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)
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 4oC (1.43321 psi/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					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					
	55.3	63.6	45.8		1.89	5.2	31					60.3	60.2	59.4	56.3	53.6	52.6	49.9	46.7	43.1	42.9	42.1					
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 uM/m2/s	Tw 0.1m	Tw 0.5m	Tw 1m	Tw 2m	Tw 3m	Tw 4m	Tw 5m	Tw 6m	Tw 8m	Tw10.2m	Tw11.5m	H310_z (m)	Lakelevel-mm (4oC)	cumul. rain-mm	Batt min-V	RH% CR10 enc	RH% MUX enc
	13.0	**17.6**	**7.7**	**74.4**	**48.0**	**2.3**	**14.1**	**228.9**	**963.8**	**354027835**	**738**	**15.7**	**15.6**	**15.2**	**13.5**	**12.0**	**11.4**	**9.9**	**8.2**	**6.2**	**6.1**	**5.6**	**10.2**	**111.9**	**48.0**	**12.7**	**58.0**	**16.6**

month (All)

Data

Location	% records	Date	Day of Yr	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 J/m2	Sum PAR Mol/m2	Tw 0.1m	Tw 0.5m	Tw 1m	Tw 2m	TW3m	TW4m	TW5m	TW6m	TW8m	TW H310-C	TW12m	H310 depth-m (4oC)	Lakelevel-mm (4oC)	cumul. rain-mm	Batt min-V	RH% CR10 enc	RH% MUX enc
ND	100%	5/1/2010	121	21.5	29.1	12.2	59.1	0.0	1.6	8.7	232	958.6	21987159	46	15	15	13.3	11.6	11.0	10.8	9.8	7.6	5.9	5.9	5.5	10.2	109.9	0.000	12.8	55.3	15.6
ND	100%	5/2/2010	122	23.6	27.8	18.9	70.8	0.0	2.2	9.5	228	958.9	19025753	42	18	17	14.6	11.9	11.1	10.8	9.7	7.8	5.9	5.9	5.5	10.2	109.1	0.000	12.8	56.7	16.7
ND	100%	5/3/2010	123	19.7	23.2	13.7	83.9	2.8	2.2	10.0	231	956.4	11312413	25	19	19	16.6	12.1	11.2	10.8	9.6	7.9	5.9	6.0	5.6	10.2	110.8	2.800	12.8	59.0	18.5
ND	100%	5/4/2010	124	14.4	20.7	9.3	82.8	10.6	1.7	11.6	249	958.8	19977883	42	18	18	17.9	12.4	11.2	10.8	9.5	8.0	6.0	6.0	5.6	10.2	113.1	13.400	12.8	59.5	17.4
ND	100%	5/5/2010	125	16.6	23.8	7.7	59.4	0.0	2.3	9.2	219	961.8	27058168	56	18	18	17.8	12.9	11.3	10.7	9.5	8.0	6.0	6.0	5.6	10.2	121.1	13.400	12.8	57.2	16.0
ND	100%	5/6/2010	126	17.0	20.2	10.9	61.9	0.6	3.5	12.1	259	957.7	24259617	51	18	18	18.1	13.4	11.5	10.8	9.4	8.1	6.1	6.0	5.6	10.2	118.0	14.000	12.8	58.3	15.1
ND	100%	5/7/2010	127	12.7	18.7	6.1	63.3	0.0	1.9	7.7	245	962.3	25653776	53	18	18	17.5	14.8	11.6	10.8	9.4	8.1	6.1	6.0	5.6	10.2	113.7	14.000	12.8	56.9	13.7
ND	100%	5/8/2010	128	12.9	18.0	5.0	72.9	4.6	4.1	14.1	223	950.7	18555888	38	17	17	17.3	15.5	11.8	10.8	9.4	8.1	6.2	6.1	5.6	10.2	113.1	18.600	12.8	58.4	20.3
