

Lake Lacawac, Bruce R. Hargreaves, Lehigh University (brh0@lehigh.edu, http://www.lehigh.edu/~brh0)

4Apr2010: Station moved from dock from 12-2:30pm (new NE anchor installed) 19Sep2010: Station moved to dock 9am-4pm for replacement of deck; mast down middle of day; removed with only 3 lines (missing SE)  
 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  
 Beaver dam bypass pipe installed 6Oct

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 ps/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																																	
		Tair avg F	Tair max F	Tair min F	Rain-in	WS-mph	WS max mph																														
		80.6	58.0	43.1	4.86	5.0	30																														
Month	summary	Tair avg-C	Tair Hi-C	Tair Min-C	RHair-%	Rain-mm	WS-m/s	WS Max- m/s	WDIR-deg	Barom-mb	Sum Rad W/m2	Sum PAR μM/m2/s	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)	10.4	14.5	6.2	82.0	123.9	2.2	13.4	209.2	961.0	205563828	410	15.2	15.3	15.1	15.4	15.2	15.4	15.3	14.7	9.2	7.4	7.0	10.2	66.7	121.6	12.5	14.1	38.4								

		Data																																				
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 μM/m2/s	Tw 0.1m	Tw 0.5m	Tw 1m	Tw 2m	TW3m	TW4m	TW5m	TW6m	TW8m	TW H310-C	TW12m	H310 depth-m (40C)	Lakelevel-cumul. rain-mm (40C)	Batt min-V	RH% CR10 enc	RH% MUX enc									
ND	100%	10/12/2010	274	13.6	16.6	9.0	88.9	44.8	3.6	11.6	254	956.2	7148506	15	19	19	18.7	18.8	18.6	18.8	18.5	15.4	8.6	7.4	7.1	10.3	113.3	42.500	12.5	16.3	42.5							
ND	100%	10/2/2010	275	10.3	15.3	6.3	81.5	0.0	1.9	7.1	233	963.4	17881474	36	18	18	17.9	18.0	17.8	17.9	17.6	16.3	8.7	7.4	7.0	10.2	81.8	42.600	12.5	13.8	34.5							
ND	100%	10/3/2010	276	9.6	15.5	3.7	81.1	0.1	1.8	7.6	192	968.2	18666677	37	18	18	17.6	17.7	17.5	17.6	17.6	16.3	8.7	7.4	7.0	10.2	81.8	42.600	12.6	12.9	33.0							
ND	100%	10/4/2010	277	8.1	10.5	7.2	97.5	20.0	2.3	7.1	285	968.6	2309321	5	17	17	17.0	17.1	17.0	17.2	17.2	16.4	8.6	7.3	7.0	10.2	80.0	62.600	12.6	12.6	37.6							
ND	100%	10/5/2010	278	9.6	11.0	8.1	100.7	27.5	1.5	4.8	273	964.9	2489233	6	16	16	16.3	16.3	16.2	16.4	16.5	16.0	8.5	7.3	7.0	10.2	109.8	90.100	12.5	13.9	42.4							
ND	100%	10/6/2010	279	10.8	12.5	8.6	93.9	2.1	1.5	5.5	127	959.7	6625004	14	16	16	15.9	16.0	15.9	16.1	16.1	15.8	8.8	7.3	7.0	10.3	116.3	92.200	12.5	14.5	43.4							
ND	100%	10/7/2010	280	13.2	17.6	9.3	77.2	0.0	3.5	11.3	221	955.5	13937600	28	16	16	15.7	15.7	15.6	15.8	15.8	15.5	8.5	7.4	7.0	10.2	90.7	92.200	12.5	16.3	39.3							
ND	100%	10/8/2010	281	14.3	20.0	8.2	62.7	0.0	2.3	8.3	198	962.1	17850946	35	15	15	15.5	15.5	15.3	15.4	15.4	15.2	8.4	7.4	6.9	10.2	67.8	92.200	12.6	14.6	36.8							
ND	100%	10/9/2010	282	13.4	18.5	7.1	60.9	0.0	2.3	9.0	225	963.1	17390389	35	15	15	15.5	15.5	15.4	15.5	15.3	15.0	8.4	7.4	6.9	10.2	54.4	92.200	12.6	13.4	36.9							
ND	100%	10/10/2010	283	10.5	19.8	1.1	69.5	0.0	1.4	6.5	197	961.1	17409380	34	15	15	15.4	15.2	15.0	15.2	15.2	14.8	8.4	7.4	6.9	10.2	48.3	92.200	12.6	13.1	33.1							
ND	100%	10/11/2010	284	14.4	20.3	10.1	85.9	9.8	1.3	7.7	194	958.7	11099765	23	16	16	15.5	15.3	15.0	15.1	15.1	14.8	8.6	7.4	6.9	10.2	43.0	102.000	12.6	13.0	38.1							
ND	100%	10/12/2010	285	12.4	15.7	6.6	84.7	5.4	2.1	8.8	225	959.3	10490097	21	15	15	15.6	15.6	15.2	15.2	15.1	14.7	8.7	7.4	7.0	10.2	54.6	107.400	12.6	14.0	40.9							
ND	100%	10/13/2010	286	8.2	16.4	1.3	77.5	0.0	1.0	3.9	179	964.9	17488202	34	15	15	15.2	15.1	14.9	15.0	14.9	14.6	8.6	7.4	6.9	10.2	48.0	107.400	12.6	13.8	35.7							
ND	100%	10/14/2010	287	7.4	11.9	2.0	94.9	11.2	1.1	5.9	150	960.0	14780862	10	15	15	14.8	14.8	14.7	14.9	14.8	14.5	8.6	7.4	6.9	10.2	44.8	118.600	12.6	12.4	38.1							
ND	100%	10/15/2010	288	7.2	9.3	5.7	90.4	2.5	4.6	12.7	206	960.2	5892765	12	14	14	14.1	14.1	14.0	14.3	14.3	14.2	8.8	7.4	6.9	10.2	56.4	121.100	12.5	14.6	41.2							
ND	100%	10/16/2010	289	8.9	11.9	7.0	72.3	0.5	5.0	13.4	235	958.4	9915488	20	13	13	13.1	13.2	13.1	13.3	13.3	13.2	10.4	7.4	7.0	10.2	56.0	121.600	12.5	18.3	41.2							
ND	100%	10/17/2010	290	10.7	16.6	4.9	66.4	0.0	2.4	9.8	204	960.8	14317041	28	13	13	12.8	12.9	12.7	12.8	12.5	12.6	11.6	7.4	6.9	10.2	42.9	121.600	12.6	14.4	37.6							
ND	100%	10/18/2010	291	8.6	11.3	5.5	73.2	0.0	2.2	9.4	191	962.3	10090300	21	12	12	12.5	12.6	12.5	12.7	12.4	12.5	11.9	7.4	7.0	10.2	35.1	121.600	12.6	13.2	39.2							
ND	25%	10/19/2010	292	5.8	6.0	5.4	98.1	0.0	0.7	1.9	185	961.8	1078	0	12	12	12.4	12.4	12.3	12.5	12.2	12.5	11.6	7.5	7.0	10.2	30.4	121.600	12.7	12.7	38.7							
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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	2.617675%	Runoff & seepage as % of watershed area precip	51.5%													
Grand sum/avg	10.36	15.24	15.30	15.33	15.36	15.19	15.36	2.0	205563828	-36891	-14.8	123.8	165.9	-54.1	-0.6	0.0
									SumTerreVap2=AirV							
									PD.mbar/WS.m/s's							

