



Evaporation and Transpiration Formulas

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List of 17 Evaporation and Transpiration Formulas

Evaporation and Transpiration 🗗

1) Actual Vapour Pressure given Evaporation Loss Per Dav

$$v = V - \left(rac{E}{C' \cdot (1.465 - (0.00732 \cdot P_a)) \cdot (0.44 + (0.0732 \cdot u))}
ight)$$

Open Calculator 🗗

$$\underbrace{ 0.400046 \text{cmHg} = 0.6 \text{cmHg} - \left(\frac{8.29 \text{cm}}{0.75 \cdot \left(1.465 - \left(0.00732 \cdot 74.83 \text{cmHg} \right) \right) \cdot \left(0.44 + \left(0.0732 \cdot 8 \text{km/h} \right) \right)} \right) }$$

2) Actual Vapour Pressure given Evaporation Loss Per Month

$$\boxed{ v = V - \left(\frac{E_m}{C \cdot \left(1 + \left(\frac{u}{16} \right) \right)} \right) }$$

Open Calculator

$$\boxed{\textbf{ex}} \ 0.4 \text{cmHg} = 0.6 \text{cmHg} - \left(\frac{8.2 \text{cm}}{0.36 \cdot \left(1 + \left(\frac{8 \text{km/h}}{16}\right)\right)} \right)$$

3) Atmospheric Pressure given Change in Vapour Pressure

$$\mathbf{R} \mathbf{P}_{a} = rac{1.456 - \left(rac{E}{C^{,.}(0.44 + (0.0732 \cdot u)) \cdot \delta V}
ight)}{0.00732}$$

Open Calculator

4) Atmospheric Pressure given Evaporation Loss Per Day

$$\Pr{\mathbf{E}} \left[P_a = \frac{1.456 - \left(\frac{E}{C' \cdot (0.44 + (0.0732 \cdot u)) \cdot (V - v)} \right)}{0.00732} \right]$$

Open Calculator





5) Change in Vapour Pressure given Evaporation Loss Per Day

$$\delta V = rac{E}{C^{\prime} \cdot (1.465 - (0.00732 \cdot P_a)) \cdot (0.44 + (0.0732 \cdot u))}$$

Open Calculator 🚰

6) Change in Vapour Pressure given Evaporation Loss Per Month

$$\delta V = \frac{E_m}{C \cdot \left(1 + \left(\frac{u}{16}\right)\right)}$$

Open Calculator

$$\boxed{0.015299 \mathrm{cmHg} = \frac{8.2 \mathrm{cm}}{0.36 \cdot \left(1 + \left(\frac{8 \mathrm{km/h}}{16}\right)\right)}}$$

7) Constant Dependent on Depth of Water Bodies given Change in Vapour Pressure

$$C = rac{E_m}{\delta V \cdot \left(1 + \left(rac{u}{16}
ight)
ight)}$$

Open Calculator

$$\boxed{\texttt{ex} 0.027537 = \frac{8.2 \text{cm}}{0.2 \text{cmHg} \cdot \left(1 + \left(\frac{8 \text{km/h}}{16}\right)\right)}}$$

8) Constant used in Rohwer's Formula given Change in Vapour Pressure

$$\boxed{\text{E}} C' = \frac{E}{(1.465 - (0.00732 \cdot P_a)) \cdot (0.44 + (0.0732 \cdot u)) \cdot \delta V}$$

Open Calculator

9) Constant used in Rohwer's Formula given Evaporation Loss Per Day

$$\text{E} \label{eq:C'} \boxed{ C' = \frac{E}{(1.465 - (0.00732 \cdot P_a)) \cdot (0.44 + (0.0732 \cdot u)) \cdot (V - v)} }$$

Open Calculator



10) Evaporation Loss Per Day

fx $E = C' \cdot (1.465 - (0.00732 \cdot P_a)) \cdot (0.44 + (0.0732 \cdot u)) \cdot (V - v)$

Open Calculator

ex

 $8.291889 \text{cm} = 0.75 \cdot (1.465 - (0.00732 \cdot 74.83 \text{cmHg})) \cdot (0.44 + (0.0732 \cdot 8 \text{km/h})) \cdot (0.6 \text{cmHg} - 0.4 \text{cmHg})$

11) Evaporation Loss Per Day given Change in Vapour Pressure 🗗

 $\mathbf{K} = C' \cdot (1.465 - (0.00732 \cdot P_a)) \cdot (0.44 + (0.0732 \cdot u)) \cdot \delta V$

Open Calculator

 $= 0.082919 \text{cm} = 0.75 \cdot (1.465 - (0.00732 \cdot 74.83 \text{cmHg})) \cdot (0.44 + (0.0732 \cdot 8 \text{km/h})) \cdot 0.2 \text{cmHg}$

