# Metadata

## Dataset Title

Monthly lake water quality data (May-September 2022) following the Greenwood Fire in northeastern Minnesota

## Abstract

This repository contains lake water quality responses to the 2021 Greenwood Fire in Superior National Forest, Minnesota, USA (near Isabella, MN in northeastern MN). Thirty lakes (15 burned watershed, 15 control) were sampled monthly from May-September 2022 along various fire disturbance gradients (e.g., % watershed burned) and in relation to hydrologic connectivity (i.e., drainage vs. isolated lakes). Much of the non-water quality data we used came from published sources, which are described and referenced below. This repository also contains R code used to analyze and visualize data, as well as some output figures.

## Investigators

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
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## Other personnel names and roles

(dataset creators & contact, field crew, data entry etc. with e-mail addresses, organization and ORCID ID)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| First Name | Middle Initial | Last Name | Organization | e-mail address | ORCID ID (optional) | Role in project |
| Beth |  | Bernhardt | University of Minnesota Duluth | [bernh080@d.umn.edu](mailto:bernh080@d.umn.edu) |  | Data collection |
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## License

## Keywords

lakes, water quality, wildfire, Minnesota, burn severity, hydrologic connectivity, watershed

## Funding of this work:

Add rows to table if several grants were involved, list only the main PI, start with main grant first:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| PI First Name | PI Middle Initial | PI Last Name | PI ORCID ID (optional) | Title of Grant | Funding Agency | Funding Identification Number |
| Ian | M | McCullough | 0000-0002-6832-674X | **Collaborative Research: RAPID: lake ecosystem responses to fire along gradients of burn characteristics and hydrologic connectivity** | US National Science Foundation Division of Environmental Biology | 2212082 |
| Christopher | T | Filstrup | 0000-0003-3812-2831 | **Collaborative Research: RAPID: lake ecosystem responses to fire along gradients of burn characteristics and hydrologic connectivity** | US National Science Foundation Division of Environmental Biology | 2212083 |

## Timeframe

* Begin date: 2022
* End date: 2022
* Data collection ongoing/completed: completed

## Taxonomic species or groups

N/A

## Methods

The methods used to analyze and/or generate the data tables below can be found in the R scripts in this repository and/or associated manuscripts (see Notes and Comments).

## Data Table

**Table name:** Data/BurnSeverity/Ian\_calculations/all\_burn\_severity\_variables.csv

**Table description:** Burn severity (vegetation and soil) metrics calculated at watershed and shoreline (100 m lake buffer) scales. This table is a combination of other tables in the same folder (burned\_buff100m\_sbs\_pct, burned\_buff100m\_vbs\_pct, burned\_ws\_sbs\_pct, burned\_buff100m\_vbs\_pct).

|  |  |  |  |
| --- | --- | --- | --- |
| Column name | Description | Unit or  code explanation or date format | Empty value code |
| lagoslakeid | Unique lake ID in LAGOS database | NA |  |
| ws\_vbs\_Unburned\_pct | Percentage of watershed that is unburned | NA |  |
| ws\_vbs\_Low\_pct | Percentage of watershed burned at low severity based on vegetation | NA |  |
| ws\_vbs\_ModerateLow\_pct | Percentage of watershed burned at moderate-low severity based on vegetation | NA |  |
| ws\_vbs\_ModerateHigh\_pct | Percentage of watershed burned at moderate-high severity based on vegetation | NA |  |
| ws\_vbs\_High\_pct | Percentage of watershed burned at high severity based on vegetation | NA |  |
| ws\_vbs\_total\_burn\_pct | Percentage of watershed burned | NA |  |
| net\_id | Network unique identifier | NA |  |

Note: additional columns are similar to above. ‘vbs’ and ‘sbs’ indicate burn severity based on vegetation and soil, respectively and ws and buff100m indicate watershed and shoreline scales.