ND	100%	5/9/2010	129	3.8	5.6	2.4	70.7	0.0	4.8	12.8	295	962.2	11897352	24	14	14	14.5	14.5	13.3	11.1	9.5	8.2	6.2	6.0	5.6	10.2	108.7	18.600	12.8	58.0	18.1
ND	100%	5/10/2010	130	5.6	10.2	0.8	58.1	0.0	3.9	11.8	303	971.5	29217927	58	13	13	13.1	13.2	13.0	12.0	9.8	8.2	6.2	6.1	5.6	10.2	103.8	18.600	12.8	56.5	13.9
ND	100%	5/11/2010	131	5.2	10.0	-1.2	70.7	4.1	1.7	5.9	155	975.5	13579486	28	13	13	12.9	12.9	12.6	12.4	10.1	8.2	6.2	6.1	5.6	10.2	100.4	22.700	12.8	56.1	13.9
ND	100%	5/12/2010	132	5.9	6.6	4.8	98.9	8.2	2.0	8.4	117	968.7	3793162	9	12	12	12.4	12.4	12.3	12.3	10.2	8.2	6.2	6.1	5.6	10.2	111.5	30.900	12.7	57.4	14.6
ND	100%	5/13/2010	133	10.2	17.7	1.5	74.3	0.1	1.3	6.4	192	972.7	25978787	54	14	13	12.3	12.2	11.9	11.9	10.3	8.3	6.2	6.1	5.6	10.2	113.0	31.000	12.7	56.6	16.3
ND	100%	5/14/2010	134	17.6	25.1	11.8	84.8	4.3	2.5	8.7	233	966.2	22524117	48	15	15	13.6	12.5	12.0	11.8	10.4	8.3	6.3	6.1	5.7	10.2	114.1	35.300	12.8	58.2	21.9
ND	100%	5/15/2010	135	14.5	18.0	10.6	63.1	0.0	3.7	11.1	298	967.0	24671565	51	16	16	15.4	13.2	12.2	11.8	10.4	8.4	6.3	6.1	5.7	10.2	113.6	35.300	12.8	59.7	17.1
ND	100%	5/16/2010	136	12.6	18.2	7.6	69.7	0.0	2.1	8.2	287	969.5	22220581	46	16	16	15.7	14.3	12.3	11.8	10.4	8.4	6.3	6.1	5.7	10.2	109.8	35.300	12.8	58.7	15.7
ND	100%	5/17/2010	137	13.1	19.1	4.9	64.4	0.0	0.9	4.4	190	970.2	18356444	37	17	16	15.9	14.7	12.4	11.9	10.3	8.4	6.3	6.1	5.7	10.2	106.8	35.300	12.8	57.6	16.0
ND	100%	5/18/2010	138	9.8	12.6	8.1	88.9	12.0	1.9	7.5	86	965.0	3142770	7	16	16	15.8	15.1	12.5	11.8	10.4	8.5	6.4	6.1	5.7	10.2	109.4	47.300	12.8	59.6	15.0
ND	100%	5/19/2010	139	11.6	15.2	8.8	91.9	0.7	2.0	6.4	290	960.3	10713536	23	15	15	15.1	15.0	12.6	11.8	10.3	8.5	6.4	6.2	5.7	10.2	119.7	48.000	12.7	59.2	18.9
ND	100%	5/20/2010	140	10.8	11.6	9.7	97.6	0.0	0.8	2.0	245	962.0	101453	0	15	15	15.1	15.0	12.6	11.9	10.3	8.5	6.3	6.1	5.7	10.2	119.4	48.000	12.8	60.5	16.3
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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:	**3.88**		Runoff & seepage as % of watershed area precip:				**3.7%**										
Grand sum/avg	**12.95**	**15.70**	**15.64**	**15.24**	**13.49**	**12.02**	**11.44**	**2.1**	**354027835**	**-39885**	**9.5**	**48.0**	**64.1**	**-58.5**	**-2.6**	**-41.8**	
