

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 16Nov 2013: platform move 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 PSIG 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).

		5280 ft/mile 1609.3 m/mile		Std pressure at sea level = 1 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)																										
		Tair avg F	Tair max F	Tair min F	Rain-in	WS-mpH	WS Max mph																	Lakelevel-mm (40C)	cumul. rain-mm	Batt min-V	RH% CR10 enc	RH% MUX enc		
		20.9	56.4	-9.3	1.71	4.2	27																	38.0	38.0	38.0	38.0	38.0	38.0	
Month summary		avg Tw	Tair avg-C	Tair Hi-C	Tair Min-C	RHair-%	Rain-mm	WS Max-ms	WDIR-deg	Barom-mb	Sum Rad W/m2	Sum PAR uMol/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_z (m)	Lakelevel-mm (40C)	cumul. rain-mm	Batt min-V	RH% CR10 enc	RH% MUX enc	
month (All)		3.1	-6.2	13.5	-22.9	74.7	43.5	1.9	12.2	237.5	961.7	120077374	229	0.4	2.8	3.0	2.9	3.1	3.3	3.2	3.5	3.2	3.4	3.4	1.9	41.8	43.5	12.3	22.9	18.9

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

		Data																														
Location	% records	Date	Day of Yr	Tair avg-C	Tair Min-C	RHair-%	Rain-mm	WS Max m/s	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 H310-C	Tw 12m	H310 depth-m (40C)	Lakelevel-cumul. rain-mm (40C)	Batt min-V	enc	RH% CR10	RH% MUX			
ND	100%	1/2/2014	2	-8.3	-6.3	-11.6	89.6	0.0	2.5	6.6	91	961.4	1369563	3.0	0.69	2.34	2.47	2.43	2.65	2.95	2.87	2.58	2.86	2.7	3.04	1.8	17.7	0.000	12.4	17.6	16.2	
ND	100%	1/3/2014	3	-15.7	-11.6	-21.2	82.7	0.0	3.1	10.3	278	962.6	8320952	15.1	0.77	2.32	2.47	2.46	2.55	2.89	2.78	2.58	2.87	2.7	2.95	1.8	25.9	0.000	12.3	18.4	16.7	
ND	100%	1/4/2014	4	-13.7	-4.7	-22.9	85.9	0.3	0.7	5.7	208	970.5	8365467	15.4	0.78	2.32	2.49	2.59	2.95	2.85	2.60	2.86	2.7	2.88	1.8	20.2	0.000	12.6	20.4	16.6		
ND	100%	1/5/2014	5	-5.2	4.2	-14.3	83.8	0.5	0.8	5.0	146	965.5	5749890	11.4	0.63	2.30	2.50	2.53	2.66	3.00	2.65	2.88	2.8	2.91	1.8	9.800	0.000	12.6	20.4	16.4		
ND	100%	1/6/2014	6	1.5	10.7	-13.5	77.6	9.0	3.0	11.1	271	947.9	1671087	3.5	0.78	2.29	2.53	2.54	2.61	2.91	2.82	2.67	2.88	2.8	2.97	1.8	32.9	18.800	12.5	28.4	27.3	
ND	100%	1/7/2014	7	-18.7	-13.8	-21.4	51.1	0.0	3.5	12.2	284	962.6	8516561	15.3	1.07	2.41	2.59	2.60	2.65	2.90	2.84	2.69	2.88	2.8	2.97	1.8	37.7	18.800	12.4	18.4	18.9	
ND	100%	1/8/2014	8	-14.4	-9.7	-18.3	60.8	0.0	1.8	6.7	272	974.6	8066540	15.0	-18.3	2.62	2.65	2.74	2.69	2.82	3.09	3.06	2.83	3.12	3.0	3.22	1.8	34.5	18.800	12.6	18.2	17.9
ND	100%	1/9/2014	9	-7.6	-2.9	-10.6	61.4	0.0	1.0	5.7	220	979.6	9063589	16.2	0.4	2.81	2.91	2.85	3.00	3.25	3.22	3.03	3.27	3.2	3.38	1.8	30.4	18.800	12.6	21.8	16.9	
