

Lake Lacawac, Bruce R. Hargreaves, Lehigh University (brh0@lehigh.edu, http://www.lehigh.edu/~brh0) 41°22.5'N 75°17.3'W elevation 428m  
 18 May 2013, 4:30-6:43pm EDT; platform moved to lake center 16 Nov 2013; platform moved to dock 11:45-13:00 EDT  
 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.

H310 sensor depth & Lake level are based on differential pressure sensor with ca 0.1mm resolution & vertical position referenced to bottom of lake.  
 Sensor PS1C converted to depth using density of water at 40C (1.43321 psf/m)  
 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		Std pressure at sea level = atm = 760 mm Hg = 29.92" Hg = 1013.2 mbars										Std pressure at 428m elevation = 724 mm Hg, 29.61 in. Hg. (965.2 mbars)																		
Month	avg Tw	Tair avg F	Tair max F	Tair min F	Rain-in mm	WS-mph	WS max mph	WS-min m/s	WS-max m/s	WDIR-deg	Barom-mb	Sum Rad W/m2	Sum PAR μMol/m2/s	Tw 0.1m F	Tw 0.5m F	Tw 1m F	Tw 2m F	Tw 3m F	Tw 4m F	Tw 5m F	Tw 6m F	Tw 8m F	Tw 10m F	Tw 12m F	H310_z (m)	Lakelevel-mm (40C)	cumul. rain-mm	Batt min-V	RH% CR10 enc	RH% MUX enc
month	(All)	3.5	-6.1	9.7	-24.9	70.7	20.9	1.7	11.3	228.1	963.4	253526118	501	0.22	2.6	3.3	3.5	3.6	3.7	3.7	3.9	3.7	3.7	3.6	2.1	146.5	20.9	12.5	25.1	17.3

