**Normal: Daymet**

This data set provides Daymet Version 3 model output data as gridded estimates of daily weather parameters for North America and Hawaii: including Canada, Mexico, the United States of America, Puerto Rico, and Bermuda. The island areas of Hawaii and Puerto Rico are available as files separate from the continental land mass. For this project the data have been clipped to North America. Daymet output variables include the following parameters: minimum temperature, maximum temperature, precipitation, shortwave radiation, vapor pressure, snow water equivalent, and day length. The data set covers the period from January 1, 1980 to December 31 of the most recent full calendar year. Each subsequent year is processed individually at the close of a calendar year. Daymet variables are continuous surfaces provided as individual files, by variable and year, at a 1-km x 1-km spatial resolution and a daily temporal resolution. Data are in a Lambert Conformal Conic projection for North America and are distributed in a netCDF file (version 1.6) format compliant to Climate and Forecast (CF) metadata conventions. For this project the monthly 30-year averages have been projected to WGS84 and saved as raster data within a geodatabase.

<https://daymet.ornl.gov/>

**Future: GDFL CM3**

The source provides modeled information of the climate expected for the years 2030, 2050, and 2070. These data were generated by the U.S. National Oceanic and Atmospheric Administration’s Geophysical Fluid Dynamics Laboratory (GFDL; Donner et al. 2011) as Climate Model 3 (CM3). As with the “normal” data, the forecasted variables include average monthly precipitation, and maximum, mean and minimum temperatures as well as 19 bioclimate variables. The GDFL CM3 global dataset was downscaled to a 30 arc-second horizontal resolution by Ramirez and Jarvis (2008), who also derived the 19 bioclimate variables. The CM3 is a coupled general circulation model for the atmosphere, oceans, land, and sea ice. It includes aerosol-cloud interactions and chemistry-climate feedbacks as well as land and ocean carbon cycles and their interactions (Donner et al. 2011).

The forecasted data are based on the greenhouse gas representative concentration pathway (RCP) 8.5 (Moss et al.), which is currently the most realistic expected outcome, given historic, present, and likely future rates of emissions (Jennings 2013).

<http://www.gfdl.noaa.gov/am3-model>

Donner, LJ, B Wyman, RS Hemler, et al. 2011: The dynamical core, physical parameterizations, and basic simulation characteristics of the atmospheric component AM3 of the GFDL Global Coupled Model CM3. *Journal of Climate* 24(13), DOI:10.1175/2011JCLI3955.1.

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Ramirez, J, and A Jarvis. 2008. High resolution statistically downscaled future climate surfaces. International Center for Tropical Agriculture (CIAT); CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Cali, Colombia.