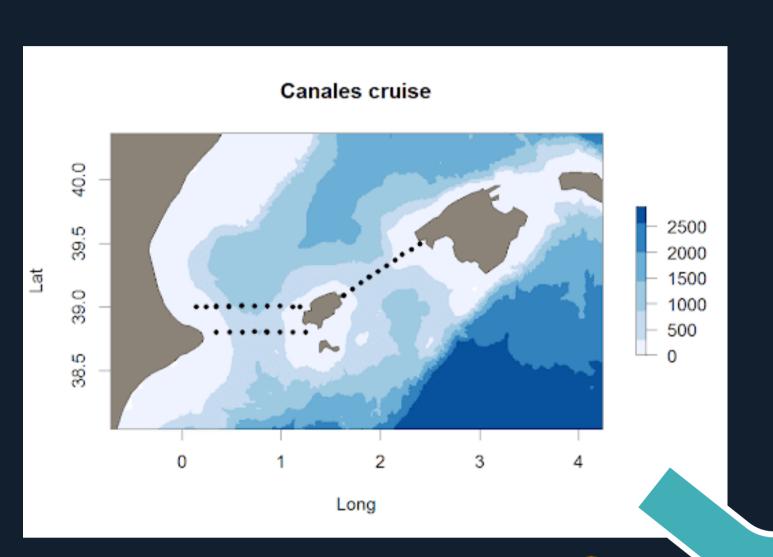
Towards the routine delayed mode calibration of oxygen data from glider platforms

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How important are the correction of glider oxygen data and enhanced methods for QC?

Abstract: Dissolved oxygen concentration is an Essential Ocean Variable (EOV) for the study of the oceans (Global Ocean Observing System, GOOS). Dissolved oxygen responds to biological changes of the Ocean and is considered an indicator of environmental changes directly connected to Ocean Health and Water Quality. Changes in oxygen also help to identify water mass boundaries and physical processes: for example low oxygen values might indicate "older" water. The traditional laboratory approach to determine dissolved oxygen concentration is by 1) Winkler titration of water samples. At SOCIB we are developing 2) a semi-automatic system for comparing salinity/oxygen and theta/oxygen diagrams between sample bottle calibrated CTD and glider mission datasets and 3) Glider against rosette inter-comparison CAST experiments.



Quasi-continuous monitoring of the Mallorca & Ibiza channels by optodes on gliders

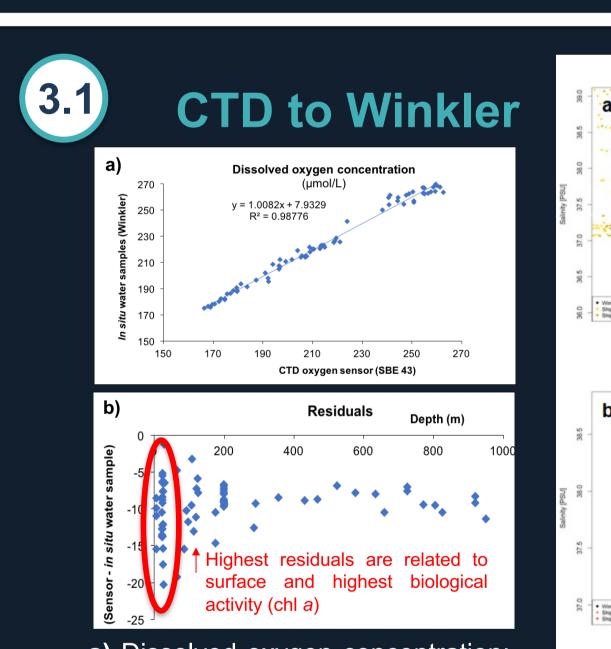
SBE 43 (Sea-Bird) SOCIB R/V monitoring, SBE 43 on CTD-Rosette, seasonally: 4 Niskin bottle