**Table name:** Data/LAGOS/LAGOS\_LOCUS\_GEO\_DEPTH\_combined.csv

**Table description:** Ancillary lake and watershed data from LAGOS-US (lagoslakes.org). The LOCUS\_GEO\_DEPTH table includes columns also in the standalone GEO and LOCUS tables. Note that ‘zone’ refers to lake watershed in descriptions.

|  |  |  |  |
| --- | --- | --- | --- |
| Column name | Description | Unit or  code explanation or date format | Empty value code |
| lagoslakeid | Unique lake ID in LAGOS database | NA |  |
| Site | Lake name | NA |  |
| climate8110norm\_ppt\_mmperyr | Average annual precipitation from 1981-2010 | Mm |  |
| lakes1ha\_all\_ha | total water area of lakes greater than or equal to 1 ha within the zone; because lake polygons are clipped to the zone boundary, the summed lake area does not include lake area located outside of the zone | Hectares |  |
| lakes1ha\_all\_n | count of all lakes greater than or equal to 1 ha within the zone |  |  |
| lakes1ha\_all\_nperha | density of lakes greater than or equal to 1 ha within the zone expressed as number per hectare |  |  |
| lakes1ha\_all\_pct | percent of the zone area comprised of lakes greater than or equal to 1 ha; because lake polygons are clipped to the zone boundary, the summed lake area does not include lake area located outside of the zone |  |  |
| streams\_all\_mperha | density of all streams within the zone, calculated as the sum of the stream length divided by the zone area; the artificial lines through non-riverine waterbodies are not counted in the stream length |  |  |
| roads\_mperha | road density within the zone, calculated as sum of the length of roads in the zone divided by the area of the zone |  |  |
| area\_ha | watershed area | Hectares |  |
| perimeter\_m | perimeter of watershed polygon including the perimeter of any internal holes | m |  |
| soil\_clay\_pct | average percentage mass fraction of clay, 0 to 2 micrometers, in the 0 to 5 cm depth soil layer within the zone |  |  |
| soil\_coarse\_pct | average percentage by volume of coarse fragments in the 0 to 5 cm soil depth layer within the zone |  |  |
| soil\_depthtobedrock\_cm | average absolute depth to bedrock within the zone | cm |  |
| soil\_kffact | average soil erodibility factor, not adjusted for the effect of rock fragments, within the zone | NA |  |
| soil\_orgcarbon\_gperkg | average organic carbon content, fine earth fraction, in the 0 to 5 cm soil layer within the zone | g/kg |  |
| soil\_sand\_pct | average percentage mass fraction of sand, 50 to 200 micrometers, in the 0 to 5 cm depth soil layer within the zone |  |  |
| soil\_silt\_pct | average percentage mass fraction of silt, 2 to 50 micrometers, in the 0 to 5 cm depth soil layer within the zone |  |  |
| elevation\_max\_m | maximum elevation in the zone referenced to the North American Vertical Datum of 1988, NAVD88 | m |  |
| elevation\_mean\_m | mean elevation in the zone referenced to the North American Vertical Datum of 1988, NAVD88 | m |  |
| elevation\_min\_m | minimum elevation in the zone referenced to the North American Vertical Datum of 1988, NAVD88 | m |  |
| elevation\_sd\_m | Standard deviation of elevation in the zone referenced to the North American Vertical Datum of 1988, NAVD88 | m |  |
| reliefratio | an index of topographic relief within a watershed calculated as the difference between mean and minimum elevation divided by the difference between maximum and minimum elevation | NA |  |
| topographicwetness | mean topographic wetness index of cells within the zone | NA |  |
| tri\_m | mean terrain ruggedness index, TRI, of cells within the zone using the Riley algorithm (1999), where TRI at each cell is the absolute difference in meters between the elevation of the focal cell and its immediate neighbors; the cell size is 10 m square. | NA |  |
