**Summary**

These data were originally intended to be used for managing biological resources and predicting species distributions that are affected by August mean stream temperature.

**Description**

These data represent modeled stream temperatures for a portion of a larger dataset known as the Great Northern Landscape Conservation Cooperative (GNLCC) (http://greatnorthernlcc.org/). This metadata record is a combined description for two spatial data feature types, vector lines and points, which cover the same geographic area. The line features are derived from NHDPlus version 2 (http://www.horizon-systems.com/NHDPlus/NHDPlusV2_home.php) (USEPA and USGS, 2010) stream lines and the point data represent 1 km intervals along the NHDPlus version 2 stream network. Both datasets contain identical modeled stream temperature attributes.

These modeled stream temperatures were generated as part of the U.S. Forest Service NorWeST stream temperature project https://www.fs.fed.us/rm/boise/AWAE/projects/NorWeST.html

These data reside in ESRI shapefile format, ArcGIS version 10.2. The line and point shapefile extents correspond to NorWeST production units, which generally relate to 6 digit (3rd code) hydrologic unit codes (HUCs). August mean stream temperature was the metric selected to be modeled in the NorWeST temperature model. Use of this metric allowed the largest proportion of data in the NorWeST observed temperature database to be used (~80%), which facilitated calibration of the model to thousands of unique stream sites across the region. The vector stream line data were derived from the NHDPlus data through a process referred to as reconditioning. This reconditioned data set was modified from the original NHDPlus data to ensure stream connectivity, which was required to fit spatial statistical models to the stream network data. Braided channels, most canals, and disconnected streams were deleted from NHDPlus Version 2. Additionally, where three or more segments converged into a single downstream segment the stream layer was manually edited to offset two of the three segments. Because many stream segments were deleted, this dataset does not contain all of the line features of the original NHDPlus v2 data.

The FLoWS and STARS toolboxes (https://www.fs.fed.us/rm/boise/AWAE/projects/SpatialStreamNetworks.shtml) were used to identify topological errors and generate the final spatial layer. The stream lines were further processed into 1 km segments to be used as input for the NorWeST stream temperature model. The point shapefiles correspond to the mid-point location for each 1 km stream segment. Stream temperatures were modeled at each point location. Modeled temperature values were subsequently attributed back to the 1 km stream line dataset. Stream temperatures were modeled from a set of covariate predictors using spatial statistical software called SSN and STARS (Ver Hoef et al. 2006). (https://www.fs.fed.us/rm/boise/AWAE/projects/SSN_STARS/downloads/VerHoef06StreamNetworksModelsThatUseFlowDistance.pdf)

The spatial covariates used for modeling stream temperature were derived from various sources as described below:

1. Air temperature_August (degree C). Mean August air temperature across the river basin derived from the dynamically downscaled NCEP RegCM3 reanalysis (Hostetler et al. 2011). Data were downloaded from the USGS Regional Climate Downscaling website (http://regclim.coas.oregonstate.edu/index.html).

2. Stream discharge_August (m3/s). Mean August stream discharge across the river based derived from USGS flow gages on streams with minimal water abstraction or storage reservoirs. Data were downloaded from the NWIS website (http://waterdata.usgs.gov/nwis/rt).
3. Elevation (m). Elevation at stream temperature sites was used to represent the vertical trend towards cooler air temperatures. Data were obtained from the 30-m resolution digital elevation model associated with NHDPlus (USEPA and USGS, 2010). Data were downloaded from http://www.horizon-systems.com/NHDPlus/NHDPlusV2_home.php.

4. Latitude (m). The y-coordinate at stream temperature sites from the Albers Equal Area projection was used to represent latitude and the poleward trend towards cooler air temperatures.

5. Canopy %. The percent canopy variable from the 2001 version of the National Land Cover Database (NLCD; Homer et al., 2007) was used to represent stream shade at each temperature site. Canopy % values in areas with recent wildfires between 2001 and 2008 were reduced based on U.S. Forest Service burn severity data following procedures developed by Miller et al. (2009). NLCD data were downloaded from http://www.mrlc.gov/nlcd2001.php.

6. Cumulative drainage area (km sq.). The value of CUMDRAINAG in NHDPlus (USEPA and USGS, 2010) at each stream temperature site was used to represent stream size and amount of insolation. It was assumed that larger streams had been exposed to insolation over a greater length and were less shaded by adjacent riparian vegetation. Data were downloaded from http://www.horizon-systems.com/NHDPlus/NHDPlusV2_home.php.

