0.845	0.862
2009/7/17	-10.423	-11.732	-8.535	0.229	0.213	0.246	0.507	0.494	0.520	0.498	0.486	0.511	0.813	0.806	0.824	0.802	0.741	0.842
2009/7/18	-7.560	-8.397	-7.182	0.238	0.228	0.257	0.523	0.502	0.551	0.512	0.494	0.537	0.811	0.803	0.822	0.726	0.707	0.737
2009/7/19	-7.163	-7.247	-6.973	0.231	0.206	0.255	0.545	0.524	0.553	0.532	0.515	0.536	0.811	0.801	0.819	0.736	0.730	0.741
2009/7/20	-7.372	-8.582	-6.906	0.211	0.201	0.218	0.494	0.469	0.523	0.481	0.449	0.515	0.789	0.777	0.802	0.740	0.726	0.752
2009/7/21	-8.819	-10.262	-8.729	0.212	0.204	0.216	0.461	0.440	0.481	0.454	0.435	0.470	0.770	0.750	0.780	0.722	0.716	0.728
2009/7/22	-10.232	-10.560	-10.115	0.196	0.188	0.206	0.440	0.430	0.453	0.429	0.423	0.444	0.761	0.755	0.770	0.742	0.722	0.754
2009/7/23	-	-	-	0.181	0.165	0.192	0.450	0.431	0.468	0.439	0.418	0.458	0.748	0.736	0.764	0.764	0.750	0.786
2009/7/24	-	-	-	0.166	0.158	0.179	0.426	0.420	0.435	0.415	0.412	0.422	0.752	0.741	0.769	0.785	0.780	0.790
2009/7/25	-	-	-	0.188	0.177	0.198	0.399	0.345	0.431	0.387	0.336	0.420	0.729	0.700	0.752	0.771	0.759	0.779
2009/7/26	-	-	-	0.205	0.184	0.221	0.411	0.402	0.420	0.398	0.388	0.411	0.720	0.703	0.749	0.736	0.727	0.756
2009/7/27	-	-	-	0.243	0.221	0.272	0.377	0.355	0.402	0.367	0.344	0.394	0.703	0.695	0.716	0.718	0.708	0.733
2009/7/28	-	-	-	0.223	0.204	0.253	0.267	0.198	0.336	0.248	0.149	0.303	0.663	0.628	0.699	0.689	0.687	0.708
2009/7/29	-	-	-	0.207	0.168	0.234	0.298	0.220	0.354	0.252	0.185	0.297	0.613	0.548	0.669	0.702	0.693	0.713
2009/7/30	-	-	-	0.147	0.108	0.182	0.146	0.112	0.229	0.131	0.107	0.194	0.643	0.604	0.670	0.682	0.681	0.708
2009/7/31	-	-	-	0.130	0.118	0.145	0.097	0.072	0.120	0.088	0.061	0.109	0.569	0.548	0.596	0.680	0.668	0.705
Monthly	-7.384	-7.965	-6.849	0.240	0.226	0.255	0.491	0.471	0.511	0.478	0.460	0.497	0.806	0.790	0.822	0.828	0.815	0.842

Table 2-8. Water temperature data (°C) at 6 depths in Naga Ike, August 2009.

Depth	1.0 m			2.3 m			4.3 m			5.35 m			15 m			9.3 m		
Date	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum
2009/8/1	-	-	-	0.111	0.081	0.143	0.117	0.053	0.256	0.089	0.046	0.203	0.606	0.589	0.626	0.659	0.649	0.669
2009/8/2	-	-	-	0.121	0.100	0.147	0.232	0.179	0.270	0.217	0.170	0.282	0.606	0.589	0.626	0.662	0.649	0.676
2009/8/3	-	-	-	0.107	0.074	0.130	0.247	0.122	0.327	0.223	0.095	0.281	0.605	0.592	0.635	0.674	0.664	0.681
2009/8/4	-	-	-	0.042	0.012	0.071	0.052	-0.001	0.131	0.233	-0.009	0.081	0.565	0.531	0.593	0.648	0.635	0.665
2009/8/5	-	-	-	0.006	-0.002	0.017	0.002	-0.009	0.013	-0.004	-0.012	0.003	0.528	0.505	0.555	0.611	0.600	0.631
2009/8/6	-	-	-	0.020	-0.003	0.072	0.144	-0.010	0.309	0.114	-0.011	0.287	0.519	0.509	0.536	0.601	0.592	0.613
2009/8/7	-	-12.326	-10.521	0.023	-0.006	0.062	0.153	-0.023	0.313	0.116	-0.037	0.305	0.506	0.441	0.531	0.594	0.575	0.608
2009/8/8	-	-10.517	-9.729	-0.007	-0.023	0.009	0.037	-0.024	0.097	0.002	-0.039	0.037	0.437	0.419	0.465	0.573	0.540	0.606
2009/8/9	-	-9.346	-9.034	-0.021	-0.013	0.011	0.118	0.025	0.156	0.078	-0.003	0.136	0.452	0.444	0.459	0.524	0.518	0.538
2009/8/10	-	-8.918	-9.009	-0.001	-0.021	0.011	0.170	0.147	0.219	0.154	0.126	0.202	0.451	0.445	0.458	0.527	0.520	0.539
2009/8/11	-	-8.977	-8.873	0.010	0.003	0.024	0.215	0.202	0.221	0.208	0.198	0.216	0.452	0.442	0.460	0.540	0.534	0.546
2009/8/12	-	-8.023	-9.117	-0.016	-0.042	0.001	0.155	0.127	0.200	0.149	0.120	0.195	0.424	0.409	0.438	0.537	0.527	0.544
2009/8/13	-	-8.201	-9.535	-0.037	-0.046	-0.027	0.118	0.083	0.142	0.105	0.064	0.134	0.424	0.410	0.444	0.519	0.516	0.526
2009/8/14	-	-9.919	-10.236	-0.046	-0.050	-0.042	0.075	0.061	0.094	0.065	0.052	0.086	0.382	0.379	0.402	0.516	0.513	0.520
2009/8/15	-	-10.493	-10.682	-0.032	-0.045	-0.019	0.097	0.064	0.125	0.092	0.057	0.121	0.382	0.375	0.386	0.501	0.471	0.522
2009/8/16	-	-10.285	-10.674	-0.018	-0.026	-0.009	0.118	0.106	0.126	0.115	0.104	0.124	0.381	0.375	0.390	0.501	0.471	0.522
2009/8/17	-	-8.703	-9.590	-0.023	-0.038	0.000	0.075	0.056	0.098	0.068	0.037	0.095	0.386	0.373	0.401	0.490	0.455	0.537
2009/8/18	-	-7.453	-7.953	-0.010	-0.021	0.004	0.087	0.066	0.095	0.076	0.055	0.091	0.416	0.396	0.436	0.532	0.518	0.540
2009/8/19	-	-7.869	-8.946	0.008	-0.008	0.026	0.110	0.083	0.135	0.118	0.085	0.152	0.445	0.438	0.461	0.546	0.540	0.553
2009/8/20	-	-10.304	-11.624	0.023	-0.003	0.063	0.064	0.013	0.118	0.059	0.005	0.111	0.446	0.435	0.465	0.552	0.541	0.561
2009/8/21	-	33.859	-12.427	0.007	-0.009	0.025	0.035	0.019	0.056	0.032	0.006	0.053	0.417	0.387	0.439	0.567	0.557	0.576
2009/8/22	-	41.952	-12.404	0.015	0.002	0.029	0.016	0.001	0.027	0.014	0.000	0.027	0.383	0.369	0.409	0.581	0.567	0.598
2009/8/23	-	-11.489	-11.857	0.034	0.012	0.072	0.035	0.014	0.071	0.035	0.004	0.096	0.426	0.384	0.487	0.628	0.581	0.687
2009/8/24	-	-12.132	-12.356	0.038	-0.001	0.105	0.081	0.011	0.141	0.067	0.008	0.148	0.444	0.411	0.516	0.716	0.656	0.787
2009/8/25	-	-	-	0.054	0.023	0.105	0.154	0.122	0.193	0.138	0.108	0.175	0.469	0.438	0.540	0.759	0.715	0.803
2009/8/26	-	-	-	0.031	0.011	0.060	0.142	0.099	0.179	0.120	0.080	0.151	0.463	0.400	0.496	0.767	0.702	0.816
2009/8/27	-	-	-	0.036	0.002	0.108	0.203	0.141	0.270	0.186	0.126	0.260	0.473	0.430	0.544	0.804	0.741	0.874
2009/8/28	-	-	-	0.033	-0.001	0.097	0.267	0.227	0.328	0.235	0.218	0.318	0.528	0.467	0.616	0.847	0.786	0.920
2009/8/29	-	-	-	0.029	-0.006	0.115	0.311	0.275	0.381	0.295	0.260	0.355	0.570	0.532	0.648	0.890	0.823	0.963
2009/8/30	-	-	-	0.001	-0.027	0.042	0.317	0.307	0.327	0.300	0.289	0.310	0.581	0.510	0.644	0.871	0.834	0.923
2009/8/31	-	-	-	-0.018	-0.038	0.005	0.338	0.324	0.351	0.327	0.314	0.336	0.552	0.532	0.568	0.755	0.683	0.829
Monthly	-4.433	-10.445	-2.370	0.017	-0.004	0.046	0.138	0.092	0.186	0.124	0.081	0.172	0.476	0.450	0.508	0.629	0.604	0.657

Table 2-9. Water temperature data (°C) at 6 depths in Naga Ike, September 2009.

Depth	1.0 m			2.3 m			4.3 m			5.35 m			7.5 m			9.3 m		
Date	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum
2009/9/1	-2.916	-3.449	-2.460	-0.011	-0.017	-0.006	2.769	2.880	2.978	2.863	2.754	2.949	3.923	3.490	4.207	4.254	4.169	4.348
2009/9/2	-3.305	-3.829	-2.761	-0.012	-0.015	-0.009	2.968	2.968	3.025	2.955	2.883	3.021	4.056	3.954	4.190	4.354	4.272	4.432
2009/9/3	-2.689	-2.883	-2.416	-0.019	-0.025	-0.015	3.041	2.990	3.071	3.020	2.971	3.051	4.142	4.055	4.207	4.356	4.310	4.405
2009/9/4	-2.299	-2.419	-2.111	-0.043	-0.070	-0.027	3.108	3.076	3.128	3.078	3.047	3.099	4.141	4.087	4.208	4.258	4.213	4.301
2009/9/5	-2.022	-2.112	-1.889	-0.129	-0.205	-0.074	3.148	3.116	3.170	3.112	3.083	3.135	4.148	4.101	4.192	4.176	4.151	4.205
2009/9/6	-2.177	-2.273	-1.949	-0.272	-0.326	-0.213	3.215	3.168	3.247	3.168	3.122	3.200	4.156	4.107	4.211	4.153	4.124	4.182
2009/9/7	-2.704	-2.866	-2.323	-0.317	-0.352	-0.278	3.278	3.247	3.310	3.231	3.189	3.282	4.188	4.133	4.249	4.175	4.140	4.212
2009/9/8	-3.355	-3.530	-2.926	-0.312	-0.349	-0.265	3.270	3.158	3.330	3.246	3.147	3.318	4.218	4.150	4.289	4.235	4.182	4.288
2009/9/9	-3.444	-3.634	-3.226	-0.328	-0.364	-0.277	3.207	3.145	3.301	3.207	3.127	3.332	4.232	4.183	4.323	4.301	4.245	4.356
2009/9/10	-2.998	-3.395	-2.736	-0.212	-0.394	-0.072	3.513	3.192	4.187	3.502	3.162	4.145	4.345	4.078	4.761	4.460	4.317	4.886
2009/9/11	-2.782	-2.841	-2.748	-0.136	-0.324	-0.032	4.242	3.951	4.487	4.248	3.924	4.510	4.449	4.093	4.711	4.466	4.335	4.584
2009/9/12	-2.765	-2.845	-2.716	-0.074	-0.218	-0.005	4.358	4.127	4.560	4.351	4.107	4.606	4.427	4.181	4.779	4.478	4.337	4.616
2009/9/13	-2.805	-2.862	-2.756	-0.061	-0.231	0.005	4.563	4.421	4.709	4.583	4.418	4.742	4.616	4.174	4.915	4.490	4.261	4.688
2009/9/14	-3.013	-3.055	-2.882	-0.034	-0.182	0.008	4.754	4.590	4.919	4.767	4.582	4.963	4.865	4.600	5.110	4.730	4.535	4.913
2009/9/15	-3.106	-3.168	-3.053	0.001	-0.016	0.010	4.968	4.803	5.150	4.976	4.801	5.176	5.071	4.823	5.319	4.957	4.792	5.105
2009/9/16	-3.444	-3.577	-3.191	0.010	-0.003	0.024	5.205	5.046	5.359	5.208	5.043	5.371	5.320	5.066	5.546	5.167	5.006	5.322
2009/9/17	-3.711	-3.821	-3.596	0.038	-0.003	0.086	5.429	5.276	5.591	5.433	5.275	5.624	5.540	5.296	5.779	5.374	5.215	5.529
2009/9/18	-3.362	-3.603	-3.157	0.080	-0.002	0.163	5.652	5.499	5.795	5.653	5.498	5.788	5.746	5.520	5.952	5.583	5.416	5.743
2009/9/19	-3.237	-3.276	-3.160	0.083	-0.001	0.200	5.864	5.735	6.010	5.866	5.730	6.021	5.977	5.751	6.220	5.787	5.624	5.933
2009/9/20	-3.325	-3.444	-3.156	0.101	0.000	0.219	6.077	5.951	6.207	6.083	5.946	6.216	6.177	5.975	6.381	5.983	5.823	6.133
2009/9/21	-2.970	-3.137	-2.625	0.049	0.000	0.092	6.201	6.143	6.201	6.166	6.136	6.201	6.199	6.144	6.267	6.072	6.024	6.117
2009/9/22	-2.253	-2.610	-1.913	0.084	0.000	0.200	6.257	6.143	6.379	6.262	6.139	6.405	6.305	6.124	6.515	6.153	5.994	6.307
2009/9/23	-1.760	-1.889	-1.690	0.053	0.000	0.091	6.393	6.356	6.440	6.392	6.356	6.452	6.404	6.379	6.553	6.277	6.189	6.348
2009/9/24	-1.463	-1.706	-1.183	0.067	0.000	0.163	6.437	6.378	6.507	6.434	6.365	6.526	6.498	6.380	6.665	6.339	6.236	6.450
2009/9/25	-1.073	-1.217	-0.931	0.080	0.003	0.162	6.587	6.483	6.681	6.592	6.482	6.690	6.670	6.509	6.827	6.488	6.351	6.605
2009/9/26	-1.023	-1.099	-0.951	0.071	0.005	0.142	6.733	6.661	6.805	6.740	6.658	6.812	6.681	6.690	6.993	6.615	6.500	6.722
2009/9/27	-0.924	-1.034	-0.817	0.074	0.004	0.148	6.831	6.758	6.914	6.835	6.761	6.928	6.901	6.778	7.037	6.671	6.605	6.822
2009/9/28	-1.012	-1.145	-0.861	0.065	0.007	0.138	6.879	6.797	7.002	6.840	6.882	7.014	7.011	6.900	7.100	6.816	6.719	6.903
2009/9/29	-1.081	-1.146	-1.020	0.049	0.004	0.114	6.961	6.940	6.972	6.960	6.933	6.981	6.995	6.962	7.034	6.829	6.789	6.876
2009/9/30	-0.916	-1.065	-0.717	0.044	0.002	0.095	6.952	6.923	6.989	6.954	6.918	6.988	6.980	6.935	7.089	6.806	6.767	6.858
Monthly	-2.461	-2.631	-2.264	-0.033	-0.102	0.026	4.966	4.861	5.081	4.961	4.848	5.085	5.353	5.188	5.521	5.295	5.188	5.400

Table 2-10. Water temperature data (°C) at 6 depths in Naga Ike, October 2009.

