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| **Equation Name** | **Predictor** | **units** | **Scaling in cover models** | **description** |
| Tmean\_CLIM | Mean annual temperature – mean across previous 30 years | Degrees C. | (Tmean\_CLIM – 10.275203571)/4.912309147 | Mean across 30 years [mean across year(monthly mean temps.)] |
| precipTempCorr\_CLIM | Precipitation Temperature correlation – mean across previous 30 years | correlation | (precipTempCorr\_CLIM - -0.120988193) / 0.410662268 | Mean across 30 years[correlation(each month’s tmax, each month’s tmin)] |
| Isothermality\_CLIM | Isothermality – mean across previous 30 years | unitless | (isothermality\_CLIM - 38.120111845) / 5.019479015 | Mean across 30 years[(Mean of monthly (max temp - min temp))/(max temp. of warmest month – min. temp of coldest month) x 100] |
| annWatDef\_CLIM | Annual water deficit – mean across previous 30 years | mm of water/  degrees C | (annWatDef\_CLIM - 99.631248729) / 85.941823498 | Mean across 30 years[ sum across year(monthly mean\*2 – monthly total precip)]  \*Note: only sum monthly water deficit values that are >0 |
| precip\_CLIM | Total annual precipitation – mean across previous 30 years | mm | (precip\_CLIM - 613.900118155) / 502.187690606 | Mean across 30 years(annual total precip) |
| precipSeasonality\_CLIM | Precipitation seasonality – mean across previous 30 years | mm | (precipSeasonality\_CLIM - 0.923249309) / 0.245954382 | Mean across 30 years (coefficient of variation of monthly total precip within a year) |
| precipDry\_CLIM | Precipitation of the driest month – mean across previous 30 years | mm | (precipDry\_CLIM - 5.000260635) / 8.205443958 | Mean across 30 years (total precip of the driest month in the year) |
| annWetDegDays\_CLIM | Annual wet degree days – mean across previous 30 years | Degree days | (annWetDegDays\_CLIM - 1762.977520092) / 1160.20756048 | Mean of annual wet degree days across the previous 30 years |
| twarm\_CLIM | Temp. of the warmest month – mean across previous 30 years | Deg. C | n/a | Maximum temperature of the warmest month in a year, averaged across previous 30 years |
| tcold\_CLIM | Temp. of the coldest month – mean across previous 30 years | Deg. C | n/a | Minimum temperature of the warmest month in a year, averaged across previous 30 years |
| precipWet\_CLIM | Precip. of the wettest month – mean across previous 30 years | mm | n/a | Precip in mm of the wettest month in a year, averaged across previous 30 years |
| soilDepth | soilDepth | cm | n/a | Depth of soil in the grid cell in cm |
| precipSeasonality\_WEATH | Precip. Seasonality – anomaly of mean across previous 3 years relative to the 30 year mean | % difference | (precipSeasonality\_WEATH - -0.025697534) / 0.132964252 | (30 year mean of precip seasonality –3 year mean of precip seasonality)/30 year mean of precip seasonality |
| precip\_WEATH | Precip. - anomaly of mean across previous 3 years relative to the 30 year mean | % difference | (precip\_WEATH - 0.030312573) / 0.168767355 | (30 year mean of precip –3 year mean of precip)/30 year mean of precip |
| annWetDegDays\_WEATH | Annual wet degree days - anomaly of mean across previous 3 years relative to the 30 year mean | % difference | (annWetDegDays\_WEATH - 0.02989113) / 0.243425185 | (30 year mean of annual wet degree days –3 year mean of annual wet degree days)/30 year mean of annual wet degree days |
| annWatDef\_WEATH | Annual water deficit - anomaly of mean across previous 3 years relative to the 30 year mean | % difference | (annWatDef\_WEATH --0.119596687) / 0.424434636 | (30 year mean of annual water deficit –3 year mean of annual water deficit)/30 year mean of annual water deficit |
| isothermality\_WEATH | Isothermality - anomaly of mean across previous 3 years relative to the 30 year mean | Absolute difference | (isothermality\_WEATH - 0.538807833) / 1.422356333 | 30 year mean of isothermality – 3 year mean of isothermality |
| annWetDegDays\_WEATH | Annual wet degree days – anomaly of mean across previous 3 years relative to the 30 year mean | % difference | (annWetDegDays\_WEATH - 0.02989113) / 0.243425185 | (30 year mean of annual wet degree days –3 year mean of annual wet degree days)/30 year mean of annual wet degree days |
| precipTempCorr\_WEATH | Precipitation Temperature correlation – anomaly of mean across previous 3 years relative to the 30 year mean | Absolute difference | (precipTempCorr\_WEATH - 0.012171065) / 0.139613922 | 30 year mean of precipTempCorr – 3 year mean of precipTempCorr |
| sand | % Sand across the soil profile | % | (sand - 47.706485501) / 16.730875594 | Average % of sand across the soil profile, weighted by the width of each soil layer |
| coarse | % Coarse fragments across the soil profile | % | (coarse - 12.799273363) / 11.332548324 | Average % of coarse fragments across the soil profile, weighted by the width of each soil layer |
| AWHC | Total soil available water holding capacity |  | (AWHC - 13.671423701) / 5.155757156 | Calculated via following code: soils <- rSOILWAT2::swSoils\_Layers(rSOILWAT2::sw\_exampleData)  p <- rSOILWAT2::ptf\_estimate( sand = soils[, sand\_frac],    clay = soils[, clay\_frac], fcoarse = soils[, gravel\_content],    swrc\_name = Campbell1974,    ptf\_name = Cosby1984)    tmp <- rSOILWAT2::swrc\_swp\_to\_vwc( c(-1.5, -0.033),    fcoarse = soils[, gravel\_content], swrc = list(name = Campbell1974, swrcp = p) )    awc <- diff(c(0, soils[, depth\_cm])) \* as.vector(diff(tmp)) |
| clay | % Clay in the soil surface | % | (clay - 18.489433548) / 9.078669938 | % of clay in the first 3 cm of the soil profile |
| carbon | % organic matter in the soil surface | % | (carbon - 3.681945502) / 6.405262851 | % of organic matter in the first 3 cm of the soil profile |