# EDI Metadata Template (2016)[[1]](#footnote-1)

## Dataset Title

**LAGOS-NELOCUS v1.01:** A module for LAGOS-NE, a multi-scaled geospatial and temporal database of lake ecological context and water quality for thousands of U.S. lakes

## Short name or nickname you use to refer to this dataset:

**LAGOS-NELOCUS v1.01**

## Data Use Policy

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## Abstract

This data package, LAGOS-NELOCUS v1.01, is 1 of 5 data packages associated with the LAGOS-NE database-- the LAke multi-scaled GeOSpatial and temporal database. Three of the data packages each contain different types of data for 51,101 lakes and reservoirs larger than 4 ha in 17 lake-rich U.S. states to support research on thousands of lakes. These three package are: (1) LAGOS-NELOCUS v1.01: lake location and physical characteristics for all lakes. (2) LAGOS-NEGEO v1.05: ecological context (i.e., the land use, geologic, climatic, and hydrologic setting of lakes) for all lakes. These geospatial data were created by processing national-scale and publicly-accessible datasets to quantify numerous metrics at multiple spatial resolutions. And, (3) LAGOS-NELIMNO v1.087.1: in-situ measurements of lake water quality from the past three decades for approximately 2,600-12,000 lakes, depending on the variable. This module was created by harmonizing 87 water quality datasets from federal, state, tribal, and non-profit agencies, university researchers, and citizen scientists. The other two data packages contain supporting data for the LAGOS-NE database: (4) LAGOS-NE-GIS v1.0: the GIS data layers for lakes, wetlands, and streams, as well as the spatial resolutions that were used to create the LAGOS-NEGEO module. (5) LAGOS-NE-RAWDATA: the original 87 datasets of lake water quality prior to processing, the R code that converts the original data formats into LAGOS-NE data format, and the log file from this procedure to create LAGOS-NE. This latter data package supports the reproducibility of LAGOS-NELIMNO.

The LAGOS-NELOCUS v1.01 module includes information on the physical location and features of all lakes > 4 ha. The information provided for this population of lakes includes: lake unique identifiers, lake area, perimeter, latitude and longitude, and the zone IDs that the lake is located within (e.g., state, county, the hydrologic unit at each level (4, 8, and 12).

Citation for the full documentation of this database:

Soranno, P.A., E.G. Bissell, K.S. Cheruvelil, S.T. Christel, S.M. Collins, C.E. Fergus, C.T. Filstrup, J.F. Lapierre, N.R. Lottig, S.K. Oliver, C.E. Scott, N.J. Smith, S. Stopyak, S. Yuan, M.T. Bremigan, J.A. Downing, C. Gries, E.N. Henry, N.K. Skaff, E.H. Stanley, C.A. Stow, P.-N. Tan, T. Wagner, K.E. Webster. 2015. Building a multi-scaled geospatial temporal ecology database from disparate data sources: Fostering open science and data reuse. GigaScience 4:28 doi:10.1186/s13742-015-0067-4

Citation for the data paper for this database:

Soranno, P.A., L.C. Bacon, M. Beauchene, K.E. Bednar, E.G. Bissell, C.K. Boudreau, M.G. Boyer, M.T. Bremigan, S.R. Carpenter, J.W. Carr, K.S. Cheruvelil, S.T. Christel, M. Claucherty, S.M.Collins, J.D. Conroy, J.A. Downing, J. Dukett, C.E. Fergus, C.T. Filstrup, C. Funk, M.J. Gonzalez, L.T. Green, C. Gries, J.D. Halfman, S.K. Hamilton, P.C. Hanson, E.N. Henry, E.M. Herron, C. Hockings, J.R. Jackson, K. Jacobson-Hedin, L.L. Janus, W.W. Jones, J.R. Jones, C.M. Keson, K.B.S. King, S.A. Kishbaugh, J.-F. Lapierre, B. Lathrop, J.A. Latimore, Y. Lee, N.R. Lottig, J.A. Lynch, L.J. Matthews, W.H. McDowell, K.E.B. Moore, B.P. Neff, S.J. Nelson, S.K. Oliver, M.L. Pace, D.C. Pierson, A.C. Poisson, A.I. Pollard, D.M. Post, P.O. Reyes, D.O. Rosenberry, K.M. Roy, L.G. Rudstam, O. Sarnelle, N.J. Schuldt, C.E. Scott, N.K. Skaff, N.J. Smith, N.R. Spinelli, J.J. Stachelek, E.H. Stanley, J.L. Stoddard, S.B. Stopyak, C.A. Stow, J.M. Tallant, P.-N. Tan, A.P. Thorpe, M.J. Vanni, T. Wagner, G. Watkins, K.C. Weathers, K.E. Webster, J.D. White, M.K. Wilmes, S. Yuan. *In Review.* LAGOS-NE: A multi-scaled geospatial and temporal database of lake ecological context and water quality for thousands of U.S. lakes. In Review at GigaScience. Submitted April 2017.