Depth	1.0 m			2.3 m			4.3 m			5.35 m			7.5 m			9.3 m		
Date	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum
2009/10/1	-2.916	-3.449	-2.460	-0.011	-0.017	-0.006	2.880	2.769	2.978	2.863	2.754	2.949	3.923	3.490	4.207	4.254	4.169	4.348
2009/10/2	-3.305	-3.829	-2.761	-0.012	-0.015	-0.009	2.968	2.896	3.025	2.955	2.883	3.021	4.056	3.594	4.190	4.354	4.272	4.432
2009/10/3	-2.689	-2.883	-2.416	-0.019	-0.025	-0.015	3.041	2.990	3.071	3.020	2.971	3.051	4.142	3.855	4.207	4.356	4.310	4.405
2009/10/4	-2.299	-2.419	-2.111	-0.043	-0.070	-0.027	3.108	3.076	3.128	3.078	3.047	3.099	4.141	4.087	4.208	4.258	4.213	4.301
2009/10/5	-2.022	-2.112	-1.889	-0.129	-0.205	-0.074	3.148	3.116	3.170	3.112	3.083	3.135	4.148	4.110	4.192	4.176	4.151	4.205
2009/10/6	-2.177	-2.273	-1.949	-0.272	-0.326	-0.213	3.215	3.168	3.247	3.168	3.122	3.200	4.156	4.107	4.211	4.153	4.124	4.182
2009/10/7	-2.704	-2.866	-2.323	-0.317	-0.352	-0.278	3.278	3.247	3.310	3.231	3.189	3.282	4.186	4.133	4.249	4.175	4.140	4.212
2009/10/8	-3.355	-3.530	-2.926	-0.312	-0.349	-0.265	3.270	3.158	3.330	3.246	3.147	3.318	4.218	4.150	4.289	4.235	4.182	4.288
2009/10/9	-3.444	-3.634	-3.226	-0.328	-0.364	-0.277	3.207	3.145	3.301	3.207	3.127	3.332	4.252	4.183	4.323	4.301	4.245	4.356
2009/10/10	-2.998	-3.395	-2.736	-0.212	-0.394	-0.072	3.513	3.192	4.187	3.502	3.162	4.145	4.345	4.078	4.761	4.460	4.317	4.886
2009/10/11	-2.782	-2.841	-2.748	-0.136	-0.324	-0.032	4.242	3.951	4.487	4.248	3.924	4.510	4.449	4.093	4.711	4.466	4.335	4.584
2009/10/12	-2.765	-2.845	-2.716	-0.074	-0.218	-0.005	4.358	4.127	4.560	4.351	4.107	4.606	4.427	4.181	4.779	4.478	4.337	4.616
2009/10/13	-2.805	-2.962	-2.756	-0.061	-0.231	0.005	4.563	4.421	4.709	4.583	4.418	4.742	4.616	4.174	4.915	4.490	4.261	4.888
2009/10/14	-3.013	-3.055	-2.882	-0.034	-0.182	0.008	4.754	4.500	4.919	4.767	4.582	4.963	4.885	4.600	5.110	4.730	4.535	4.913
2009/10/15	-3.106	-3.168	-3.053	0.001	-0.016	0.010	4.968	4.803	5.150	4.976	4.801	5.176	5.071	4.823	5.319	4.957	4.782	5.105
2009/10/16	-3.444	-3.577	-3.191	0.010	-0.003	0.024	5.205	5.046	5.359	5.208	5.043	5.371	5.320	5.066	5.546	5.167	5.006	5.322
2009/10/17	-3.711	-3.821	-3.596	0.038	-0.003	0.086	5.429	5.276	5.591	5.433	5.275	5.624	5.540	5.296	5.779	5.374	5.215	5.529
2009/10/18	-3.362	-3.603	-3.157	0.080	-0.002	0.163	5.652	5.499	5.795	5.653	5.498	5.788	5.746	5.520	5.952	5.583	5.416	5.743
2009/10/19	-3.237	-3.276	-3.160	0.093	-0.001	0.200	5.864	5.735	6.010	5.866	5.730	6.021	5.977	5.751	6.220	5.787	5.624	5.933
2009/10/20	-3.325	-3.444	-3.156	0.101	0.000	0.219	6.077	5.951	6.207	6.083	5.946	6.216	6.177	5.975	6.381	5.983	5.823	6.133
2009/10/21	-2.870	-3.137	-2.625	0.049	0.000	0.092	6.168	6.143	6.201	6.166	6.136	6.201	6.199	6.144	6.267	6.072	6.024	6.117
2009/10/22	-2.253	-2.610	-1.913	0.084	0.000	0.200	6.257	6.143	6.379	6.262	6.139	6.405	6.305	6.124	6.515	6.153	5.994	6.307
2009/10/23	-1.760	-1.889	-1.690	0.053	0.000	0.091	6.393	6.356	6.440	6.392	6.356	6.452	6.464	6.379	6.553	6.277	6.189	6.348
2009/10/24	-1.463	-1.706	-1.183	0.067	0.000	0.163	6.437	6.378	6.507	6.434	6.365	6.526	6.498	6.380	6.665	6.339	6.236	6.450
2009/10/25	-1.073	-1.217	-0.931	0.080	0.003	0.162	6.587	6.481	6.681	6.592	6.482	6.690	6.670	6.509	6.827	6.488	6.351	6.605
2009/10/26	-1.023	-1.099	-0.951	0.071	0.005	0.142	6.733	6.661	6.805	6.740	6.658	6.812	6.813	6.690	6.993	6.615	6.500	6.722
2009/10/27	-0.924	-1.034	-0.817	0.074	0.004	0.148	6.831	6.758	6.914	6.835	6.761	6.928	6.901	6.778	7.037	6.721	6.605	6.822
2009/10/28	-1.012	-1.145	-0.861	0.065	0.007	0.138	6.937	6.879	7.002	6.940	6.882	7.014	7.011	6.900	7.100	6.816	6.715	6.903
2009/10/29	-1.081	-1.146	-1.020	0.049	0.004	0.114	6.961	6.940	6.972	6.940	6.933	6.961	6.995	6.962	7.034	6.829	6.789	6.876
2009/10/30	-0.916	-1.065	-0.717	0.044	0.002	0.095	6.952	6.923	6.989	6.954	6.934	6.998	6.980	6.935	7.089	6.806	6.767	6.958
2009/10/31	-2.916	-3.449	-2.460	-0.011	-0.017	-0.006	2.880	2.769	2.978	2.863	2.754	2.949	3.923	3.490	4.207	4.254	4.169	4.348
Monthly	-2.476	-2.657	-2.270	-0.033	-0.100	0.025	4.899	4.793	5.013	4.893	4.780	5.016	5.307	5.133	5.479	5.261	5.155	5.366

Table 2-11. Water temperature data (°C) at 6 depths in Naga Ike, November 2009.

Depth	1.0 m		2.3 m		4.3 m		5.35 m		7.5 m		9.3 m	
Date	daily average	minimum maximum	daily average	minimum maximum	daily average	minimum maximum	daily average	minimum maximum	daily average	minimum maximum	daily average	minimum maximum
2009/11/1	-2.916	-3.449 -2.460	-0.011	-0.017	-0.006	-0.006	2.978	2.978	3.923	3.490	4.207	4.254
2009/11/2	-3.305	-3.829 -2.761	-0.012	-0.015	-0.009	-0.009	2.968	2.968	3.954	3.954	4.190	4.432
2009/11/3	-2.689	-2.883 -2.416	-0.019	-0.025	-0.015	-0.015	3.041	2.990	4.142	4.055	4.207	4.356
2009/11/4	-2.299	-2.419 -2.111	-0.043	-0.070	-0.027	-0.027	3.108	3.076	4.141	4.087	4.208	4.258
2009/11/5	-2.022	-2.112 -1.889	-0.129	-0.205	-0.074	-0.074	3.148	3.116	4.148	4.110	4.192	4.176
2009/11/6	-2.177	-2.273 -1.949	-0.272	-0.328	-0.213	-0.213	3.215	3.168	4.156	4.107	4.211	4.153
2009/11/7	-2.704	-2.866 -2.323	-0.317	-0.352	-0.278	-0.278	3.278	3.247	4.186	4.133	4.249	4.175
2009/11/8	-3.355	-3.550 -3.226	-0.312	-0.349	-0.265	-0.265	3.270	3.156	4.218	4.150	4.289	4.235
2009/11/9	-3.444	-3.634 -3.226	-0.328	-0.364	-0.277	-0.277	3.207	3.145	4.252	4.183	4.323	4.301
2009/11/10	-2.998	-3.395 -2.736	-0.212	-0.394	-0.072	-0.072	3.513	3.192	4.345	4.078	4.761	4.460
2009/11/11	-2.782	-2.841 -2.748	-0.136	-0.324	-0.032	-0.032	4.242	3.951	4.449	4.093	4.711	4.466
2009/11/12	-2.765	-2.845 -2.716	-0.074	-0.218	-0.005	-0.005	4.358	4.127	4.560	4.427	4.779	4.478
2009/11/13	-2.805	-2.862 -2.756	-0.061	-0.231	0.005	0.005	4.563	4.418	4.742	4.616	4.915	4.490
2009/11/14	-3.013	-3.055 -2.882	-0.034	-0.182	0.008	0.008	4.754	4.590	4.865	4.600	5.110	4.730
2009/11/15	-3.168	-3.053 -3.191	0.001	-0.016	0.010	0.010	4.968	4.803	5.071	4.823	5.319	4.957
2009/11/16	-3.444	-3.577 -3.191	0.010	-0.003	0.024	0.024	5.205	5.046	5.320	5.066	5.546	5.167
2009/11/17	-3.711	-3.821 -3.596	0.038	-0.003	0.086	0.086	5.429	5.276	5.591	5.296	5.779	5.374
2009/11/18	-3.362	-3.603 -3.157	0.080	-0.002	0.163	0.163	5.652	5.499	5.788	5.540	5.952	5.529
2009/11/19	-3.237	-3.276 -3.160	0.093	-0.001	0.200	0.200	5.864	5.735	5.977	5.751	6.220	5.787
2009/11/20	-3.325	-3.444 -3.156	0.101	0.000	0.219	0.219	6.077	5.931	6.177	5.975	6.381	5.983
2009/11/21	-3.370	-3.137 -2.825	0.049	0.000	0.092	0.092	6.168	6.143	6.199	6.144	6.267	6.072
2009/11/22	-2.553	-2.610 -1.913	0.084	0.000	0.200	0.200	6.237	6.143	6.305	6.124	6.515	6.153
2009/11/23	-1.760	-1.889 -1.690	0.053	0.000	0.091	0.091	6.393	6.356	6.405	6.379	6.553	6.277
2009/11/24	-1.463	-1.706 -1.183	0.080	0.000	0.163	0.163	6.437	6.378	6.484	6.380	6.665	6.339
2009/11/25	-1.073	-1.217 -0.931	0.067	0.000	0.162	0.162	6.587	6.483	6.690	6.509	6.827	6.498
2009/11/26	-1.023	-1.099 -0.951	0.000	0.003	0.085	0.085	6.733	6.661	6.813	6.690	6.993	6.615
2009/11/27	-0.924	-1.034 -0.817	0.071	0.005	0.148	0.148	6.831	6.758	6.901	6.778	7.037	6.721
2009/11/28	-1.012	-1.145 -0.861	0.065	0.007	0.138	0.138	6.937	6.879	7.011	6.900	7.100	6.816
2009/11/29	-1.081	-1.146 -1.020	0.049	0.004	0.114	0.114	6.961	6.940	6.985	6.962	7.034	6.829
2009/11/30	-0.916	-1.065 -0.717	0.044	0.002	0.095	0.095	6.952	6.923	6.980	6.935	7.089	6.806
Monthly	-2.461	-2.631 -2.264	-0.033	-0.102	0.026	0.026	4.966	4.861	5.353	5.188	5.521	5.295
							4.961	4.848	5.085	5.188	5.521	5.188
												5.400

Table 2-12. Water temperature data (°C) at 6 depths in Naga Ike, December 2009.

Depth	1.0 m			2.3 m			4.3 m			5.35 m			7.5 m			9.3 m		
Date	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum
2009/12/1	0.135	0.001	0.391	5.668	3.387	6.417	9.848	9.795	9.926	9.841	9.788	9.937	9.905	9.812	10.032	9.719	9.646	9.823
2009/12/2	0.083	0.022	0.299	6.127	5.742	6.527	9.895	9.843	9.935	9.897	9.839	9.990	9.944	9.870	10.057	9.741	9.673	9.823
2009/12/3	0.051	0.004	0.128	6.246	6.068	6.495	9.929	9.872	9.993	9.930	9.873	9.999	9.985	9.887	10.107	9.764	9.683	9.864
2009/12/4	0.075	0.011	0.177	6.271	5.152	7.108	10.068	9.947	10.182	10.077	9.944	10.184	10.130	9.983	10.244	9.888	9.742	10.003
2009/12/5	0.073	0.019	0.180	6.738	6.440	7.064	10.247	10.151	10.357	10.255	10.147	10.364	10.299	10.136	10.463	10.041	9.897	10.178
2009/12/6	0.031	0.001	0.069	7.234	6.685	7.876	10.341	10.319	10.373	10.343	10.317	10.375	10.368	10.308	10.441	10.082	10.036	10.120
2009/12/7	0.027	-0.008	0.083	7.057	6.469	7.563	10.314	10.296	10.341	10.313	10.298	10.358	10.353	10.321	10.421	10.061	10.010	10.130
2009/12/8	0.086	0.003	0.192	6.256	4.802	7.230	10.415	10.319	10.546	10.415	10.315	10.554	10.468	10.326	10.596	10.227	10.082	10.365
2009/12/9	0.170	0.013	0.676	5.198	4.128	7.085	10.394	10.271	10.475	10.385	10.208	10.474	10.484	10.386	10.574	10.319	10.224	10.402
2009/12/10	0.205	0.002	0.733	5.260	4.076	6.060	10.422	10.317	10.480	10.422	10.312	10.525	10.499	10.349	10.645	10.329	10.215	10.427
2009/12/11	0.079	0.003	0.218	5.640	4.240	6.951	10.427	10.359	10.478	10.428	10.364	10.480	10.521	10.438	10.610	10.369	10.268	10.453
2009/12/12	0.059	0.004	0.110	5.468	4.703	6.309	10.380	10.321	10.434	10.375	10.297	10.432	10.439	10.351	10.548	10.333	10.280	10.386
2009/12/13	0.081	0.013	0.159	5.111	4.325	5.932	10.239	10.069	10.332	10.234	10.068	10.339	10.314	10.126	10.454	10.261	10.182	10.332
2009/12/14	0.106	0.005	0.210	5.289	4.631	5.628	10.012	9.911	10.181	10.015	9.916	10.188	10.091	9.930	10.206	10.098	9.989	10.191
2009/12/15	0.145	-0.006	0.570	5.805	5.017	8.496	9.424	6.951	9.901	9.423	6.922	9.899	9.573	6.953	9.920	9.676	6.966	9.966
2009/12/16	0.064	-0.008	1.678	2.089	0.780	6.524	2.068	0.848	6.271	2.064	0.806	6.198	2.113	0.860	6.142	2.190	0.827	6.447
2009/12/17	0.647	0.471	0.733	0.707	0.593	0.790	0.726	0.657	0.845	0.712	0.616	0.798	0.751	0.674	0.874	0.791	0.702	1.015
2009/12/18	0.919	0.597	1.276	0.968	0.686	1.383	0.959	0.679	1.497	0.972	0.678	1.482	1.120	0.691	1.771	2.208	0.739	3.532
2009/12/19	1.465	0.836	2.022	1.557	1.059	2.057	1.644	1.095	2.175	1.657	1.088	2.216	1.931	1.319	2.560	3.423	1.832	4.856
2009/12/20	2.168	1.622	2.730	2.241	1.701	2.800	2.310	1.747	2.858	2.306	1.821	2.835	2.602	1.949	3.627	4.093	2.202	5.618
2009/12/21	2.563	2.186	2.890	2.583	2.199	2.974	2.603	2.284	3.020	2.595	2.226	3.022	2.735	2.360	3.235	3.331	2.393	4.602
2009/12/22	2.855	2.611	3.265	2.887	2.665	3.274	2.897	2.710	3.254	2.902	2.714	3.248	2.990	2.779	3.367	3.380	2.842	4.458
2009/12/23	0.135	0.001	0.391	5.688	3.387	6.417	9.848	9.795	9.926	9.841	9.788	9.937	9.905	9.812	10.032	9.719	9.646	9.823
2009/12/24	0.083	0.022	0.299	6.127	5.742	6.527	9.895	9.843	9.935	9.897	9.839	9.950	9.944	9.870	10.057	9.741	9.673	9.823
2009/12/25	0.051	0.004	0.128	6.246	6.068	6.495	9.929	9.872	9.993	9.930	9.873	9.999	9.985	9.887	10.107	9.764	9.683	9.864
2009/12/26	0.075	0.011	0.177	6.271	5.152	7.108	10.068	9.947	10.182	10.077	9.944	10.184	10.130	9.983	10.244	9.888	9.742	10.003
2009/12/27	0.073	0.019	0.180	6.738	6.440	7.064	10.247	10.151	10.357	10.255	10.147	10.364	10.299	10.136	10.463	10.041	9.897	10.178
2009/12/28	0.031	0.001	0.069	7.234	6.685	7.876	10.341	10.319	10.373	10.343	10.317	10.375	10.368	10.308	10.441	10.082	10.036	10.120
2009/12/29	0.027	-0.008	0.083	7.057	6.469	7.563	10.314	10.296	10.341	10.313	10.298	10.358	10.353	10.321	10.421	10.061	10.010	10.130
2009/12/30	0.086	0.003	0.192	6.256	4.802	7.230	10.415	10.319	10.546	10.415	10.315	10.554	10.468	10.326	10.596	10.227	10.082	10.365
2009/12/31	0.170	0.013	0.676	5.198	4.128	7.085	10.394	10.271	10.475	10.385	10.208	10.474	10.484	10.386	10.574	10.319	10.224	10.402
Monthlv	0.433	0.276	0.677	5.135	4.336	5.997	8.291	8.051	8.580	8.291	8.042	8.583	8.373	8.092	8.704	8.393	7.969	8.829