| nlcd\_fordec41\_pct | percent of zone classified as deciduous forest |  |  |
| nlcd\_forcon42\_pct | percent of zone classified as evergreen forest |  |  |
| nlcd\_formix43\_pct | percent of zone classified as mixed forest |  |  |
| nlcd\_wetwood90\_pct | percent of zone classified as woody wetlands |  |  |
| nlcd\_wetemerg95\_pct | percent of zone classified as emergent herbaceous wetlands |  |  |
| lake\_waterarea\_ha | surface area of lake waterbody polygon from NHD comprised of open water; islands are excluded | Hectares |  |
| lake\_totalarea\_ha | total area of the lake waterbody polygon from the NHD; includes combined area of open water and any islands within the outer boundary | Hectares |  |
| lake\_islandarea\_ha | surface area of any islands contained within the outer boundary of the lake waterbody polygon from NHD | Hectares |  |
| lake\_perimeter\_m | perimeter of outer boundary of lake waterbody polygon from the NHD; excludes perimeter of any islands | m |  |
| lake\_islandperimeter\_m | perimeter of islands contained within the outer boundary of the lake waterbody polygon from the NHD | m |  |
| lake\_shorelinedevfactor | shoreline development factor; calculated as lake\_perimeter\_m divided by the product of 2 times the square root of pi times lake\_waterarea\_ha | NA |  |
| lake\_connectivity\_class | maximum hydrologic connectivity class of the focal lake determined from the NHD network considering both permanent and intermittent-ephemeral flow | NA |  |
| lake\_connectivity\_fluctuates | indicates whether the lake connectivity classification depends on non-permanent flow | Y=yes, N=no |  |
| lake\_connectivity\_permanent | hydrologic connectivity class of the focal lake determined from the NHD network considering only permanent flow | NA |  |
| lake\_lakes1ha\_upstream\_ha | total area of lakes greater than or equal to 1 ha upstream of the focal lake, connected via surface streams | Hectares |  |
| lake\_lakes4ha\_upstream\_ha | total area of lakes greater than or equal to 4 ha upstream of the focal lake, connected via surface streams | Hectares |  |
| lake\_lakes10ha\_upstream\_ha | total area of lakes greater than or equal to 10 ha upstream of the focal lake, connected via surface streams | Hectares |  |
| lake\_lakes1ha\_upstream\_n | count of lakes greater than or equal to 1 ha upstream of the focal lake, connected via surface streams |  |  |
| lake\_lakes4ha\_upstream\_n | count of lakes greater than or equal to 4 ha upstream of the focal lake, connected via surface streams |  |  |
| lake\_lakes10ha\_upstream\_n | count of lakes greater than or equal to 10 ha upstream of the focal lake, connected via surface streams |  |  |
| lake\_elevation\_m | the elevation of the lake polygon central point, in meters; referenced to the North American Vertical Datum of 1988 or NAVD88 and obtained from the National Elevation Dataset | m |  |
| ws\_subtype | watershed subtype class for the watershed; LC equals local catchment, DWS equals drainage-watershed, IDWS equals inter-drainage-lake watershed | NA |  |
| ws\_focallakewaterarea\_ha | surface area of focal lake for which the WS is calculated | Hectares |  |
| ws\_area\_ha | area of watershed polygon | Hectares |  |
| ws\_perimeter\_m | perimeter of watershed polygon including perimeter of any internal holes | m |  |
| ws\_lake\_arearatio | ratio between watershed area and lake water area | NA |  |
| lake\_meanwidth\_m | Average width of lake | m |  |
| lake\_maxdepth\_m | The maximum depth in meters of a lake based on existing sources, not based on field measurements | m |  |
| type | Burned watershed or control group lake | NA |  |
| source | Drainage (inflowing streams) or isolated lake (no inflow our outflows) | NA |  |