7. Stream slope %. The stream slope value in NHDPlus (USEPA and USGS, 2010) at a stream temperature site. It was assumed that slope affects flow velocity and equilibration time to local heating conditions. Steeper slopes, therefore, should negatively affect stream temperatures because conditions further upstream at higher elevations have greater influence on local temperatures. Data were downloaded from http://www.horizon-systems.com/NHDPlus/NHDPlusV2_home.php.

8. Mean annual precipitation (mm). The value of AREAWTMAP in NHDPlus (USEPA and USGS, 2010) at each stream temperature site. Areas with high annual precipitation may have higher water yields that cool streams. Data were downloaded from http://www.horizon-systems.com/NHDPlus/NHDPlusV2_home.php.

9. Base flow index (BFI). The value of the base flow index (Wolock, 2003) at a stream temperature site. Streams with larger baseflows and groundwater contributions are thought to be colder than other streams and potentially less sensitive to climate warming. Data were downloaded from http://ks.water.usgs.gov/pubs/abstracts/of.03-263.htm.

10. Glacier %. The percentage of the catchment area classified as glacier at each temperature site. Summaries were computed using a standard flow accumulation routine. This covariate represents the local cooling effect that glaciers may have on downstream temperatures. Data were downloaded from http://glaciers.research.pdx.edu/Downloads.

11. Lake %. The value of NLCD11PC in NHDPlus (USEPA and USGS, 2010), which is the percentage of the catchment area classified as open water, at a temperature site. This covariate represents the warming effect that natural lakes and many reservoirs have on downstream temperatures. Data were downloaded from http://www.horizon-systems.com/NHDPlus/NHDPlusV2_home.php.

12. Tailwater. Categorical predictor variable coded as 0/1 to indicate whether a stream temperature site is downstream from a reservoir that creates an anomalously cold tailwater. Using the SSN and STARS tools along with the covariate predictors, various mean August stream temperature scenarios were modeled. The scenarios include the 19 year average from 1993-2011, the 10 year average from 2002-2001, and single year scenarios for the years 1993 through 2011.

Referenced Cited:


Credits

U.S. Forest Service; Rocky Mountain Research Station; Air, Water, and Aquatic Environments Program (AWAE). https://www.fs.fed.us/rm/boise/awae_home.shtml

Use limitations

These data should be used with the understanding that the stream temperature values contained herein are modeled temperatures, not actual temperatures, and are subject error. The USDA Forest Service makes no warranty, expressed or implied, including the warranties of merchantability and fitness for a particular purpose, nor assumes any legal liability or responsibility for the accuracy, reliability, completeness or utility of these geospatial data, or for the improper or incorrect use of these geospatial data. These geospatial data and related maps or graphics are not legal documents and are not intended to be used as such. The data and maps may not be used to determine title, ownership, legal descriptions or boundaries, legal jurisdiction, or restrictions that may be in place on either public or private land. Natural hazards may or may not be depicted on the data and maps, and land users should exercise due caution. The data are dynamic and may change over time. The user is responsible to verify the limitations of the geospatial data and to use the data accordingly.

Extent

West -109.994205  East -102.605180
North 41.550390  South 35.961908

Scale Range

Maximum (zoomed in) 1:5,000
Minimum (zoomed out) 1:150,000,000

ArcGIS Metadata ►

Topics and Keywords ►

* CONTENT TYPE  Downloadable Data

Citation ►

TITLE "XXXX" Processing Unit - NorWeST Predicted Stream Temperature Lines
**SPATIAL REPRESENTATION TYPE**  
* vector

**PROCESSING ENVIRONMENT**  
Microsoft Windows 7 Version 6.1 (Build 7601) Service Pack 1; Esri ArcGIS 10.2.1.3497

**CREDITS**  
U.S. Forest Service; Rocky Mountain Research Station; Air, Water, and Aquatic Environments Program (AWAE). https://www.fs.fed.us/rm/boise/awae_home.shtml