ND	100%	1/10/2014	10	-1.9	3.5	-7.0	84.7	1.6	0.4	3.6	184	975.2	4071637	8.1	0.29	2.87	3.00	2.97	3.12	3.38	3.24	3.22	3.37	3.3	3.44	1.8	27.9	20.400	12.6	22.6	16.8	
ND	100%	1/11/2014	11	8.2	13.5	0.8	95.5	18.5	1.3	8.8	234	953.9	1238641	2.9	0.36	2.88	2.97	2.96	3.07	3.36	3.25	3.17	3.30	3.2	3.46	1.9	51.1	43.300	12.6	24.7	16.7	
ND	100%	1/12/2014	12	2.2	7.4	-1.5	68.7	0.0	2.9	10.5	292	955.2	177584	3.8	0.44	2.91	3.02	2.95	3.07	3.35	3.24	3.17	3.32	3.2	3.43	1.9	53.9	38.900	12.5	29.5	24.4	
ND	100%	1/13/2014	13	2.6	7.7	-3.3	71.8	0.0	0.8	5.2	251	962.9	4610490	9.4	0.47	2.96	3.08	3.00	3.15	3.43	3.34	3.27	3.39	3.3	3.46	1.9	53.1	38.900	12.4	25.9	19.2	
ND	100%	1/14/2014	14	4.7	5.5	1.3	89.2	3.5	0.7	4.7	254	955.9	1284111	2.9	0.44	3.00	3.12	3.04	3.21	3.48	3.41	3.32	3.48	3.4	3.53	1.9	53.4	42.400	12.5	30.4	22.2	
ND	100%	1/15/2014	15	1.9	6.4	-1.9	88.6	0.1	0.7	5.9	216	959.8	9355856	18.2	0.51	3.08	3.18	3.09	3.28	3.53	3.50	3.41	3.61	3.4	3.65	1.9	54.3	42.500	12.4	31.0	20.2	
ND	100%	1/16/2014	16	-2.4	0.9	-6.5	84.7	0.8	1.2	5.2	190	959.5	4025198	8.9	0.52	3.12	3.24	3.18	3.37	3.62	3.58	3.51	3.66	3.5	3.65	1.9	53.4	43.300	12.7	25.8	18.2	
ND	100%	1/17/2014	17	-2.5	2.2	-7.7	77.8	0.0	0.3	5.0	208	959.6	7546851	14.2	0.37	3.15	3.25	3.19	3.39	3.65	3.58	3.49	3.65	3.6	3.61	1.9	51.1	43.300	12.6	24.7	16.7	
ND	100%	1/18/2014	18	-4.9	-2.6	-8.2	88.2	0.0	1.9	6.9	253	956.0	1315088	2.8	0.32	3.15	3.28	3.20	3.35	3.63	3.55	3.46	3.60	3.5	3.57	1.9	50.5	43.300	12.6	21.5	16.6	
ND	100%	1/19/2014	19	-6.0	-1.5	-9.9	71.2	0.1	2.2	8.7	271	953.0	6846007	13.3	0.32	3.12	3.27	3.20	3.33	3.62	3.53	3.44	3.56	3.5	3.54	1.9	53.9	43.400	12.5	21.4	16.8	
ND	100%	1/20/2014	20	-1.4	1.2	-8.3	66.1	0.1	2.5	8.2	284	951.6	2225776	4.8	0.29	3.11	3.29	3.23	3.33	3.56	3.50	3.45	3.56	3.5	3.55	1.9	54.2	43.500	12.6	24.9	17.6	
ND	100%	1/21/2014	21	-12.1	-8.4	-16.6	66.1	0.0	2.8	7.1	141	959.6	3888505	8.1	0.35	3.05	3.27	3.23	3.34	3.52	3.44	3.60	3.58	3.5	3.49	2.0	50.0	43.500	12.5	18.4	17.2	
ND	100%	1/22/2014	22	-18.3	-14.0	-22.8	57.3	0.0	3.0	9.0	296	957.9	11508763	20.3	0.11	2.99	3.28	3.26	3.32	3.48	3.37	3.61	3.58	3.5	3.50	2.0	49.7	43.500	12.4	19.2	18.9	
ND	100%	1/23/2014	23	-15.5	-11.2	-19.6	68.0	0.0	1.9	7.0	294	964.5	9238866	16.4	-0.20	2.94	3.29	3.26	3.31	3.61	3.40	3.69	3.64	3.52	3.61	2.0	48.7	43.500	12.6	18.5	18.1	
#N/A	100%	1/24/2014	24	-14.6	-14.6	-14.6	65.9	0.0	4.0	6.5	324	969.5	355	0.0	-0.38	2.91	3.30	3.27	3.35	3.60	3.39	3.55	3.60	3.6	3.47	2.0	46.9	43.500	12.7	17.1	18.0	
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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	16%													
Grand sum/avg	-6.22	0.47	2.79	2.96	2.92	3.05	3.32	1.6	124829547	-17803	27.1	43.5	26.6	-23.8	0.0	0.0
											SumTerre vap=Air/PD, mbar*WS, m/s					