**Table name:** Data/VariancePartitioning/burned\_v\_control.csv

**Table description:** Each of the tables in this folder represents output from a variance partitioning analysis. The difference is the fire variable used. ConnClass=permanent hydrologic connectivity class, mean depth=average of maximum depths measured at each lake in the field, Random:lake=random lake effect, Month=random month effect. See LAGOS table above for descriptions of predictor variables.

burned\_v\_control.csv: based on simple burned vs. control groups

pct\_buffer\_burned.csv: based on percent shoreline (100m lake buffer) burned

pct\_buffer\_burned\_HSsoil.csv: based on percent shoreline (100m lake buffer) burned at high severity based on soil

pct\_buffer\_burned\_HSveg.csv: based on percent shoreline (100m lake buffer) burned at high severity based on vegetation

pct\_ws\_burned: based on percent watershed burned

pct\_ws\_burned\_HSsoil.csv: based on percent watershed burned at high severity based on soil

pct\_ws\_burned\_HSveg.csv: based on percent watershed burned at high severity based on vegetation

|  |  |  |  |
| --- | --- | --- | --- |
| Column name | Description | Unit or  code explanation or date format | Empty value code |
| predictor | Lake or watershed predictor variable | Variable; see LAGOS table above |  |
| variable | Water quality response variable | Variable; see water quality tables below |  |
| variance | Variance explained | NA |  |

**Table name:** Data/WaterQuality/burned\_control\_change\_summary.csv and burned\_control\_change\_summary\_conn.csv.

**Table description:** Monthly summaries of lake water quality in burned vs. control lakes from 2022. The table with ‘conn’ in the title contains columns for burned vs. control drainage and isolated lakes, whereas the other is all burned vs. control lakes. Measurements are lake surface samples.

|  |  |  |  |
| --- | --- | --- | --- |
| Column name | Description | Unit or  code explanation or date format | Empty value code |
| Month | Sampling month | NA |  |
| TP\_burned | Total phosphorus in burned lakes (first number is concentration, second is number of lakes sampled) | ppb |  |
| TP\_control | Total phosphorus in control lakes (first number is concentration, second is number of lakes sampled) | ppb |  |
| TP\_diff | Total phosphorus difference in burned vs. control lakes (first number is concentration, second is percentage) | ppb |  |
| TN\_burned | Total nitrogen in burned lakes (first number is concentration, second is number of lakes sampled) | ppb |  |
| TN\_control | Total nitrogen in control lakes (first number is concentration, second is number of lakes sampled) | ppb |  |
| TN\_diff | Total nitrogen difference in burned vs. control lakes (first number is concentration, second is percentage) | ppb |  |
| DOC\_burned | Dissolved organic carbon in burned lakes (first number is concentration, second is number of lakes sampled) | ppm |  |
| DOC\_control | Dissolved organic carbon in control lakes (first number is concentration, second is number of lakes sampled) | ppm |  |
| DOC\_diff | Dissolved organic difference in burned vs. control lakes (first number is concentration, second is percentage) | ppm |  |
| TSS\_burned | Total suspended solids in burned lakes (first number is concentration, second is number of lakes sampled) | mg/L |  |
| TSS\_control | Total suspended solids in control lakes (first number is concentration, second is number of lakes sampled) | mg/L |  |
| TSS\_diff | Total suspended solids difference in burned vs. control lakes (first number is concentration, second is percentage) | mg/L |  |
| Chloro\_burned | Chlorophyll-a in burned lakes (first number is concentration, second is number of lakes sampled) | ppb |  |
| Chloro\_control | Chlorophyll-a in control lakes (first number is concentration, second is number of lakes sampled) | ppb |  |
| Chloro\_diff | Chlorophyll-a difference in burned vs. control lakes (first number is concentration, second is percentage) | ppb |  |
| Secchi\_burned | Secchi depth in burned lakes (first number is value, second is number of lakes sampled) | m |  |
| Secchi\_control | Secchi depth in control lakes (first number is value, second is number of lakes sampled) | m |  |
| Secchi\_diff | Secchi depth difference in burned vs. control lakes (first number is value, second is percentage) | m |  |
| pH\_burned | pH in burned lakes (first number is value, second is number of lakes sampled) |  |  |
| pH\_control | pH in control lakes (first number is value, second is number of lakes sampled) |  |  |
| pH\_diff | pH difference in burned vs. control lakes (first number is value, second is percentage) |  |  |
| ANC\_mgCaCO3L\_burned | Acid neutralizing capacity in burned lakes (first number is concentration, second is number of lakes sampled) | mg/L as CaCO3 |  |
| ANC\_mgCaCO3L\_control | Acid neutralizing capacity in control lakes (first number is concentration, second is number of lakes sampled) | mg/L as CaCO3 |  |
| ANC\_mgCaCO3L\_diff | Acid neutralizing capacity difference in burned vs. control lakes (first number is concentration, second is percentage) | mg/L as CaCO3 |  |
| SpecCond\_uScm\_burned | Specific conductivity in burned lakes (first number is conductivity, second is number of lakes sampled) | uS/cm |  |
| SpecCond\_uScm\_control | Specific conductivity in control lakes (first number is conductivity, second is number of lakes sampled) | uS/cm |  |
| SpecCond\_uScm\_diff | Specific conductivity difference in burned vs. control lakes (first number is conductivity, second is percentage) | uS/cm |  |
| NH4N\_burned | NH4 in burned lakes (first number is concentration, second is number of lakes sampled) | ppb |  |
| NH4N\_control | NH4 in control lakes (first number is concentration, second is number of lakes sampled) | ppb |  |
| NH4N\_diff | NH4 difference in burned vs. control lakes (first number is concentration, second is percentage) | ppb |  |
| WaterTemp\_C\_burned | Water temperature in burned lakes (first number is value, second is number of lakes sampled) | degC |  |
| WaterTemp\_C\_control | Water temperature in control lakes (first number is value, second is number of lakes sampled) | degC |  |
| WaterTemp\_C\_diff | Water temperature difference in burned vs. control lakes (first number is value, second is percentage) | degC |  |

