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## SUPPLEMENTARY MATERIAL 2

# Exploiting high frequency monitoring and satellite imagery for assessing chlorophyll-a dynamics in a shallow eutrophic lake

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**Tab. 1.** Water physico-chemical data measured by ARPA Lombardy in the years 2018 and 2019 for the Superior, Middle and Inferior lakes (n=36).

| | | Superior Lake | | | | | Middle Lake | | | | | Inferior Lake | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **mean** | **SD** | **median** | **min** | **max** | **mean** | **SD** | **median** | **min** | **max** | **mean** | **SD** | **median** | **min** | **max** |
| **Trasparency (Secchi disk)** | m | 1.2 | 0.3 | 1.2 | 0.6 | 1.7 | 0.9 | 0.2 | 0.9 | 0.7 | 1.4 | 0.8 | 0.2 | 0.8 | 0.6 | 1.2 |
| **Water temperature** | °C | 17.7 | 7.7 | 18.3 | 4.3 | 30.2 | 17.2 | 6.9 | 17.5 | 4.4 | 26.2 | 17.4 | 7.3 | 17.8 | 4.1 | 27.6 |
| **pH** | pH | 8.0 | 0.4 | 8.0 | 7.4 | 8.7 | 8.2 | 0.2 | 8.2 | 7.8 | 8.5 | 8.2 | 0.3 | 8.3 | 7.5 | 8.7 |
| **$O_2$** | % sat. | 127 | 70 | 102 | 68 | 303 | 123 | 30 | 116 | 87 | 174 | 139 | 40 | 132 | 88 | 227 |
| **$O_2$** | mg $L^{-1}$ | 11.8 | 5.1 | 11.7 | 6.2 | 22.8 | 11.9 | 2.9 | 11.1 | 9.2 | 17.3 | 13.3 | 3.4 | 11.6 | 9.5 | 19.0 |
| **Conductivity** | µS $cm^{-1}$ | 413 | 74 | 390 | 315 | 602 | 431 | 72 | 399 | 369 | 613 | 420 | 72 | 390 | 367 | 602 |
| **Hardness ($CaCO_3$)** | mg $L^{-1}$ | 152 | 41 | 148 | 99 | 255 | 156 | 35 | 155 | 90 | 227 | 167 | 31 | 161 | 122 | 227 |
| **Calcium ($Ca^{2+}$)** | mg $L^{-1}$ | 44 | 12 | 44 | 28 | 74 | 46 | 11 | 45 | 26 | 69 | 48 | 9 | 47 | 34 | 68 |
| **N_$NH_4^+$** | mg $L^{-1}$ | 0.067 | 0.044 | 0.053 | 0.010 | 0.152 | 0.046 | 0.033 | 0.042 | 0.010 | 0.116 | 0.061 | 0.046 | 0.051 | 0.010 | 0.138 |
| **N_$NO_3^-$** | mg $L^{-1}$ | 1.9 | 1.7 | 1.4 | 0.5 | 7.1 | 2.0 | 2.1 | 1.2 | 0.8 | 8.5 | 1.6 | 2.2 | 0.8 | 0.1 | 8.4 |
| **Total nitrogen** | mg $L^{-1}$ | 2.6 | 1.9 | 2.0 | 1.4 | 8.2 | 2.6 | 2.2 | 1.9 | 1.3 | 9.3 | 2.6 | 2.3 | 1.8 | 1.1 | 9.5 |
| **P_$PO_4^{3-}$** | µg $L^{-1}$ | 42 | 33 | 42 | 2 | 105 | 28 | 27 | 19 | 2 | 96 | 18 | 30 | 6 | 2 | 110 |
| **Total phosphorous** | µg $L^{-1}$ | 79 | 32 | 72 | 27 | 140 | 90 | 32 | 82 | 46 | 137 | 78 | 34 | 82 | 21 | 140 |
| **$SiO_2$** | mg $L^{-1}$ | 3.6 | 1.8 | 3.3 | 0.4 | 7.0 | 3.8 | 2.2 | 4.0 | 0.4 | 7.6 | 3.4 | 2.3 | 3.5 | 0.1 | 7.6 |
| **Chlorophyll-a** | µg $L^{-1}$ | 12.8 | 9.0 | 10.1 | 2.3 | 30.4 | 22.7 | 12.4 | 23.9 | 2.8 | 45.7 | 25.5 | 12.2 | 24.5 | 2.3 | 42.9 |
| **Total suspended solids (TSS)** | mg $L^{-1}$ | 6.6 | 3.4 | 5.5 | 2.0 | 14.0 | 11.7 | 5.9 | 10.9 | 3.8 | 27.3 | 12.6 | 6.0 | 13.8 | 2.8 | 23.3 |