**ARCgis Item Properties**

* **NAME**  NorWeST_PredictedStreamTempLines_XXXX
* **SIZE**  32.446

* **LOCATION**
  * **ACCESS PROTOCOL**  Local Area Network

**Extents**

**EXTENT**

**GEOGRAPHIC EXTENT**

**BOUNDING RECTANGLE**

* **EXTENT TYPE**  Extent used for searching
* **WEST LONGITUDE**  -109.994205
* **EAST LONGITUDE**  -102.605180
* **NORTH LATITUDE**  41.550390
* **SOUTH LATITUDE**  35.961908
* **EXTENT CONTAINS THE RESOURCE**  Yes

**EXTENT IN THE ITEM'S COORDINATE SYSTEM**

* **WEST LONGITUDE**  1862305.031100
* **EAST LONGITUDE**  2456707.391700
* **SOUTH LATITUDE**  711497.577500
* **NORTH LATITUDE**  1276226.438900
* **EXTENT CONTAINS THE RESOURCE**  Yes

**Resource Maintenance**
UPDATE FREQUENCY  as needed

Resource Constraints ►

LIMITATIONS OF USE

These data should be used with the understanding that the stream temperature values contained herein are modeled temperatures, not actual temperatures, and are subject to error. The USDA Forest Service makes no warranty, expressed or implied, including the warranties of merchantability and fitness for a particular purpose, nor assumes any legal liability or responsibility for the accuracy, reliability, completeness or utility of these geospatial data, or for the improper or incorrect use of these geospatial data. These geospatial data and related maps or graphics are not legal documents and are not intended to be used as such. The data and maps may not be used to determine title, ownership, legal descriptions or boundaries, legal jurisdiction, or restrictions that may be in place on either public or private land. Natural hazards may or may not be depicted on the data and maps, and land users should exercise due caution. The data are dynamic and may change over time. The user is responsible to verify the limitations of the geospatial data and to use the data accordingly.

Spatial Reference ►

ARCGIS COORDINATE SYSTEM

* Type Projected
* Geographic Coordinate Reference GCS_North_American_1983
* Projection GNLCC

PROJECTED COORDINATE SYSTEM

SEE INDIVIDUAL XML FILE FOR COORDINATE SYSTEM AND BOUNDARY INFORMATION

WELL-KNOWN TEXT

PROJCS["GNLCC",GEOGCS["GCS_North_American_1983",DATUM["D_North_American_1983",SPHEROID["GRS_1980",6378137.0,298.257222101]],PRIMEM["Greenwich",0.0],UNIT["Degree",0.0174532925199433]],PROJECTION["Albers"],PARAMETER["False_Easting",1500000.0],PARAMETER["False_Northing",0.0],PARAMETER["Central_Meridian",-114.0],PARAMETER["Standard_Parallel_1",43.0],PARAMETER["Standard_Parallel_2",47.0],PARAMETER["Latitude_Of_Origin",30.0],UNIT["Meter",1.0]]

REFERENCE SYSTEM IDENTIFIER

* Value 0
VECTOR

* LEVEL OF TOPOLOGY FOR THIS DATASET  geometry only

GEOMETRIC OBJECTS

FEATURE CLASS NAME  NorWeST_PredictedStreamTempLines_XXXX

* OBJECT TYPE  composite
* OBJECT COUNT  135714

ARCgis FEATURE CLASS PROPERTIES

FEATURE CLASS NAME  NorWeST_PredictedStreamTempLines_XXXX

* FEATURE TYPE  Simple
* GEOMETRY TYPE  Polyline
* HAS TOPOLOGY  FALSE
* FEATURE COUNT  see individual shapefile metadata
* SPATIAL INDEX  FALSE
* LINEAR REFERENCING  FALSE

Hide ArcGIS Feature Class Properties ▲

Hide Spatial Data Properties ▲

Distribution

DISTRIBUTION FORMAT

* NAME  Shapefile

TRANSFER OPTIONS
* TRANSFER SIZE  see individual metadata

Fields

DETAILS FOR OBJECT  NorWeST_PredictedStreamTempLines_XXXX

* TYPE  Feature Class
* ROW COUNT  135714

DEFINITION

Attribute Table

DEFINITION SOURCE
**FIELD FID**

* ALIAS FID
* DATA TYPE OID
* WIDTH 4
* PRECISION 0
* SCALE 0

**FIELD DESCRIPTION**

Internal feature number.

