Tutorial 3

Humidity, Clausius-Clapeyron equation

Saturated vapor pressure

1. **Check the validity of different expressions for the saturated vapor pressure against the exact solution (a polynomial fit to observations). Take into account three expressions:**
   (a) **solution of the Clausius-Clapeyron equation where $L_{vl} = const = L_{vl}(T_0)$, $T_0 = 273.15K$,**
   (b) **solution of the Clausius-Clapeyron equation where L_{vl} depends on temperature T,**
   (c) **Magnus-Tetens formula $e_s(t) = e_{s0} exp\left(\frac{17.67t}{t+243.5}\right)$, where t is in degrees C and e_{s0} =6.112 hPa is the saturation vapor pressure at t=0°C.**
2. **Check the validity of expression for the saturated vapor pressure over ice (solution of the Clausius-Clapeyron equation with $L_{vi} = const$) against the exact solution.**