

Lake Lacawac, Bruce R. Hargreaves, Lehigh University (brho@lehigh.edu, http://www.lehigh.edu/~brho)
 13Apr09: Station moved from dock from 2:30-3:30pm (problems with ice-shift anchors result in wind direction error until corrected on 10Jun09)
 The water level sensor (referenced to dock) settles for several days after moving platform to lake center and thus underestimates water level during this period.
 Adjusted Tw sensors 13Nov07 based on comparison of depths and vs PUV & YSI sonde profiles (note that Tw at 11.3m matches PUV Tw at 12.5, probably within sediment boundary layer)
 Tw12 adjusted to match others on bottom after moved to dock

H310 sensor depth & Lake level are based on differential pressure sensor with ca 0.1mm resolution & vertical position referenced to bottom of lake.
 Sensor PSIG converted to depth using density of water at 40C (1.43321 psim)
 Lake level is referenced also to lower frame of dock at SE corner (2003-May2005)
 (Actual water level at dock varies seasonally with density of water column and hourly from precip, runoff, evaporation, seepage & outflow. Outflow also varies with status of beaver dam).

Month summary	5280 ft/mile 1609.3 m/mile										Sum PAR										H310 depth-m (40C)	Lakelevel-mm (40C)	cumul. rain-mm	Batt min-V	RH% CR10 enc	RH% MUX enc		
	Tair avg-F	Tair max-F	Tair min-F	Rain-in	WS-mpH	WS max-mpH	WS-min	WS-max	WDIR-deg	Barom-mb	Sum Rad W/m2	Sum PAR μMol/m2	Tw 0.1m	Tw 0.5m	Tw 1m	Tw 2m	Tw 3m	Tw 4m	Tw 5m	Tw 6m							Tw 8m	Tw 10m
month (All)	8.9	12.7	5.1	83.3	101.3	1.9	14.6	63.4	965.2	25192900	517	12.4	12.5	12.5	12.4	12.3	12.3	12.1	11.7	9.0	7.7	7.6	10.2	-54.3	101.3	12.5	30.2	45.4

