

Panga Changelog V1.2.0

New Solubilities

New high precision noble gas solubilities from Jenkins et al. (2019)¹ have been added and are recommended to use. The previously used solubilities from Weiss combined with Clever are still available for comparison.

Changes in the used Physical Properties

In accordance to upcoming publications in noble gas thermometry, some used physical properties were adjusted.

- molar volume:
Molar volumes based on Dymond and Smith (1980)² are used for the conversion of concentration units (mol/g) to (ccSTP/g). This also effects the solubilities from Clever.
- water vapor pressure:
The used water vapor pressure is based on Dickson et al. (2007)³ (see also R. Hamme skript: vpress Version 2.0).

Additional Output Data

- D_{Ne} : $(C_{\text{meas}}(\text{Ne}) - C_{\text{eq}}(\text{Ne})) / C_{\text{eq}}(\text{Ne})$
The uncertainty $D_{\text{Ne_err}}$ is only approximated by propagation assuming independent variables.
- Rad_He : $C_{\text{meas}}(\text{He}) - C_{\text{mod}}(\text{He})$
- $\text{Rad_}^3\text{He}$: approximated by $\text{Rad_He} * 2\text{E-}8$

¹ Jenkins et al., "A determination of atmospheric helium, neon, argon, krypton, and xenon solubility concentrations in water and seawater", 2019

² Dymond and Smith, "The Virial Coefficients of Pure Gases and Mixtures", 1980

³ Dickson et al., "Guide to Best Practices for Ocean CO₂ Measurements", 2007