

Lake Lacawac, Bruce R. Hargreaves, Lehigh University (brho@lehigh.edu, http://www.lehigh.edu/~brhd)
 17 April 2011: platform moved to lake center, 1-2pm

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 Oct

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 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 43.3 | 76.7 | 28.9 | 4.67 | 4.7 | 34 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Month | sum | avg Tw | Tair avg-C | Tair Hi-C | Tair Mi-C | RHair-% | Rain-mm | WS-ms | WS Max | WDIR-deg | Barom-mb | Sum Rad W/m2 | Sum PAR μMm2/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 | | | | | | | | |
| month | (All) | 6.6 | 6.3 | 24.8 | -1.7 | 83.7 | 118.6 | 2.1 | 15.4 | 20.9 | 961.5 | 256134694 | 535 | 7.2 | 7.1 | 7.2 | 7.0 | 6.8 | 6.6 | 6.7 | 6.3 | 6.1 | 6.1 | 6.1 | 6.1 | 4.4 | 104.8 | 118.6 | 118.6 | 12.5 | 32.5 | 15.2 |

| | | 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 W/m2 | Sum PAR μMm2/s | Tw 0.1m | Tw 0.5m | Tw 1m | Tw 2m | Tw 3m | Tw 4m | Tw 5m | Tw 6m | Tw 8m | Tw H310-C | Tw12m | H310 depth-m (40C) | Lakelevel-cumul. rain-mm (40C) | Batt min-V | RH% CR10 enc | RH% MUX enc | | | | | | | |
| ND | 100% | 4/1/2011 | 91 | 1.1 | 3.3 | 0.0 | 98.2 | 8.5 | 2.1 | 8.1 | 229 | 945.7 | 4146528 | 10 | 3.91 | 4.07 | 4.15 | 4.10 | 4.26 | 3.99 | 4.20 | 4.14 | 4.24 | 4.6 | 4.35 | 2.3 | 47.8 | 8.500 | 12.6 | 32.6 | 15.2 | | | | | |
| ND | 100% | 4/2/2011 | 92 | 3.4 | 7.5 | -1.0 | 66.5 | 0.0 | 2.7 | 9.3 | 293 | 949.0 | 1897025 | 38 | 4.11 | 4.26 | 4.37 | 4.33 | 4.37 | 4.16 | 4.35 | 4.29 | 4.41 | 4.7 | 4.55 | 2.3 | 50.7 | 8.500 | 12.6 | 35.6 | 14.3 | | | | | |
| ND | 100% | 4/3/2011 | 93 | 5.1 | 9.9 | 1.1 | 59.4 | 1.7 | 2.6 | 10.5 | 291 | 960.2 | 18972843 | 38 | 4.51 | 4.54 | 4.61 | 4.56 | 4.55 | 4.36 | 4.56 | 4.50 | 4.65 | 4.9 | 4.77 | 2.3 | 50.2 | 10.200 | 12.7 | 36.3 | 13.3 | | | | | |
| ND | 100% | 4/4/2011 | 94 | 7.1 | 15.8 | 1.6 | 91.1 | 3.1 | 0.9 | 5.5 | 173 | 953.5 | 6027592 | 14 | 5.07 | 4.76 | 4.79 | 4.71 | 4.73 | 4.54 | 4.75 | 4.69 | 4.81 | 5.1 | 4.95 | 2.3 | 55.7 | 13.300 | 12.6 | 36.3 | 14.1 | | | | | |
| ND | 100% | 4/5/2011 | 95 | 6.3 | 15.6 | 0.7 | 87.6 | 7.2 | 3.0 | 11.9 | 283 | 946.1 | 5249450 | 11 | 5.02 | 5.06 | 5.11 | 5.02 | 4.94 | 4.77 | 4.96 | 4.91 | 5.06 | 5.3 | 5.19 | 2.3 | 64.8 | 20.900 | 12.6 | 40.0 | 18.1 | | | | | |
| ND | 100% | 4/6/2011 | 96 | 1.6 | 6.1 | -1.7 | 82.6 | 6.0 | 1.3 | 8.4 | 252 | 961.3 | 12318467 | 25 | 4.95 | 5.07 | 5.13 | 5.03 | 4.98 | 4.81 | 5.02 | 4.95 | 5.10 | 5.3 | 5.23 | 2.3 | 69.0 | 26.500 | 12.5 | 35.8 | 14.3 | | | | | |
| ND | 100% | 4/7/2011 | 97 | 2.6 | 8.0 | 0.3 | 94.3 | 5.2 | 0.9 | 4.1 | 143 | 966.5 | 8210766 | 17 | 5.21 | 5.21 | 5.24 | 5.11 | 5.06 | 4.91 | 5.14 | 5.07 | 5.23 | 5.4 | 5.34 | 2.3 | 76.7 | 31.700 | 12.6 | 37.6 | 15.4 | | | | | |
