# **cross\_scale\_interactions.zip Contents**

## File Types and Descriptions

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Entity Type** | **Externally Defined Format** | **Description** |
| CSI\_R\_Script.R | text/x-rsrc | application/R | Script that outlines the Activity A, B, and C steps that students complete as part of the module. |
| Mendota folder |  |  |  |
| glm2.nml |  | application/GLM | File to configure lake characteristics, meteorological driver data, and physical response variables for the Lake Mendota General Lake Model (GLM). Save as .nml to run. |
| aed2.nml |  | application/GLM | File to configure lake biogeochemical parameters for Aquatic Ecodynamics (AED) to simulate oxygen, carbon, phosphorus, and nitrogen dynamics, among others for Lake Mendota. Save as .nml to run. |
| aed2\_phyto\_pars.nml |  | application/GLM | File to configure lake phytoplankton parameters for AED for Lake Mendota. Save as .nml to run. |
| aed2\_zoop\_pars.nml |  | application/GLM | File to configure lake zooplankton parameters for AED for Lake Mendota. Save as .nml to run. |
| met\_hourly.csv |  |  | Meteorological GLM driver data for a baseline simulation based on observed data for Lake Mendota. |
| met\_hourly\_plus2.csv |  |  | Meteorological GLM driver data for a year-round +2°C climate scenario for Lake Mendota. |
| met\_hourly\_plus4.csv |  |  | Meteorological GLM driver data for a year-round +4°C climate scenario for Lake Mendota. |
| met\_hourly\_plus6.csv |  |  | Meteorological GLM driver data for a year-round +6°C climate scenario for Lake Mendota. |
| inflow.csv |  |  | Surface inflow GLM driver data for a baseline simulation based on observed data for Lake Mendota. |
| inflow\_twoP.csv |  |  | Surface inflow GLM driver data for a 2× filterable reactive phosphorus (PHS\_frp) land use change scenario for Lake Mendota. |
| inflow\_fourP.csv |  |  | Surface inflow GLM driver data for a 4× filterable reactive phosphorus (PHS\_frp) land use change scenario for Lake Mendota. |
| inflow\_sixP.csv |  |  | Surface inflow GLM driver data for a 6× filterable reactive phosphorus (PHS\_frp) land use change scenario for Lake Mendota. |
| outflow.csv |  |  | Surface outflow GLM driver data based on observed data for Lake Mendota. |
| Sunapee folder |  |  |  |
| glm2.nml |  | application/GLM | File to configure lake characteristics, meteorological driver data, and physical response variables for the Lake Sunapee General Lake Model (GLM). Save as .nml to run. |
| aed2.nml |  | application/GLM | File to configure lake biogeochemical parameters for Aquatic Ecodynamics (AED) to simulate oxygen, carbon, phosphorus, and nitrogen dynamics, among others for Lake Sunapee. Save as .nml to run. |
| aed2\_phyto\_pars.nml |  | application/GLM | File to configure lake phytoplankton parameters for AED for Lake Sunapee. Save as .nml to run. |
| aed2\_zoop\_pars.nml |  | application/GLM | File to configure lake zooplankton parameters for AED for Lake Sunapee. Save as .nml to run. |
| met\_hourly.csv |  |  | Meteorological GLM driver data for a baseline simulation based on observed data for Lake Sunapee. |
| met\_hourly\_plus2.csv |  |  | Meteorological GLM driver data for a year-round +2°C climate scenario for Lake Sunapee. |
| met\_hourly\_plus4.csv |  |  | Meteorological GLM driver data for a year-round +4°C climate scenario for Lake Sunapee. |
| met\_hourly\_plus6.csv |  |  | Meteorological GLM driver data for a year-round +6°C climate scenario for Lake Sunapee. |
| inflow.csv |  |  | Surface inflow GLM driver data for a baseline simulation based on observed data for Lake Sunapee. |
| inflow\_twoP.csv |  |  | Surface inflow GLM driver data for a 2× filterable reactive phosphorus (PHS\_frp) land use change scenario for Lake Sunapee. |
| inflow\_fourP.csv |  |  | Surface inflow GLM driver data for a 4× filterable reactive phosphorus (PHS\_frp) land use change scenario for Lake Sunapee. |
| inflow\_sixP.csv |  |  | Surface inflow GLM driver data for a 6× filterable reactive phosphorus (PHS\_frp) land use change scenario for Lake Sunapee. |
| outflow.csv |  |  | Surface outflow GLM driver data based on observed data for Lake Sunapee. |

## Data Table Structure

**met\_hourly.csv, met\_hourly\_plus2.csv, met\_hourly\_plus4.csv, met\_hourly\_plus6.csv**

|  |  |  |  |
| --- | --- | --- | --- |
| **Column name** | **Description** | **Unit or code explanation or date format** | **Empty value code** |
| time | Date and time of sampling | YYYY-MM-DD HH:MM:SS | NA |
| ShortWave | Short wave radiation | wattsPerSquareMeter | NA |
| LongWave | Long wave radiation | wattsPerSquareMeter | NA |
| AirTemp | Air temperature | celsius | NA |
| RelHum | Relative humidity in percent | dimensionless | NA |
| WindSpeed | Wind speed | metersPerSecond | NA |
| Rain | Hourly rain accumulation | metersPerDay | NA |
| Snow | Hourly snow accumulation | metersPerDay | NA |

**inflow.csv, inflow\_twoP.csv, inflow\_fourP.csv, inflow\_sixP.csv**

|  |  |  |  |
| --- | --- | --- | --- |
| **Column name** | **Description** | **Unit or code explanation or date format** | **Empty value code** |
| time | Date and time of sampling | YYYY-MM-DD HH:MM:SS | NA |
| FLOW | Stream inflow rate | cubicMetersPerSecond | NA |
| SALT | Inflow stream salinity | milligramsPerLiter | NA |
| TEMP | Inflow water temperature | celsius | NA |
| OGM\_don | Inflow dissolved organic nitrogen concentration | millimolesPerCubicMeter | NA |
| NIT\_nit | Inflow nitrate concentration | millimolesPerCubicMeter | NA |
| NIT\_amm | Inflow ammonium concentration | millimolesPerCubicMeter | NA |
| PHS\_frp | Inflow filterable reactive phosphorus concentration | millimolesPerCubicMeter | NA |

**outflow.csv**

|  |  |  |  |
| --- | --- | --- | --- |
| **Column name** | **Description** | **Unit or code explanation or date format** | **Empty value code** |
| time | Date and time of sampling | YYYY-MM-DD HH:MM:SS | NA |
| FLOW | Stream inflow rate | cubicMetersPerSecond | NA |