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13Apr09: Station moved from dock from 2:30-3:30pm (problems with ice-shift anchors result in wind direction error until corrected on 10Jun09)

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 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).

| Month summary | 5280 ft/mile<br>1609.3 m/mile |            |            |         |         |            |            |          |          |              |                  |           |           |         |         |         |         |         |         |         |          |          |            |                    |                |            |              |             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---------------|-------------------------------|------------|------------|---------|---------|------------|------------|----------|----------|--------------|------------------|-----------|-----------|---------|---------|---------|---------|---------|---------|---------|----------|----------|------------|--------------------|----------------|------------|--------------|-------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
|               | Tair avg F                    | Tair max F | Tair min F | Rain-in | WS-mp/h | WS max mph | WS max m/s | WDIR-deg | Barom-mb | Sum Rad W/m2 | Sum PAR μMol/m2s | 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 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|               | 39.3                          | 49.7       | 30.4       | 1.79    | 4.5     | 32         |            |          |          |              | 34.9             | 38.9      | 39.5      | 39.8    | 39.2    | 40.1    | 39.7    | 39.9    | 40.0    | 39.7    | 39.5     |          |            |                    |                |            |              |             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| month (All)   | 4.1                           | 9.8        | -0.9       | 72.4    | 45.5    | 2.0        | 14.1       | 194.5    | 959.9    | 276002103    | 562              | 1.6       | 3.9       | 4.2     | 4.4     | 4.0     | 4.5     | 4.3     | 4.4     | 4.5     | 4.3      | 4.2      | 2.0        | -45.3              | 45.5           | 12.5       | 41.8         | 13.4        |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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 | 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-mm (40C) | cumul. rain-mm | Batt min-V | RH% CR10 enc | RH% MUX enc |      |
|----------|-----------|-----------|-----------|------------|-----------|------------|---------|---------|--------|-----------------|----------|--------------|----------|---------|---------|-------|-------|-------|-------|-------|-------|-------|-----------|--------|--------------------|--------------------|----------------|------------|--------------|-------------|------|
| ND       | 100%      | 3/1/2010  | 60        | 0.7        | 3.5       | -1.5       | 83.3    | 1.5     | 3.9    | 10.5            | 323      | 955.9        | 9947921  | 21      | 1       | 3     | 3.9   | 4.2   | 3.8   | 4.3   | 4.1   | 4.1   | 4.2       | 4.1    | 4.0                | 2.0                | -62.3          | 1.500      | 12.7         | 51.6        | 13.9 |
| ND       | 100%      | 3/2/2010  | 61        | 1.2        | 4.9       | -2.5       | 82.8    | 0.0     | 1.0    | 4.7             | 158      | 958.4        | 10274093 | 21      | 1       | 3     | 4.0   | 4.5   | 3.9   | 4.4   | 4.2   | 4.3   | 4.3       | 4.0    | 4.0                | 2.0                | -67.8          | 1.500      | 12.7         | 43.1        | 13.9 |
| ND       | 100%      | 3/3/2010  | 62        | 0.8        | 3.5       | -1.4       | 93.8    | 2.8     | 2.4    | 7.7             | 142      | 951.6        | 5540896  | 12      | 1       | 3     | 4.0   | 4.4   | 3.9   | 4.4   | 4.1   | 4.2   | 4.3       | 4.0    | 4.1                | 2.0                | -69.9          | 4.300      | 12.7         | 37.9        | 13.9 |
| ND       | 100%      | 3/4/2010  | 63        | 3.9        | 13.3      | -3.2       | 72.6    | 0.1     | 3.3    | 8.8             | 320      | 953.9        | 14047914 | 28      | 1       | 3     | 4.0   | 4.3   | 3.9   | 4.4   | 4.1   | 4.2   | 4.3       | 4.0    | 4.1                | 2.0                | -73.3          | 4.400      | 12.6         | 34.7        | 13.9 |