Table 2-13. Water temperature data (°C) at 6 depths in Naga Ike, January 2010.

Depth	1.0 m			2.3 m			4.3 m			5.35 m			7.5 m			9.3 m		
Date	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum	daily average	minimum	maximum
2010/1/1	0.135	0.001	0.391	3.668	3.387	6.417	9.848	9.785	9.926	9.841	9.788	9.937	9.905	9.812	10.032	9.719	9.646	9.823
2010/1/2	0.083	0.022	0.299	6.127	5.742	6.527	9.895	9.843	9.935	9.897	9.839	9.960	9.944	9.870	10.057	9.741	9.673	9.823
2010/1/3	0.051	0.004	0.128	6.246	6.068	6.495	9.929	9.872	9.993	9.930	9.873	9.999	9.985	9.887	10.107	9.764	9.693	9.864
2010/1/4	0.075	0.011	0.177	6.271	5.152	7.108	10.068	9.947	10.182	10.077	9.944	10.194	10.130	9.983	10.244	9.888	9.742	10.003
2010/1/5	0.073	0.019	0.180	6.738	6.440	7.064	10.247	10.151	10.357	10.255	10.147	10.364	10.299	10.136	10.463	10.041	9.897	10.178
2010/1/6	0.031	0.001	0.069	7.234	6.685	7.876	10.341	10.319	10.373	10.343	10.317	10.375	10.368	10.308	10.441	10.082	10.036	10.120
2010/1/7	0.027	-0.008	0.083	7.057	6.469	7.563	10.314	10.296	10.341	10.313	10.298	10.358	10.353	10.321	10.421	10.061	10.010	10.130
2010/1/8	0.086	0.003	0.192	6.256	4.802	7.230	10.415	10.319	10.546	10.415	10.315	10.554	10.468	10.326	10.596	10.227	10.082	10.365
2010/1/9	0.170	0.013	0.676	5.198	4.128	7.085	10.394	10.271	10.475	10.385	10.208	10.474	10.484	10.386	10.574	10.319	10.224	10.402
2010/1/10	0.205	0.002	0.733	5.260	4.076	6.060	10.422	10.317	10.480	10.422	10.312	10.525	10.499	10.349	10.645	10.329	10.215	10.427
2010/1/11	0.079	0.003	0.218	5.640	4.240	6.951	10.427	10.359	10.478	10.428	10.364	10.490	10.521	10.438	10.610	10.369	10.268	10.453
2010/1/12	0.059	0.004	0.110	5.468	4.703	6.309	10.380	10.321	10.434	10.375	10.297	10.432	10.439	10.351	10.548	10.333	10.290	10.386
2010/1/13	0.081	0.013	0.159	5.111	4.325	5.932	10.239	10.089	10.332	10.234	10.088	10.339	10.314	10.126	10.454	10.261	10.182	10.332
2010/1/14	0.106	0.005	0.210	5.289	4.631	5.828	10.012	9.911	10.181	10.015	9.916	10.188	10.091	9.930	10.206	10.098	9.989	10.191
2010/1/15	0.145	-0.006	0.370	5.805	5.017	8.496	9.424	8.961	9.901	9.423	8.922	9.899	9.573	8.953	9.920	9.678	8.966	9.966
2010/1/16	0.064	-0.008	1.678	2.089	0.780	6.524	2.068	0.848	6.271	2.064	0.806	6.198	2.113	0.860	6.142	2.190	0.827	6.447
2010/1/17	0.647	0.471	0.733	0.707	0.593	0.790	0.726	0.657	0.845	0.712	0.616	0.798	0.751	0.674	0.874	0.791	0.702	1.015
2010/1/18	0.919	0.597	1.276	0.968	0.886	1.383	0.959	0.679	1.497	0.972	0.678	1.482	1.120	0.691	1.771	2.208	0.739	3.532
2010/1/19	1.465	0.936	2.022	1.557	1.059	2.057	1.644	1.095	2.175	1.657	1.088	2.216	1.931	1.319	2.560	3.423	1.832	4.856
2010/1/20	2.168	1.622	2.730	2.241	1.701	2.800	2.310	1.747	2.858	2.306	1.821	2.835	2.602	1.949	3.627	4.093	2.202	5.618
2010/1/21	2.563	2.186	2.890	2.583	2.199	2.974	2.603	2.284	3.020	2.595	2.226	3.022	2.735	2.360	3.235	3.331	2.393	4.602
2010/1/22	2.855	2.611	3.265	2.887	2.665	3.274	2.897	2.710	3.254	2.902	2.714	3.248	2.990	2.779	3.367	3.380	2.842	4.458
Monthly	0.577	0.386	0.854	4.654	3.889	5.570	7.525	7.217	7.902	7.525	7.208	7.904	7.619	7.264	8.041	7.742	7.184	8.318

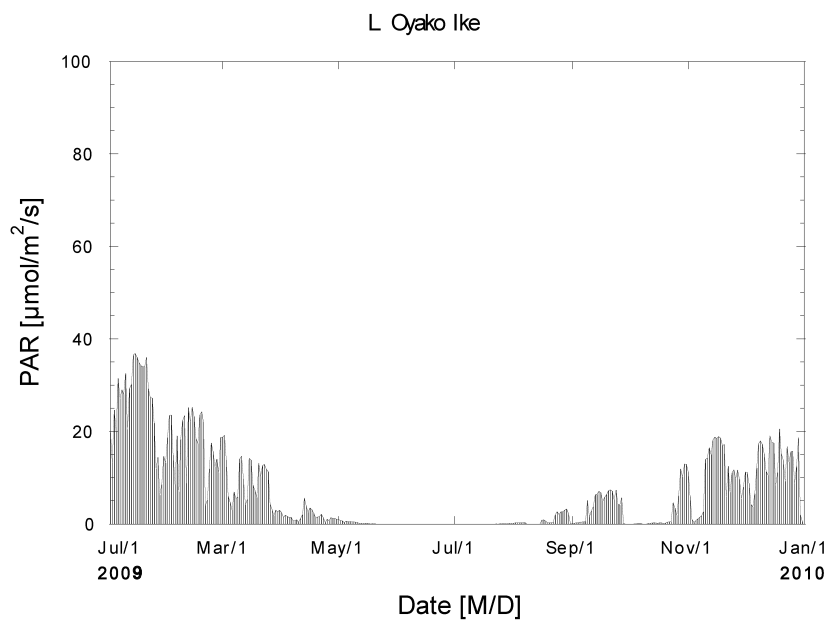


Fig. 5. Seasonal changes of photosynthetically active radiation (PAR) at 6.1 m depth in Oyako Ike (2009–2010). Daily average data.

Table 3-1. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 6.1 m depth in Oyako Ike, January 2009.

Depth	6.1 m		
Date	daily average	minimum	maximum
2009/1/1	20	1	69
2009/1/2	13	0	35
2009/1/3	25	1	65
2009/1/4	20	1	46
2009/1/5	32	1	75
2009/1/6	27	1	67
2009/1/7	29	1	71
2009/1/8	28	1	79
2009/1/9	33	1	95
2009/1/10	21	1	45
2009/1/11	29	0	74
2009/1/12	30	0	83
2009/1/13	37	1	89
2009/1/14	37	1	85
2009/1/15	36	1	104
2009/1/16	35	1	84
2009/1/17	34	1	83
2009/1/18	34	1	81
2009/1/19	34	1	82
2009/1/20	36	0	88
2009/1/21	29	0	87
2009/1/22	27	0	70
2009/1/23	27	0	66
2009/1/24	22	0	73
2009/1/25	12	0	45
2009/1/26	14	0	42
2009/1/27	6	0	31
2009/1/28	9	0	38
2009/1/29	15	0	43
2009/1/30	13	0	41
2009/1/31	19	0	64
Monthly	25	1	68

Table 3-2. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 6.1 m depth in Oyako Ike, February 2009.

Depth	6.1 m		
Date	daily average	minimum	maximum
2009/2/1	11	0	27
2009/2/2	11	0	27
2009/2/3	9	0	23
2009/2/4	4	0	14
2009/2/5	4	0	12
2009/2/6	7	0	17
2009/2/7	12	0	29
2009/2/8	17	0	40
2009/2/9	18	1	41
2009/2/10	17	0	40
2009/2/11	15	0	46
2009/2/12	11	0	33
2009/2/13	11	0	25
2009/2/14	19	1	43
2009/2/15	18	1	40
2009/2/16	18	1	42
2009/2/17	8	0	27
2009/2/18	11	1	32
2009/2/19	21	1	50
2009/2/20	15	1	45
2009/2/21	14	0	32
2009/2/22	9	0	27
2009/2/23	17	0	39
2009/2/24	13	0	37
2009/2/25	16	0	48
2009/2/26	16	0	54
2009/2/27	9	0	23
2009/2/28	12	0	40
Monthly	13	0	34

Table 3-3. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 6.1 m depth in Oyako Ike, March 2009.

Depth	6.1 m		
Date	daily average	minimum	maximum
2009/3/1	11	0	27
2009/3/2	11	0	27
2009/3/3	9	0	23
2009/3/4	4	0	14
2009/3/5	4	0	12
2009/3/6	7	0	17
2009/3/7	12	0	29
2009/3/8	17	0	40
2009/3/9	18	1	41
2009/3/10	17	0	40
2009/3/11	15	0	46
2009/3/12	11	0	33
2009/3/13	11	0	25
2009/3/14	19	1	43
2009/3/15	18	1	40
2009/3/16	18	1	42
2009/3/17	8	0	27
2009/3/18	11	1	32
2009/3/19	21	1	50
2009/3/20	15	1	45
2009/3/21	14	0	32
2009/3/22	9	0	27
2009/3/23	17	0	39
2009/3/24	13	0	37
2009/3/25	16	0	48
2009/3/26	16	0	54
2009/3/27	9	0	23
2009/3/28	12	0	40
2009/3/29	19	0	43
2009/3/30	2	0	7
2009/3/31	1	0	1
Monthly	12	0	32

Table 3-4. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 6.1 m depth in Oyako Ike, April 2009.

Depth	6.1 m		
Date	daily average	minimum	maximum
2009/4/1	11	0	27
2009/4/2	11	0	27
2009/4/3	9	0	23
2009/4/4	4	0	14
2009/4/5	4	0	12
2009/4/6	7	0	17
2009/4/7	12	0	29
2009/4/8	17	0	40
2009/4/9	18	1	41
2009/4/10	17	0	40
2009/4/11	15	0	46
2009/4/12	11	0	33
2009/4/13	11	0	25
2009/4/14	19	1	43
2009/4/15	18	1	40
2009/4/16	18	1	42
2009/4/17	8	0	27
2009/4/18	11	1	32
2009/4/19	21	1	50
2009/4/20	15	1	45
2009/4/21	14	0	32
2009/4/22	9	0	27
2009/4/23	17	0	39
2009/4/24	13	0	37
2009/4/25	16	0	48
2009/4/26	16	0	54
2009/4/27	9	0	23
2009/4/28	12	0	40
2009/4/29	19	0	43
2009/4/30	2	0	7
Monthly	13	0	33

Table 3-5. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 6.1 m depth in Oyako Ike, May 2009.

Depth	6.1 m		
Date	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/5/1	11	0	27
2009/5/2	11	0	27
2009/5/3	9	0	23
2009/5/4	4	0	14
2009/5/5	4	0	12
2009/5/6	7	0	17
2009/5/7	12	0	29
2009/5/8	17	0	40
2009/5/9	18	1	41
2009/5/10	17	0	40
2009/5/11	15	0	46
2009/5/12	11	0	33
2009/5/13	11	0	25
2009/5/14	19	1	43
2009/5/15	18	1	40
2009/5/16	18	1	42
2009/5/17	8	0	27
2009/5/18	11	1	32
2009/5/19	21	1	50
2009/5/20	15	1	45
2009/5/21	14	0	32
2009/5/22	9	0	27
2009/5/23	17	0	39
2009/5/24	13	0	37
2009/5/25	16	0	48
2009/5/26	16	0	54
2009/5/27	9	0	23
2009/5/28	12	0	40
2009/5/29	19	0	43
2009/5/30	2	0	7
2009/5/31	1	0	1
<i>Monthly</i>	12	0	32

Table 3-6. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 6.1 m depth in Oyako Ike, June 2009.

Depth	6.1 m		
Date	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/6/1	11	0	27
2009/6/2	11	0	27
2009/6/3	9	0	23
2009/6/4	4	0	14
2009/6/5	4	0	12
2009/6/6	7	0	17
2009/6/7	12	0	29
2009/6/8	17	0	40
2009/6/9	18	1	41
2009/6/10	17	0	40
2009/6/11	15	0	46
2009/6/12	11	0	33
2009/6/13	11	0	25
2009/6/14	19	1	43
2009/6/15	18	1	40
2009/6/16	18	1	42
2009/6/17	8	0	27
2009/6/18	11	1	32
2009/6/19	21	1	50
2009/6/20	15	1	45
2009/6/21	14	0	32
2009/6/22	9	0	27
2009/6/23	17	0	39
2009/6/24	13	0	37
2009/6/25	16	0	48
2009/6/26	16	0	54
2009/6/27	9	0	23
2009/6/28	12	0	40
2009/6/29	19	0	43
2009/6/30	2	0	7
<i>Monthly</i>	13	0	33

Table 3-7. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 6.1 m depth in Oyako Ike, July 2009.