**Table name:** Data/WaterQuality/combined\_lab\_field\_may\_sep.csv

**Table description:** Combined lab and field lake water quality results from May to September 2022.

|  |  |  |  |
| --- | --- | --- | --- |
| Column name | Description | Unit or  code explanation or date format | Empty value code |
| Site | Lake name | NA |  |
| Month | Sample month | Numeric |  |
| Date | Sample date | Month/day/year |  |
| Chloro\_ppb | Chlorophyll-a | ppb |  |
| TP\_ppb | Total phosphorus | ppb |  |
| TN\_ppb | Total nitrogen | ppb |  |
| NH4N\_ppb | NH4N | ppb |  |
| NO2NO3\_ppb | NO2NO3 | ppb |  |
| ANC\_mgCaCO3L | Acid neutralizing capacity | mg/L as CaCO3 |  |
| TSS\_mgL | Total suspended solids | mg/L |  |
| DOC\_ppm | Dissolved organic carbon | ppm |  |
| lagoslakeid | Unique lake ID in LAGOS database | NA |  |
| Type | Burned or control lake | NA |  |
| lake\_connectivity\_class | maximum hydrologic connectivity class of the focal lake determined from the NHD network considering both permanent and intermittent-ephemeral flow | NA |  |
| ConnClass | hydrologic connectivity class of the focal lake determined from the NHD network considering only permanent flow | NA |  |
| Group | Control drainage, control isolated, burned drainage or burned isolated lake groups | NA |  |
| Month\_factor | Month as a factor (e.g., May, Jun) | NA |  |
| SecchiDepth\_m | Secchi depth | m |  |
| zMax\_m | Maximum lake depth | m |  |
| ProfileDepth\_m | Sample depth | m |  |
| WaterTemp\_C | Water temperature | degC |  |
| SpecCond\_uScm | Specific conductivity | uS/cm |  |
| LDO\_mgL | Dissolved oxygen | mg/L |  |
| LDO\_pct | Dissolved oxygen | Percentage |  |
| pH | pH |  |  |
| Lake | Lake name without the word “lake” for easier plotting | NA |  |

**Table name:** Data/WaterQuality/minmedianmaxWQ\_summary.csv

**Table description:** Summary statistics for water quality in burned and control lakes in 2022. See previous table for descriptions and units of water quality variables.