| ND       | 100%      | 3/5/2010  | 64        | 0.2        | 3.7       | -2.7       | 56.9    | 0.0     | 3.0    | 7.8             | 259      | 962.3        | 15357689 | 31      | 1       | 3     | 3.9   | 4.3   | 3.9   | 4.4   | 4.1   | 4.2   | 4.3       | 4.1    | 4.1                | 2.0                | -78.1          | 4.400      | 12.6         | 33.3        | 14.0 |
| ND       | 100%      | 3/6/2010  | 65        | -0.2       | 6.8       | -9.3       | 50.0    | 0.0     | 2.0    | 7.7             | 268      | 967.2        | 19002226 | 37      | 1       | 3     | 4.0   | 4.3   | 3.9   | 4.4   | 4.2   | 4.3   | 4.3       | 4.1    | 4.1                | 2.0                | -82.4          | 4.400      | 12.6         | 28.8        | 14.2 |
| ND       | 100%      | 3/7/2010  | 66        | 2.8        | 9.6       | -1.9       | 55.2    | 0.0     | 1.7    | 6.9             | 292      | 963.8        | 18203865 | 36      | 0       | 3     | 4.0   | 4.4   | 3.9   | 4.4   | 4.2   | 4.3   | 4.4       | 4.0    | 4.1                | 2.0                | -86.2          | 4.400      | 12.6         | 30.1        | 14.1 |
| ND       | 100%      | 3/8/2010  | 67        | 5.7        | 11.1      | -1.3       | 48.3    | 0.0     | 2.5    | 8.5             | 301      | 960.1        | 18458469 | 37      | 1       | 3     | 4.1   | 4.3   | 3.9   | 4.4   | 4.2   | 4.3   | 4.5       | 4.1    | 4.2                | 2.0                | -88.8          | 4.400      | 12.7         | 30.7        | 13.8 |
| ND       | 100%      | 3/9/2010  | 68        | 5.4        | 11.7      | -0.6       | 58.1    | 0.0     | 1.7    | 6.6             | 263      | 960.9        | 18571016 | 38      | 1       | 4     | 4.1   | 4.4   | 4.0   | 4.6   | 4.4   | 4.4   | 4.5       | 4.2    | 4.2                | 2.0                | -89.8          | 4.400      | 12.7         | 31.6        | 13.4 |
| ND       | 100%      | 3/10/2010 | 69        | 3.9        | 13.3      | -3.2       | 72.6    | 0.0     | 4.4    | 4.3             | 131      | 962.8        | 20285384 | 41      | 1       | 4     | 4.1   | 4.1   | 3.9   | 4.5   | 4.2   | 4.3   | 4.4       | 4.3    | 4.1                | 2.1                | 18.7           | 45.500     | 12.5         | 62.4        | 13.1 |
| ND       | 100%      | 3/11/2010 | 70        | 6.3        | 13.6      | 1.1        | 80.6    | 0.0     | 1.0    | 5.4             | 140      | 963.9        | 13643423 | 28      | 2       | 4     | 4.2   | 4.5   | 4.0   | 4.5   | 4.3   | 4.4   | 4.5       | 4.3    | 4.1                | 2.0                | -87.6          | 4.400      | 12.6         | 30.1        | 12.8 |
| ND       | 100%      | 3/12/2010 | 71        | 3.7        | 5.0       | 2.7        | 99.1    | 3.2     | 3.0    | 10.8            | 103      | 965.2        | 1634932  | 4       | 2       | 4     | 4.2   | 4.4   | 3.9   | 4.5   | 4.2   | 4.3   | 4.5       | 4.3    | 4.1                | 2.0                | -78.3          | 7.600      | 12.6         | 30.7        | 13.3 |
| ND       | 100%      | 3/13/2010 | 72        | 2.7        | 4.5       | 0.7        | 98.3    | 26.0    | 5.6    | 14.1            | 102      | 955.2        | 1707805  | 4       | 1       | 4     | 4.1   | 4.3   | 3.8   | 4.4   | 4.1   | 4.2   | 4.3       | 4.3    | 4.1                | 2.0                | -54.9          | 33.600     | 12.6         | 38.3        | 13.5 |
| ND       | 100%      | 3/14/2010 | 73        | 4.4        | 5.8       | 3.3        | 97.6    | 5.3     | 3.0    | 9.8             | 79       | 949.6        | 2848703  | 6       | 0       | 4     | 4.1   | 4.2   | 3.9   | 4.4   | 4.2   | 4.3   | 4.4       | 4.3    | 4.1                | 2.1                | 7.1            | 38.900     | 12.6         | 70.1        | 13.2 |
| ND       | 100%      | 3/15/2010 | 74        | 3.9        | 5.6       | 2.7        | 95.2    | 6.5     | 1.9    | 6.4             | 60       | 953.3        | 3520337  | 8       | 0       | 4     | 4.0   | 4.1   | 3.9   | 4.5   | 4.2   | 4.3   | 4.3       | 4.3    | 4.0                | 2.1                | 20.9           | 45.400     | 12.5         | 70.0        | 13.3 |
| ND       | 100%      | 3/16/2010 | 75        | 6.2        | 14.0      | -0.7       | 58.0    | 0.1     | 1.7    | 7.8             | 177      | 962.8        | 20285384 | 41      | 1       | 4     | 4.1   | 4.1   | 3.9   | 4.5   | 4.2   | 4.3   | 4.4       | 4.3    | 4.1                | 2.1                | 18.7           | 45.500     | 12.5         | 62.4        | 13.1 |