PAR & PYR Integration period=15min instead of 60min after 11am on 9/11/2013

Location	% records	Date	Day of Yr	Tair avg-C	Tair Hi-C	Tair Min-C	Rhair-%	Rain-mm	WS-m/s	WS Max	WDIR-deg	Barom-mb	Sum Rad J/m2	Sum PAR μMol/m2/s	Tw 0.1m	Tw 0.5m	Tw 1m	Tw 2m	Tw 3m	Tw 4m	Tw 5m	Tw 6m	Tw 8m	Tw H310-C	Tw 12m	H310 depth-m (40C)	Lakelevel-cumul. rain-mm (40C)	Batt min-V	RH% CR10 enc	RH% MUX enc	
ND	100%	2/12/2014	32	2.6	4.9	-4.1	57.3	0.2	0.6	5.9	179	968.9	6948050	14.3	-0.02	2.65	3.28	3.35	3.48	3.67	3.56	3.83	3.72	3.6	3.54	2.0	52.3	0.200	12.6	27.8	18.4
ND	100%	2/22/2014	33	2.0	6.7	-1.9	80.5	0.4	1.0	5.6	284	962.4	2617643	5.9	0.03	2.64	3.28	3.36	3.48	3.67	3.58	3.83	3.71	3.7	3.55	2.0	54.4	0.600	12.7	28.4	18.0
ND	100%	2/3/2014	34	-3.9	0.0	-6.9	99.9	0.0	1.7	5.4	171	968.1	2108205	5.1	0.05	2.62	3.26	3.37	3.51	3.69	3.60	3.87	3.68	3.7	3.55	2.0	61.2	0.600	12.5	24.5	17.1
ND	100%	2/4/2014	35	-8.5	-2.3	-16.2	81.0	0.6	3.2	5.6	169	974.2	846250	19.1	0.05	2.59	3.25	3.37	3.51	3.69	3.60	3.87	3.72	3.7	3.55	2.0	63.8	0.600	12.5	22.6	17.2
ND	100%	2/5/2014	36	-4.7	-2.6	-6.9	95.8	0.0	2.1	9.9	129	959.0	1912432	4.4	0.08	2.65	3.28	3.38	3.50	3.69	3.63	3.86	3.69	3.7	3.57	2.1	111.5	5.200	12.6	22.2	16.3
ND	100%	2/6/2014	37	-10.3	-6.1	-14.8	83.3	0.0	1.7	8.1	285	968.7	12735366	24.1	0.12	2.72	3.30	3.40	3.48	3.68	3.64	3.86	3.76	3.7	3.56	2.1	142.1	5.200	12.5	25.4	16.5
ND	100%	2/7/2014	38	-8.0	-3.1	-13.3	60.2	0.0	1.6	7.8	278	969.6	13614700	25.4	0.13	2.68	3.28	3.40	3.49	3.70	3.63	3.87	3.73	3.7	3.61	2.1	138.4	5.200	12.7	24.3	15.9
ND	100%	2/8/2014	39	-10.8	-6.4	-18.7	49.9	0.0	0.9	5.3	249	969.8	8633087	17.0	0.13	2.63	3.26	3.40	3.49	3.72	3.66	3.88	3.73	3.7	3.61	2.1	144.8	5.200	12.7	20.3	15.6
ND	100%	2/9/2014	40	-10.6	-4.2	-16.2	75.5	0.0	0.7	5.5	177	964.4	8206719	16.1	0.12	2.59	3.25	3.40	3.50	3.72	3.66	3.89	3.70	3.7	3.61	2.1	149.2	5.200	12.7	20.6	15.7
ND	100%	2/10/2014	41	-10.1	-6.8	-16.0	67.7	0.0	2.5	9.6	307	965.9	8283346	19.7	0.17	2.56	3.24	3.41	3.48	3.71	3.60	3.79	3.71	3.7	3.58	2.1	147.5	5.200	12.7	22.2	15.5
ND	100%	2/11/2014	42	-13.1	-8.9	-19.5	64.4	0.0	1.9	7.7	290	972.7	14241821	25.6	0.13	2.52	3.23	3.41	3.52	3.72	3.57	3.80	3.73	3.7	3.58	2.1	144.0	5.200	12.7	21.3	15.4
ND	100%	2/12/2014	43	-14.1	-4.5	-24.9	63.0	0.0	0.5	4.9	134	975.4	12058830	22.3	0.15	2.50	3.21	3.42	3.53	3.76	3.56	3.85	3.75	3.7	3.58	2.1	140.7	5.200	12.6	21.7	15.6
ND	100%	2/13/2014	44	-6.5	-0.8	-11.4	91.9	0.0	1.8	9.4	87	955.4	1378742	4.3	0.15	2.46	3.21	3.43	3.55	3.70	3.58	3.86	3.71	3.7	3.59	2.1	147.3	5.200	12.6	20.6	15.7
ND	100%	2/14/2014	45	-2.9	-0.8	-5.6	91.2	0.1	3.6	11.3	294	944.0	9306090	18.0	0.21	2.56	3.27	3.42	3.52	3.63	3.55	3.77	3.66	3.7	3.60	2.1	179.6	5.200	12.6	27.6	17.6
ND	100%	2/15/2014	46	-4.4	-2.1	-7.2	91.4	0.0	1.9	10.9	172	954.0	2633531	6.4	0.20	2.58	3.24	3.42	3.53	3.69	3.57	3.87	3.69	3.7	3.59	2.1	179.2	5.300	12.6	24.0	18.1
ND	100%	2/16/2014	47	-10.2	-7.5	-12.8	72.4	0.0	3.0	10.7	309	960.0	7520854	15.2	0.22	2.59	3.26	3.42	3.52	3.68	3.56	3.84	3.67	3.7	3.58	2.1	181.0	5.300	12.6	20.5	17.7
ND	100%	2/17/2014	48	-10.0	-2.3	-15.0	61.1	0.0	2.0	8.0	254	971.1	16036794	29.2	0.17	2.57	3.25	3.43	3.53	3.71	3.58	3.88	3.70	3.7	3.59	2.1	175.8	5.300	12.7	25.9	16.8
ND	100%	2/18/2014	49	-4.0	0.3	-7.7	71.2	0.0	1.5	8.3	205	964.0	4877695	11.7	0.20	2.54	3.26	3.43	3.52	3.70	3.57	3.87	3.67	3.7	3.59	2.1	172.6	5.300	12.7	24.0	17.2
ND	100%	2/19/2014	50	-1.9	4.5	-10.9	86.8	2.6	1.1	9.0	176	958.6	5485961	11.1	0.20	2.53	3.25	3.44	3.53	3.72	3.61	3.89	3.68	3.7	3.59	2.1	171.6	7.900	12.6	26.3	17.7
ND	100%	2/20/2014	51	1.9	9.7	-5.9	63.8	9.5	1.2	8.6	195	966.9	12322535	24.0	0.17	2.51	3.27	3.44	3.54	3.73	3.66	3.92	3.71	3.7	3.60	2.1	171.1	17.400	12.6	34.4	20.0
ND	100%	2/21/2014	52	2.4	6.4	-0.9	90.9	3.4	0.8	7.0	166	957.4	1811894	4.3	0.18	2.48	3.25	3.44	3.54	3.76	3.66	3.92	3.69	3.7	3.60	2.1	172.0	20.800	12.6	32.2	22.4
ND	100%	2/22/2014	53	4.9	9.7	-0.3	38.3	0.0	2.2	9.4	260	961.1	6334984	31.8	0.21	2.48	3.27	3.47	3.55	3.70	3.63	3.87	3.71	3.7	3.65	2.1	176.6	20.800	12.6	35.8	22.1
ND	100%	2/23/2014	54	2.1	7.9	-3.6	62.4	0.0	0.9	5.6	249	961.4	9301429	19.2	0.27	2.53	3.29	3.54	3.63	3.79	3.72	4.00	3.81	3.8	3.68	2.1	174.1	20.800	12.7	30.7	20.5
ND	100%	2/24/2014	55	-4.0	3.0	-7.6	52.0	0.0	3.3	10.4	311	959.8	14328927	27.3	0.33	2.62	3.34	3.60	3.67	3.79	3.72	3.98	3.79	3.8	3.73	2.1	171.5	20.800	12.7	29.5	18.0
ND	100%	2/25/2014	56	-8.8	-4.3	-14.9	70.5	0.1	1.5	7.6	273	961.8	11043772	21.5	0.39	2.70	3.38	3.63	3.71	3.84	3.95	4.05	3.86	3.8	3.78	2.1	169.8	20.900	12.7	22.7	16.5
ND	100%	2/26/2014	57	-11.2	-8.0	-18.6	64.9	0.0	1.6	8.1	254	957.6	11616742	22.5	0.36	2.70	3.38	3.64	3.70	3.87	3.96	4.05	3.85	3.8	3.77	2.2	170.6	20.900	12.6	21.4	16.2
ND	100%	2/27/2014	58	-11.8	-5.9	-19.2	52.7	0.0	2.4	11.2	260	952.8	11292188	21.6	0.36	2.71	3.39	3.64	3.72	3.86	3.92	4.02	3.84	3.8	3.71	2.2	170.6	20.900	12.6	21.1	15.8
ND	75%	2/28/2014	59	-14.7	-8.2	-19.0	48.4	0.0	1.6	6.6	270	970.0	18410032	34.1	0.33	2.71	3.38	3.66	3.74	3.87	3.97	4.07	3.90	3.9	3.77	2.2	167.8	20.900	12.5	23.5	16.1
	0%																														
	0%																														
	0%																														