|  |  |  |  |
| --- | --- | --- | --- |
| Column name | Description | Unit or  code explanation or date format | Empty value code |
| Variable | TP, TN, DOC, TSS, Secchi, Chlorophyll-a, pH, Water temperature, Acid neutralizing capacity | NA |  |
| MayBurned | First number is minimum, second number is median, third number is maximum measured in May among burned lakes. | Variable |  |
| MayControl | First number is minimum, second number is median, third number is maximum measured in May among control lakes. | Variable |  |
| JunBurned | First number is minimum, second number is median, third number is maximum measured in June among burned lakes. | Variable |  |
| JunControl | First number is minimum, second number is median, third number is maximum measured in June among control lakes. | Variable |  |
| JulBurned | First number is minimum, second number is median, third number is maximum measured in July among burned lakes. | Variable |  |
| JulControl | First number is minimum, second number is median, third number is maximum measured in July among control lakes. | Variable |  |
| AugBurned | First number is minimum, second number is median, third number is maximum measured in August among burned lakes. | Variable |  |
| AugControl | First number is minimum, second number is median, third number is maximum measured in August among control lakes. | Variable |  |
| SepBurned | First number is minimum, second number is median, third number is maximum measured in September among burned lakes. | Variable |  |
| SepControl | First number is minimum, second number is median, third number is maximum measured in September among control lakes. | Variable |  |
| AllMonthsBurned | First number is minimum, second number is median, third number is maximum measured among all months combined among burned lakes. | Variable |  |
| AllMonthsControl | First number is minimum, second number is median, third number is maximum measured among all months combined among control lakes. | Variable |  |

**Table name:** Data/weatherstation/ambient-weather-20220524-20220926.csv

**Table description:** Weather station data measured from May through September 2022 (47.709624, -91.663992).

|  |  |  |  |
| --- | --- | --- | --- |
| Column name | Description | Unit or  code explanation or date format | Empty value code |
| Date | Date and time | Year/month/day, military time + seconds |  |
| Simple Date | Simplified date and time | Month/day/year, military time |  |
| Outdoor Temperature (Â°F) | Air temperature | degF |  |
| Feels Like (Â°F) | Feels like air temperature | degF |  |
| Dew Point (Â°F) | Dew point | degF |  |
| Wind Speed (mph) | Wind speed | miles/hour |  |
| Wind Gust (mph) | Wind gust | miles/hour |  |
| Wind Direction (Â°) | Wind direction | Degrees |  |
| Hourly Rain (in/hr) | Rain | inches/hour |  |
| Daily Rain (in) | Rain | inches/day |  |
| 24 Hour Rain (in) | Rain | inches in last 24 hours |  |
| Relative Pressure (inHg) | Relative pressure | inHg |  |
| Outdoor Humidity (%) | Humidity | Percentage |  |
| Absolute Pressure (inHg) | Absolute pressure | inHg |  |

**Table name:** Data/lake\_locations.csv

**Table description:** Table with lake latitude and longitude coordinates

|  |  |  |  |
| --- | --- | --- | --- |
| Column name | Description | Unit or  code explanation or date format | Empty value code |
| lagoslakeid | Unique lake ID in LAGOS database | NA |  |
| lake\_lat\_decdeg | Latitude | Decimal degrees |  |
| lake\_lon\_decdeg | Longitude | Decimal degrees |  |
| Site | Lake name | NA |  |

## Scripts/code (software) (in the Rcode folder)

|  |  |  |
| --- | --- | --- |
| File name | Description | Scripting language |
| This repository will be published on Zenodo as “Monthly lake water quality data (May-September 2022) following the Greenwood Fire in northeastern Minnesota” | <https://github.com/contlimno/SplashNBurn> | R |
| BurnSeverity\_byLake.R | Burn severity plots by lake (figure 1 and supplemental figures) | R |
| Check\_WQdata\_inLAGOS.R | Check for availability of pre-fire lake water quality data in LAGOS database | R |
| ComparingBurnedControlLakeCharacteristics.R | Comparison of lake and watershed characteristics in burned vs. control lakes | R |
| ExploringWaterQuality\_IMM.R | Initial exploratory water quality data analysis | R |
| GetLatLonCoordinates.R | Obtain latitude and longitude for study lakes | R |
| HMSC\_water\_chem\_model.R | Variance partitioning analysis | R |
| LakeProfiles-JAB | Analysis of lake profile data | R |
| MultipanelVariancePartitioningPlot.R | Creation of summary plot for variance partitioning analysis (figure 5) | R |
| NOAA\_climatedata.R | Analysis of historical climate data (supplemental figures) | R |
| WaterQuality\_Boxplots.R | Creation of summary plot for monthly water quality data (figure 3) | R |
| WaterQuality\_BurnGradients.R | Creation of summary plot for water quality along burn gradients (figure 4) | R |
| WaterQuality\_DensityHistograms.R | Creation of summary plot for water quality in burned vs. control lakes (figure 2) | R |
| WaterQuality\_PercentChange.R | Calculate percent change in burned vs. control lakes | R |
| WaterQuality\_SummaryTables.R | Generate summary tables for lake water quality | R |
| WeatherStation.R | Analysis of weather station data for the 2022 sampling season | R |