| ND | 100% | 4/8/2011 | 98 | 3.1 | 7.4 | -0.9 | 86.1 | 0.0 | 0.7 | 3.7 | 162 | 969.3 | 7042951 | 15 | 5.25 | 5.32 | 5.37 | 5.24 | 5.24 | 5.06 | 5.30 | 5.19 | 5.35 | 5.6 | 5.47 | 2.3 | 76.3 | 31.700 | 12.6 | 36.4 | 14.2 | | | | | |
| ND | 100% | 4/9/2011 | 99 | 7.0 | 15.2 | -0.8 | 79.5 | 0.0 | 0.7 | 5.7 | 221 | 968.0 | 23937858 | 46 | 6.60 | 5.73 | 5.45 | 5.23 | 5.19 | 5.06 | 5.27 | 5.23 | 5.36 | 5.6 | 5.52 | 2.3 | 73.2 | 31.700 | 12.5 | 39.3 | 15.1 | | | | | |
| ND | 100% | 4/10/2011 | 100 | 9.2 | 11.6 | 7.1 | 90.1 | 0.0 | 0.0 | 5.2 | 204 | 965.6 | 8309639 | 19 | 7.05 | 6.58 | 6.40 | 6.51 | 6.60 | 5.55 | 5.78 | 5.68 | 5.97 | 6.0 | 6.08 | 2.3 | 70.6 | 31.700 | 12.6 | 40.2 | 13.8 | | | | | |
| ND | 100% | 4/11/2011 | 101 | 17.1 | 24.8 | 10.1 | 84.8 | 0.2 | 1.4 | 7.3 | 244 | 954.6 | 14911520 | 32 | 8.93 | 7.76 | 7.37 | 6.65 | 6.11 | 6.11 | 6.41 | 6.32 | 6.69 | 6.5 | 6.87 | 2.3 | 69.4 | 31.900 | 12.6 | 41.3 | 16.4 | | | | | |
| ND | 100% | 4/12/2011 | 102 | 10.0 | 17.9 | 6.9 | 84.0 | 2.6 | 3.0 | 9.6 | 144 | 959.5 | 5622516 | 13 | 9.52 | 9.49 | 9.49 | 9.02 | 7.94 | 8.21 | 8.48 | 8.24 | 8.92 | 8.2 | 8.98 | 2.3 | 70.0 | 34.500 | 12.6 | 43.8 | 14.0 | | | | | |
| ND | 100% | 4/13/2011 | 103 | 5.8 | 6.8 | 4.6 | 101.9 | 13.0 | 2.4 | 9.1 | 149 | 960.7 | 2748365 | 7 | 8.58 | 8.72 | 8.80 | 8.78 | 8.21 | 8.32 | 8.64 | 8.37 | 8.76 | 8.4 | 8.82 | 2.3 | 81.2 | 47.500 | 12.5 | 42.1 | 13.8 | | | | | |
| ND | 100% | 4/14/2011 | 104 | 9.9 | 16.5 | 4.8 | 72.9 | 0.0 | 3.0 | 9.1 | 312 | 965.2 | 24773414 | 50 | 9.69 | 9.53 | 9.49 | 9.34 | 8.57 | 8.78 | 9.10 | 8.83 | 9.32 | 8.8 | 9.42 | 2.4 | 84.0 | 47.500 | 12.5 | 44.1 | 15.2 | | | | | |
| ND | 100% | 4/15/2011 | 105 | 6.4 | 12.2 | 2.8 | 73.7 | 0.0 | 1.6 | 5.9 | 79 | 975.0 | 14665699 | 30 | 9.77 | 9.65 | 9.66 | 9.47 | 8.80 | 8.94 | 9.31 | 9.05 | 9.45 | 9.1 | 9.58 | 2.4 | 83.6 | 47.500 | 12.7 | 42.4 | 13.9 | | | | | |
| ND | 100% | 4/16/2011 | 106 | 4.4 | 11.2 | 1.6 | 96.2 | 54.2 | 3.1 | 9.6 | 66 | 963.6 | 2411425 | 6 | 8.51 | 8.60 | 8.66 | 8.59 | 8.30 | 8.23 | 8.61 | 8.39 | 8.60 | 8.6 | 8.71 | 2.4 | 97.0 | 101.700 | 12.6 | 40.0 | 14.5 | | | | | |
| ND | 100% | 4/17/2011 | 107 | 7.6 | 10.6 | 4.3 | 80.1 | 2.4 | 3.0 | 15.4 | 248 | 951.7 | 16534584 | 34 | 8.21 | 8.31 | 8.40 | 8.38 | 8.12 | 7.66 | 7.75 | 7.04 | 6.71 | 6.7 | 6.74 | 2.6 | 170.0 | 104.100 | 12.5 | 37.7 | 21.0 | | | | | |
| LC | 100% | 4/18/2011 | 108 | 7.7 | 14.2 | 1.9 | 71.8 | 0.4 | 1.7 | 7.3 | 216 | 961.4 | 13895943 | 28 | 8.22 | 8.31 | 8.39 | 8.33 | 7.98 | 7.73 | 7.57 | 6.09 | 5.12 | 5.1 | 5.07 | 10.2 | 176.0 | 104.500 | 12.7 | 16.2 | 16.1 | | | | | |