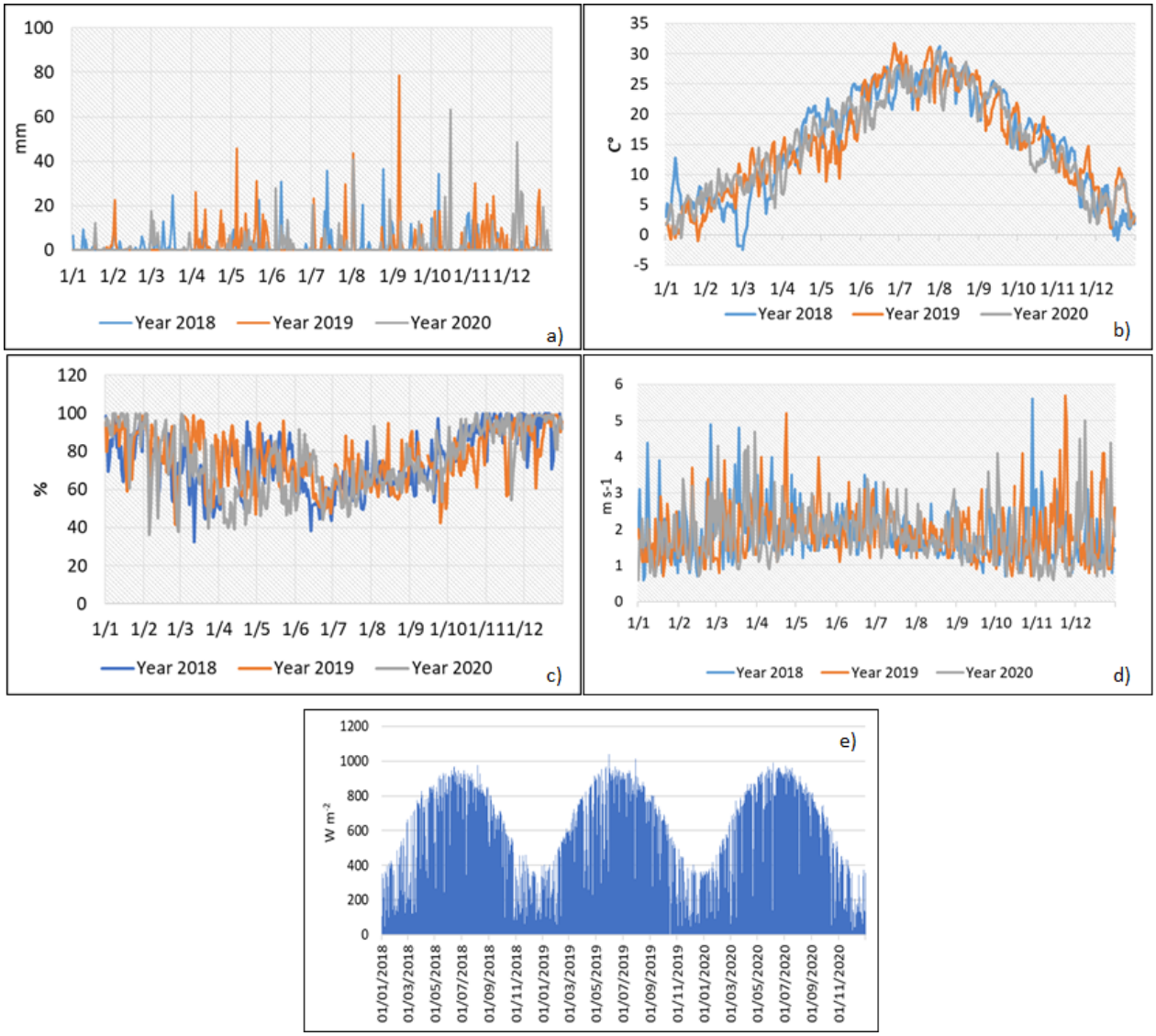


**Figure 1.** Daily precipitation (a), mean daily air temperature (b), relative humidity (c), average daily wind speed (d), and maximum average hourly value of solar radiance (e) for the Mantua Lakes in the period 2018-2020.