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| **Table xx. Inputs and calculation steps for the SEBAL model.** | | |
|  |  |  |
| **Inputs** | **Description** | **Data Source** |
| 1. Albedo(α) | All-sky Albedo (dimensionless) | Terra/Aqua-MODIS MOD43B3, Diffuse Fraction map (Biggs, Mishra, & Turral, 2008) |
| 1. SW↓ | Incoming Short Wave Radiation (W/m2) | GEWEX Surface Radiation Budget Quality Checked v2.5 Daily All Sky Shortwave Insolation |
| 1. LW | Net Long Wave Radiation (W/m2) | GEWEX Surface Radiation Budget Quality Checked v2.5 Daily Net Longwave Radiation |
| 1. NDVI | Normalized Difference Vegetation Index | Terra/Aqua-MODIS MOD13A1 |
| 1. LST | Land Surface Temperature (K) | Terra/Aqua-MODIS MOD11A1 |
| 1. U | Wind Speed (m/s) | Wind Speed at the International Crop Research Institute for the Semi-Arid Tropics (ICRISAT) Weather Station |
| 1. z0m | Surface Roughness (dimensionless) | Land use map, literature values |
| 1. Elevation | Surface Elevation(m) | Shuttle Radar Topography Mission (SRTM) Digital Elevation Model (DEM) |
|  | | |
| **Derived variables** | **Description** | **Equation** |
| 1. Rn | Net Radiation |  |
| 1. G | Ground heat flux (W/m2) | G = Rn\*(LST-273.15/α)\*(.0032 \* C1 \* α + .0062 \* (C1 \* α)2)\*(1 - .978NDVI4))  where C1 is a correction coefficient (=1.1) |
|  | Friction Velocity at ICRISAT Weather Station |  |
|  | Wind Speed at blending height (200m) above the Weather Station (m/s) |  |
|  | Friction Velocity |  |
| 1. rAH | Aerodynamic resistance to heat transport | where 2 and 0.01 are the heights that dT is measured (z1 and z2) |
| 1. DryPixel | Dry Pixel for Calibration | The Dry Pixel is selected from the image by selecting the pixel with the lowest NDVI from the subset of pixels with highest LST |
| 1. WetPixel | Wet Pixel for Calibration | The Wet Pixel is selected from the image by selecting the pixel with the highest NDVI from the subset of pixels with lowest LST |
| 1. LSTDry, LSTWet | Land Surface Temperature at the Dry Pixel, and Wet Pixel |  |
| 1. a | Calibration Coefficient a |  |
| 1. b | Calibration Coefficient b |  |
| 1. dT | Temperature difference between z1 and z2 (K) |  |
| 1. AirPressure Dry | Air Pressure at Dry Pixel (hPa); use LST at Dry Pixel for initial value of TempAir | where ZDryPixel is the elevation of the DryPixel; TempAir ,Air Pressure, and Air Density are iteratively updated in the Monin-Obhukov Iteration, see below |
| 1. ρair | Air Density (kg/m3) |  |
| 1. H | Sensible Heat Flux (W/m2) |  |
| 1. L | Monin-Obhukov Length (dimensionless) |  |
|  | Monin-Obhukov Correction for heat transport for Unstable and Neutral Atmospheric Conditions (L<0) |  |
|  | Monin-Obhukov Correction for momentm transport for Unstable and Neutral Atmospheric Conditions (L<0) | where |
|  | Monin-Obhukov Correction for heat transport for Stable Atmospheric Conditions (L>0) |  |
|  | Monin-Obhukov Correction for heat transport for Stable Atmospheric Conditions (L>0) |  |
|  | Friction Velocity, corrected with Monin-Obhukov Correction |  |
| 1. rAH | Aerodynamic resistance to heat transport, corrected with Monin-Obhukov Correction |  |
| ***Iteration: Repeat steps 13 through 22 until changes in H are <5%*** | | |
| 1. Ʌ | Evaporative Fraction (dimensionless) |  |
| 1. ET | 24 hour Evapotranspiration (mm/day) | where ρw is density of water (kg/m3), λ is latent heat of vaporization (J/kg). |