Evapotranspiration (ET)

- **Before 2008:**
  - **Model:** PT-JPL
  - **Units:** mm/month (daylight hours)
  - **Satellites:** Landsat 5, 7, 8
  - **Resolution:** 30 m
  - **Source:** https://landsat.gsfc.nasa.gov/satellites/
  - **Data Availability:** 1985 - 2007
  - **Description:** ET is calculated daily using the PT-JPL model on Landsat overpass days. Values are then interpolated across each day of the month by using the nearest clear-sky Landsat observation for each pixel. This produces a monthly ET product in mm/month.
- **2008 and Later:**
  - **Model:** OpenET Ensemble
  - **Units:** mm/month
  - **Satellites:** Landsat 5, 7, 8, 9
  - **Resolution:** 30 m
  - **Source:**
    - https://etdata.org/methodologies
    - https://developers.google.com/earth-engine/datasets/catalog/OpenET_ENSEMBLE_CONUS_GRIDMET_MONTHLY_v2_0
  - **Data Availability:** 2008 - 2023
  - **Description:** Monthly evapotranspiration is provided by OpenET. Monthly ET is calculated as the mean of multiple remote sensing models (ALEXI/DisALEXI, eeMETRIC, geeSEBAL, PT-JPL, SIMS, SSEBop), with outliers removed using the Median Absolute Deviation.

Potential Evapotranspiration (PET)

- **Before 2008:**
  - **Model:** PT-JPL
  - **Units:** mm/month (daylight hours)
  - **Satellites:** Landsat 5, 7, 8
  - **Resolution:** 30 m
  - **Source:** https://landsat.gsfc.nasa.gov/satellites/
  - **Data Availability:** 1985 - 2007
  - **Description:** PET is derived by dividing daily ET by the Evaporative Stress Index (ESI), both calculated using the PT-JPL model. Like ET, the data is temporally interpolated to generate monthly mm/month values using the nearest cloud-free Landsat pass.

Reference Evapotranspiration (ETo)

- **2008 and Later:**
  - **Dataset:** University of Idaho EPSCOR GRIDMET (modified)
  - **Units:** mm/month (daylight hours scaled, ET-corrected)
  - **Resolution:** 4 km
  - **Source:**
    - https://www.climatologylab.org/gridmet.html
    - https://developers.google.com/earth-engine/datasets/catalog/IDAHO_EPSCOR_GRIDMET
  - **Data Availability:** 2008 - 2023
  - **Description:** Daily ETo is calculated using the Penman-Monteith method and aggregated monthly (mm/month). Since the product is 24-hour-based, we scale it to daylight hours using average latitude and day-of-year data. To improve comparability with PET, ETo is adjusted: if it falls below the maximum ET value from any ensemble model, it is replaced with that maximum. Both the original and adjusted ETo values are included in the CSV export.

Precipitation (PPT)

- **Dataset:** Oregon State PRISM
- **Units:** mm/month
- **Resolution:** 4 km
- **Source:** https://prism.oregonstate.edu
- **Data Availability:** 1985 - 2023
- **Description:** Monthly mm/month precipitation data is provided by the Oregon State PRISM dataset.

Cloud Cover and Missing Data *(Computed)*

- **Before 2008:**
  - Cloud cover and missing data are calculated as the ratio of cloudy or missing pixels to the total number of pixels in a region, averaged monthly.
- **2008 and Later:**
  - Cloud cover and missing data are calculated by comparing the number of Landsat passes with valid, good-visibility pixels (as provided by OpenET) to the total number of Landsat passes available for the month. Total available passes are determined on-demand via the Microsoft Planetary Computer STAC API.
    - Algorithm: (Number of Landsat Passes – Average Passes Used per Pixel) / Number of Landsat Passes