**DESCRIPTION SOURCE**

ESRI

**DESCRIPTION OF VALUES**

Sequential unique whole numbers that are automatically generated.

*Hide Field FID*

---

**FIELD Shape**

* ALIAS Shape
* DATA TYPE Geometry
* WIDTH 0
* PRECISION 0
* SCALE 0

**FIELD DESCRIPTION**

Feature geometry.

**DESCRIPTION SOURCE**

ESRI

**DESCRIPTION OF VALUES**

Coordinates defining the features.
FIELD OBSPRED_ID ►
  * ALIAS OBSPRED_ID
  * DATA TYPE Integer
  * WIDTH 9
  * PRECISION 9
  * SCALE 0
  FIELD DESCRIPTION
   A unique ID for each feature

DESCRIPTION SOURCE
   USFS RMRS Boise Aquatic Sciences Lab

FIELD ELEV ►
  * ALIAS ELEV
  * DATA TYPE Double
  * WIDTH 11
  * PRECISION 10
  * SCALE 2
  FIELD DESCRIPTION
   Elevation in meters

DESCRIPTION SOURCE
   USFS RMRS Boise Aquatic Sciences Lab

FIELD CANOPY ►
* ALIAS CANOPY
* DATA TYPE Double
* WIDTH 11
* PRECISION 10
* SCALE 2
FIELD DESCRIPTION
Percent canopy for each 1 km stream segment

DESCRIPTION SOURCE
USFS RMRS Boise Aquatic Sciences Lab

Hide Field CANOPY ▲

FIELD TAILWATER ►
* ALIAS TAILWATER
* DATA TYPE Integer
* WIDTH 8
* PRECISION 8
* SCALE 0
DESCRIPTION SOURCE
USFS RMRS Boise Aquatic Sciences Lab
FIELD DESCRIPTION
Categorical predictor variable coded as 0/1 to indicate whether a stream temperature site is downstream from a reservoir that creates an anomalously cold tailwater.

Hide Field TAILWATER ▲

FIELD SLOPE ►
* ALIAS SLOPE
* DATA TYPE Double
* WIDTH 14
* PRECISION 13
* SCALE 8
FIELD DESCRIPTION

Slope (rise/run) for each NHDPlus stream reach

DESCRIPTION SOURCE

USFS RMRS Boise Aquatic Sciences Lab

Hide Field SLOPE ▲

FIELD PRECIP ▶

  * ALIAS    PRECIP
  * DATA TYPE Double
  * WIDTH    19
  * PRECISION 18
  * SCALE    2

FIELD DESCRIPTION

  NHDPlus precipitation measure (mm)

DESCRIPTION SOURCE

  USFS RMRS Boise Aquatic Sciences Lab

Hide Field PRECIP ▲

FIELD CUMDRAINAG ▶

  * ALIAS    CUMDRAINAG
  * DATA TYPE Double
  * WIDTH    19
  * PRECISION 18
  * SCALE    2

FIELD DESCRIPTION

  Cumulative drainage area (sq. km) for each NHDPlus stream reach

DESCRIPTION SOURCE

  USFS RMRS Boise Aquatic Sciences Lab

Hide Field CUMDRAINAG ▲
FIELD Y_COORD ▶

* ALIAS    Y_COORD
* DATA TYPE Double
* WIDTH    13
* PRECISION 12
* SCALE    2

FIELD DESCRIPTION
Y coordinate of Albers Equal Area projection with units meters, used as surrogate for latitude

DESCRIPTION SOURCE
USFS RMRS Boise Aquatic Sciences Lab

Hide Field Y_COORD ▲

FIELD NLCD11PC ▶

* ALIAS    NLCD11PC
* DATA TYPE Double
* WIDTH    19
* PRECISION 0
* SCALE    0

FIELD DESCRIPTION
Percent cumulative open water from NHDPlus, derived from National Land Cover Dataset