Data

Location	% records	Date	Day of Yr	Tair avg-C	Tair Hi-C	Tair Min-	RH-air-%	Rain-mm	WS-m/s	WS-Max-WDIR-deg	Barom-mb	Sum Rad J/m2	Sum PAR Mol/m2	Tw 0.1m	Tw 0.5m	Tw 1m	Tw 2m	Tw 3m	Tw 4m	Tw 5m	Tw 6m	Tw 8m	Tw 10m	Tw 12m	H310 depth-m (40C)	Lakelevel-mm (40C)	cumul. rain-mm	Batt min-V	RH% CR10 enc	RH% MUX enc		
LC	100%	10/1/2009	274	6.9	9.3	5.6	91.2	0.2	2.0	7.2	275	963.9	7851394	16	16	16	15.8	15.8	15.7	15.9	15.7	13.8	8.2	7.4	7.5	10.2	-64.9	0.200	12.5	18.6	45.7	
LC	100%	10/2/2009	275	9.4	14.8	4.2	88.6	1.0	1.9	7.8	172	963.1	5451572	12	15	15	15.2	15.2	15.2	15.4	15.2	14.3	8.3	7.5	7.5	10.2	-67.3	1.200	12.5	19.9	43.4	
LC	100%	10/3/2009	276	15.9	19.8	10.6	88.0	1.9	1.3	5.7	193	960.3	13905781	28	15	15	15.4	15.1	15.0	15.2	15.0	14.3	8.3	7.5	7.5	10.2	-65.8	3.100	12.6	27.7	43.6	
LC	100%	10/4/2009	277	12.6	17.7	7.9	79.5	1.1	1.1	8.1	266	961.5	12709319	26	16	16	15.7	15.4	15.1	15.2	15.0	14.2	8.3	7.5	7.5	10.2	-67.1	3.200	12.6	24.8	42.8	
LC	100%	10/5/2009	278	10.2	13.9	7.0	82.1	0.0	2.1	8.2	256	963.0	11592593	24	15	15	15.3	15.2	15.1	15.3	15.0	14.1	8.3	7.5	7.5	10.2	-69.7	3.200	12.6	21.8	40.7	
LC	100%	10/6/2009	279	11.2	16.8	5.8	77.1	0.0	1.8	7.6	244	962.1	16988064	35	15	15	15.1	14.9	14.8	14.9	14.7	14.0	8.3	7.5	7.5	10.1	-72.4	3.200	12.7	23.9	39.8	
LC	100%	10/7/2009	280	12.8	14.8	9.9	77.7	2.6	4.5	14.6	253	952.1	10025523	20	15	15	14.9	14.8	14.8	14.9	14.7	14.1	8.4	7.5	7.5	10.1	-72.8	5.800	12.6	24.8	42.5	
LC	100%	10/8/2009	281	10.6	13.8	7.7	73.3	0.0	2.5	11.4	278	965.6	13818998	28	14	14	14.3	14.2	14.2	14.3	14.1	14.0	8.4	7.5	7.6	10.1	-76.7	5.800	12.6	23.1	40.3	
LC	100%	10/9/2009	282	13.0	15.0	10.5	91.4	15.3	1.1	5.5	191	959.6	2152876	5	14	14	14.2	14.1	14.1	14.2	14.0	13.8	8.4	7.5	7.6	10.1	-72.2	21.100	12.6	24.6	48.3	
LC	100%	10/10/2009	283	11.0	15.3	4.2	89.1	0.3	2.5	11.0	285	961.5	7177323	15	14	14	14.1	14.1	14.0	14.2	14.0	13.9	10.4	7.5	7.5	10.2	-62.7	29.800	12.6	26.9	54.8	
LC	100%	10/11/2009	284	6.7	11.8	2.1	80.1	0.1	1.8	7.4	275	970.2	11949725	24	14	14	13.7	13.7	13.6	13.8	13.6	13.5	8.4	7.5	7.5	10.2	-63.8	21.500	12.6	22.1	46.1	
LC	100%	10/12/2009	285	4.4	7.9	-0.1	79.1	0.0	1.3	4.9	188	933.8	7846721	16	13	13	13.2	13.2	13.1	13.3	13.1	13.0	8.5	7.5	7.5	10.2	-66.2	21.500	12.6	19.7	44.3	
LC	100%	10/13/2009	286	8.1	10.4	4.1	82.6	0.2	3.1	9.6	277	966.5	5594469	12	13	13	12.8	12.8	12.7	12.9	12.8	12.7	8.5	7.5	7.5	10.2	-68.0	21.700	12.6	22.4	45.4	
LC	100%	10/14/2009	287	4.6	7.2	0.7	77.6	0.0	1.9	7.3	236	970.0	12182674	24	12	12	12.4	12.3	12.3	12.4	12.3	12.2	8.8	7.5	7.5	10.1	-70.3	21.700	12.5	20.7	41.8	
LC	100%	10/15/2009	288	1.4	3.5	0.2	93.3	6.1	2.2	6.6	69	963.8	2557953	6	12	12	11.8	11.8	11.7	11.8	11.8	11.7	9.5	7.5	7.5	10.2	-69.4	27.800	12.5	19.7	43.7	
LC	100%	10/16/2009	289	1.9	4.3	-0.3	89.3	2.0	1.9	7.4	62	961.8	5693460	12	11	11	10.9	10.9	10.9	10.9	10.9	10.8	10.4	7.5	7.5	10.2	-62.7	29.800	12.5	50.3	43.2	
LC	100%	10/17/2009	290	3.1	4.5	1.7	89.7	1.1	2.6	4.7	65	965.8	4074077	9	10	10	10.5	10.5	10.5	10.6	10.5	10.5	10.2	7.5	7.5	10.2	-62.3	30.900	12.5	43.7	43.7	
LC	100%	10/18/2009	291	5.0	8.9	2.7	74.6	0.0	2.4	7.8	163	966.8	7393162	15	10	10	10.2	10.2	10.1	10.2	10.2	10.2	10.0	7.5	7.5	10.2	-62.9	30.900	12.5	36.8	44.8	
LC	100%	10/19/2009	292	4.4	10.8	-0.8	74.6	0.0	1.6	7.2	274	968.4	15978321	31	10	10	10.1	10.0	9.9	9.9	9.8	9.7	9.5	7.6	7.5	10.2	-64.8	30.900	12.6	32.7	41.3	
LC	100%	10/20/2009	293	10.3	16.8	2.9	68.5	0.0	1.6	6.8	255	968.5	13921677	28	10	10	10.2	10.0	9.8	9.8	9.7	9.7	9.4	7.7	7.5	10.2	-66.2	30.900	12.7	33.1	41.8	
LC	100%	10/21/2009	294	11.6	17.6	7.4	79.7	0.0	0.7	4.4	237	967.7	5804908	12	11	11	10.5	10.2	9.9	9.9	9.8	9.7	9.4	7.8	7.5	10.2	-66.8	30.900	12.6	33.0	44.8	
LC	100%	10/22/2009	295	14.8	20.8	8.8	69.8	0.0	1.5	8.6	257	964.2	13341125	27	11	11	10.9	10.6	10.0	9.9	9.9	9.4	7.8	7.5	10.2	-67.6	30.900	12.6	34.4	43.9		
LC	100%	10/23/2009	296	9.0	14.0	6.4	87.4	5.2	2.7	9.2	152	966.2	4079981	9	11	11	11.2	11.0	10.4	10.9	10.8	9.7	9.4	8.0	7.5	10.2	-67.5	38.100	12.6	31.4	45.4	
LC	100%	10/24/2009	297	14.3	18.5	7.5	97.0	32.6	2.3	10.6	190	955.9	1597904	4	11	11	11.1	10.9	10.5	10.1	9.9	9.7	9.4	8.0	7.6	10.2	-44.8	68.700	12.5	38.0	48.1	
LC	100%	10/25/2009	298	9.2	12.8	4.8	71.1	0.0	2.7	8.9	305	965.6	13866821	28	11	11	11.2	11.0	10.8	10.5	10.0	9.8	9.4	8.1	7.6	10.2	-23.1	68.700	12.5	39.5	49.7	
LC	100%	10/26/2009	299	7.9	15.4	1.0	76.5	0.0	0.9	4.5	209	973.4	14231993	29	11	11	11.0	10.8	10.7	10.3	10.6	10.1	9.8	9.4	8.2	7.6	10.2	-23.9	68.700	12.6	34.9	44.5
LC	100%	10/27/2009	300	7.1	9.3	4.1	98.8	4.0	1.0	3.9	82	968.2	1819971	4	11	11	10.9	10.7	10.6	10.6	10.1	9.8	9.3	8.2	7.7	10.2	-23.4	72.700	12.6	31.8	46.0	
LC	100%	10/28/2009	301	9.8	10.8	9.3	98.7	28.5	1.6	5.1	84	961.7	2915852	7	11	11	10.8	10.7	10.7	10.7	10.2	9.8	9.4	8.2	7.7	10.2	-3.3	101.200	12.5	38.7	57.0	
LC	100%	10/29/2009	302	10.3	13.1	7.9	85.0	0.1	1.6	4.2	139	971.8	5405729	12	11	11	10.9	10.7	10.6	10.6	10.3	9.8	9.3	8.2	7.7	10.2	-16.6	101.300	12.6	44.6	59.2	
LC	25%	10/30/2009	303	10.1	11.3	8.9	96.9	0.0	1.1	4.2	174	972.2	-69	0	11	11	10.9	10.7	10.6	10.7	10.2	9.9	9.3	8.2	7.7	10.2	-16.8	101.300	12.6	41.1	60.3	