Depth	6.1 m		
Date	daily average	minimum	maximum
2009/7/1	11	0	27
2009/7/2	11	0	27
2009/7/3	9	0	23
2009/7/4	4	0	14
2009/7/5	4	0	12
2009/7/6	7	0	17
2009/7/7	12	0	29
2009/7/8	17	0	40
2009/7/9	18	1	41
2009/7/10	17	0	40
2009/7/11	15	0	46
2009/7/12	11	0	33
2009/7/13	11	0	25
2009/7/14	19	1	43
2009/7/15	18	1	40
2009/7/16	18	1	42
2009/7/17	8	0	27
2009/7/18	11	1	32
2009/7/19	21	1	50
2009/7/20	15	1	45
2009/7/21	14	0	32
2009/7/22	9	0	27
2009/7/23	17	0	39
2009/7/24	13	0	37
2009/7/25	16	0	48
2009/7/26	16	0	54
2009/7/27	9	0	23
2009/7/28	12	0	40
2009/7/29	19	0	43
2009/7/30	2	0	7
2009/7/31	1	0	1
Monthly	12	0	32

Table 3-8. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 6.1 m depth in Oyako Ike, August 2009.

Depth	6.1 m		
Date	daily average	minimum	maximum
2009/8/1	11	0	27
2009/8/2	11	0	27
2009/8/3	9	0	23
2009/8/4	4	0	14
2009/8/5	4	0	12
2009/8/6	7	0	17
2009/8/7	12	0	29
2009/8/8	17	0	40
2009/8/9	18	1	41
2009/8/10	17	0	40
2009/8/11	15	0	46
2009/8/12	11	0	33
2009/8/13	11	0	25
2009/8/14	19	1	43
2009/8/15	18	1	40
2009/8/16	18	1	42
2009/8/17	8	0	27
2009/8/18	11	1	32
2009/8/19	21	1	50
2009/8/20	15	1	45
2009/8/21	14	0	32
2009/8/22	9	0	27
2009/8/23	17	0	39
2009/8/24	13	0	37
2009/8/25	16	0	48
2009/8/26	16	0	54
2009/8/27	9	0	23
2009/8/28	12	0	40
2009/8/29	19	0	43
2009/8/30	2	0	7
2009/8/31	1	0	1
Monthly	12	0	32

Table 3-9. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 6.1 m depth in Oyako Ike, September 2009.

Depth	6.1 m		
Date	daily average	minimum	maximum
2009/9/1	11	0	27
2009/9/2	11	0	27
2009/9/3	9	0	23
2009/9/4	4	0	14
2009/9/5	4	0	12
2009/9/6	7	0	17
2009/9/7	12	0	29
2009/9/8	17	0	40
2009/9/9	18	1	41
2009/9/10	17	0	40
2009/9/11	15	0	46
2009/9/12	11	0	33
2009/9/13	11	0	25
2009/9/14	19	1	43
2009/9/15	18	1	40
2009/9/16	18	1	42
2009/9/17	8	0	27
2009/9/18	11	1	32
2009/9/19	21	1	50
2009/9/20	15	1	45
2009/9/21	14	0	32
2009/9/22	9	0	27
2009/9/23	17	0	39
2009/9/24	13	0	37
2009/9/25	16	0	48
2009/9/26	16	0	54
2009/9/27	9	0	23
2009/9/28	12	0	40
2009/9/29	19	0	43
2009/9/30	2	0	7
Monthly	13	0	33

Table 3-10. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 6.1 m depth in Oyako Ike, October 2009.

Depth	6.1 m		
Date	daily average	minimum	maximum
2009/10/1	11	0	27
2009/10/2	11	0	27
2009/10/3	9	0	23
2009/10/4	4	0	14
2009/10/5	4	0	12
2009/10/6	7	0	17
2009/10/7	12	0	29
2009/10/8	17	0	40
2009/10/9	18	1	41
2009/10/10	17	0	40
2009/10/11	15	0	46
2009/10/12	11	0	33
2009/10/13	11	0	25
2009/10/14	19	1	43
2009/10/15	18	1	40
2009/10/16	18	1	42
2009/10/17	8	0	27
2009/10/18	11	1	32
2009/10/19	21	1	50
2009/10/20	15	1	45
2009/10/21	14	0	32
2009/10/22	9	0	27
2009/10/23	17	0	39
2009/10/24	13	0	37
2009/10/25	16	0	48
2009/10/26	16	0	54
2009/10/27	9	0	23
2009/10/28	12	0	40
2009/10/29	19	0	43
2009/10/30	2	0	7
2009/10/31	1	0	1
Monthly	12	0	32

Table 3-11. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 6.1 m depth in Oyako Ike, November 2009.

Depth	6.1 m		
Date	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/11/1	11	0	27
2009/11/2	11	0	27
2009/11/3	9	0	23
2009/11/4	4	0	14
2009/11/5	4	0	12
2009/11/6	7	0	17
2009/11/7	12	0	29
2009/11/8	17	0	40
2009/11/9	18	1	41
2009/11/10	17	0	40
2009/11/11	15	0	46
2009/11/12	11	0	33
2009/11/13	11	0	25
2009/11/14	19	1	43
2009/11/15	18	1	40
2009/11/16	18	1	42
2009/11/17	8	0	27
2009/11/18	11	1	32
2009/11/19	21	1	50
2009/11/20	15	1	45
2009/11/21	14	0	32
2009/11/22	9	0	27
2009/11/23	17	0	39
2009/11/24	13	0	37
2009/11/25	16	0	48
2009/11/26	16	0	54
2009/11/27	9	0	23
2009/11/28	12	0	40
2009/11/29	19	0	43
2009/11/30	2	0	7
<i>Monthly</i>	13	0	33

Table 3-12. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 6.1 m depth in Oyako Ike, December 2009.

Depth	6.1 m		
Date	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/12/1	11	0	27
2009/12/2	11	0	27
2009/12/3	9	0	23
2009/12/4	4	0	14
2009/12/5	4	0	12
2009/12/6	7	0	17
2009/12/7	12	0	29
2009/12/8	17	0	40
2009/12/9	18	1	41
2009/12/10	17	0	40
2009/12/11	15	0	46
2009/12/12	11	0	33
2009/12/13	11	0	25
2009/12/14	19	1	43
2009/12/15	18	1	40
2009/12/16	18	1	42
2009/12/17	8	0	27
2009/12/18	11	1	32
2009/12/19	21	1	50
2009/12/20	15	1	45
2009/12/21	14	0	32
2009/12/22	9	0	27
2009/12/23	17	0	39
2009/12/24	13	0	37
2009/12/25	16	0	48
2009/12/26	16	0	54
2009/12/27	9	0	23
2009/12/28	12	0	40
2009/12/29	19	0	43
2009/12/30	2	0	7
2009/12/31	1	0	1
<i>Monthly</i>	12	0	32



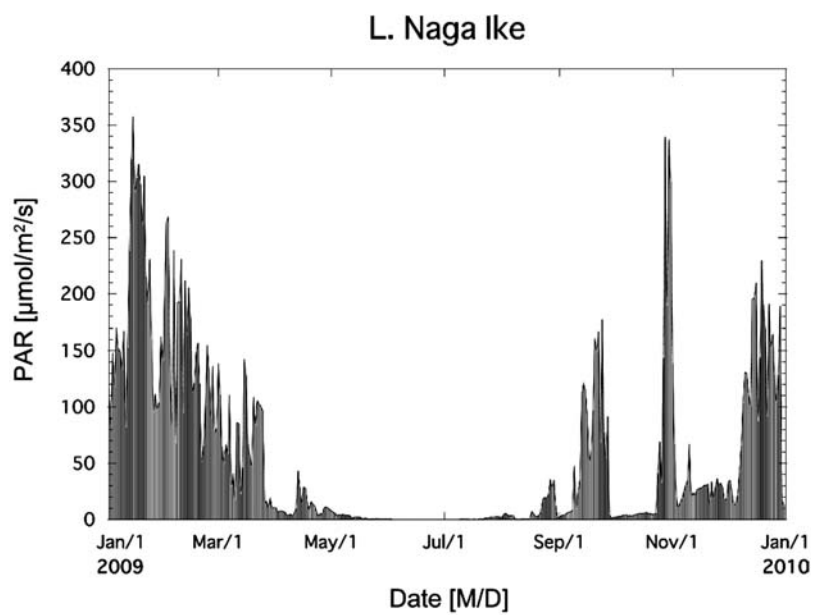


Fig. 6. Seasonal changes of photosynthetically active radiation (PAR) at 1.5 m depth in Naga Ike (2009–2010). Daily average data.

Table 4-1. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 1.5 m depth in Naga Ike, January 2009.

Depth	1.5 m		
Date	daily average	minimum	maximum
2009/1/1	116	8	387
2009/1/2	83	4	209
2009/1/3	148	9	417
2009/1/4	118	9	255
2009/1/5	170	9	388
2009/1/6	152	9	340
2009/1/7	149	8	392
2009/1/8	133	6	374
2009/1/9	168	7	445
2009/1/10	82	5	172
2009/1/11	153	3	366
2009/1/12	238	5	651
2009/1/13	320	13	802
2009/1/14	358	12	999
2009/1/15	291	8	845
2009/1/16	303	11	725
2009/1/17	315	10	966
2009/1/18	297	10	671
2009/1/19	262	8	667
2009/1/20	305	5	805
2009/1/21	215	7	718
2009/1/22	191	6	455
2009/1/23	231	3	735
2009/1/24	160	4	551
2009/1/25	95	2	310
2009/1/26	112	0	299
2009/1/27	98	0	410
2009/1/28	104	1	361
2009/1/29	163	0	522
2009/1/30	141	0	451
2009/1/31	197	0	713
Monthly	189	6	529

Table 4-2. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 1.5 m depth in Naga Ike, February 2009.

Depth	1.5 m		
Date	daily average	minimum	maximum
2009/2/1	2	0	12
2009/2/2	3	0	18
2009/2/3	4	0	21
2009/2/4	4	0	21
2009/2/5	6	0	29
2009/2/6	6	0	31
2009/2/7	7	0	32
2009/2/8	8	0	34
2009/2/9	48	0	232
2009/2/10	9	0	38
2009/2/11	26	0	132
2009/2/12	36	0	159
2009/2/13	111	0	669
2009/2/14	122	0	759
2009/2/15	115	0	654
2009/2/16	93	0	414
2009/2/17	51	0	318
2009/2/18	61	0	227
2009/2/19	97	0	385
2009/2/20	161	0	864
2009/2/21	149	0	745
2009/2/22	167	0	775
2009/2/23	68	0	241
2009/2/24	177	0	839
2009/2/25	77	0	488
2009/2/26	54	0	199
2009/2/27	92	0	371
2009/2/28	4	0	23
Monthly	63	0	312

Table 4-3. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 1.5 m depth in Naga Ike, March 2009.

Depth	1.5 m		
Date	daily average	minimum	maximum
2009/3/1	2	0	12
2009/3/2	3	0	18
2009/3/3	4	0	21
2009/3/4	4	0	21
2009/3/5	6	0	29
2009/3/6	6	0	31
2009/3/7	7	0	32
2009/3/8	8	0	34
2009/3/9	48	0	232
2009/3/10	9	0	38
2009/3/11	26	0	132
2009/3/12	36	0	159
2009/3/13	111	0	669
2009/3/14	122	0	759
2009/3/15	115	0	654
2009/3/16	93	0	414
2009/3/17	51	0	318
2009/3/18	61	0	227
2009/3/19	97	0	385
2009/3/20	161	0	864
2009/3/21	149	0	745
2009/3/22	167	0	775
2009/3/23	68	0	241
2009/3/24	177	0	839
2009/3/25	77	0	488
2009/3/26	54	0	199
2009/3/27	92	0	371
2009/3/28	4	0	23
2009/3/29	1	0	5
2009/3/30	2	0	8
2009/3/31	2	0	12
Monthly	57	0	282

Table 4-4. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 1.5 m depth in Naga Ike, April 2009.

Depth	1.5 m		
Date	daily average	minimum	maximum
2009/4/1	2	0	12
2009/4/2	3	0	18
2009/4/3	4	0	21
2009/4/4	4	0	21
2009/4/5	6	0	29
2009/4/6	6	0	31
2009/4/7	7	0	32
2009/4/8	8	0	34
2009/4/9	48	0	232
2009/4/10	9	0	38
2009/4/11	26	0	132
2009/4/12	36	0	159
2009/4/13	111	0	669
2009/4/14	122	0	759
2009/4/15	115	0	654
2009/4/16	93	0	414
2009/4/17	51	0	318
2009/4/18	61	0	227
2009/4/19	97	0	385
2009/4/20	161	0	864
2009/4/21	149	0	745
2009/4/22	167	0	775
2009/4/23	68	0	241
2009/4/24	177	0	839
2009/4/25	77	0	488
2009/4/26	54	0	199
2009/4/27	92	0	371
2009/4/28	4	0	23
2009/4/29	1	0	5
2009/4/30	2	0	8
Monthly	59	0	291

Table 4-5. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 1.5 m depth in Naga Ike, May 2009.

Depth	1.5 m		
Date	daily average	minimum	maximum
2009/5/1	2	0	12
2009/5/2	3	0	18
2009/5/3	4	0	21
2009/5/4	4	0	21
2009/5/5	6	0	29
2009/5/6	6	0	31
2009/5/7	7	0	32
2009/5/8	8	0	34
2009/5/9	48	0	232
2009/5/10	9	0	38
2009/5/11	26	0	132
2009/5/12	36	0	159
2009/5/13	111	0	669
2009/5/14	122	0	759
2009/5/15	115	0	654
2009/5/16	93	0	414
2009/5/17	51	0	318
2009/5/18	61	0	227
2009/5/19	97	0	385
2009/5/20	161	0	864
2009/5/21	149	0	745
2009/5/22	167	0	775
2009/5/23	68	0	241
2009/5/24	177	0	839
2009/5/25	77	0	488
2009/5/26	54	0	199
2009/5/27	92	0	371
2009/5/28	4	0	23
2009/5/29	1	0	5
2009/5/30	2	0	8
2009/5/31	2	0	12
Monthly	57	0	282

Table 4-6. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 1.5 m depth in Naga Ike, June 2009.

Depth	1.5 m		
Date	daily average	minimum	maximum
2009/6/1	2	0	12
2009/6/2	3	0	18
2009/6/3	4	0	21
2009/6/4	4	0	21
2009/6/5	6	0	29
2009/6/6	6	0	31
2009/6/7	7	0	32
2009/6/8	8	0	34
2009/6/9	48	0	232
2009/6/10	9	0	38
2009/6/11	26	0	132
2009/6/12	36	0	159
2009/6/13	111	0	669
2009/6/14	122	0	759
2009/6/15	115	0	654
2009/6/16	93	0	414
2009/6/17	51	0	318
2009/6/18	61	0	227
2009/6/19	97	0	385
2009/6/20	161	0	864
2009/6/21	149	0	745
2009/6/22	167	0	775
2009/6/23	68	0	241
2009/6/24	177	0	839
2009/6/25	77	0	488
2009/6/26	54	0	199
2009/6/27	92	0	371
2009/6/28	4	0	23
2009/6/29	1	0	5
2009/6/30	2	0	8
Monthly	59	0	291

Table 4-7. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 1.5 m depth in Naga Ike, July 2009.

