Stream Thermal Sensitivities in Southwestern and Southcentral Alaska

Data Files README

1. tempSitesMetadata.csv

Metadata information for 420 stream temperature monitoring sites in five study regions: Cook Inlet, Prince William Sound, Copper River, Bristol Bay, and Kodiak. Site metadata includes SiteID (identifier used for this project), Agency_ID (original identifier used by data provider), SourceName (agency abbreviation), Contact_person, Contact_email, Contact_telephone, Latitude, Longitude, Waterbody_name, and Region.

2. dailyTemps.csv

Daily minimum, maximum, and mean stream temperatures for 420 stream temperature monitoring sites with one or more summers of complete time series (80% of days in June, July, and August). Fields include SiteID, sampleDate, meanDT, minDT, and maxDT.

3. tempMetrics.csv

Thirty-seven stream temperature metrics that represent magnitude, duration, frequency, variability, and timing of annual stream temperatures. Metrics were calculated for all sites and years in the dailyTemps.csv dataset. Fields include SiteID, Year, and metrics listed in table below.

Group	Metric	Description
Duration	dur13	Average duration of stream temperature events that exceed 13°C
Duration	dur13ct	Count of all stream temperature events that exceed 13°C
Duration	dur13gt6	Count of stream temperature events that exceed 13°C for seven or more days
Duration	dur13mx	Maximum duration of stream temperature events that exceed 13°C
Duration	dur18	Average duration of stream temperature events that exceed 18°C
Duration	dur18ct	Count of all stream temperature events that exceed 18°C
Duration	dur18gt6	Count of stream temperature events that exceed 18°C for seven or more days
Duration	dur18mx	Maximum duration of stream temperature events that exceed 18°C
Duration	dur20	Average duration of stream temperature events that exceed 20°C
Duration	dur20ct	Count of all stream temperature events that exceed 20°C
Duration	dur20gt6	Count of stream temperature events that exceed 20°C for seven or more days
Duration	dur20mx	Maximum duration of stream temperature events that exceed 20°C
Frequency	SUM_13_DMT	Number of days when mean daily temperatures exceed 13°C
Frequency	SUM_18_DMT	Number of days when mean daily temperatures exceed 18°C
Frequency	SUM_20_DMT	Number of days when mean daily temperatures exceed 20°C
Magnitude	Aug	Mean of mean daily temperatures in August for time series with 80% of days in that month

Group	Metric	Description
Magnitude	Jul	Mean of mean daily temperatures in July for time series with 80% of days in that month
Magnitude	Jun	Mean of mean daily temperatures in June for time series with 80% of days in that month
Magnitude	MA7d_DAT	Maximum of rolling 7-day average of daily mean temperatures
Magnitude	MA7d_DMT	Maximum of rolling 7-day average of daily maximum temperatures
Magnitude	MnDAT	Mean of mean daily temperatures
Magnitude	MnDMT	Mean of maximum daily temperatures
Magnitude	MnDNT	Mean of minimum daily temperatures
Magnitude	MxDAT	Maximum of mean daily temperatures
Magnitude	MxDMT	Maximum of maximum daily temperatures
Magnitude	NDNT	Minimum of minimum daily temperatures
Timing	MA7d_DMT_jd	Timing of maximum of rolling 7-day average of daily maximum temperatures (julian day)
Timing	MxDMT_jd	Timing of maximum of maximum daily temperatures (julian day)
Variability	CV_DAT	Coefficient of variation of mean daily temperatures
Variability	CV_DAT_K	Coefficient of variation of mean daily temperatures after conversion to Kelvin
Variability	MxDIFF	Difference between maximum daily maximum temperature and minimum daily minimum temperature
Variability	RANGE_MAX	Maximum daily range
Variability	RANGE_MN	Mean daily range
Variability	SD	Standard deviation of mean daily temperatures
Variability	SIGMA_DAT	Variance of mean daily temperatures
Variability	SIGMA_DMT	Variance of maximum daily temperatures
Variability	SIGMA_DNT	Variance of minimum daily temperatures

4. tempSitesSens.csv

Dataset of estimated stream thermal sensitivities and 13 covariates used in boosted regression tree model for 319 sites with data from 2011-2019. Fields include SiteID, Year, TempSens, and covariates listed in table below.

Covariate	Description	Data Source
str_slope	Stream gradient (%)	National Hydrography Dataset and custom stream networks
cat_elev_MEAN	Mean catchment elevation	National Hydrography Dataset and custom stream networks
cat_slope_MEAN	Mean catchment slope	National Hydrography Dataset and custom stream networks
wtd_north_per	Percent of watershed facing north	National Hydrography Dataset and custom stream networks

Covariate	Description	Data Source
wtd_slope_MEAN	Mean watershed slope	National Hydrography Dataset and custom stream networks
wtd_area_sqKM	Watershed area (km^2)	National Hydrography Dataset and custom stream networks
dist_coast_km	Distance to coastline (km)	National Hydrography Dataset and custom stream networks
wtd_glacier_per	Total glacier cover in watershed (%)	Randolph Glacier Inventory
wtd_lake_per	Total lake cover in watershed (%)	National Hydrography Dataset
wtd_wet_per	Total wetland cover in watershed (%)	National Land Cover Dataset 2010
wtd_lcld_jd	Last day of continuous snow season averaged over the watershed (julian day)	MODIS Snow Metrics
summer_precip	Total summer precipitation by year at monitoring location (mm)	DAYMET
Region	Study region: Cook Inlet, Prince William Sound, Copper River, Bristol Bay, and Kodiak	National Hydrography Dataset

5. tempScensSens.csv

Dataset of scenarios of stream thermal sensitivities, 13 covariates, and species and life stage information for 966 salmon streams across the Cook Inlet, Prince William Sound, and Copper River regions. Four scenarios include low and high spring snowpack and low and high summer precipitation. Fields include HUC12, Year, Scenario, TempSens, Chinook, Coho, Sockeye, Pink, Chum, Spawning, Rearing, and covariates listed in table above. For species and life stage fields (Chinook to Rearing), entries indicate presence/absence of that species or life stage in that stream reach as assigned in the ADF&G Anadromous Waters Catalog.