															SumTerrevap2=AirV PD,mbar*WS,m/s*s		

Data

DATE	DayOfYr	AvgTair C	AvgTw 0.1m	AvgTw0.5m	Avg Tw1m	Avg Tw2m	Avg Tw3m	Avg Tw4m	AvgWS CSI m/s	SumRad J/m2	SumH Evap (*0.9=KJ/m2)	Sum Lk_lvl chg (mm)	SumRain mm	Sum Runoff & seepage, mm	SumLake evap (mm)	Sum Terrevap2	Sum Out flow (lake mm)
5/1/2010	121	21.52	14.78	14.55	13.31	11.58	11.00	10.78	1.5	21987159	-549	-0.633	0.0	2.6	-0.8	-0.4	-2.1
5/2/2010	122	23.60	17.59	17.18	14.56	11.86	11.11	10.79	1.9	19025753	-15	-0.738	0.0	1.7	0.0	-0.3	-2.1
5/3/2010	123	19.67	18.57	18.56	16.59	12.12	11.18	10.78	1.9	11312413	-519	2.109	2.8	2.4	-0.8	-0.1	-2.2
5/4/2010	124	14.36	18.25	18.30	17.95	12.41	11.24	10.75	1.5	19977883	-1247	9.005	10.6	2.6	-1.8	-0.1	-2.2
5/5/2010	125	16.64	18.04	18.04	17.81	12.89	11.34	10.73	2.1	27058168	-2825	-0.779	0.0	6.2	-4.2	-0.3	-2.5
5/6/2010	126	16.96	17.98	18.05	18.07	13.40	11.47	10.76	3.3	24259617	-3880	-3.551	0.6	4.3	-5.7	-0.4	-2.4
5/7/2010	127	12.74	17.68	17.67	17.53	14.83	11.58	10.78	1.7	25653776	-2650	-3.691	0.0	2.6	-3.9	-0.1	-2.3
5/8/2010	128	12.90	17.21	17.30	17.33	15.53	11.76	10.84	3.7	18555888	-4437	0.668	4.6	5.0	-6.5	-0.2	-2.2
5/9/2010	129	3.83	14.29	14.41	14.46	14.53	13.26	11.09	4.4	11897352	-5606	-6.433	0.0	3.9	-8.2	0.0	-2.1
5/10/2010	130	5.61	12.98	13.08	13.12	13.17	13.03	11.98	3.6	29217927	-4390	-4.816	0.0	3.5	-6.4	0.0	-1.9
5/11/2010	131	5.24	12.75	12.84	12.87	12.91	12.64	12.39	1.5	13579486	-1994	2.777	4.1	3.1	-2.9	0.0	-1.5
5/12/2010	132	5.87	12.21	12.32	12.37	12.44	12.32	12.30	1.8	3793162	-1241	9.632	8.2	5.4	-1.8	0.0	-2.2
5/13/2010	133	10.15	13.70	12.61	12.32	12.18	11.95	11.92	1.1	25978787	-1214	-1.969	0.1	2.0	-1.8	-0.1	-2.2
5/14/2010	134	17.55	14.80	14.56	13.56	12.48	11.99	11.81	2.3	22524117	-18	3.972	4.3	2.1	0.0	-0.1	-2.3
5/15/2010	135	14.55	15.52	15.58	15.42	13.24	12.18	11.83	3.4	24671565	-2894	-4.183	0.0	2.6	-4.2	-0.2	-2.3
5/16/2010	136	12.65	15.65	15.71	15.72	14.34	12.33	11.85	2.0	22220581	-2021	-3.375	0.0	1.9	-3.0	-0.1	-2.1
5/17/2010	137	13.11	16.51	16.20	15.87	14.73	12.41	11.86	0.8	18356444	-1416	-2.566	0.0	1.6	-2.1	-0.1	-2.0
5/18/2010	138	9.76	15.72	15.84	15.81	15.06	12.49	11.85	1.8	3142770	-1726	13.042	12.0	5.7	-2.5	0.0	-2.1
5/19/2010	139	11.64	14.94	15.03	15.08	15.03	12.57	11.84	1.9	10713536	-1066	0.879	0.7	4.2	-1.6	0.0	-2.4