Nominal diffuse NR from water=7%	#N/A	#N/A	15%	3	3.0	0.8
	#N/A	#N/A	15%			

		Data																											
DATE	DOY	AvgTair C	AvgTw 0.1m	AvgTw 0.5m	AvgTw 1m	AvgTw 2m	AvgTw 3m	AvgTw 4m	AvgWS CSI	SumRad J/m2	SumH Evap ('0.9=KJ/m2)	Sum Lk_MJ	Sum Rain	Sum Runoff & seepage, mm	Sum Lake evap (mm)	Sum Terre vap2	Solar Heat input (absorbed from solar rad), KJ/m2	Sum H evap (KJ/m2)	Solar heat absorbed - evap loss (KJ/m2)	% of absorbed solar heat lost via evap	Solar Heat input (absorbed from solar rad), Tw (0-6m)	starting Tw (0-6m)	ending Tw (0-6m)	actual dT, Tw, 0-6m	RESID: NON-SOLAR FLUX (Heat flux to offset absorbed solar to match dT)	evap loss (degC 0-6m)	RESID: NON-SOLAR FLUX to offset absorbed solar to match dT LESS EVAP (degC 0-6m)		
1/2/2014	2	-7.52	1.18	2.25	2.43	2.45	2.62	2.92	1.1	4751985	-770	-2323	0.0	-0.6	-1.0	0.0	4419	-693	3726	15.7%	0.18	2.55	2.62	0.07	(0.10)	-0.03	(0.08)		
1/3/2014	3	-8.15	0.71	2.34	2.47	2.43	2.65	2.95	2.4	1369991	-1027	4974	0.0	7.2	-1.4	0.0	1274	-924	349	72.6%	0.05	2.62	2.59	(0.03)	(0.08)	-0.04	(0.04)		
1/4/2014	4	-15.42	0.76	2.33	2.47	2.45	2.56	2.89	3.0	8320547	-1868	2059	0.0	5.4	-2.5	0.0	7738	-1681	6057	21.7%	0.31	2.59	2.61	(0.02)	(0.29)	-0.07	(0.22)		
1/5/2014	5	-14.02	0.79	2.32	2.48	2.49	2.59	2.95	0.5	8364289	-930	-3327	0.3	-1.5	-1.3	0.0	7779	-837	6942	10.8%	0.31	2.61	2.63	0.02	(0.29)	-0.03	(0.26)		
1/6/2014	6	-5.65	0.63	2.30	2.50	2.53	2.66	3.00	0.6	5750963	-425	6996	8.3	-6.2	-0.6	0.0	5348	-382	4966	7.1%	0.21	2.63	2.63	0.00	(0.21)	-0.02	(0.20)		
1/7/2014	7	2.03	0.77	2.29	2.53	2.54	2.61	2.91	2.4	1671164	-355	16298	10.2	7.4	-0.5	0.0	1554	-319	1235	20.5%	0.06	2.63	2.60	(0.03)	(0.09)	-0.01	(0.08)		
1/8/2014	8	-18.49	1.07	2.42	2.58	2.59	2.64	2.89	3.2	8515880	-2451	-1758	0.0	2.4	-3.3	0.0	7920	-2206	5714	27.9%	0.32	2.60	2.74	0.14	(0.18)	-0.09	(0.09)		
1/9/2014	9	-14.62	0.74	2.64	2.74	2.69	2.81	3.08	1.6	8067245	-1376	-3799	0.0	-1.1	-1.9	0.0	7503	-1239	6264	16.5%	0.30	2.							