DESCRIPTION SOURCE
USFS RMRS Boise Aquatic Sciences Lab

Hide Field NLCD11PC ▲

FIELD BFI ▶

* ALIAS    BFI
* DATA TYPE Integer
FIELD Description

Base flow index. Base flow to total flow as a percentage

DESCRIPTION SOURCE

USFS RMRS Boise Aquatic Sciences Lab

FIELD Air_Aug

* ALIAS Air_Aug

* DATA TYPE Double

* WIDTH 19

* PRECISION 0

* SCALE 0

FIELD DESCRIPTION

August mean air temperature for the NorWeST processing unit

DESCRIPTION SOURCE

USFS RMRS Boise Aquatic Sciences Lab

FIELD GLACIER

* ALIAS GLACIER

* DATA TYPE Double

* WIDTH 11

* PRECISION 10

* SCALE 2

FIELD DESCRIPTION

The percentage of the catchment area classified as glacier at each temperature site.
FIELD Flow_Aug ▶
* ALIAS   Flow_Aug
* DATA TYPE   Double
* WIDTH   19
* PRECISION   0
* SCALE   0
FIELD DESCRIPTION
August mean stream flow metric for the NorWeST processing unit

FIELD S1_93_11 ▶
* ALIAS   S1_93_11
* DATA TYPE   Double
* WIDTH   19
* PRECISION   0
* SCALE   0
FIELD DESCRIPTION
Scenario 1, modeled stream temperature from 1993-2011
FIELD S2_02_11 ►
  * ALIAS S2_02_11
  * DATA TYPE Double
  * WIDTH 19
  * PRECISION 0
  * SCALE 0
FIELD DESCRIPTION
  Scenario 2, modeled stream temperature from 2002-2011
DESCRIPTION SOURCE
  USFS RMRS Boise Aquatic Sciences Lab

Hide Field S2_02_11 ▲

FIELD S3_1993 ►
  * ALIAS S3_1993
  * DATA TYPE Double
  * WIDTH 19
  * PRECISION 0
  * SCALE 0
FIELD DESCRIPTION
  Scenario 3, modeled stream temperature for the year 1993
DESCRIPTION SOURCE
  USFS RMRS Boise Aquatic Sciences Lab

Hide Field S3_1993 ▲

FIELD S4_1994 ►
  * ALIAS S4_1994
  * DATA TYPE Double
  * WIDTH 19
  * PRECISION 0
  * SCALE 0
FIELD DESCRIPTION

Scenario 4, modeled stream temperature for the year 1994

DESCRIPTION SOURCE

USFS RMRS Boise Aquatic Sciences Lab

FIELD S5_1995

* ALIAS S5_1995
* DATA TYPE Double
* WIDTH 19
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION

Scenario 5, modeled stream temperature for the year 1995

DESCRIPTION SOURCE

USFS RMRS Boise Aquatic Sciences Lab

FIELD S6_1996

* ALIAS S6_1996
* DATA TYPE Double
* WIDTH 19
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION

Scenario 6, modeled stream temperature for the year 1996

DESCRIPTION SOURCE

USFS RMRS Boise Aquatic Sciences Lab
FIELD S7_1997 ►
* ALIAS S7_1997
* DATA TYPE Double
* WIDTH 19
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
   Scenario 7, modeled stream temperature for the year 1997
DESCRIPTION SOURCE
   USFS RMRS Boise Aquatic Sciences Lab
Hide Field S7_1997 ▲

FIELD S8_1998 ►
* ALIAS S8_1998
* DATA TYPE Double
* WIDTH 19
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
   Scenario 8, modeled stream temperature for the year 1998
DESCRIPTION SOURCE
   USFS RMRS Boise Aquatic Sciences Lab
Hide Field S8_1998 ▲

FIELD S9_1999 ►
* ALIAS S9_1999
* DATA TYPE Double
FIELD DESCRIPTION

Scenario 9, modeled stream temperature for the year 1999

DESCRIPTION SOURCE

USFS RMRS Boise Aquatic Sciences Lab

 Hide Field S9_1999 ▲

FIELD S10_2000 ►

* ALIAS S10_2000

* DATA TYPE Double

* WIDTH 19

* PRECISION 0

* SCALE 0

FIELD DESCRIPTION

Scenario 10, modeled stream temperature for the year 2000

DESCRIPTION SOURCE

USFS RMRS Boise Aquatic Sciences Lab

 Hide Field S10_2000 ▲

FIELD S11_2001 ►

* ALIAS S11_2001

* DATA TYPE Double

* WIDTH 19

* PRECISION 0

* SCALE 0

FIELD DESCRIPTION

Scenario 11, modeled stream temperature for the year 2001
FIELD S12_2002

* ALIAS S12_2002
* DATA TYPE Double
* WIDTH 19
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION

