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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Product | Evaporation Method | Land cover types |  |  |  |  |  |  |  |
| GLEAM | Priestly Taylor | Bare soil  Low-vegetation (grass)  Tall vegetation (trees)  Open water |  |  |  |  |  |  |  |
| HOLAPS | Priestly Taylor |  |  |  |  |  |  |  |  |
| MODIS | Penman Montieth | No Open Water |  |  |  |  |  |  |  |
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All driven by remote sensing observations

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|  |  | GLEAM (v3) | HOLAPS (v1) | MODIS (V1.6) |
| Evaporation Method |  | Priestly Taylor | Priestly Taylor | Penman Montieth |
| Land cover types |  | Bare soil  Low-vegetation (grass)  Tall vegetation (trees)  Open water  (MOD44B – Global Vegetation Continuous Fields)  Change the Priestly Taylor Coefficient from 1.26 for low vegetation (grass) and 0.96 for tall vegetation (Trees) |  | MODIS landcover classification (14 different classes) MDCLCHKM |
| Inputs | Radiation |  |  | MERRA GMAO incident PAR |
|  | Air Temperature |  |  | MERRA GMAO – minimum temp and average temp |
|  | Precipitation |  |  |  |
|  | Soil Moisture |  |  |  |
|  | Humidity |  |  | MERRA GMAO humidity |
|  | Snow Cover |  |  |  |
|  | Albedo |  |  | MCD43A2/A3 16 day moving window albedo |
|  | Vegetation |  |  | Biome specific physiological parameters = lookup table of values  8day FPAR (max across 8 days selected) – MOD15A2H |
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| Validation | Station Hourly |  |  |  |
|  | Station Daily |  |  |  |
|  | Station Monthly |  |  |  |
| Regions not calculated |  |  | Open water bodies. | Non vegetated pixels.  Perennial salt or water bodies;  Perennial snow/ice;  Permanent wetlands/marshland;  Urban areas;  Unclassified land cover; |
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|  | GRUN | GLEAM | HOLAPS | MODIS |
| Version | V1.0 | v3.2b | V0.9 | MOD16A2 V105 |
| References | Ghiggi et al (in press); Gudmundsson and Seneviratne (2015, 2016) | Miralles et al (2011); Martens et al (2017); | Loew et al (2016); | Mu et al (2011); Mu et al (2014) |
| Resolution | 50 km; Monthly | 25 km; Daily | 5 km; Daily | 1 km; 8 Day |
| Temporal Range | 1901-2014 | 1980-2017 | 2001-2005 | 2000-2014 |
| Methods | Random Forest Algorithm trained on previous 6 months of precipitation and temperature | Priestly-Taylor to calculate PET; evaporative stress factor to compute actual evapotranspiration | Priestly Taylor | Penman Monteith |
| Driving Datasets | Precipitation - Global Soil Wetness Project Phase 3 (GSWP3)  Temperature – GSWP3  Observed Runoff - Global Streamflow Indices and Metadata Archive (GSIM) | Radiation – ERA Interim  Precipitation - MSWEP  Temperature – ERA Interim  Vegetation – VOD (LPRM)  Surface Soil Moisture – ESA CCI | Radiation – CMSAF  Precipitation – TMPA  Temperature – ERA Interim  TCW – ERA interim  Wind – ERA interim  Cloud Albedo – GRIDSAT  Albedo – GLOBALBEDO | Radiation - MERRA GMAO  Temperature - MERRA GMAO  (No Precip)  Humidity – MERRA GMAO Albedo - MODIS  Vegetation – Biome Lookup Table; FAPAR |