|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameters of the leaf model** | | | | | |
| **Symbol** | **Description** | **Units** | **Value** | **Source** |
| *a1* | plant biochemical parameter, in case of Rubisco limited photosynthesis, it is the maximum carboxylation capacity (Vc,max or Vm) | mol m-2 s-1 | 60 x 10-6 | Katul et al., 2010 |
| *a2* | biochemical constant | mol mol-1 | 510 x 10-6 | Katul et al., 2010 |
| *Ca* | CO2 concentration of air (ambient CO2 concentration) | mol mol-1 | 0.0004 | Buckley and Schymanski, 2014 |
|  | the ratio of resistance of CO2 to H2O |  | 1.6 |  |
| *cons2* | inverse of the specific gas constant of water vapor | s2 m-2 | 7.27 x 10-6 |  |
| *cons1* | molar mass of H20 | kg mol-1 | 0.01801528 |  |
| *cons3* | physical constant to convert mass flux resistance of H20 to mol concentration flux resistance at 25oC | m3 mol-1 | 0.025 | Jones 2014, eq 3.24a |
| *De* | water vapor diffusivity in air | m2 s-1 | 24 x 10-6 |  |
| *Dm* | diffusivity of water in mesophyll | m2 s-1 | 8.5 x 10-10 | Noblin et al., 2008 |
| *ea* | partial pressure water vapor of air at 25 °C | Pa | 1584.5 | calculated from relative humidity of 50% at 25 oC |
| *esat* | saturated water vapor pressure at 25°C | Pa | 3169 |  |
| *kZ* |  |  | 1 |  |
| *R* | carbon cost per leaf volume (the sum of *RC* and *RR*) | mol m-3 s-1 | 0.9 x 10-6 | Fig. 6.3 in Chapin, Matson, and Vitousek 2011; O’Leary et al. 2017 |
| *rT* | radius of xylem conduit of terminal vein | m | 3 x 10-6 | Blackman, Brodribb, and Jordan, 2010; Dunbar-co, Sporck, and Sack, 2009 |
| *lT* | terminal minor vein length | m | 150 x 10-6 | we take as half of the leaf thickness |
| *w0* | saturated water concentration in mesophyll | mol m-3 | 40 | Noblin et al., 2008 |
| *Z* | thickness of leaf | m | 300 x 10-6 a  ,250 x 10-6, 350 x 10-6 | Niinemets, 1999; Noblin et al., 2008; |
| *ΨC* | critical xylem water potential | Pa | -5 x 106 | Scoffoni et al., 2017 |
|  |  |  |  |  |