## Investigators

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## Other personnel names and roles

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## Keywords

LAGOS-NE, Lakes, nutrients, water quality, water clarity, chlorophyll, ecological context, lake trophic state, eutrophication

## Funding of this work:

Title of grant: **The effect of cross-scale interactions on freshwater ecosystem state across space and time**

Principal Investigator: **Patricia A. Soranno**

Co-investigators: **Kendra S. Cheruvelil, Emily H. Stanley, Noah Lottig, John A. Downing, Pang-Ning Tan**

Granting agency: **National Science Foundation**

Grant identification number: **EF-1065786, EF-1065818, EF-1065649**

## Timeframe

* Begin date: **May 2011**
* End date: **May 2017**
* Data collection ongoing/completed: **Completed**

## Geographic location

* Verbal description: Northeastern and upper Midwestern U.S. states, including: Minnesota, Iowa, Wisconsin, Illinois, Indiana, Missouri, Michigan, Ohio, Pennsylvania, New York, Connecticut, Rhode Island, New Hampshire, Vermont, Maine, New Jersey, New YOrk
* North bounding coordinates (decimals) – PLEASE FILL IN
* South bounding coordinates (decimals) – PLEASE FILL IN
* East bounding coordinates (decimals) – PLEASE FILL IN
* West bounding coordinates (decimals) – PLEASE FILL IN

## Taxonomic species or groups

NA

## Methods

Please see the following manuscript for detailed methods used to harmonize the datasets in LAGOS-NE; in particular, many of the specific methods and procedures are found in the online ‘Additional Files’ available at: <https://gigascience.biomedcentral.com/articles/10.1186/s13742-015-0067-4>

Soranno, P.A., E.G. Bissell, K.S. Cheruvelil, S.T. Christel, S.M. Collins, C.E. Fergus, C.T. Filstrup, J.F. Lapierre, N.R. Lottig, S.K. Oliver, C.E. Scott, N.J. Smith, S. Stopyak, S. Yuan, M.T. Bremigan, J.A. Downing, C. Gries, E.N. Henry, N.K. Skaff, E.H. Stanley, C.A. Stow, P.-N. Tan, T. Wagner, K.E. Webster. 2015. Building a multi-scaled geospatial temporal ecology database from disparate data sources: Fostering open science and data reuse. GigaScience 4:28 doi:10.1186/s13742-015-0067-4

Detailed information on data sources are found in ‘Additional File 5’ in Soranno et al. (2015). Briefly, the data source for lakes and streams in the 17 state area was the NHD (<http://nhd.usgs.gov>). The hydrologic boundaries (i.e., for three of the spatial classifications, HUC12, HUC8, HUC4) came from the Watershed Boundary Dataset (WBD; http://nhd.usgs.gov/wbd.html). In addition, we used the digital raster dataset of elevation for watershed delineation from the National Elevation Dataset (http://ned.usgs.gov/). All download dates for these data sources are provided in ‘Additional File 5’ in the above citation.

All methods to create this module are described in Soranno et al. (2015). The most challenging and time-consuming part of building this module was connecting the sampling locations from the lake water quality datasets (which each contained different types of unique identifiers, and sometimes only lake names) to a georeferenced location in the NHD. When data providers included the lake latitude and longitude, we were able to mostly automate the procedure. Nevertheless, even when coordinates were available, there were many cases where the latitude and longitude did not intersect the NHD lake polygon boundary, requiring manual interpretation. We also had to devote significant resources to developing automated procedures for creating lake watersheds, which are all described in Soranno et al. (2015).

## Data Table

* INSERT LAGOS-NE-LOCUS Metadata tables

1. This document liberally borrows from similar documents at SBC and GCE [↑](#footnote-ref-1)