Scenario 12, modeled stream temperature for the year 2002

DESCRIPTION SOURCE

USFS RMRS Boise Aquatic Sciences Lab

FIELD S13_2003

* ALIAS S13_2003
* DATA TYPE Double
* WIDTH 19
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION

Scenario 13, modeled stream temperature for the year 2003

DESCRIPTION SOURCE

USFS RMRS Boise Aquatic Sciences Lab
FIELD S14_2004 ►

* ALIAS  S14_2004
* DATA TYPE  Double
* WIDTH  19
* PRECISION  0
* SCALE  0

FIELD DESCRIPTION

Scenario 14, modeled stream temperature for the year 2004

DESCRIPTION SOURCE

USFS RMRS Boise Aquatic Sciences Lab

Hide Field S14_2004 ►

FIELD S15_2005 ►

* ALIAS  S15_2005
* DATA TYPE  Double
* WIDTH  19
* PRECISION  0
* SCALE  0

FIELD DESCRIPTION

Scenario 15, modeled stream temperature for the year 2005

DESCRIPTION SOURCE

USFS RMRS Boise Aquatic Sciences Lab

Hide Field S15_2005 ►

FIELD S16_2006 ►

* ALIAS  S16_2006
* DATA TYPE  Double
* WIDTH  19
* PRECISION  0
* SCALE  0
**FIELD DESCRIPTION**

Scenario 16, modeled stream temperature for the year 2006

**DESCRIPTION SOURCE**

USFS RMRS Boise Aquatic Sciences Lab

*Hide Field S16_2006▲*

**FIELD S17_2007►**

* ALIAS S17_2007
* DATA TYPE Double
* WIDTH 19
* PRECISION 0
* SCALE 0

**FIELD DESCRIPTION**

Scenario 17, modeled stream temperature for the year 2007

**DESCRIPTION SOURCE**

USFS RMRS Boise Aquatic Sciences Lab

*Hide Field S17_2007▲*

**FIELD S18_2008►**

* ALIAS S18_2008
* DATA TYPE Double
* WIDTH 19
* PRECISION 0
* SCALE 0

**FIELD DESCRIPTION**

Scenario 18, modeled stream temperature for the year 2008

**DESCRIPTION SOURCE**

USFS RMRS Boise Aquatic Sciences Lab

*Hide Field S18_2008▲*
FIELD S19_2009 ►

* ALIAS  S19_2009
* DATA TYPE  Double
* WIDTH  19
* PRECISION  0
* SCALE  0

FIELD DESCRIPTION

Scenario 19, modeled stream temperature for the year 2009

DESCRIPTION SOURCE

USFS RMRS Boise Aquatic Sciences Lab

Hide Field S19_2009 ►

FIELD S20_2010 ►

* ALIAS  S20_2010
* DATA TYPE  Double
* WIDTH  19
* PRECISION  0
* SCALE  0

FIELD DESCRIPTION

Scenario 20, modeled stream temperature for the year 2010

DESCRIPTION SOURCE

USFS RMRS Boise Aquatic Sciences Lab

Hide Field S20_2010 ►

FIELD S21_2011 ►

* ALIAS  S21_2011
* DATA TYPE  Double
**FIELD DESCRIPTION**

Scenario 21, modeled stream temperature for the year 2011

**DESCRIPTION SOURCE**

USFS RMRS Boise Aquatic Sciences Lab

*Hide Field S21_2011 ▲*

**FIELD FTYPE**

* **ALIAS** FTYPE
* **DATA TYPE** String
* **WIDTH** 24
* **PRECISION** 0
* **SCALE** 0

**FIELD DESCRIPTION**

This attribute is only for the predicted temperature locations. This attribute is the NHDPlus feature type and can have one of two values, either 'StreamRiver' or 'ArtificialPath'. This is an NHDPlus defined attribute

**DESCRIPTION SOURCE**

USFS RMRS Boise Aquatic Sciences Lab

*Hide Field FTYPE ▲*

**FIELD WATERBODY**

* **ALIAS** WATERBODY
* **DATA TYPE** Integer
* **WIDTH** 8
* **PRECISION** 8
* **SCALE** 0

**FIELD DESCRIPTION**
This attribute is only for the predicted temperature locations. This attribute is for prediction points that fall within an NHDPlus water body feature. Values may be 0 or 1. 1 represents a point or stream segment within a water body feature. This attribute was generated at the Boise Lab to designate line segments that fall within water bodies.