Lake water & energy budget daily summary from hourly data (negative values: loss from lake; runoff & seepage term is residual after adjusting lake level change for all others)

Ratio of lake watershed to lake area:		3.88	Runoff & seepage as % of watershed area precip:					16.9%												
Grand sum/avg		8.91	12.43	12.49	12.51	12.38	12.25	12.30	1.7	25192900	-3514	80.6	101.3	66.1	-52.0	0.0	-35.1			
SumTerreap2=AirV PD.mbar*WS.ms*sc																	4.184	slope		-13.3
Data																	4.184	intercept		r2
DATE	DayOfYr	AvgTair-C	AvgTw 0.1m	AvgTw0.5	Avg Tw1m	Avg Tw2m	Avg Tw3m	Avg Tw4m	AvgWS	SumRad	SumH Evap (*0.9=KJ/m2)	SumLk_Ml chg(mm)	SumRain	SumLake evap(mm)	Sum Terreap2	Sum Out flow (lake mm)				
10/1/2009	274	6.9	15.65	15.76	15.81	15.77	15.93	15.93	1.9	7851394	-2251	-2.531	0.2	1.6	-3.3	0.0	-1.2			
10/2/2009	275	9.37	15.08	15.20	15.24	15.19	15.16	15.36	1.7	5451572	-1503	-1.125	1.0	1.3	-2.2	0.0	-1.2			
10/3/2009	276	15.89	15.45	15.45	15.42	15.08	14.99	15.18	1.2	13805781	-264	1.230	1.9	0.9	-0.4	0.0	-1.2			
10/4/2009	277	12.56	15.58	15.68	15.68	15.39	15.10	15.23	1.4	12709319	-1273	-2.285	0.1	0.7	-1.9	0.0	-1.2			
10/5/2009	278	10.24	15.14	15.24	15.29	15.24	15.13	15.30	2.0	11592593	-1829	-2.812	0.0	1.1	-2.7	0.0	-1.2			
10/6/2009	279	11.18	15.06	15.14	15.09	14.89	14.76	14.93	1.6	16988064	-1536	-2.847	0.0	0.6	-2.3	0.0	-1.2			
10/7/2009	280	12.78	14.72	14.93	14.88	14.83	14.77	14.95	4.1	10025523	-2821	-0.457	2.6	2.3	-4.1	0.0	-1.2			
10/8/2009	281	10.57	14.15	14.25	14.29	14.23	14.18	14.30	2.3	13818998	-2138	-3.410	0.0	0.9	-3.1	0.0	-1.2			
10/9/2009	282	13.02	14.06	14.14	14.18	14.10	14.06	14.21	1.0	2152876	-364	10.665	15.3	2.5	-0.5	0.0	-1.2			
10/10/2009	283	10																		