Geophysical Research Abstracts
Vol. 19, EGU2017-14489, 2017
EGU General Assembly 2017

Empirical algorithms to predict aragonite saturation state

Daniela Turk and Michael Dowd
Dalhousie University, Dept. of Oceanography, Halifax, Canada (Daniela.Turk@dal.ca)

Novel sensor packages deployed on autonomous platforms (Profiling Floats, Gliders, Moorings, SeaCycler) and biogeochemical models have a potential to increase the coverage of a key water chemistry variable, aragonite saturation state (ΩAr) in time and space, in particular in the under sampled regions of global ocean. However, these do not provide the set of inorganic carbon measurements commonly used to derive ΩAr. There is therefore a need to develop regional predictive models to determine ΩAr from measurements of commonly observed or/and non carbonate oceanic variables. Here, we investigate predictive skill of several commonly observed oceanographic variables (temperature, salinity, oxygen, nitrate, phosphate and silicate) in determining ΩAr using climatology and shipboard data. This will allow us to assess potential for autonomous sensors and biogeochemical models to monitor ΩAr regionally and globally. We apply the regression models to several time series data sets and discuss regional differences and their implications for global estimates of ΩAr.