## Data provenance

|  |  |  |  |
| --- | --- | --- | --- |
| Dataset title | Dataset DOI or URL | Creator (name & email) | Contact (name & email) |
| LAGOS-US-LOCUS v1.0 | <https://doi.org/10.6073/pasta/e5c2fb8d77467d3f03de4667ac2173ca> | Nicole Smith (smithn78@msu.edu) | Nicole Smith (smithn78@msu.edu) |
| LAGOS-US-GEO v1.0 | <https://doi.org/10.6073/pasta/53ae2afd051a6a082a2ab129e4281e13> | Nicole Smith (smithn78@msu.edu) | Nicole Smith (smithn78@msu.edu) |
| LAGOS-US-DEPTH v1.0 | <https://doi.org/10.6073/pasta/64ddc4d04661d9aef4bd702dc5d8984f> | Jemma Stachelek (stachel2@msu.edu) | Jemma Stachelek (stachel2@msu.edu) |

## Notes and Comments

This is the manuscript associated with this repository:

**McCullough, I. M.**, Brentrup, J. A., Wagner, T., Lapierre J., Henneck, J, Paul, A. M., Belair, M., Moritz, M. A. and C. T. Filstrup. (Accepted). Fire characteristics and hydrologic connectivity influence short-term responses of north temperate lakes to wildfire. *Geophysical Research Letters*.

Other data in this repository:

**Data/GreenwoodFirePolygon/GreenwoodFirePolygon.shp**

A shapefile of the Greenwood Fire burn area in NAD 1983/CONUS Albers (EPSG: 5070)

**Data/GTAC**

Satellite images from before and after the fire, dNBR rasters (for burn severity), soil burn severity raster (sbs)

4-22-22: downloaded from: https://burnseverity.cr.usgs.gov/baer/baer-imagery-support-data-download

https://www.fs.usda.gov/about-agency/gtac

https://www.fs.usda.gov/inside-fs/out-and-about/greenwood-fire-post-wildfire-assessments-provide-key-information-and

5-11-22: downloaded soil burn severity (sbs) data from:

https://burnseverity.cr.usgs.gov/baer/baer-imagery-support-data-download

As of this date, no updates to other data downloaded on 4-22

**Data/Minnesota\_outline/Minnesota.shp**

A shapefile of Minnesota in NAD 1983 USGS Continuous USA Albers (EPSG: 102039)

**Data/NOAA\_climate**

Historical climate data for northeastern Minnesota. Downloaded NOAA climate data for Lake County, MN on 8-25-22. Changed based period to 1991-2020. They have city data for Duluth or International Falls going back to 1940s. Palmer Drought Index not available for cities or counties

NOAA National Centers for Environmental information, Climate at a Glance: County Time Series, published August 2022, retrieved on August 25, 2022 from <https://www.ncei.noaa.gov/cag/>

The 3386547\_Duluth\_precip\_1948\_2023.csv file is for the Duluth airport, whereas the other files are for Lake County. Please see the original source for column explanations.

National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental

Information. (2023). Daily Summaries Station Details: Duluth International Airport, MN, US.

https://www.ncdc.noaa.gov/cdo-web/datasets/GHCND/stations/GHCND:USW00014913/detail.

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