| ND       | 100%      | 3/17/2010 | 76        | 5.4        | 14.7      | -2.4       | 61.2    | 0.0     | 1.0    | 6.4             | 173      | 963.4        | 20501008 | 41      | 3       | 5     | 4.5   | 4.4   | 4.1   | 4.7   | 4.5   | 4.6   | 4.7       | 4.6    | 4.4                | 2.1                | 9.9            | 45.500     | 12.7         | 51.6        | 13.3 |
| ND       | 100%      | 3/18/2010 | 77        | 6.7        | 16.2      | -1.4       | 60.7    | 0.0     | 1.2    | 8.4             | 225      | 958.3        | 20360778 | 41      | 4       | 4     | 4.5   | 4.5   | 4.2   | 4.8   | 4.6   | 4.7   | 4.8       | 4.6    | 4.5                | 2.1                | 4.0            | 45.500     | 12.7         | 46.6        | 13.0 |
| ND       | 100%      | 3/19/2010 | 78        | 7.9        | 17.8      | -1.0       | 61.9    | 0.0     | 0.8    | 6.6             | 211      | 959.1        | 19357216 | 39      | 4       | 5     | 4.6   | 4.5   | 4.2   | 4.7   | 4.6   | 4.7   | 4.7       | 4.6    | 4.4                | 2.1                | 0.4            | 45.500     | 12.7         | 44.4        | 12.8 |
| ND       | 100%      | 3/20/2010 | 79        | 10.5       | 18.6      | 1.9        | 61.0    | 0.0     | 1.0    | 7.3             | 229      | 963.8        | 18723028 | 38      | 5       | 5     | 4.6   | 4.6   | 4.3   | 4.9   | 4.7   | 4.8   | 4.8       | 4.7    | 4.5                | 2.1                | -1.5           | 45.500     | 12.7         | 43.6        | 12.4 |
| ND       | 100%      | 3/21/2010 | 80        | 7.7        | 19.9      | 1.8        | 77.9    | 0.0     | 0.5    | 3.7             | 127      | 966.8        | 11129821 | 23      | 5       | 5     | 4.7   | 4.5   | 4.2   | 4.7   | 4.5   | 4.6   | 4.6       | 4.5    | 4.3                | 2.1                | -2.4           | 45.500     | 12.7         | 40.8        | 12.7 |
|          | 0%        |           |           |            |           |            |         |         |        |                 |          |              |          |         |         |       |       |       |       |       |       |       |           |        |                    |                    |                |            |              |             |      |
|          | 0%        |           |           |            |           |            |         |         |        |                 |          |              |          |         |         |       |       |       |       |       |       |       |           |        |                    |                    |                |            |              |             |      |
|          | 0%        |           |           |            |           |            |         |         |        |                 |          |              |          |         |         |       |       |       |       |       |       |       |           |        |                    |                    |                |            |              |             |      |
|          | 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: | 3.88 | Runoff & seepage as % of watershed area precip: |      |      |      |      |      |     |           |       |      | 77.3% |       |      |     |        |                                     |  |  |  |  |  |  |  |  |  |
| Grand sum/avg                         | 4.07 | 1.59  | 3.86 | 4.18 | 4.36 | 3.99 | 4.50 | 1.9 | 276002103 | -4753 | 57.8 | 45.5  | 135.9 | -6.9 | 0.0 | -117.2 | SumTerrevap2=AirV PD.mbar*WS.m/s*sc |  |  |  |  |  |  |  |  |  |

| DATE      | DayOffYr | AvgTair-C | AvgTw 0.1m | AvgTw 0.5m | Avg Tw1m | Avg Tw2m | Avg Tw3m | Avg Tw4m | AvgWS CSI m/s | SumRad J/m2 | SumH Evap (*0.9=KJ/m2) | SumLk_lvl chg (mm) | SumRain mm | SumRunoff & seepage mm | SumLake evap (mm) | Sum Terrevap2 mm | Sum Out flow (lake mm) |
|-----------|----------|-----------|------------|------------|----------|----------|----------|----------|---------------|-------------|------------------------|--------------------|------------|------------------------|-------------------|------------------|------------------------|
| 3/1/2010  | 60       | 0.70      | 0.58       | 3.28       | 3.94     | 4.21     | 3.80     | 4.29     | 3.7           | 9947921     | -429                   | -5.554             | 1.5        | -5.3                   | 0.6               | 0.0              | -1.2                   |
