|  |  |  |  |  |
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| Table 3. Inputs and calculation steps for the SEBAL model (Bastiaanssen et al, 1998). | | | | |
|  |  | |  |  |
| **Inputs** | **Description** | | **Data Source** | **Units** |
| 1. Rn | Instantaneous net radiation | | Eq 1 | W m-2 |
| 1. Rn24 | 24-hour mean net radiation | | Eq 1 | W m-2 |
| 1. NDVI | Normalized Difference Vegetation Index | | Imagery | dimensionless |
| 1. TR | Land Surface Temperature | | Imagery | K |
| 1. U | Wind Speed | | Wind Speed at meteorological station | m s-1 |
| 1. z0m | Surface Roughness | | Land use map, literature values [[1]](#footnote-1) | m |
| 1. Elevation | Surface Elevation | | Digital Elevation Model (DEM) | m |
|  | | | | |
| **Derived variables** | **Description** | | **Equation** |  |
| 1. G | Ground heat flux | | G = Rn\*(TR-273.15/α)\*(.0032 \* C1 \* α + .0062 \* (C1 \* α)2)\*(1 - .978NDVI4))  where C1 is a correction coefficient (=1.1)[[2]](#footnote-2) | W m-2 |
|  | Friction Velocity at meteorological station | | i | m s-1 |
|  | Wind Speed at blending height (200m) above the meteorological Station (m/s) | | i | m s-1 |
|  | Friction Velocity | | i | m s-1 |
| 1. rAH | Aerodynamic resistance to heat transport | | where 2 and 0.01 are the heights (m) that dT is measured (z1 and z2) i | s m-1 |
| 1. Select 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 TR [[3]](#footnote-3) |  |
| 1. Select 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 TR iii |  |
| 1. TR Dry, TR Wet | Land Surface Temperature at the Dry Pixel, and Wet Pixel | | Imagery | K |
| 1. a | Calibration Coefficient a | |  | dimensionless |
| 1. b | Calibration Coefficient b | | i | dimensionless |
| 1. dT | Temperature difference between z1 and z2 | |  | K |
| 1. T2 | Air temperature at dry pixel | | TR at Dry Pixel for initial value of T2 | K |
| 1. Air Pressure Dry (Pa) | Air Pressure at Dry Pixel | | where ZDryPixel is the elevation of the DryPixel; T2 ,Air Pressure, and Air Density are iteratively updated in the Monin-Obhukov Iteration, see below i | hPa |
| 1. ρair | Air Density | | i | kg m-3 |
| 1. H | Sensible Heat Flux | | i | W m-2 |
| 1. L | Monin-Obhukov Length | | i | dimensionless |
|  | Monin-Obhukov Correction for heat transport for Unstable and Neutral Atmospheric Conditions (L<0) | | i | dimensionless |
|  | Monin-Obhukov Correction for momentm transport for Unstable and Neutral Atmospheric Conditions (L<0) | | where i | dimensionless |
|  | Monin-Obhukov Correction for heat transport for Stable Atmospheric Conditions (L>0) | | i | dimensionless |
|  | Monin-Obhukov Correction for heat transport for Stable Atmospheric Conditions (L>0) | | i | dimensionless |
|  | Friction Velocity, corrected with Monin-Obhukov Correction | | i | m s-1 |
| 1. rAH | Aerodynamic resistance to heat transport, corrected with Monin-Obhukov Correction | | i | s m-1 |
| ***Iteration: Repeat steps 13 through 22 until changes in H are <5%*** | | | | |
| 1. Ʌop | Evaporative Fraction at overpass | i | | dimensionless |
| 1. ET24 | 24 hour Evapotranspiration | i  where ρw is density of water (kg m-3), λ is latent heat of vaporization (J kg-1). | | mm d-1 |

1. (Tasumi, 2003) [↑](#footnote-ref-1)
2. (Gieske, 2001) [↑](#footnote-ref-2)
3. (Messina, 2012) [↑](#footnote-ref-3)