**CTFS-ForestGEO Climate Data Sources – Metadata**

**Table 1. Description of data fields in ‘ForestGEO climate data sources.csv’ and instructions for updating these.**

| **Column Header** | **Description** | **Instructions** |
| --- | --- | --- |
| Data.set.name | Name describing the data set. Name should be specific enough to uniquely identify the data set |  |
| Site | CTFS-ForestGEO site name. “[ANY SITE]” indicates that data are available for any site globally as part of a gridded data product. If data have been extracted for particular CTFS-ForestGEO sites, these sites are listed specifically in ‘ForestGEO climate data sources.csv’ (Table 3). | When entering this, please be sure that it matches exactly with existing instances of that site name. If existing instances require correction, please change all. |
| Variable | Climate variable (listed in Table 2). ‘(multiple)’ is a shorthand indicating that multiple variables are available from the same source.  Note that this refers to the property measured (e.g., air temperature) and not the statistics applied to those measurements (e.g., mean annual temperature, max July temperature, frost day frequency). | Select variable from list in Table 2. When entering this, please be sure that it matches exactly with existing instances of that variable name. If variable does not exist, please add it to Table 2. If multiple variables are available, “(multiple)” may be selected; however, best practice is to enter all available variables. |
| Statistic | Statistic applied to the variable over the data interval. | Enter the statistic applied over the data interval. For instance, temperature is typically averaged over the data interval, whereas precipitation is summed. Note that most meteorological stations measure at high frequency and record averages or sums. If data set records each measurement taken, indicate 'none'. |
| Data.Interval | Time interval(s) at which data are reported. Note that data may be measured at finer intervals but aggregated to longer intervals based on the statistic reported in the previous column. | Enter the minimum time interval at which data are available. If data summaries exist at longer time intervals, these may also be reported. |
| Start.Date | Start date for which data are available. Date format is YYYY.MM.DD, YYYY.MM., or YYYY. | Enter start date for which data are available. If older data exist from a different source, this may be indicated in the notes. |
| End.Date | Most recent date for which data were available at the time the record was created/updated. Date format is YYYY.MM.DD, YYYY.MM., or YYYY. | Enter most recent date for which data are available. If collection is ongoing, that will be indicated in the next column. If newer data exist from a different source, this may be indicated in the notes. |
| Ongoing? | Whether data collection is ongoing/ expected to continue beyond the end date. Y-yes; N-no. |  |
| Data.Type | Data types:   * “Raw”- original measurements (i.e. instrument readings) * “Gap filled/ Corrected”- Secondary data product where missing or bad values have been replaced by estimated values * “Modeled/ Interpolated”- Data not measured onsite, but estimated via modeling/spatial interpolation. |  |
| Gap.Free? | Indicates whether data record contains gaps of any length: Y-yes; N-no |  |
| Source.Type | Indicates source type:   * instrument/ meteorological station * gridded data product | Source details will be given in following columns. |
| For Instrument/ meteorological station records: | | |
| Meteorological.Station.Name.(ID) | Meteorological station name/ ID. This may be either an official name (if applicable) or a simple description. | Provide official name, if one exists. Otherwise, give unofficial name. |
| latitude | Latitude of meteorological station (in decimal degrees, with + indicating N and - indicating S) |  |
| longitude | Longitude of meteorological station (in decimal degrees, with + indicating E and - indicating W) |  |
| elevation | Elevation of meteorological station (m) |  |
| Instrument.Location | Instrument location relative to forest canopy:   * “Above canopy” * “Below top of canopy” * “Multiple heights above/ within/ below canopy” * “Clearing or natural gap” – clearing within forested area * “Non-forested site” –large clearing and/or built environment (e.g., airport meteorological station). | This is a categorical variable; please enter exact match. |
| Instrument.Distance.From.Plot(km) | Instrument distance from CTFS-ForestGEO plot, in km. | Distance may be approximate (e.g., rounded to zero for instruments adjacent to plot) |
| Station.Elevation.Relative.To.Plot | Qualitative description of elevation of the (base of) meteorological station elevation relative to that of CTFS-ForestGEO plot:   * within range- within the range of elevations to that CTFS-ForestGEO plot * lower elevation- elevation lower than minimum elevation in CTFS-ForestGEO plot * higher elevation- elevation higher than maximum elevation in CTFS-ForestGEO plot | If exact elevation difference is known, please include in Instrument Location Description. |
| Instrument.Location.Description | Description of instrument location appropriate for use in a publication, including relevant details not listed elsewhere. | Provide description that would be appropriate for description in a scientific publication. |
| Instrument.height.or.depth(m) | Instrument height (+ values) or depth (- values) relative to ground surface, in m. | Record if known. This is most important when reporting a height or depth profile. |
| n.instruments | Number of instruments measuring this variable in this location. May be more than one when there are backup instruments or spatial replication. | Record if known. |
| instrument.type/model | Instrument type / model | Record if known. |
| Gridded Data Product Information: | | |
| Gridded.Data.Product.Name | Name of gridded data product (original source) |  |
| Gridded.Data.Product.URL.or.citation | URL and/or citation for gridded data product. |  |
| Gridded.Data.Product.Spatial.Resolution | Spatial resolution of gridded data product. |  |
| Gridded.data.product.notes | Notes on the gridded data product. |  |
| Gridded.data.product.availability | Availability of the original gridded data product. |  |
| Data Product Information: | | |
| Data.Availability | Availability of data product:   * open access-freely available for academic research purposes * upon request- data not publically available, but will be shared with any researcher who requests them * unspecified * restricted- data are conditionally available, if at all. |  |
| Data.URL.or.location | If data are available online, provide link. If not, indicate where they are stored. |  |
| Data.Contact(s) | Name(s), Institution(s), and email(s) for one or more person who can be contacted with data requests or questions. If none is specified, data inquiries should be addressed to the site PI(s). |  |
| Related.Publication(s).or.Metadata | Publication(s) useful for understanding the data set. |  |
| Notes | Any relevant information not included in other fields. |  |
| Record.last.updated | Date of record update. |  |

Table 2. Variables currently included in the metadata record.

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| --- |
| Variables |
| (multiple) |
| Air Temperature |
| Barometric Pressure |
| Cloud cover |
| IR Biological Temperature |
| Potential Evapotranspiration |
| Precipitation |
| Radiation: Photosynthetically Active Radiation |
| Radiation: Shortwave and Longwave radiation (net radiation) |
| Radiation: Solar (shortwave) radiation |
| Relative humidity |
| Snow depth |
| Snowfall |
| Soil Heat Flux |
| Soil temperature |
| Vapour pressure |
| Wind speed & direction (2D) |

**Table 3. Description of data fields in ‘ForestGEO\_gridded climate data.csv’.**

| **Column Header** | **Description** |
| --- | --- |
| Site | CTFS-ForestGEO site name. |
| [gridded data product name] | 1- Data have been extracted for this site and are available as indicated in ‘ForestGEO climate data sources.csv’.  0- Data not extracted/ available for this site. Data may be unavailable either because (1) the site is not covered by the data product or (2) the site was added to the CTFS-ForestGEO network after data were extracted. |