

Key to file names:

1) First 2-5 letters refer to the climate variable:

pet1: Potential evapotranspiration (natural vegetation, no water limit)

pet5: Potential evapotranspiration (short reference crop, for rangeland)

et: Evapotranspiration

runof: Runoff

bflow: Baseflow

cflow: Combined flow (i.e., runoff + baseflow)

soilm: Soil moisture

ppt: Precipitation

smd: Soil moisture deficit

snowd: Snow depth

swe: Snow water equivalent

tavg: Average temperature

tmin: Minimum temperature

tmax: Maximum temperature

rh: Relative humidity

wbd: Water balance deficit (ie, PET1 minus ET)

wlv: Water-limited vegetation indicator

2) The single digit following the variable name refers to the years:

0: 1916-2006 (ie, historic)

4: 2030-2059 (2040s)

8: 2070-2099 (2080s)

3) If there is a "d" following the year, it means "delta" (ie, change from historic)

4) The text between the two underscores refers to the month/season/annual:

jan: January

feb: February...etc

djf: Dec-Jan-Feb

mam: Mar-Apr-May, ...etc

ann: Annual

5) After the second underscore refers to the global climate model (or historic):

h: historic

p: PCM1

m: Miroc 3.2

c: Ensemble Mean (ie, Composite)

NOTES:

A. For the "smd" and "wbd" variables, there are also datasets named with "**mp**", "**nmp**", "**lmp**", & "**fmp**" in place of the season/month. The explanation of these annual delta variables for water balance deficit (WBD) is as follows. Background: WBD is the difference between the potential evapotranspiration and the actual evapotranspiration, and is a measure of the difference between the atmospheric demand for moisture and the ability of plant surfaces to supply it. Since much of the west experiences dry summers, we typically have the situation where the atmospheric demand for water is higher than available surface moisture in the summer months - i.e., we experience a water balance deficit (i.e.,  $WBD > 0$ ). So, WBD is a measure of plant moisture stress.

The datasets with "**mp**", "**nmp**", "**lmp**", & "**fmp**" in the names represent experimental variables related to the change in WBD (and SMD) under the various climate change scenarios, as follows: "**lmp**" stands for "last month positive"; these datasets represent the change in the number (e.g., jan = 1, feb = 2, etc) of the last month in the year that experiences a water balance deficit (i.e.,  $WBD > 0$ ). "**fmp**" stands for "first month positive", and is the analogous metric for the change in the number of the first month of the year with a deficit. "**nmp**" stands for "number of months positive", and represents the change in the total number of months with a deficit. Finally, "**mp**" is an index based on the "**fmp**" and "**lmp**" variables, and is intended to represent the seasonal timing of the WBD, indicating whether the "season" with a WBD started earlier, ended later, or both.

Soil Moisture Deficit (SMD) is itself an experimental variable, analogous to WBD, but for soil moisture stress rather than atmospheric. The "**mp**", "**nmp**", "**lmp**", & "**fmp**" datasets for SMD are completely analogous to the WBD datasets described above.

B. The Water Limited Vegetation variables (WLV) are annual deltas, only