**DESCRIPTION SOURCE**

USFS RMRS Boise Aquatic Sciences Lab

*Hide Field WATERBODY ▲*

**FIELD S22_PredSE ▶**

* ALIAS S22_PredSE
* DATA TYPE Double
* WIDTH 19
* PRECISION 0
* SCALE 0

**FIELD DESCRIPTION**

Standard errors of stream temperature predictions

**DESCRIPTION SOURCE**

USFS RMRS Boise Aquatic Sciences Lab

*Hide Field S22_PredSE ▲*

**FIELD S23_1C ▶**

* ALIAS S23_1C
* DATA TYPE Double
* WIDTH 19
* PRECISION 0
* SCALE 0

**FIELD DESCRIPTION**

Future scenario adds 1.00 C to S1_93-11

**DESCRIPTION SOURCE**

USFS RMRS Boise Aquatic Sciences Lab
FIELD S24_1C_D ►

* ALIAS  S24_1C_D
* DATA TYPE  Double
* WIDTH  19
* PRECISION  0
* SCALE  0

FIELD DESCRIPTION

Future scenario adds 1.00 °C to S1_93-11 but also accounts for differential warming of streams by using historical temperatures to scale temperature increases so that cold streams warm less than warm streams.

DESCRIPTION SOURCE

USFS RMRS Boise Aquatic Sciences Lab

FIELD S25_2C ►

* ALIAS  S25_2C
* DATA TYPE  Double
* WIDTH  19
* PRECISION  0
* SCALE  0

FIELD DESCRIPTION

Future scenario adds 2.00 °C to S1_93-11

DESCRIPTION SOURCE

USFS RMRS Boise Aquatic Sciences Lab
FIELD S26_2C_D
* ALIAS S26_2C_D
* DATA TYPE Double
* WIDTH 19
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Future scenario adds 2.00 °C to S1_93-11 but also accounts for differential warming of streams by using historical temperatures to scale temperature increases so that cold streams warm less than warm streams.

DESCRIPTION SOURCE
USFS RMRS Boise Aquatic Sciences Lab

Hide Field S26_2C_D ▲

FIELD S27_3C
* ALIAS S27_3C
* DATA TYPE Double
* WIDTH 19
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
Future scenario adds 3.00 °C to S1_93-11

DESCRIPTION SOURCE
USFS RMRS Boise Aquatic Sciences Lab

Hide Field S27_3C ▲

FIELD S28_3C_D
* ALIAS S28_3C_D
* DATA TYPE Double
* WIDTH 19
* PRECISION 0
Future scenario adds 3.00 °C to S1_93-11 but also accounts for differential warming of streams by using historical temperatures to scale temperature increases so that cold streams warm less than warm streams.

FIELD DESCRIPTION

Future scenario based on global climate model ensemble averages that represent the A1B warming trajectory for 2040s (2030 - 2059). Future stream deltas within a processing unit were similar and based on projected changes in August air temperature and stream discharge.

FIELD DESCRIPTION

Future scenario based on global climate model ensemble averages that represent the A1B warming trajectory for 2040s (2030 - 2059). Future stream deltas within a processing unit were similar and based on projected changes in August air temperature and stream discharge.
projected changes in August air temperature and stream discharge, but also accounted for differential warming of streams by using historical temperatures to scale temperature increases so that cold streams warm less than warm streams.

DESCRIPTION SOURCE

USFS RMRS Boise Aquatic Sciences Lab

FIELD S31_2080

* ALIAS S31_2080
* DATA TYPE Double
* WIDTH 19
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION

Future scenario based on global climate model ensemble averages that represent the A1B warming trajectory for 2080s (2070-2099). Future stream deltas within a processing unit were similar and based on projected changes in August air temperature and stream discharge.