Depth	1.5 m		
Date	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/7/1	2	0	12
2009/7/2	3	0	18
2009/7/3	4	0	21
2009/7/4	4	0	21
2009/7/5	6	0	29
2009/7/6	6	0	31
2009/7/7	7	0	32
2009/7/8	8	0	34
2009/7/9	48	0	232
2009/7/10	9	0	38
2009/7/11	26	0	132
2009/7/12	36	0	159
2009/7/13	111	0	669
2009/7/14	122	0	759
2009/7/15	115	0	654
2009/7/16	93	0	414
2009/7/17	51	0	318
2009/7/18	61	0	227
2009/7/19	97	0	385
2009/7/20	161	0	864
2009/7/21	149	0	745
2009/7/22	167	0	775
2009/7/23	68	0	241
2009/7/24	177	0	839
2009/7/25	77	0	488
2009/7/26	54	0	199
2009/7/27	92	0	371
2009/7/28	4	0	23
2009/7/29	1	0	5
2009/7/30	2	0	8
2009/7/31	2	0	12
<i>Monthly</i>	57	0	282

Table 4-8. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 1.5 m depth in Naga Ike, August 2009.

Depth	1.5 m		
Date	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/8/1	2	0	12
2009/8/2	3	0	18
2009/8/3	4	0	21
2009/8/4	4	0	21
2009/8/5	6	0	29
2009/8/6	6	0	31
2009/8/7	7	0	32
2009/8/8	8	0	34
2009/8/9	48	0	232
2009/8/10	9	0	38
2009/8/11	26	0	132
2009/8/12	36	0	159
2009/8/13	111	0	669
2009/8/14	122	0	759
2009/8/15	115	0	654
2009/8/16	93	0	414
2009/8/17	51	0	318
2009/8/18	61	0	227
2009/8/19	97	0	385
2009/8/20	161	0	864
2009/8/21	149	0	745
2009/8/22	167	0	775
2009/8/23	68	0	241
2009/8/24	177	0	839
2009/8/25	77	0	488
2009/8/26	54	0	199
2009/8/27	92	0	371
2009/8/28	4	0	23
2009/8/29	1	0	5
2009/8/30	2	0	8
2009/8/31	2	0	12
<i>Monthly</i>	57	0	282

Table 4-9. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 1.5 m depth in Naga Ike, September 2009.

Depth	1.5 m		
Date	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/9/1	2	0	12
2009/9/2	3	0	18
2009/9/3	4	0	21
2009/9/4	4	0	21
2009/9/5	6	0	29
2009/9/6	6	0	31
2009/9/7	7	0	32
2009/9/8	8	0	34
2009/9/9	48	0	232
2009/9/10	9	0	38
2009/9/11	26	0	132
2009/9/12	36	0	159
2009/9/13	111	0	669
2009/9/14	122	0	759
2009/9/15	115	0	654
2009/9/16	93	0	414
2009/9/17	51	0	318
2009/9/18	61	0	227
2009/9/19	97	0	385
2009/9/20	161	0	864
2009/9/21	149	0	745
2009/9/22	167	0	775
2009/9/23	68	0	241
2009/9/24	177	0	839
2009/9/25	77	0	488
2009/9/26	54	0	199
2009/9/27	92	0	371
2009/9/28	4	0	23
2009/9/29	1	0	5
2009/9/30	2	0	8
<i>Monthly</i>	59	0	291

Table 4-10. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 1.5 m depth in Naga Ike, October 2009.

Depth	1.5 m		
Date	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/10/1	34	1	75
2009/10/2	35	1	82
2009/10/3	25	1	65
2009/10/4	13	0	37
2009/10/5	14	0	35
2009/10/6	22	1	51
2009/10/7	42	1	89
2009/10/8	66	2	148
2009/10/9	103	4	256
2009/10/10	131	6	326
2009/10/11	130	5	386
2009/10/12	111	6	428
2009/10/13	101	5	244
2009/10/14	195	10	443
2009/10/15	197	10	443
2009/10/16	210	11	555
2009/10/17	87	6	229
2009/10/18	144	11	450
2009/10/19	230	14	606
2009/10/20	190	12	511
2009/10/21	170	9	448
2009/10/22	92	2	295
2009/10/23	191	10	473
2009/10/24	152	6	434
2009/10/25	165	10	413
2009/10/26	129	8	409
2009/10/27	104	6	265
2009/10/28	128	9	308
2009/10/29	189	8	430
2009/10/30	18	1	41
2009/10/31	13	0	26
<i>Monthly</i>	111	6	290

Table 4-11. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 1.5 m depth in Naga Ike, November 2009.

Depth	1.5 m		
Date	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/11/1	34	1	75
2009/11/2	35	1	82
2009/11/3	25	1	65
2009/11/4	13	0	37
2009/11/5	14	0	35
2009/11/6	22	1	51
2009/11/7	42	1	89
2009/11/8	66	2	148
2009/11/9	103	4	256
2009/11/10	131	6	326
2009/11/11	130	5	386
2009/11/12	111	6	428
2009/11/13	101	5	244
2009/11/14	195	10	443
2009/11/15	197	10	443
2009/11/16	210	11	555
2009/11/17	87	6	229
2009/11/18	144	11	450
2009/11/19	230	14	606
2009/11/20	190	12	511
2009/11/21	170	9	448
2009/11/22	92	2	295
2009/11/23	191	10	473
2009/11/24	152	6	434
2009/11/25	165	10	413
2009/11/26	129	8	409
2009/11/27	104	6	265
2009/11/28	128	9	308
2009/11/29	189	8	430
2009/11/30	18	1	41
<i>Monthly</i>	114	6	299

Table 4-12. Photosynthetic active radiation data ( $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 1.5 m depth in Naga Ike, December 2009.

Depth	1.5 m		
Date	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/12/1	34	1	75
2009/12/2	35	1	82
2009/12/3	25	1	65
2009/12/4	13	0	37
2009/12/5	14	0	35
2009/12/6	22	1	51
2009/12/7	42	1	89
2009/12/8	66	2	148
2009/12/9	103	4	256
2009/12/10	131	6	326
2009/12/11	130	5	386
2009/12/12	111	6	428
2009/12/13	101	5	244
2009/12/14	195	10	443
2009/12/15	197	10	443
2009/12/16	210	11	555
2009/12/17	87	6	229
2009/12/18	144	11	450
2009/12/19	230	14	606
2009/12/20	190	12	511
2009/12/21	170	9	448
2009/12/22	92	2	295
2009/12/23	191	10	473
2009/12/24	152	6	434
2009/12/25	165	10	413
2009/12/26	129	8	409
2009/12/27	104	6	265
2009/12/28	128	9	308
2009/12/29	189	8	430
2009/12/30	18	1	41
2009/12/31	13	0	26
<i>Monthly</i>	111	6	290

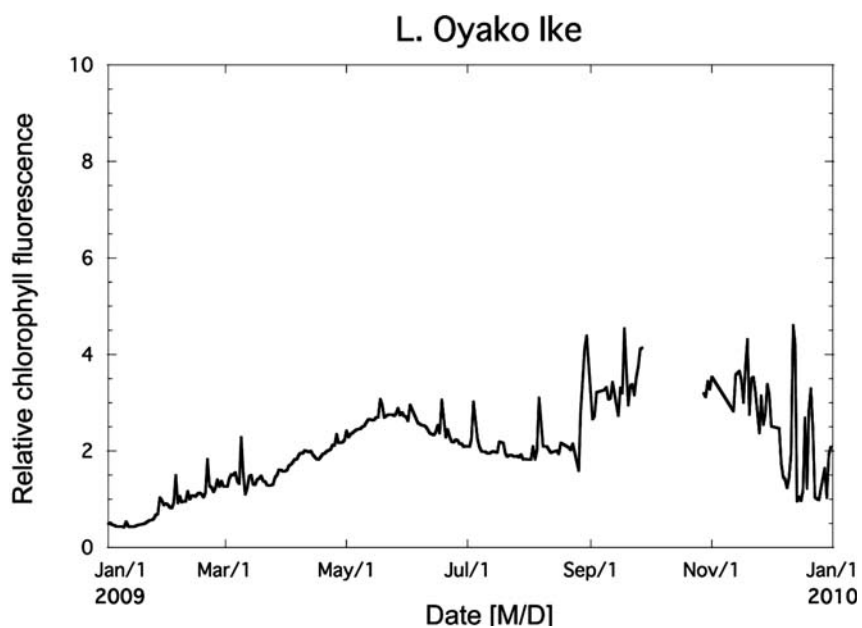


Fig. 7. Seasonal changes of chlorophyll fluorescence and turbidity at 1.8 m depth in Oyako Ike (2009–2010). Daily average data.



Table 5-1. Chlorophyll *a* fluorescence and turbidity data at 1.8 m depth in Oyako Ike, January 2009.

Date	Chlorophyll (relative)			Turbidity (FTU)		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/1/1	0.49	0.35	0.64	—	—	—
2009/1/2	0.51	0.39	0.66	—	—	—
2009/1/3	0.47	0.34	0.64	—	—	—
2009/1/4	0.46	0.35	0.63	—	—	—
2009/1/5	0.44	0.31	0.61	—	—	—
2009/1/6	0.44	0.34	0.59	—	—	—
2009/1/7	0.44	0.31	0.57	—	—	—
2009/1/8	0.44	0.31	0.59	—	—	—
2009/1/9	0.42	0.31	0.57	—	—	—
2009/1/10	0.54	0.37	2.21	—	—	—
2009/1/11	0.44	0.32	0.64	—	—	—
2009/1/12	0.42	0.31	0.56	—	—	—
2009/1/13	0.44	0.31	0.62	—	—	—
2009/1/14	0.43	0.31	0.57	—	—	—
2009/1/15	0.45	0.32	0.60	—	—	—
2009/1/16	0.47	0.34	0.62	—	—	—
2009/1/17	0.48	0.34	0.63	—	—	—
2009/1/18	0.48	0.31	0.64	—	—	—
2009/1/19	0.49	0.32	0.68	—	—	—
2009/1/20	0.51	0.34	0.72	—	—	—
2009/1/21	0.54	0.33	0.73	—	—	—
2009/1/22	0.57	0.37	0.77	—	—	—
2009/1/23	0.57	0.39	0.78	—	—	—
2009/1/24	0.61	0.42	0.78	—	—	—
2009/1/25	0.68	0.48	0.84	—	—	—
2009/1/26	0.69	0.51	0.94	—	—	—
2009/1/27	1.03	0.64	1.47	—	—	—
2009/1/28	0.97	0.61	1.26	—	—	—
2009/1/29	0.88	0.57	1.23	—	—	—
2009/1/30	0.92	0.61	1.20	—	—	—
2009/1/31	0.89	0.53	1.24	—	—	—
<i>Monthly</i>	0.57	0.31	2.21	—	—	—

Table 5-2. Chlorophyll *a* fluorescence and turbidity data at 1.8 m depth in Oyako Ike, February 2009.

Date	Chlorophyll (relative)			Turbidity (FTU)		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/2/1	0.83	0.51	1.17	—	—	—
2009/2/2	0.81	0.48	1.20	—	—	—
2009/2/3	0.92	0.57	1.15	—	—	—
2009/2/4	1.50	0.88	4.69	—	—	—
2009/2/5	0.92	0.53	1.38	—	—	—
2009/2/6	1.06	0.79	1.30	—	—	—
2009/2/7	0.94	0.57	1.38	—	—	—
2009/2/8	0.96	0.61	1.52	—	—	—
2009/2/9	0.95	0.54	1.57	—	—	—
2009/2/10	1.17	0.81	1.48	—	—	—
2009/2/11	1.00	0.56	1.57	—	—	—
2009/2/12	1.08	0.60	1.66	—	—	—
2009/2/13	1.08	0.59	1.68	—	—	—
2009/2/14	1.05	0.52	1.61	—	—	—
2009/2/15	1.11	0.68	1.64	—	—	—
2009/2/16	1.13	0.56	1.66	—	—	—
2009/2/17	1.10	0.52	1.72	—	—	—
2009/2/18	1.04	0.53	2.08	—	—	—
2009/2/19	1.14	0.48	1.94	—	—	—
2009/2/20	1.83	0.70	3.30	—	—	—
2009/2/21	1.27	0.78	1.77	—	—	—
2009/2/22	1.25	0.64	1.88	—	—	—
2009/2/23	1.15	0.60	1.83	—	—	—
2009/2/24	1.24	0.57	1.82	—	—	—
2009/2/25	1.41	0.70	2.16	—	—	—
2009/2/26	1.26	0.68	1.89	—	—	—
2009/2/27	1.38	0.85	1.79	—	—	—
2009/2/28	1.27	0.66	1.85	—	—	—
<i>Monthly</i>	1.14	0.48	4.69	—	—	—

Table 5-3. Chlorophyll *a* fluorescence and turbidity data at 1.8 m depth in Oyako Ike, March 2009.

Date	Chlorophyll (relative)			Turbidity (FTU)		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/3/1	1.27	0.64	1.86	—	—	—
2009/3/2	1.26	0.71	1.79	—	—	—
2009/3/3	1.43	0.73	2.17	—	—	—
2009/3/4	1.52	0.98	1.84	—	—	—
2009/3/5	1.50	1.07	1.83	—	—	—
2009/3/6	1.56	1.33	1.89	—	—	—
2009/3/7	1.38	0.98	1.74	—	—	—
2009/3/8	1.32	0.83	2.10	—	—	—
2009/3/9	2.29	1.13	6.63	—	—	—
2009/3/10	1.54	0.65	2.52	—	—	—
2009/3/11	1.10	0.51	1.65	—	—	—
2009/3/12	1.24	0.62	1.70	—	—	—
2009/3/13	1.47	0.98	1.82	—	—	—
2009/3/14	1.50	0.95	1.83	—	—	—
2009/3/15	1.31	0.61	1.86	—	—	—
2009/3/16	1.30	0.63	1.85	—	—	—
2009/3/17	1.41	0.79	1.79	—	—	—
2009/3/18	1.43	0.85	1.75	—	—	—
2009/3/19	1.49	0.90	1.83	—	—	—
2009/3/20	1.38	0.72	1.85	—	—	—
2009/3/21	1.37	0.76	1.83	—	—	—
2009/3/22	1.29	0.64	1.74	—	—	—
2009/3/23	1.29	0.69	1.64	—	—	—
2009/3/24	1.29	0.72	1.63	—	—	—
2009/3/25	1.31	0.76	1.64	—	—	—
2009/3/26	1.45	1.03	1.71	—	—	—
2009/3/27	1.50	1.20	1.70	—	—	—
2009/3/28	1.61	1.42	1.79	—	—	—
2009/3/29	1.61	1.27	1.80	—	—	—
2009/3/30	1.58	1.24	1.75	—	—	—
2009/3/31	1.58	1.26	1.76	—	—	—
<i>Monthly</i>	1.44	0.51	6.63	—	—	—

Table 5-4. Chlorophyll *a* fluorescence and turbidity data at 1.8 m depth in Oyako Ike, April 2009.