| 3/2/2010  | 61       | 1.20      | 0.52       | 3.22       | 3.98     | 4.46     | 3.89     | 4.37     | 0.9           | 10274093    | -121                   | -5.027             | 0.0        | -3.7                   | -0.2              | 0.0              | -1.2                   |
| 3/3/2010  | 62       | 0.79      | 0.51       | 3.19       | 3.98     | 4.38     | 3.86     | 4.35     | 2.3           | 5540896     | -89                    | -0.984             | 2.8        | -2.5                   | -0.1              | 0.0              | -1.2                   |
| 3/4/2010  | 63       | -0.51     | 0.52       | 3.16       | 3.98     | 4.32     | 3.88     | 4.36     | 3.1           | 14047914    | -877                   | -4.640             | 0.1        | -2.3                   | -1.3              | 0.0              | -1.2                   |
| 3/5/2010  | 64       | 0.22      | 0.55       | 3.14       | 3.94     | 4.31     | 3.89     | 4.36     | 2.8           | 15357689    | -946                   | -4.675             | 0.0        | -2.1                   | -1.4              | 0.0              | -1.2                   |
| 3/6/2010  | 65       | -0.15     | 0.52       | 3.15       | 3.99     | 4.33     | 3.93     | 4.36     | 1.9           | 19002226    | -904                   | -4.078             | 0.0        | -1.6                   | -1.3              | 0.0              | -1.2                   |
| 3/7/2010  | 66       | 2.84      | 0.48       | 3.19       | 4.02     | 4.38     | 3.92     | 4.38     | 1.5           | 18203865    | -392                   | -2.918             | 0.0        | -1.2                   | -0.6              | 0.0              | -1.2                   |
| 3/8/2010  | 67       | 5.73      | 0.61       | 3.32       | 4.06     | 4.33     | 3.94     | 4.43     | 2.3           | 18458469    | -471                   | -2.004             | 0.0        | -0.1                   | -0.7              | 0.0              | -1.2                   |
| 3/9/2010  | 68       | 5.42      | 0.84       | 3.75       | 4.14     | 4.43     | 4.02     | 4.55     | 1.5           | 18571016    | -274                   | -0.141             | 0.0        | 1.5                    | -0.4              | 0.0              | -1.2                   |
| 3/10/2010 | 69       | 3.86      | 1.16       | 4.11       | 4.15     | 4.43     | 3.97     | 4.49     | 0.3           | 12885580    | -87                    | 0.387              | 0.0        | 1.7                    | -0.1              | 0.0              | -1.2                   |
| 3/11/2010 | 70       | 6.27      | 1.84       | 4.13       | 4.16     | 4.46     | 3.99     | 4.53     | 0.9           | 13643423    | 183                    | 4.816              | 0.0        | 5.8                    | 0.3               | 0.0              | -1.2                   |
| 3/12/2010 | 71       | 3.72      | 1.60       | 4.10       | 4.18     | 4.39     | 3.94     | 4.46     | 2.8           | 1634932     | 340                    | 14.308             | 3.2        | 11.8                   | 0.5               | 0.0              | -1.2                   |
| 3/13/2010 | 72       | 2.66      | 1.19       | 4.06       | 4.14     | 4.26     | 3.84     | 4.38     | 5.3           | 1707805     | 499                    | 52.591             | 28.0       | 28.4                   | 0.6               | 0.0              | -2.4                   |
| 3/14/2010 | 73       | 4.43      | 0.37       | 4.04       | 4.14     | 4.20     | 3.87     | 4.42     | 2.7           | 2848703     | 597                    | 34.732             | 5.3        | 41.5                   | 0.9               | 0.0              | -12.9                  |
| 3/15/2010 | 74       | 3.92      | 0.47       | 4.05       | 4.00     | 4.08     | 3.93     | 4.48     | 1.8           | 3520337     | 274                    | 5.414              | 6.5        | 18.5                   | 0.4               | 0.0              | -20.0                  |
| 3/16/2010 | 75       | 6.24      | 1.13       | 4.22       | 4.13     | 4.05     | 3.92     | 4.45     | 1.5           | 20285384    | -438                   | -0.805             | 0.1        | 11.1                   | -0.6              | 0.0              | -18.6                  |
| 3/17/2010 | 76       | 5.40      | 3.16       | 4.58       | 4.50     | 4.43     | 4.13     | 4.68     | 0.9           |             |                        |                    |            |                        |                   |                  |                        |