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	2.6176798	Runoff & seepage as % of watershed area precip	147%													
Grand sum/avg	-6.08	0.18	2.59	3.28	3.45	3.55	3.73	1.5	253526118	-21352	113.7	20.9	215.0	-29.0	0.0	0.0

Nominal diffuse NR from water=2%		#N/A	#N/A	#N/A	3	3.5	0.2	#N/A	-7.8		
Sum Terre vap=Air/PD, mbar*WS, m/s	4.184	=<=CONVERT HEAT TO DEGREES							4.184	slope intercept	
Sum Runoff & seepage, SumLake Sum Terre vap	7%	0.9	6000000							6000000	f2
Solar Heat input (absorbed from solar rad), KJ/m2	6461	-239	6222	3.7%	0.26	3.41	3.38	(0.03)	(0.29)		
Sum H evap (KJ/m2)	2435	-33	2402	1.4%	0.10	3.38	3.42	0.05	(0.05)		
Solar heat absorbed - evap loss (KJ/m2)	1958	-361	1597	18.4%	0.08	3.42	3.44	0.01	(0.07)		
% of absorbed solar heat lost via evap	7874	-484	7390	6.1%	0.31	3.44	3.43	(0.01)	(0.32)		
Solar heat input absorbed from solar rad, Tw 0-6m	1779	-452	1327	25.4%	0.07	3.43	3.38	(0.05)	(0.12)		
Solar heat input absorbed from solar rad, Tw 0-1m	11843	-849	10994	7.2%	0.47	3.38	3.45	0.07	(0.40)		
Solar heat input absorbed from solar rad, Tw 0-0.5m	12659	-661	11998	6.8%	0.50	3.45	3.43	(0.02)	(0.53)		
Solar heat input absorbed from solar rad, Tw 0-0.2m	8032	-840	7192	10.5%	0.32	3.44	3.44	0.01	(0.31)		
Solar heat input absorbed from solar rad, Tw 0-0.1m	7632	-609	7023	8.0%	0.30	3.44	3.44	(0.00)	(0.31)		
Solar heat input absorbed from solar rad, Tw 0-0.05m	7702	-1187	6515	15.4%	0.31	3.44	3.43	(0.01)	(0.31)		
Solar heat input absorbed from solar rad, Tw 0-0.02m	13248	-1146	12101	8.7%	0.53	3.43	3.42	(0.01)	(0.54)		
Solar heat input absorbed from solar rad, Tw 0-0.01m	11214	-779	10434	7.0%	0.45	3.42	3.44	0.02	(0.43)		
Solar heat input absorbed from solar rad, Tw 0-0.005m	1282	-449	833	35.0%	0.05	3.44	3.40	(0.03)	(0.29)		
Solar heat input absorbed from solar rad, Tw 0-0.002m	8655	-596									