Date	Chlorophyll (relative)			Turbidity (FTU)		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/4/1	1.60	1.25	1.78	—	—	—
2009/4/2	1.70	1.48	1.82	—	—	—
2009/4/3	1.72	1.50	1.85	—	—	—
2009/4/4	1.77	1.53	1.91	—	—	—
2009/4/5	1.83	1.60	1.97	—	—	—
2009/4/6	1.83	1.54	1.99	—	—	—
2009/4/7	1.92	1.75	2.05	—	—	—
2009/4/8	1.97	1.83	2.11	—	—	—
2009/4/9	1.95	1.72	2.08	—	—	—
2009/4/10	2.01	1.82	2.11	—	—	—
2009/4/11	2.00	1.80	2.18	—	—	—
2009/4/12	1.98	1.63	2.52	—	—	—
2009/4/13	2.00	1.08	3.06	—	—	—
2009/4/14	1.92	1.38	2.58	—	—	—
2009/4/15	1.88	1.60	2.02	—	—	—
2009/4/16	1.83	1.41	2.01	—	—	—
2009/4/17	1.83	1.48	1.99	—	—	—
2009/4/18	1.88	1.63	2.01	—	—	—
2009/4/19	1.94	1.71	2.12	—	—	—
2009/4/20	1.95	1.71	2.10	—	—	—
2009/4/21	1.99	1.75	2.12	—	—	—
2009/4/22	2.01	1.76	2.17	—	—	—
2009/4/23	2.03	1.77	2.19	—	—	—
2009/4/24	2.13	1.95	2.34	—	—	—
2009/4/25	2.11	1.85	2.41	—	—	—
2009/4/26	2.35	1.86	3.53	—	—	—
2009/4/27	2.17	1.89	2.35	—	—	—
2009/4/28	2.17	1.90	2.37	—	—	—
2009/4/29	2.18	1.86	2.35	—	—	—
2009/4/30	2.23	1.96	2.39	—	—	—
<i>Monthly</i>	1.96	1.08	3.53	—	—	—

Table 5-5. Chlorophyll *a* fluorescence and turbidity data at 1.8 m depth in Oyako Ike, May 2009.

Date	Chlorophyll (relative)			Turbidity (FTU)		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/5/1	2.42	1.98	3.17	—	—	—
2009/5/2	2.29	1.98	2.52	—	—	—
2009/5/3	2.35	2.04	2.49	—	—	—
2009/5/4	2.37	2.11	2.56	—	—	—
2009/5/5	2.41	2.11	2.56	—	—	—
2009/5/6	2.44	2.16	2.58	—	—	—
2009/5/7	2.45	2.13	2.59	—	—	—
2009/5/8	2.46	2.10	2.64	—	—	—
2009/5/9	2.50	2.16	2.64	—	—	—
2009/5/10	2.52	2.17	2.65	—	—	—
2009/5/11	2.59	2.27	3.11	—	—	—
2009/5/12	2.65	2.38	2.89	—	—	—
2009/5/13	2.66	2.33	3.05	—	—	—
2009/5/14	2.63	2.34	2.79	—	—	—
2009/5/15	2.65	2.30	2.87	—	—	—
2009/5/16	2.70	2.34	2.81	—	—	—
2009/5/17	2.70	2.38	2.84	—	—	—
2009/5/18	3.07	2.60	4.79	—	—	—
2009/5/19	2.95	2.38	5.50	—	—	—
2009/5/20	2.69	2.34	2.99	—	—	—
2009/5/21	2.73	2.46	2.87	—	—	—
2009/5/22	2.75	2.55	2.89	—	—	—
2009/5/23	2.76	2.56	2.89	—	—	—
2009/5/24	2.76	2.53	2.85	—	—	—
2009/5/25	2.73	2.46	2.86	—	—	—
2009/5/26	2.78	2.56	2.90	—	—	—
2009/5/27	2.89	2.64	3.14	—	—	—
2009/5/28	2.75	2.47	2.86	—	—	—
2009/5/29	2.80	2.48	3.17	—	—	—
2009/5/30	2.72	2.46	2.82	—	—	—
2009/5/31	2.71	2.42	3.08	—	—	—
<i>Monthly</i>	2.64	1.98	5.50	—	—	—

Table 5-6. Chlorophyll *a* fluorescence and turbidity data at 1.8 m depth in Oyako Ike, June 2009.

Date	Chlorophyll (relative)			Turbidity (FTU)		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/6/1	2.62	2.40	2.74	—	—	—
2009/6/2	2.96	2.64	3.81	—	—	—
2009/6/3	—	—	—	—	—	—
2009/6/4	—	—	—	—	—	—
2009/6/5	—	—	—	—	—	—
2009/6/6	2.58	2.49	2.65	—	—	—
2009/6/7	2.56	2.51	2.71	—	—	—
2009/6/8	2.53	2.48	2.57	—	—	—
2009/6/9	2.53	2.45	2.82	—	—	—
2009/6/10	2.51	2.43	2.64	—	—	—
2009/6/11	2.44	2.36	2.57	—	—	—
2009/6/12	2.37	2.32	2.45	—	—	—
2009/6/13	2.35	2.30	2.40	—	—	—
2009/6/14	2.33	2.27	2.40	—	—	—
2009/6/15	2.39	2.25	3.05	—	—	—
2009/6/16	2.54	2.24	3.66	—	—	—
2009/6/17	2.37	2.17	2.59	—	—	—
2009/6/18	3.06	2.86	3.26	—	—	—
2009/6/19	—	—	—	—	—	—
2009/6/20	2.28	2.22	2.37	—	—	—
2009/6/21	2.45	2.23	2.89	—	—	—
2009/6/22	2.30	2.15	2.76	—	—	—
2009/6/23	2.19	2.12	2.24	—	—	—
2009/6/24	2.18	2.12	2.30	—	—	—
2009/6/25	2.24	2.13	2.66	—	—	—
2009/6/26	2.22	2.03	2.67	—	—	—
2009/6/27	2.15	2.07	2.19	—	—	—
2009/6/28	2.16	2.08	2.24	—	—	—
2009/6/29	2.09	1.95	2.15	—	—	—
2009/6/30	2.10	1.99	2.19	—	—	—
<i>Monthly</i>	2.40	1.95	3.81	—	—	—

Table 5-7. Chlorophyll *a* fluorescence and turbidity data at 1.8 m depth in Oyako Ike, July 2009.

Date	Chlorophyll (relative)			Turbidity (FTU)		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/7/1	2.09	2.04	2.15	—	—	—
2009/7/2	2.09	2.01	2.18	—	—	—
2009/7/3	2.25	1.86	3.60	—	—	—
2009/7/4	3.02	2.72	3.49	—	—	—
2009/7/5	—	—	—	—	—	—
2009/7/6	2.25	1.97	4.27	—	—	—
2009/7/7	2.08	1.94	2.54	—	—	—
2009/7/8	1.99	1.89	2.05	—	—	—
2009/7/9	1.99	1.86	2.07	—	—	—
2009/7/10	1.99	1.85	2.12	—	—	—
2009/7/11	1.95	1.77	2.04	—	—	—
2009/7/12	1.95	1.75	2.05	—	—	—
2009/7/13	1.98	1.80	2.10	—	—	—
2009/7/14	2.00	1.82	2.08	—	—	—
2009/7/15	1.98	1.71	2.04	—	—	—
2009/7/16	1.97	1.83	2.03	—	—	—
2009/7/17	2.19	1.79	3.38	—	—	—
2009/7/18	—	—	—	—	—	—
2009/7/19	2.17	2.00	2.33	—	—	—
2009/7/20	1.95	1.71	2.92	—	—	—
2009/7/21	1.88	1.71	1.96	—	—	—
2009/7/22	1.91	1.74	1.99	—	—	—
2009/7/23	1.92	1.70	2.05	—	—	—
2009/7/24	1.89	1.69	1.97	—	—	—
2009/7/25	1.88	1.66	2.03	—	—	—
2009/7/26	1.90	1.67	2.02	—	—	—
2009/7/27	1.87	1.60	2.00	—	—	—
2009/7/28	1.92	1.70	2.09	—	—	—
2009/7/29	1.83	1.63	1.93	—	—	—
2009/7/30	1.83	1.60	1.95	—	—	—
2009/7/31	1.83	1.60	1.97	—	—	—
<i>Monthly</i>	2.02	1.60	4.27	—	—	—

Table 5-8. Chlorophyll *a* fluorescence and turbidity data at 1.8 m depth in Oyako Ike, August 2009.

Date	Chlorophyll (relative)			Turbidity (FTU)		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/8/1	1.82	1.61	1.97	—	—	—
2009/8/2	1.82	1.54	1.94	—	—	—
2009/8/3	2.09	1.71	3.34	—	—	—
2009/8/4	1.83	1.57	1.95	—	—	—
2009/8/5	2.02	1.75	2.52	—	—	—
2009/8/6	3.10	2.83	3.31	—	—	—
2009/8/7	—	—	—	—	—	—
2009/8/8	2.10	2.03	2.16	—	—	—
2009/8/9	2.10	1.98	2.23	—	—	—
2009/8/10	2.10	1.90	2.24	—	—	—
2009/8/11	2.02	1.82	2.21	—	—	—
2009/8/12	1.97	1.68	2.15	—	—	—
2009/8/13	1.98	1.79	2.17	—	—	—
2009/8/14	1.99	1.75	2.19	—	—	—
2009/8/15	2.01	1.76	2.23	—	—	—
2009/8/16	1.94	1.57	2.19	—	—	—
2009/8/17	2.17	1.67	3.60	—	—	—
2009/8/18	—	—	—	—	—	—
2009/8/19	—	—	—	—	—	—
2009/8/20	—	—	—	—	—	—
2009/8/21	2.08	2.07	2.08	—	—	—
2009/8/22	2.02	1.65	3.53	—	—	—
2009/8/23	2.15	2.07	2.21	—	—	—
2009/8/24	—	—	—	—	—	—
2009/8/25	—	—	—	—	—	—
2009/8/26	1.59	1.29	1.97	—	—	—
2009/8/27	2.81	1.78	3.78	—	—	—
2009/8/28	—	—	—	—	—	—
2009/8/29	4.11	3.49	4.52	—	—	—
2009/8/30	4.39	4.12	4.88	—	—	—
2009/8/31	—	—	—	—	—	—
<i>Monthly</i>	2.27	1.29	4.88	—	—	—

Table 5-9. Chlorophyll *a* fluorescence and turbidity data at 1.8 m depth in Oyako Ike, September 2009.

Date	Chlorophyll (relative)			Turbidity (FTU)		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/9/1	—	—	—	—	—	—
2009/9/2	2.66	2.32	2.98	—	—	—
2009/9/3	2.73	2.14	3.26	—	—	—
2009/9/4	3.22	2.60	4.37	—	—	—
2009/9/5	—	—	—	—	—	—
2009/9/6	—	—	—	—	—	—
2009/9/7	—	—	—	—	—	—
2009/9/8	3.27	2.72	3.86	—	—	—
2009/9/9	3.32	2.49	7.34	—	—	—
2009/9/10	3.07	2.73	3.90	—	—	—
2009/9/11	3.09	2.38	3.89	—	—	—
2009/9/12	3.43	2.98	4.55	—	—	—
2009/9/13	—	—	—	—	—	—
2009/9/14	—	—	—	—	—	—
2009/9/15	2.73	1.58	3.43	—	—	—
2009/9/16	3.32	1.64	5.55	—	—	—
2009/9/17	3.20	1.90	4.51	—	—	—
2009/9/18	4.54	4.17	4.89	—	—	—
2009/9/19	3.66	3.22	4.10	—	—	—
2009/9/20	2.95	1.72	3.81	—	—	—
2009/9/21	3.35	1.89	5.35	—	—	—
2009/9/22	3.38	1.98	4.50	—	—	—
2009/9/23	3.16	2.02	4.37	—	—	—
2009/9/24	3.53	1.95	4.97	—	—	—
2009/9/25	3.75	2.33	5.54	—	—	—
2009/9/26	4.11	2.86	8.72	—	—	—
2009/9/27	4.14	2.71	5.11	—	—	—
2009/9/28	5.68	5.22	6.99	—	—	—
2009/9/29	—	—	—	—	—	—
2009/9/30	—	—	—	—	—	—
<i>Monthly</i>	3.47	1.58	8.72	—	—	—

Table 5-10. Chlorophyll *a* fluorescence and turbidity data at 1.8 m depth in Oyako Ike, October 2009.

Date	Chlorophyll (relative)			Turbidity (FTU)		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/10/1	—	—	—	—	—	—
2009/10/2	—	—	—	—	—	—
2009/10/3	—	—	—	—	—	—
2009/10/4	—	—	—	—	—	—
2009/10/5	—	—	—	—	—	—
2009/10/6	—	—	—	—	—	—
2009/10/7	—	—	—	—	—	—
2009/10/8	—	—	—	—	—	—
2009/10/9	—	—	—	—	—	—
2009/10/10	—	—	—	—	—	—
2009/10/11	—	—	—	—	—	—
2009/10/12	—	—	—	—	—	—
2009/10/13	—	—	—	—	—	—
2009/10/14	—	—	—	—	—	—
2009/10/15	—	—	—	—	—	—
2009/10/16	—	—	—	—	—	—
2009/10/17	—	—	—	—	—	—
2009/10/18	—	—	—	—	—	—
2009/10/19	—	—	—	—	—	—
2009/10/20	—	—	—	—	—	—
2009/10/21	—	—	—	—	—	—
2009/10/22	—	—	—	—	—	—
2009/10/23	—	—	—	—	—	—
2009/10/24	—	—	—	—	—	—
2009/10/25	5.95	4.27	7.68	—	—	—
2009/10/26	—	—	—	—	—	—
2009/10/27	—	—	—	—	—	—
2009/10/28	3.20	2.16	4.78	—	—	—
2009/10/29	3.12	1.74	5.22	—	—	—
2009/10/30	3.45	1.98	5.37	—	—	—
2009/10/31	3.28	1.52	6.48	—	—	—
<i>Monthly</i>	3.80	1.52	7.68	—	—	—

Table 5-11. Chlorophyll *a* fluorescence and turbidity data at 1.8 m depth in Oyako Ike, November 2009.

Date	Chlorophyll (relative)			Turbidity (FTU)		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/11/1	3.54	2.18	4.76	—	—	—
2009/11/2	—	—	—	—	—	—
2009/11/3	—	—	—	—	—	—
2009/11/4	—	—	—	—	—	—
2009/11/5	—	—	—	—	—	—
2009/11/6	—	—	—	—	—	—
2009/11/7	—	—	—	—	—	—
2009/11/8	—	—	—	—	—	—
2009/11/9	—	—	—	—	—	—
2009/11/10	—	—	—	—	—	—
2009/11/11	—	—	—	—	—	—
2009/11/12	2.83	1.90	3.89	—	—	—
2009/11/13	3.58	1.95	5.28	—	—	—
2009/11/14	—	—	—	—	—	—
2009/11/15	3.66	1.85	5.95	—	—	—
2009/11/16	3.46	1.54	5.95	—	—	—
2009/11/17	3.01	1.46	4.86	—	—	—
2009/11/18	3.75	3.24	4.17	—	—	—
2009/11/19	4.31	2.41	8.94	—	—	—
2009/11/20	2.75	1.45	4.75	—	—	—
2009/11/21	3.50	2.34	4.85	—	—	—
2009/11/22	3.53	1.67	6.92	—	—	—
2009/11/23	3.23	1.93	4.88	—	—	—
2009/11/24	2.80	1.57	4.18	—	—	—
2009/11/25	2.37	1.52	3.98	—	—	—
2009/11/26	3.15	2.12	4.90	—	—	—
2009/11/27	2.55	1.90	3.15	—	—	—
2009/11/28	2.76	1.49	4.70	—	—	—
2009/11/29	3.39	1.55	5.61	—	—	—
2009/11/30	3.16	2.23	8.57	—	—	—
<i>Monthly</i>	3.23	1.45	8.94	—	—	—

Table 5-12. Chlorophyll *a* fluorescence and turbidity data at 1.8 m depth in Oyako Ike, December 2009.

Date	Chlorophyll (relative)			Turbidity (FTU)		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/12/1	2.51	1.41	4.67	—	—	—
2009/12/2	—	—	—	—	—	—
2009/12/3	—	—	—	—	—	—
2009/12/4	—	—	—	—	—	—
2009/12/5	2.47	1.82	3.13	—	—	—
2009/12/6	1.75	1.00	3.58	—	—	—
2009/12/7	1.46	0.90	2.10	—	—	—
2009/12/8	1.42	0.76	2.67	—	—	—
2009/12/9	1.24	0.75	2.33	—	—	—
2009/12/10	1.45	0.79	2.80	—	—	—
2009/12/11	1.95	1.50	2.30	—	—	—
2009/12/12	4.60	3.64	5.53	—	—	—
2009/12/13	4.21	4.00	4.53	—	—	—
2009/12/14	0.96	0.75	1.27	—	—	—
2009/12/15	1.05	0.70	1.51	—	—	—
2009/12/16	0.97	0.69	1.27	—	—	—
2009/12/17	1.18	0.87	1.48	—	—	—
2009/12/18	2.69	1.19	5.43	—	—	—
2009/12/19	1.22	0.64	7.65	—	—	—
2009/12/20	2.85	2.02	4.37	—	—	—
2009/12/21	3.29	2.57	4.00	—	—	—
2009/12/22	2.46	2.46	2.46	—	—	—
2009/12/23	1.04	0.77	1.36	—	—	—
2009/12/24	1.01	0.76	1.23	—	—	—
2009/12/25	0.99	0.76	1.20	—	—	—
2009/12/26	1.20	0.72	1.97	—	—	—
2009/12/27	—	—	—	—	—	—
2009/12/28	1.65	1.60	1.69	—	—	—
2009/12/29	1.03	0.81	1.30	—	—	—
2009/12/30	1.92	1.36	3.19	—	—	—
2009/12/31	2.08	1.59	3.42	—	—	—
<i>Monthly</i>	1.88	0.64	7.65	—	—	—

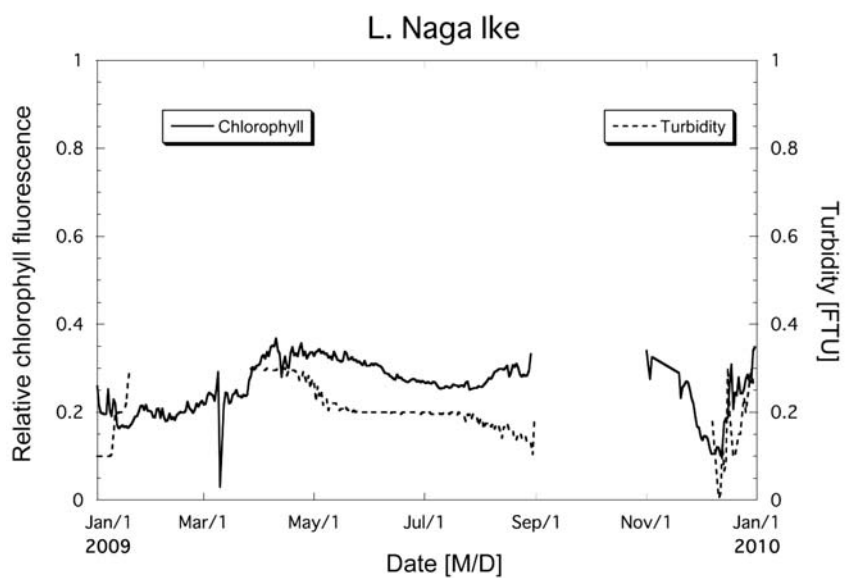


Fig. 8. Seasonal changes of chlorophyll fluorescence and turbidity at 2.3 m depth in Naga Ike (2009–2010). Daily average data.

Table 6-1 Chlorophyll *a* fluorescence and turbidity data at 2.3 m depth in Naga Ike, January 2009.

Depth	Chlorophyll (relative)			Turbidity (FTU)		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/1/1	0.26	0.17	0.87	0.10	0.10	0.10
2009/1/2	0.22	0.15	0.51	0.10	0.10	0.10
2009/1/3	0.20	0.13	0.47	0.10	0.10	0.10
2009/1/4	0.20	0.14	0.28	0.10	0.10	0.10
2009/1/5	0.20	0.13	0.28	0.10	0.10	0.10
2009/1/6	0.20	0.13	0.28	0.10	0.10	0.20
2009/1/7	0.25	0.14	0.37	0.10	0.10	0.10
2009/1/8	0.20	0.13	0.29	0.10	0.10	0.10
2009/1/9	0.19	0.12	0.28	0.10	0.10	0.20
2009/1/10	0.23	0.15	0.33	0.15	0.10	0.20
2009/1/11	0.22	0.14	0.34	0.20	0.20	0.20
2009/1/12	0.17	0.12	0.30	0.20	0.10	0.20
2009/1/13	0.16	0.10	0.29	0.20	0.20	0.20
2009/1/14	0.17	0.11	0.28	0.20	0.20	0.20
2009/1/15	0.17	0.12	0.28	0.20	0.20	0.20
2009/1/16	0.17	0.12	0.28	0.20	0.20	0.30
2009/1/17	0.17	0.12	0.27	0.22	0.20	0.30
2009/1/18	0.16	0.10	0.27	0.27	0.20	0.30
2009/1/19	0.17	0.10	0.26	0.30	0.20	0.30
2009/1/20	0.17	0.12	0.27	0.30	0.20	0.30
2009/1/21	0.18	0.12	0.28	0.30	0.30	0.30
2009/1/22	0.19	0.12	0.30	0.30	0.30	0.30
2009/1/23	0.19	0.12	0.32	0.30	0.30	0.30
2009/1/24	0.20	0.13	0.30	0.30	0.30	0.30
2009/1/25	0.21	0.13	0.32	0.30	0.20	0.30
2009/1/26	0.22	0.15	0.32	0.30	0.30	0.30
2009/1/27	0.21	0.13	0.31	0.30	0.30	0.30
2009/1/28	0.22	0.14	0.30	0.30	0.30	0.30
2009/1/29	0.20	0.12	0.30	0.30	0.30	0.30
2009/1/30	0.20	0.12	0.30	0.30	0.30	0.30
2009/1/31	0.20	0.12	0.30	0.30	0.30	0.30
<i>Monthly</i>	0.20	0.10	0.87	0.21	0.10	0.30

Table 6-2 Chlorophyll *a* fluorescence and turbidity data at 2.3 m depth in Naga Ike, February 2009.

Date	Chlorophyll (relative)			Turbidity (FTU)		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/2/1	0.19	0.10	0.29	0.30	0.30	0.30
2009/2/2	0.19	0.12	0.28	0.30	0.30	0.30
2009/2/3	0.21	0.12	0.28	0.30	0.30	0.30
2009/2/4	0.21	0.15	0.28	0.30	0.30	0.30
2009/2/5	0.19	0.12	0.28	0.30	0.30	0.30
2009/2/6	0.21	0.15	0.27	0.30	0.30	0.30
2009/2/7	0.19	0.12	0.28	0.30	0.30	0.30
2009/2/8	0.18	0.12	0.27	0.30	0.30	0.30
2009/2/9	0.18	0.12	0.27	0.30	0.30	0.30
2009/2/10	0.20	0.14	0.26	0.30	0.30	0.30
2009/2/11	0.18	0.12	0.27	0.30	0.30	0.30
2009/2/12	0.19	0.13	0.27	0.30	0.30	0.30
2009/2/13	0.18	0.12	0.27	0.30	0.30	0.30
2009/2/14	0.19	0.12	0.27	0.30	0.30	0.30
2009/2/15	0.20	0.13	0.27	0.30	0.30	0.30
2009/2/16	0.20	0.12	0.27	0.30	0.30	0.30
2009/2/17	0.20	0.12	0.28	0.30	0.30	0.30
2009/2/18	0.20	0.13	0.28	0.30	0.30	0.30
2009/2/19	0.20	0.12	0.29	0.30	0.30	0.30
2009/2/20	0.22	0.12	0.30	0.30	0.30	0.30
2009/2/21	0.21	0.14	0.27	0.30	0.30	0.30
2009/2/22	0.21	0.12	0.30	0.30	0.30	0.30
2009/2/23	0.20	0.12	0.29	0.30	0.30	0.30
2009/2/24	0.21	0.14	0.28	0.30	0.30	0.30
2009/2/25	0.22	0.13	0.28	0.30	0.30	0.30
2009/2/26	0.21	0.14	0.30	0.30	0.30	0.30
2009/2/27	0.22	0.15	0.29	0.30	0.30	0.30
2009/2/28	0.23	0.14	0.30	0.30	0.30	0.30
<i>Monthly</i>	0.21	0.12	0.30	0.30	0.30	0.30



Table 6-3 Chlorophyll *a* fluorescence and turbidity data at 2.3 m depth in Naga Ike, March 2009.

Depth	Chlorophyll (relative)			Turbidity (FTU)		
Date	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/3/1	0.22	0.13	0.30	0.30	0.30	0.30
2009/3/2	0.22	0.14	0.31	0.30	0.30	0.30
2009/3/3	0.24	0.15	0.32	0.30	0.30	0.30
2009/3/4	0.25	0.14	0.32	0.30	0.30	0.30
2009/3/5	0.24	0.15	0.32	0.30	0.30	0.30
2009/3/6	0.24	0.15	0.33	0.30	0.30	0.30
2009/3/7	0.23	0.13	0.32	0.30	0.30	0.30
2009/3/8	0.26	0.17	0.33	0.30	0.30	0.30
2009/3/9	0.29	0.25	0.97	0.30	0.30	0.30
2009/3/10	0.03	–	0.35	0.30	0.30	0.30
2009/3/11	0.12	–	0.28	0.30	0.30	0.30
2009/3/12	0.21	0.15	0.29	0.30	0.30	0.30
2009/3/13	0.25	0.14	0.30	0.30	0.30	0.30
2009/3/14	0.24	0.15	0.30	0.30	0.30	0.30
2009/3/15	0.22	0.12	0.32	0.30	0.30	0.30
2009/3/16	0.22	0.12	0.30	0.30	0.30	0.30
2009/3/17	0.24	0.14	0.30	0.30	0.30	0.30
2009/3/18	0.24	0.15	0.32	0.30	0.30	0.30
2009/3/19	0.25	0.17	0.30	0.30	0.30	0.30
2009/3/20	0.24	0.13	0.31	0.30	0.30	0.30
2009/3/21	0.24	0.13	0.32	0.30	0.30	0.30
2009/3/22	0.23	0.12	0.32	0.30	0.30	0.30
2009/3/23	0.24	0.14	0.32	0.30	0.30	0.30
2009/3/24	0.24	0.13	0.30	0.30	0.30	0.30
2009/3/25	0.24	0.14	0.32	0.30	0.30	0.30
2009/3/26	0.27	0.19	0.32	0.30	0.30	0.30
2009/3/27	0.28	0.19	0.34	0.30	0.30	0.30
2009/3/28	0.30	0.22	0.35	0.29	0.20	0.30
2009/3/29	0.30	0.19	0.36	0.30	0.30	0.30
2009/3/30	0.31	0.22	0.35	0.30	0.30	0.30
2009/3/31	0.31	0.22	0.36	0.30	0.20	0.30
<i>Monthly</i>	0.24	0.12	0.97	0.30	0.20	0.30

Table 6-4 Chlorophyll *a* fluorescence and turbidity data at 2.3 m depth in Naga Ike, April 2009.

Depth	Chlorophyll (relative)			Turbidity (FTU)		
Date	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/4/1	0.31	0.22	0.35	0.30	0.20	0.30
2009/4/2	0.33	0.27	0.37	0.30	0.20	0.30
2009/4/3	0.33	0.25	0.37	0.30	0.20	0.30
2009/4/4	0.32	0.24	0.37	0.30	0.20	0.30
2009/4/5	0.34	0.25	0.38	0.30	0.30	0.30
2009/4/6	0.33	0.25	0.38	0.30	0.30	0.30
2009/4/7	0.35	0.30	0.40	0.30	0.30	0.30
2009/4/8	0.35	0.29	0.41	0.30	0.20	0.30
2009/4/9	0.35	0.26	0.39	0.30	0.20	0.30
2009/4/10	0.37	0.34	0.43	0.30	0.20	0.30
2009/4/11	0.34	0.27	0.41	0.30	0.30	0.30
2009/4/12	0.33	0.22	0.44	0.30	0.30	0.30
2009/4/13	0.28	0.17	0.42	0.30	0.20	0.30
2009/4/14	0.31	0.18	0.41	0.30	0.30	0.30
2009/4/15	0.33	0.22	0.42	0.30	0.30	0.30
2009/4/16	0.30	0.17	0.43	0.28	0.20	0.30
2009/4/17	0.30	0.20	0.42	0.30	0.20	0.30
2009/4/18	0.33	0.23	0.42	0.30	0.30	0.30
2009/4/19	0.35	0.29	0.42	0.30	0.20	0.30
2009/4/20	0.33	0.19	0.41	0.30	0.20	0.30
2009/4/21	0.33	0.23	0.43	0.29	0.20	0.30
2009/4/22	0.33	0.23	0.42	0.29	0.20	0.30
2009/4/23	0.35	0.25	0.43	0.27	0.20	0.30
2009/4/24	0.36	0.32	0.45	0.28	0.20	0.30
2009/4/25	0.33	0.25	0.44	0.29	0.20	0.30
2009/4/26	0.34	0.25	0.42	0.28	0.20	0.30
2009/4/27	0.32	0.22	0.41	0.27	0.20	0.30
2009/4/28	0.33	0.20	0.40	0.28	0.20	0.30
2009/4/29	0.34	0.22	0.40	0.25	0.20	0.30
2009/4/30	0.34	0.22	0.40	0.28	0.20	0.30
<i>Monthly</i>	0.33	0.17	0.45	0.29	0.20	0.30

Table 6-5 Chlorophyll *a* fluorescence and turbidity data at 2.3 m depth in Naga Ike, May 2009.

Depth	Chlorophyll (relative)			Turbidity (FTU)		
Date	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/5/1	0.33	0.20	0.41	0.27	0.20	0.30
2009/5/2	0.34	0.22	0.40	0.23	0.20	0.30
2009/5/3	0.34	0.24	0.42	0.26	0.20	0.30
2009/5/4	0.34	0.25	0.40	0.24	0.20	0.30
2009/5/5	0.33	0.23	0.38	0.25	0.20	0.30
2009/5/6	0.34	0.24	0.38	0.22	0.20	0.30
2009/5/7	0.33	0.22	0.38	0.23	0.20	0.30
2009/5/8	0.33	0.24	0.38	0.23	0.20	0.30
2009/5/9	0.32	0.24	0.37	0.20	0.20	0.30
2009/5/10	0.33	0.24	0.37	0.22	0.20	0.30
2009/5/11	0.32	0.23	0.37	0.22	0.20	0.30
2009/5/12	0.34	0.25	0.38	0.22	0.20	0.30
2009/5/13	0.33	0.27	0.37	0.22	0.20	0.30
2009/5/14	0.32	0.24	0.36	0.21	0.20	0.30
2009/5/15	0.32	0.24	0.36	0.20	0.20	0.30
2009/5/16	0.31	0.24	0.35	0.21	0.20	0.30
2009/5/17	0.32	0.25	0.37	0.21	0.10	0.30
2009/5/18	0.34	0.32	0.37	0.22	0.20	0.30
2009/5/19	0.33	0.28	0.37	0.21	0.20	0.30
2009/5/20	0.32	0.27	0.36	0.20	0.20	0.30
2009/5/21	0.32	0.28	0.35	0.21	0.20	0.30
2009/5/22	0.33	0.30	0.35	0.20	0.20	0.20
2009/5/23	0.32	0.30	0.34	0.20	0.20	0.30
2009/5/24	0.32	0.28	0.35	0.20	0.20	0.20
2009/5/25	0.31	0.28	0.34	0.20	0.20	0.30
2009/5/26	0.32	0.29	0.35	0.20	0.20	0.30
2009/5/27	0.31	0.28	0.33	0.20	0.20	0.20
2009/5/28	0.31	0.28	0.33	0.20	0.20	0.20
2009/5/29	0.32	0.29	0.34	0.20	0.20	0.20
2009/5/30	0.31	0.28	0.34	0.20	0.20	0.20
2009/5/31	0.31	0.27	0.33	0.20	0.20	0.20
<i>Monthly</i>	0.32	0.20	0.42	0.22	0.10	0.30

Table 6-6 Chlorophyll *a* fluorescence and turbidity data at 2.3 m depth in Naga Ike, June 2009.