12) Evaporation Loss Per Month

 $\mathbf{E}_{\mathrm{m}} = \mathbf{C} \cdot (\mathbf{V} - \mathbf{v}) \cdot \left(1 + \left(\frac{\mathbf{u}}{16}\right)\right)$

Open Calculator 2

 $8.2 \text{cm} = 0.36 \cdot (0.6 \text{cmHg} - 0.4 \text{cmHg}) \cdot \left(1 + \left(\frac{8 \text{km/h}}{16}\right)\right)$

13) Evaporation Loss Per Month given Change in Vapour Pressure

 $\mathbf{E}_{\mathrm{m}} = \mathbf{C} \cdot \delta \mathbf{V} \cdot \left(1 + \left(\frac{\mathbf{u}}{16} \right) \right)$

Open Calculator 2

ex $142921.2 \mathrm{cm} = 0.36 \cdot 0.2 \mathrm{cmHg} \cdot \left(1 + \left(\frac{8 \mathrm{km/h}}{16}\right)\right)$

14) Maximum Vapour Pressure given Evaporation Loss Per Day

 $\boxed{ k V = v + \left(\frac{E}{C' \cdot (1.465 - (0.00732 \cdot P_a)) \cdot (0.44 + (0.0732 \cdot u))} \right) }$

Open Calculator

 $\boxed{ 0.599954 \text{cmHg} = 0.4 \text{cmHg} + \left(\frac{8.29 \text{cm}}{0.75 \cdot (1.465 - (0.00732 \cdot 74.83 \text{cmHg})) \cdot (0.44 + (0.0732 \cdot 8 \text{km/h}))} \right) }$

$$\underbrace{0.599954 \text{cmHg} = 0.4 \text{cmHg} + \left(\frac{8.29 \text{cm}}{0.75 \cdot \left(1.465 - \left(0.00732 \cdot 74.83 \text{cmHg} \right) \right) \cdot \left(0.44 + \left(0.0732 \cdot 8 \text{km/h} \right) \right)} \right) }$$

15) Maximum Vapour Pressure given Evaporation Loss Per Month

 $V = v + \left(\frac{E_{\rm m}}{C \cdot \left(1 + \left(\frac{u}{VC} \right) \right)} \right)$

Open Calculator

$$oxed{ex} 0.6 \mathrm{cmHg} = 0.4 \mathrm{cmHg} + \left(rac{8.2 \mathrm{cm}}{0.36 \cdot \left(1 + \left(rac{8 \mathrm{km/h}}{16}
ight)
ight)}
ight)$$





16) Mean Wind Velocity at Ground Level given Evaporation Loss Per Day

$$\mathbf{k} = \frac{\left(rac{\mathrm{E}}{\mathrm{C} \cdot (1.465 - (0.00732 \cdot \mathrm{P_a})) \cdot (\mathrm{V} - \mathrm{v})}
ight) - 0.44}{0.0732}$$

$$\boxed{ 0.079932 km/h = \frac{ \left(\frac{8.29 cm}{0.75 \cdot (1.465 - (0.00732 \cdot 74.83 cmHg)) \cdot (0.6 cmHg - 0.4 cmHg)} \right) - 0.44}{0.0732} }$$

17) Monthly Mean Wind Velocity given Evaporation Loss Per Month

$$\boxed{ \text{fx} \left[u = \left(\left(\frac{E_m}{C \cdot (V - v)} \right) - 1 \right) \cdot 16 \right] }$$

$$\boxed{ 0.08 \text{km/h} = \left(\left(\frac{8.2 \text{cm}}{0.36 \cdot \left(0.6 \text{cmHg} - 0.4 \text{cmHg} \right)} \right) - 1 \right) \cdot 16 }$$



Variables Used

- C Meyer's Constant
- C' Rohwer's Formula Constant
- **E** Evaporation Loss per Day (Centimeter)
- Em Evaporation Loss per Month (Centimeter)
- Pa Atmospheric Pressure (Centimeter Mercury (0 °C))
- u Mean Wind Velocity (Kilometer per Hour)
- V Actual Vapour Pressure (Centimeter Mercury (0 °C))
- **V** Maximum Vapour Pressure (Centimeter Mercury (0 °C))
- δV Change in Vapour Pressure (Centimeter Mercury (0 °C))





Constants, Functions, Measurements used

- Measurement: Length in Centimeter (cm)
 Length Unit Conversion
- Measurement: Pressure in Centimeter Mercury (0 °C) (cmHg)

 Pressure Unit Conversion
- Measurement: Speed in Kilometer per Hour (km/h)
 Speed Unit Conversion





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