| LC | 100% | 4/19/2011 | 109 | 5.7 | 7.2 | 4.5 | 101.2 | 7.3 | 1.4 | 6.6 | 148 | 964.9 | 9313020 | 9 | 8.40 | 8.49 | 8.60 | 8.55 | 8.27 | 7.71 | 7.55 | 6.33 | 5.13 | 5.1 | 5.07 | 10.2 | 179.1 | 111.800 | 12.6 | 13.5 | 14.5 | | | | | |
| LC | 100% | 4/20/2011 | 110 | 11.6 | 21.2 | 4.6 | 87.4 | 0.1 | 3.0 | 10.9 | 167 | 959.2 | 13246599 | 29 | 8.64 | 8.69 | 8.76 | 8.68 | 8.31 | 7.80 | 7.61 | 6.35 | 5.15 | 5.1 | 5.08 | 10.2 | 187.9 | 111.900 | 12.5 | 16.4 | 18.4 | | | | | |
| LC | 100% | 4/21/2011 | 111 | 6.0 | 10.4 | 1.7 | 65.3 | 0.1 | 4.3 | 12.7 | 291 | 968.6 | 22002224 | 44 | 8.98 | 9.09 | 9.18 | 9.15 | 8.88 | 8.45 | 7.95 | 6.56 | 5.27 | 5.1 | 5.10 | 10.2 | 189.4 | 112.000 | 12.6 | 14.0 | 14.7 | | | | | |
| LC | 100% | 4/22/2011 | 112 | 3.1 | 7.5 | -1.4 | 71.7 | 0.7 | 2.0 | 7.5 | 157 | 976.0 | 9427336 | 20 | 8.60 | 8.71 | 8.81 | 8.82 | 8.62 | 8.42 | 8.35 | 7.46 | 5.36 | 5.1 | 5.10 | 10.2 | 187.1 | 112.700 | 12.7 | 12.7 | 14.1 | | | | | |
| LC | 25% | 4/23/2011 | 113 | 2.8 | 5.1 | 1.8 | 98.1 | 5.9 | 2.5 | 7.7 | 141 | 969.6 | 46462 | 0 | 8.37 | 8.48 | 8.58 | 8.61 | 8.42 | 8.25 | 8.44 | 7.56 | 5.34 | 5.1 | 5.11 | 10.2 | 201.1 | 118.600 | 12.6 | 12.8 | 14.0 | | | | | |
| | 0% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 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: | 2.61767578 | Runoff & seepage as % of watershed area precip: | 32.5% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Grand sum/avg | 6.62 | 7.10 | 7.91 | 7.02 | 6.86 | 6.59 | 6.42 | 1.8 | 225632316 | -10168 | 148.0 | 111.8 | 76.1 | -14.8 | -2.0 | 0.0 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | Nominal diffuse %R from water=7% | | | | | | | | | | #NA | | | #NA | | | #NA | | | Slope intercept | | | | | | | | | | | | | | | | |
|--|----------|---|------|-------|------|------|------|------|------|--|--|--------------------|--|--|---|--|--|--|--|--|---|--|--|---|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | 7% | | | | | | | | | | 0.9 | | | 4.184 | | | 6000000 | | | 4.184 | | | | | | | | | | | | | | | | |
| | | 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) | | | RESID: NON-SOLAR FLUX (heat loss to reach dT) | | | | | | | | | | | | | |
| | 4/1/2011 | 3856 | -345 | 3511 | 8.9% | 0.15 | 1.14 | 4.06 | 0.07 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4/2/2011 | 17639 | -888 | 16751 | 5.0% | 0.70 | 4.06 | 4.23 | 0.17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4/3/2011 | 17645 | -958 | 16687 | 5.4% | 0.70 | 4.23 | 4.71 | 0.48 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4/4/2011 | 5606 | -8 | 5598 | 0.1% | 0.22 | 4.71 | 4.86 | 0.15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |