README for gas_toolbox

Please check our GitHub page (https://github.com/dnicholson/gas_toolbox/releases) for the most recent version of these functions. We plan to add more gases and gas exchange parameterizations to the gas_toolbox in the future.

These MATLAB functions are provided as supporting information to the publication Manning, C.C., R.H.R. Stanley, D.P. Nicholson, and M.J. Squibb (2016). Quantifying air-sea gas exchange using noble gases in a coastal upwelling zone. *J. Phys. Conf. Ser.* (In Proceedings of the 7th International Symposium on Gas Transfer at Water Surfaces)

If you use these functions in a publication, please cite or acknowledge our paper or our code, and also cite the references listed in the headers of the individual functions.

Example citation: Manning, CC and DP Nicholson (2016). gas_toolbox: MATLAB code used in Manning et al. GTWS-7 proceedings. Zenodo. DOI: 10.5281/zenodo.45293

Purpose
These functions calculate the air-sea flux of several gases using various gas exchange parameterizations, including three that explicitly include bubble-mediated exchange.

Gases currently supported
He, Ne, Ar, Kr, Xe, O_2, and N_2.

Gas exchange parameterizations currently supported
With explicit bubble-mediated flux:
fas_S09: Stanley et al. 2009
fas_N11: Nicholson et al. 2011
fas_L11: Liang et al. 2013

Without explicit bubble-mediated flux:
fas_Sw07: Sweeney et al. 2007
fas_Fd includes W14: Wanninkhof 2014
W92a: Wanninkhof 1992 - averaged winds
W92b: Wanninkhof 1992 - instantaneous or steady winds
Sw07: Sweeney et al. 2007
Ho06: Ho et al. 2006
Ng00: Nightingale et al. 2000
LM86: Liss and Merlivat 1986

Please see the MATLAB function headers for the full citations for each parameterization.

Use of these functions requires installation of the Gibbs-SeaWater (GSW) Oceanographic Toolbox, Version 3.04 or newer (released 20th December 2013), which is available at http://www.teos-10.org/software.htm.

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