DESCRIPTION SOURCE

USFS RMRS Boise Aquatic Sciences Lab

FIELD S32_2080D

* ALIAS S32_2080D
* DATA TYPE Double
* WIDTH 19
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION

Future scenario based on global climate model ensemble averages that represent the A1B warming trajectory for 2080s (2070-2099). Future stream deltas within a processing unit were based on similar projected changes in August air temperature and stream discharge, but also accounted for differential warming of streams by using historical temperatures to scale temperature increases so that cold streams warm less than warm streams.
FIELD S32_2080D

FIELD S33_2012

ALIAS S33_2012
DATA TYPE Double
WIDTH 19
PRECISION 0
SCALE 0

FIELD DESCRIPTION
Scenario 33, modeled stream temperature for the year 2012

FIELD S34_2013

ALIAS S34_2013
DATA TYPE Double
WIDTH 19
PRECISION 0
SCALE 0

FIELD DESCRIPTION
Scenario 34, modeled stream temperature for the year 2013
FIELD S35_2014 ►
  * ALIAS S35_2014
  * DATA TYPE Double
  * WIDTH 19
  * PRECISION 0
  * SCALE 0
FIELD DESCRIPTION
  Scenario 35, modeled stream temperature for the year 2014

DESCRIPTION SOURCE
  USFS RMRS Boise Aquatic Sciences Lab

Hide Field S35_2014 ►

FIELD S36_2015 ►
  * ALIAS S36_2015
  * DATA TYPE Double
  * WIDTH 19
  * PRECISION 0
  * SCALE 0
FIELD DESCRIPTION
  Scenario 36, modeled stream temperature for the year 2015

DESCRIPTION SOURCE
  USFS RMRS Boise Aquatic Sciences Lab

Hide Field S36_2015 ►

FIELD COMID ►
  * ALIAS COMID
  * DATA TYPE Integer
**FIELD DESCRIPTION**

<table>
<thead>
<tr>
<th>FIELD</th>
<th>DESCRIPTION</th>
<th>SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMID</td>
<td>COMID for the underlying 1:100,000 scale NHDPlus stream lines (version two).</td>
<td>USFS RMRS Boise Aquatic Sciences Lab</td>
</tr>
<tr>
<td>GNIS_NAME</td>
<td>The stream name from the Geographic Names Information System database</td>
<td>USFS RMRS Boise Aquatic Sciences Lab</td>
</tr>
<tr>
<td>S37_9311M</td>
<td>Historical composite scenario representing 19 year average Maximum Weekly Maximum Temperature (MWMT or 7 DADM) for 1993 - 2011.</td>
<td>USFS RMRS Boise Aquatic Sciences Lab</td>
</tr>
</tbody>
</table>
Future Maximum Weekly Maximum Temperature (MWMT or 7DADM) stream scenario based on global climate model ensemble average projected changes for the A1B warming trajectory in the 2040s (2030-2059). Future stream deltas are identical at all sites within a NorWeST unit.

Future Maximum Weekly Maximum Temperature (MWMT or 7DADM) stream scenario based on global climate model ensemble average projected changes for the A1B warming trajectory in the 2040s (2030-2059). Future stream deltas account for differential sensitivity among streams so that cold streams warm less than warm streams.
FIELD S40_2080M

* ALIAS S40_2080M
* DATA TYPE Double
* WIDTH 19
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION

Future Maximum Weekly Maximum Temperature (MWMT or 7DADM) stream scenario based on global climate model ensemble average projected changes for the A1B warming trajectory in the 2080s (2070-2099). Future stream deltas are identical at all sites within a NorWeST unit.

DESCRIPTION SOURCE

USFS RMRS Boise Aquatic Sciences Lab

FIELD S41_2080DM

* ALIAS S41_2080DM
* DATA TYPE Double
* WIDTH 19
* PRECISION 0
* SCALE 0

FIELD DESCRIPTION

Future Maximum Weekly Maximum Temperature (MWMT or 7DADM) stream scenario based on global climate model ensemble average projected changes for the A1B warming trajectory in the 2080s (2070-2099). Future stream deltas within a NorWeST unit account for differential sensitivity among streams so that cold streams warm less than warm streams.

DESCRIPTION SOURCE

USFS RMRS Boise Aquatic Sciences Lab
Records were queried for "FTYPE" = 'ArtificialPath' AND "WATERBODY" = 1.

Those modeled segments or points that were part of a lake or waterbody feature had their scenario fields calculated to equal -9999.
## Metadata Contacts

**METADATA CONTACT**

**INDIVIDUAL'S NAME**  Sharon (Parkes) Payne  
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**COUNTRY**  US  

**Hide Contact information ▲**