

Supplementary Files for Online Publication Only

Drought Offsets the Controls on Colored Dissolved Organic Matter in Lakes

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Table S1. Percentage of land cover in the cumulative area of the study catchments, shown as mean proportions in the CORINE land cover datasets from 2012 and 2018, respectively.

| Land cover | |
|----------------------------------|-------|
| Mixed forest | 7.4% |
| Broadleaf forest | 12.3% |
| Coniferous forest | 23.8% |
| Herbaceous vegetation and shrubs | 32.3% |
| Open area | 11.6% |
| Wetland | 8.0% |
| Open water | 4.6% |

Table S2. Resolution, radiometry and signal-to-noise ratio (SNR) of Sentinel-2 bands. The ratio between band 3 and band 4 was used to predict CDOM in this study.

| Band | Resolution (m) | Central wavelength (nm) | Region | Bandwidth (nm) | SNR |
|------|-------------------|----------------------------|----------|-------------------|-----|
| 2 | 10 | 490 | Blue | 65 | 154 |
| 3 | 10 | 560 | Green | 35 | 168 |
| 4 | 10 | 665 | Red | 30 | 142 |
| 5 | 20 | 705 | Red-edge | 15 | 117 |
| 6 | 20 | 740 | Red-edge | 15 | 89 |
| 7 | 10 | 783 | Red-edge | 20 | 105 |
| 8 | 20 | 842 | NIR | 115 | 174 |

Table S3. Variation partitioning sub-datasets. Morphometry variables were determined according to Peters *et al.* (reference [30] in main paper).

| Climate Data | Land Cover Data | Landscape Morphometry |
|---------------|-----------------------------|-----------------------|
| Temperature | Broad leaf | Lake area |
| Precipitation | Coniferous forests | Lake perimeter |
| PDI | Mixed forests | Basin area |
| | Grasslands | Basin perimeter |
| | Moors and heathland | Basin length |
| | Transitional woodland shrub | Basin width |
| | Bare rocks | Basin northness |
| | Sparsely vegetated | Basin eastness |
| | Peat bogs | Basin cpar* |
| | Water bodies | Basin hortons f1 |
| | NDVI | Basin hortons f2 |
| | | Basin schlumm |
| | | Basin chorley's |
| | | Mean elevation |
| | | Stdv elevation |
| | | Mean slope |

*Basin corrected perimeter to area ratio

Supplementary figures

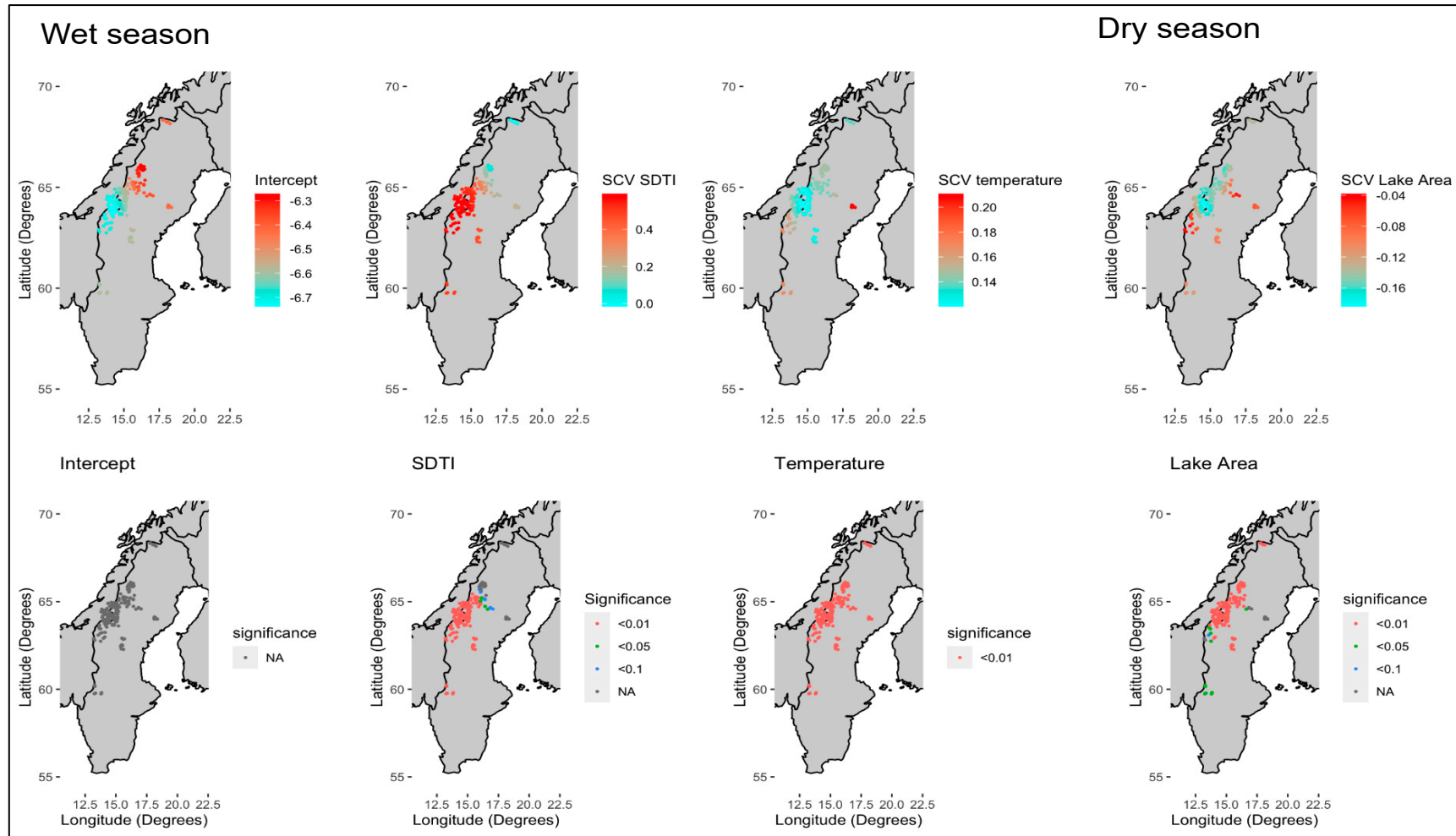


Figure S1. The spatial coefficient of variation (SCV) of temperature and lake area in wet (summer 2016) and dry (summer 2018) season and the significance of the spatial points of SCV.