Depth	Chlorophyll (relative)			Turbidity (FTU)		
Date	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/6/1	0.31	0.27	0.34	0.20	0.20	0.20
2009/6/2	0.31	0.27	0.34	0.20	0.20	0.20
2009/6/3	0.31	0.29	0.33	0.20	0.20	0.20
2009/6/4	0.31	0.28	0.35	0.20	0.20	0.20
2009/6/5	0.31	0.27	0.35	0.20	0.20	0.20
2009/6/6	0.31	0.28	0.33	0.20	0.20	0.20
2009/6/7	0.30	0.27	0.35	0.20	0.20	0.20
2009/6/8	0.30	0.28	0.32	0.20	0.20	0.20
2009/6/9	0.29	0.27	0.32	0.20	0.20	0.20
2009/6/10	0.29	0.27	0.32	0.20	0.20	0.20
2009/6/11	0.29	0.27	0.32	0.20	0.20	0.20
2009/6/12	0.28	0.27	0.30	0.20	0.10	0.20
2009/6/13	0.28	0.27	0.30	0.20	0.20	0.20
2009/6/14	0.28	0.25	0.30	0.20	0.20	0.20
2009/6/15	0.27	0.26	0.30	0.20	0.20	0.20
2009/6/16	0.29	0.25	0.32	0.20	0.20	0.30
2009/6/17	0.28	0.25	0.30	0.20	0.20	0.20
2009/6/18	0.28	0.26	0.31	0.20	0.10	0.20
2009/6/19	0.27	0.26	0.28	0.20	0.20	0.20
2009/6/20	0.27	0.25	0.30	0.20	0.20	0.20
2009/6/21	0.27	0.25	0.30	0.20	0.20	0.20
2009/6/22	0.27	0.24	0.30	0.20	0.20	0.20
2009/6/23	0.27	0.25	0.30	0.20	0.20	0.20
2009/6/24	0.27	0.25	0.30	0.20	0.20	0.20
2009/6/25	0.28	0.25	0.32	0.20	0.20	0.20
2009/6/26	0.27	0.26	0.29	0.20	0.20	0.20
2009/6/27	0.27	0.25	0.29	0.20	0.20	0.20
2009/6/28	0.27	0.25	0.29	0.20	0.20	0.20
2009/6/29	0.27	0.24	0.30	0.20	0.10	0.20
2009/6/30	0.27	0.25	0.30	0.20	0.20	0.20
<i>Monthly</i>	0.28	0.24	0.35	0.20	0.10	0.30

Table 6-7 Chlorophyll *a* fluorescence and turbidity data at 2.3 m depth in Naga Ike, July 2009.

Depth	Chlorophyll (relative)			Turbidity (FTU)		
Date	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/7/1	0.27	0.25	0.28	0.20	0.20	0.20
2009/7/2	0.27	0.24	0.29	0.20	0.20	0.20
2009/7/3	0.27	0.25	0.30	0.20	0.10	0.30
2009/7/4	0.27	0.25	0.30	0.20	0.20	0.20
2009/7/5	0.27	0.25	0.28	0.20	0.10	0.20
2009/7/6	0.27	0.24	0.29	0.20	0.10	0.20
2009/7/7	0.27	0.25	0.28	0.20	0.20	0.20
2009/7/8	0.26	0.24	0.28	0.20	0.20	0.20
2009/7/9	0.26	0.24	0.27	0.20	0.20	0.20
2009/7/10	0.25	0.22	0.27	0.20	0.10	0.20
2009/7/11	0.26	0.24	0.28	0.20	0.10	0.20
2009/7/12	0.26	0.23	0.28	0.20	0.20	0.20
2009/7/13	0.26	0.25	0.28	0.20	0.20	0.20
2009/7/14	0.26	0.24	0.29	0.20	0.20	0.20
2009/7/15	0.26	0.24	0.27	0.20	0.10	0.20
2009/7/16	0.26	0.24	0.27	0.20	0.20	0.20
2009/7/17	0.26	0.25	0.28	0.20	0.20	0.20
2009/7/18	0.26	0.24	0.29	0.20	0.10	0.20
2009/7/19	0.26	0.25	0.28	0.19	0.10	0.20
2009/7/20	0.26	0.24	0.27	0.20	0.20	0.20
2009/7/21	0.26	0.24	0.28	0.20	0.10	0.20
2009/7/22	0.26	0.24	0.28	0.19	0.10	0.20
2009/7/23	0.26	0.24	0.28	0.19	0.10	0.20
2009/7/24	0.27	0.24	0.30	0.18	0.10	0.20
2009/7/25	0.27	0.23	0.33	0.20	0.10	0.20
2009/7/26	0.25	0.20	0.32	0.20	0.10	0.20
2009/7/27	0.25	0.20	0.30	0.18	0.10	0.20
2009/7/28	0.25	0.22	0.28	0.20	0.10	0.20
2009/7/29	0.26	0.23	0.28	0.19	0.10	0.20
2009/7/30	0.26	0.24	0.28	0.19	0.10	0.20
2009/7/31	0.26	0.22	0.29	0.17	0.10	0.20
<i>Monthly</i>	0.26	0.20	0.33	0.20	0.10	0.30

Table 6-8 Chlorophyll *a* fluorescence and turbidity data at 2.3 m depth in Naga Ike, August 2009.

Depth	Chlorophyll (relative)			Turbidity (FTU)		
Date	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/8/1	0.26	0.24	0.27	0.18	0.10	0.20
2009/8/2	0.26	0.22	0.29	0.19	0.10	0.20
2009/8/3	0.26	0.23	0.28	0.16	0.10	0.20
2009/8/4	0.27	0.22	0.29	0.18	0.10	0.20
2009/8/5	0.27	0.23	0.30	0.18	0.10	0.20
2009/8/6	0.28	0.25	0.32	0.18	0.10	0.20
2009/8/7	0.28	0.22	0.32	0.17	0.10	0.20
2009/8/8	0.28	0.25	0.32	0.18	0.10	0.20
2009/8/9	0.29	0.27	0.32	0.16	0.10	0.20
2009/8/10	0.29	0.25	0.33	0.18	0.10	0.20
2009/8/11	0.30	0.28	0.33	0.17	0.10	0.20
2009/8/12	0.30	0.27	0.33	0.16	0.10	0.20
2009/8/13	0.30	0.25	0.33	0.14	0.10	0.20
2009/8/14	0.30	0.27	0.32	0.17	0.10	0.20
2009/8/15	0.30	0.28	0.33	0.17	0.10	0.20
2009/8/16	0.31	0.28	0.33	0.18	0.10	0.20
2009/8/17	0.28	0.21	0.33	0.16	0.10	0.20
2009/8/18	0.29	0.27	0.33	0.16	0.10	0.20
2009/8/19	0.31	0.28	0.33	0.16	0.10	0.20
2009/8/20	0.30	0.27	0.35	0.14	0.10	0.20
2009/8/21	0.31	0.28	0.35	0.14	0.10	0.20
2009/8/22	0.30	0.23	0.33	0.15	0.10	0.20
2009/8/23	0.29	0.20	0.33	0.15	0.10	0.20
2009/8/24	0.28	0.17	0.35	0.14	0.10	0.20
2009/8/25	0.29	0.19	0.33	0.14	0.10	0.20
2009/8/26	0.28	0.19	0.33	0.15	0.10	0.20
2009/8/27	0.28	0.18	0.33	0.13	0.10	0.20
2009/8/28	0.30	0.19	0.35	0.13	0.10	0.20
2009/8/29	0.33	0.30	0.81	0.13	0.10	0.20
2009/8/30	—	—	—	0.10	0.10	0.20
2009/8/31	—	—	—	0.19	0.10	0.30
<i>Monthly</i>	0.29	0.17	0.81	0.16	0.10	0.30

Table 6-9 Chlorophyll *a* fluorescence and turbidity data at 2.3 m depth in Naga Ike, September 2009.

Depth Date	Chlorophyll (relative)			Turbidity (FTU)		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/9/1	-	-	-	-	-	-
2009/9/2	-	-	-	-	-	-
2009/9/3	-	-	-	-	-	-
2009/9/4	-	-	-	-	-	-
2009/9/5	-	-	-	-	-	-
2009/9/6	-	-	-	-	-	-
2009/9/7	-	-	-	-	-	-
2009/9/8	-	-	-	-	-	-
2009/9/9	-	-	-	-	-	-
2009/9/10	-	-	-	-	-	-
2009/9/11	-	-	-	-	-	-
2009/9/12	-	-	-	-	-	-
2009/9/13	-	-	-	-	-	-
2009/9/14	-	-	-	-	-	-
2009/9/15	-	-	-	-	-	-
2009/9/16	-	-	-	-	-	-
2009/9/17	-	-	-	-	-	-
2009/9/18	-	-	-	-	-	-
2009/9/19	-	-	-	-	-	-
2009/9/20	-	-	-	-	-	-
2009/9/21	-	-	-	-	-	-
2009/9/22	-	-	-	-	-	-
2009/9/23	-	-	-	-	-	-
2009/9/24	-	-	-	-	-	-
2009/9/25	-	-	-	-	-	-
2009/9/26	-	-	-	-	-	-
2009/9/27	-	-	-	-	-	-
2009/9/28	-	-	-	-	-	-
2009/9/29	-	-	-	-	-	-
2009/9/30	-	-	-	-	-	-
<i>Monthly</i>	-	-	-	-	-	-

Table 6-10 Chlorophyll *a* fluorescence and turbidity data at 2.3 m depth in Naga Ike, October 2009.

Depth Date	Chlorophyll (relative)			Turbidity (FTU)		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/10/1	-	-	-	-	-	-
2009/10/2	-	-	-	-	-	-
2009/10/3	-	-	-	-	-	-
2009/10/4	-	-	-	-	-	-
2009/10/5	-	-	-	-	-	-
2009/10/6	-	-	-	-	-	-
2009/10/7	-	-	-	-	-	-
2009/10/8	-	-	-	-	-	-
2009/10/9	-	-	-	-	-	-
2009/10/10	-	-	-	-	-	-
2009/10/11	-	-	-	-	-	-
2009/10/12	-	-	-	-	-	-
2009/10/13	-	-	-	-	-	-
2009/10/14	-	-	-	-	-	-
2009/10/15	-	-	-	-	-	-
2009/10/16	-	-	-	-	-	-
2009/10/17	-	-	-	-	-	-
2009/10/18	-	-	-	-	-	-
2009/10/19	-	-	-	-	-	-
2009/10/20	-	-	-	-	-	-
2009/10/21	-	-	-	-	-	-
2009/10/22	-	-	-	-	-	-
2009/10/23	-	-	-	-	-	-
2009/10/24	-	-	-	-	-	-
2009/10/25	-	-	-	-	-	-
2009/10/26	-	-	-	-	-	-
2009/10/27	-	-	-	-	-	-
2009/10/28	-	-	-	-	-	-
2009/10/29	-	-	-	-	-	-
2009/10/30	-	-	-	-	-	-
2009/10/31	-	-	-	-	-	-
<i>Monthly</i>	-	-	-	-	-	-

Table 6-11 Chlorophyll *a* fluorescence and turbidity data at 2.3 m depth in Naga Ike, November 2009.

Depth Date	Chlorophyll (relative)			Turbidity (FTU)		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/11/1	0.34	0.27	0.41	—	—	—
2009/11/2	0.31	0.25	0.37	—	—	—
2009/11/3	0.28	0.25	0.32	—	—	—
2009/11/4	0.33	0.26	0.46	—	—	—
2009/11/5	—	—	—	—	—	—
2009/11/6	—	—	—	—	—	—
2009/11/7	—	—	—	—	—	—
2009/11/8	—	—	—	—	—	—
2009/11/9	—	—	—	—	—	—
2009/11/10	—	—	—	—	—	—
2009/11/11	—	—	—	—	—	—
2009/11/12	—	—	—	—	—	—
2009/11/13	—	—	—	—	—	—
2009/11/14	—	—	—	—	—	—
2009/11/15	—	—	—	—	—	—
2009/11/16	—	—	—	—	—	—
2009/11/17	—	—	—	—	—	—
2009/11/18	—	—	—	—	—	—
2009/11/19	0.29	0.24	0.37	—	—	—
2009/11/20	0.23	0.19	0.28	—	—	—
2009/11/21	0.26	0.23	0.31	—	—	—
2009/11/22	0.26	0.18	0.33	—	—	—
2009/11/23	0.27	0.24	0.33	—	—	—
2009/11/24	0.27	0.22	0.32	—	—	—
2009/11/25	0.25	0.22	0.31	—	—	—
2009/11/26	0.23	0.20	0.28	—	—	—
2009/11/27	0.22	0.19	0.26	—	—	—
2009/11/28	0.19	0.17	0.24	—	—	—
2009/11/29	0.17	0.15	0.20	—	—	—
2009/11/30	0.17	0.14	0.21	—	—	—
<i>Monthly</i>	0.25	0.14	0.46	—	—	—

Table 6-12 Chlorophyll *a* fluorescence and turbidity data at 2.3 m depth in Naga Ike, December 2009.

Depth Date	Chlorophyll (relative)			Turbidity (FTU)		
	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>	<i>daily average</i>	<i>minimum</i>	<i>maximum</i>
2009/12/1	0.15	0.11	0.20	—	—	—
2009/12/2	0.14	0.10	0.20	—	—	—
2009/12/3	0.15	0.10	0.19	—	—	—
2009/12/4	0.15	0.11	0.17	—	—	—
2009/12/5	0.14	0.11	0.17	—	—	—
2009/12/6	0.12	0.07	0.15	—	—	—
2009/12/7	0.11	0.07	0.14	0.20	0	0.30
2009/12/8	0.11	0.07	0.14	—	—	—
2009/12/9	0.11	0.08	0.15	—	—	—
2009/12/10	0.12	0.08	0.20	—	—	—
2009/12/11	0.12	0.08	0.27	0.00	0	0.10
2009/12/12	0.10	0.08	0.15	0.02	0	0.10
2009/12/13	0.12	0.07	0.19	0.13	0	0.30
2009/12/14	0.18	0.12	0.22	0.07	0	0.10
2009/12/15	0.19	0.11	0.23	0.08	0	0.20
2009/12/16	0.19	0.11	0.24	0.30	0.30	0.30
2009/12/17	0.26	0.17	0.35	0.20	0.10	0.30
2009/12/18	0.31	0.24	0.43	—	—	—
2009/12/19	0.21	0.12	0.30	0.10	0	0.30
2009/12/20	0.25	0.15	0.38	0.10	0.10	0.10
2009/12/21	0.24	0.18	0.34	—	—	—
2009/12/22	0.28	0.19	0.41	0.15	0.10	0.20
2009/12/23	0.24	0.18	0.40	0.15	0.10	0.20
2009/12/24	0.24	0.17	0.43	0.20	0.10	0.30
2009/12/25	0.25	0.19	0.41	0.23	0.20	0.30
2009/12/26	0.28	0.20	0.40	0.20	0.20	0.20
2009/12/27	0.29	0.22	0.41	—	—	—
2009/12/28	0.27	0.22	0.34	—	—	—
2009/12/29	0.27	0.21	0.35	0.30	0.30	0.30
2009/12/30	0.34	0.30	0.57	0.27	0.20	0.30
2009/12/31	0.35	0.27	0.39	—	—	—
<i>Monthly</i>	0.20	0.07	0.57	0.16	0.00	0.30