Nominal diffuse %R from water=7%	#N/A	#N/A	26%

	16	15.3	-6.1

←SCALE ADJ (1.000 adjustment)  
 4.184 joule/calorie (e joule/degree for 1cm3)

4.184 slope intercept

←CONVERT HEAT TO DEGREES cm3/m2 (for 0-4m integrated depth)

6000000

		Data																											
DATE	DayOfYr	AvgTair C	AvgTw 0.1m	AvgTw 0.5m	Avg Tw1m	Avg Tw2m	Avg Tw3m	Avg Tw4m	Avg WS	SumRad J/m2	SumH Evap (0.9*H310m2)	SumLk_lvlSumRain c/m	SumRunoff & seepage mm	SumLake evap (mm)	SumTerreVap2														
10/1/2010	274	13.59	18.53	18.61	18.67	18.76	18.83	18.84	3.3	7148506	-3305	64.367	44.8	141.7	-4.4	-0.1													
10/2/2010	275	10.33	17.82	17.89	17.93	18.00	17.78	17.94	1.7	17881474	-2616	-22.745	0.0	-2.1	-3.8	0.0													
10/3/2010	276	9.63	17.52	17.58	17.63	17.69	17.48	17.62	1.6	18666677	-2606	-10.160	0.1	-2.1	-3.8	0.0													
10/4/2010	277	8.14	16.86	16.95	17.01	17.09	16.97	17.20	2.2	2309321	-2441	10.687	20.0	1.8	-3.6	0.0													
10/5/2010	278	9.55	16.09	16.17	16.25	16.31	16.20	16.42	1.4	2489233	-1309	31.006	27.5	20.3	-1.9	0.0													
10/6/2010	279	10.75	15.80	15.87	15.94	15.99	15.87	16.07	1.4	6625004	-1151	-14.694	2.1	6.2	-1.7	0.0													
10/7/2010	280																												