cruises a year

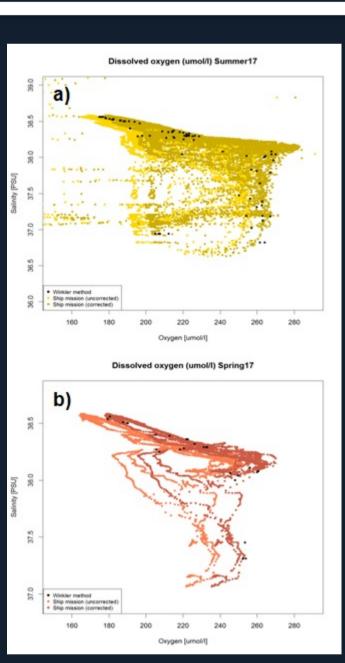
Winkler titration of samples

> The GO-SHIP Repeat Hydrography Manual: A Collection of Expert Reports and Guidelines DETERMINATION OF DISSOLVED OXYGEN IN SEAWATER BY WINKLE senstiel School of Marine and Atmospheric Science, University of Miami, 4600 Rickenbacker Causeway,

RESULTS OF THE COMPARISONS



a) Dissolved oxygen concentration: in situ samples against oxygen values obtained from SBE 43 b) Residuals at each depth (sensor minus in situ water samples).



Oxygen OPTODE

(Anderaa)

Oxygen CTD to Winkler corrected data for a) summer and **b)** spring Canales 17.

Gliders to calibrated CTD Salinity/oxygen

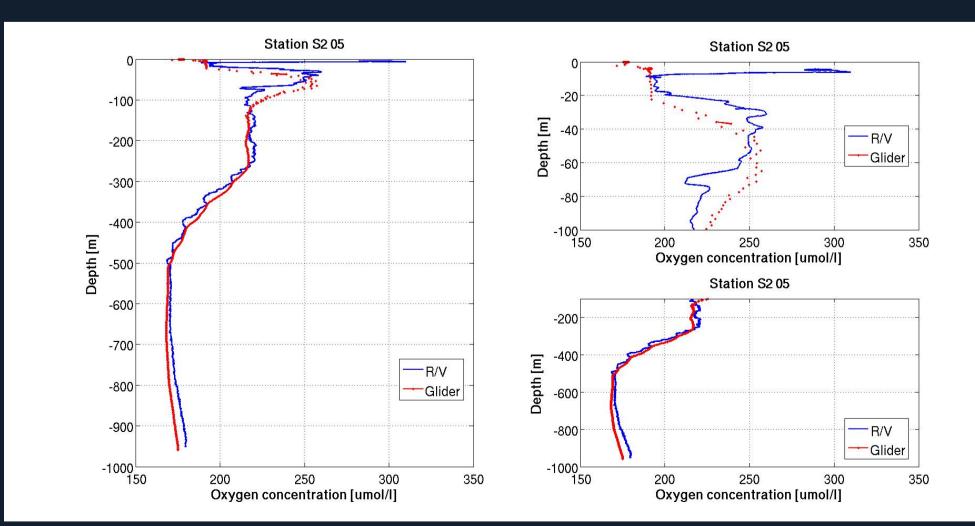
Oxygen against salinity values of glider to CTD to Winkler a) uncorrected and **b)** corrected.

Theta/oxygen Dissolved oxygen (umol/l) - 2017

Oxygen against potential temperature of glider to CTD to Winkler

Glider against rosette inter-comparison CAST experiments during the summer Canales17 cruise.

GARICAST



Oxygen distribution at station S2 05 from the GARICAST experiment (summer Canales17)

Next actions

a) uncorrected and b) corrected

- Standardize automate and procedures for glider post-mission oxygen corrections.
- Information recorded in the metadatafiles as for other variables (e.g. L1c for salinity.

guarantee the traceability, the netCDF file should have an updated header, containing all the formation necessary to understand how and when the calibration was performed. e propose the following global attributes to be added: rrection author = "J. Allen" rrection email = " ... @socib.es rection method = "Least-square linear regress" fall the variables are calibrated using the same instrument (e.g., the R/V CTD), then two more some variables are calibrated against different instruments or data set, then this information nould be reflected in the variable attributes, not the global attributes. salinity corrected:long name = "water salinity" salinity corrected:standard name = "sea water salinity salinity corrected:units = "PSU" salinity_corrected:coordinates = "time depth latitude longitude salinity_corrected:_FillValue = 1.79769313486232e+308 salinity_corrected:author = " operator1" salinity corrected:email = salinity_corrected:date = ' salinity corrected:equation =

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