5/20/2010	140	10.69	14.86	15.04	15.12	14.98	12.61	11.85	0.8	101453	-176	0.141	0.0	0.8	-0.3	0.0	-0.6
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										1.000	<=SCALE ADJ (1.0=no adjustment)
										4.184	joule/calorie (= joule/degree for 1cm3)
Nominal diffuse %R from water=7%	#N/A	#N/A	68%		12	12.3	2.3			#N/A	-0.5
				4.184	<=CONVERT HEAT TO DEGREES					4.184	slope
70%	0.9			6000000	cm3/m2 (for 0-4m integrated depth)					6000000	intercept
											r2
Solar Heat input (absorbed from solar rad), KJ/m2)	Sum H evap (KJ/m^2)	solar heat absorbed - evap loss (kJ/m^2)	% 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 dTw, 0-6m	RESID1: NON-SOLAR FLUX (Heat flux to offset absorbed solar to match dTw)	evap loss (degC 0-6m)	RESID2: NON-SOLAR FLUX to offset absorbed solar to match dTw LESS EVAP (degC 0-6m)	
6596	-494	6102	7.5%	0.26	10.92	11.36	0.44	0.18	-0.02	0.20	
5708	-13	5694	0.2%	0.23	11.36	11.73	0.37	0.14	0.00	0.15	
3394	-467	2926	13.8%	0.14	11.73	12.04	0.31	0.17	-0.02	0.19	
5993	-1122	4871	18.7%	0.24	12.04	12.17	0.13	(0.11)	-0.04	(0.06)	
8117	-2542	5575	31.3%	0.32	12.17	12.18	0.02	(0.31)	-0.10	(0.21)	
7278	-3492	3786	48.0%	0.29	12.18	12.43	0.25	(0.04)	-0.14	0.10	
7696	-2385	5311	31.0%	0.31	12.43	12.69	0.26	(0.04)	-0.10	0.05	
5567	-3993	1574	71.7%	0.22	12.69	12.91	0.22	(0.01)	-0.16	0.15	
3569	-5045	-1476	141.4%	0.14	12.91	11.96	(0.95)	(1.09)	-0.20	(0.89)	
8765	-3951	4814	45.1%	0.35	11.96	11.98	0.02	(0.33)	-0.16	(0.18)	
4074	-1795	2279	44.1%	0.16	11.98	11.87	(0.11)	(0.28)	-0.07	(0.20)	
1138	-1117	21	98.1%	0.05	11.87	11.55	(0.32)	(0.36)	-0.04	(0.32)	
7794	-1093	6701	14.0%	0.31	11.55	11.52	(0.03)	(0.34)	-0.04	(0.29)	
6757	-16	6741	0.2%	0.27	11.52	12.19	0.67	0.40	0.00	0.40	
7401	-2605	4797	35.2%	0.29	12.19	12.53	0.33	0.04	-0.10	0.14	
6666	-1819	4847	27.3%	0.27	12.53	12.75	0.23	(0.04)	-0.07	0.03	
5507	-1274	4233	23.1%	0.22	12.75	12.97	0.22	(0.00)	-0.05	0.05	
943	-1553	-610	164.7%	0.04	12.97	12.81	(0.16)	(0.19)	-0.06	(0.13)	
3214	-959	2255	29.8%	0.13	12.81	12.86	0.04	(0.08)	-0.04	(0.05)	
30	-158	-128	520.6%	0.00	12.86	13.26	0.40	0.40	-0.01	0.40	
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	#N/A	#N/A		#N/A				#N/A	#N/A		
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