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 $t=0^{\circ}$ 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.