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The Research Investigator Partnership

Today's geoscience research efforts can rapidly produce an unprecedented volume of multidisciplinary data that can pose management challenges for the facility charged with curating that information. How do these facilities achieve efficient data management in a high volume, heterogeneous data world? Partnerships are critical, especially for small to mid-sized data management offices, such as those dedicated to academic domain research communities. The idea of partnerships can encompass a wide range of collaborative relationships aimed at helping these facilities meet the evolving needs of their communities. However, one basic and often overlooked partnership in the data management process is that of the information manager and the Principal Investigator (PI) or data originator. Such relationships are critical in discerning the best possible management strategy, and in obtaining the most robust metadata necessary for reuse and interoperability of multidisciplinary datasets. Partnerships established early in the data life cycle enable efficient management and dissemination of data in high volume and heterogeneous formats.

The Biological and Chemical Oceanography Data Management Office (BCO-DMO) was created to fulfill the data management needs of PIs funded by the NSF Ocean Sciences Biological and Chemical Sections, and Division of Polar Programs. Since its inception, the Office has relied upon the close relationships it cultivates with project PIs in order to provide effective data management for a wide variety of ecological and biogeochemical oceanographic data. Here we highlight some of the successful partnerships BCO-DMO has made with individual and collaborative investigators within the GEOTRACES community. Partnerships such as these are an essential component in the effective management of individual investigator data. Through these and other strategic partnerships, domain specific repositories such as BCO-DMO create 'smarter data' to support the research community's needs.



GEOTRACES is an international program which aims to improve the understanding of biogeochemical cycles and large-scale distribution of trace elements and their isotopes in the marine environment. Scientists from approximately 35 nations have been involved in the program, which is designed to study all major ocean basins over the next decade. (www.geotraces.org)



U.S. GEOTRACES contributes to the mission of the GEOTRACES program to identify processes and quantify fluxes that control the distributions of the key trace elements and isotopes in the ocean, and to establish the sensitivity of these distributions to changing environmental conditions

A variety of data are collected from shipboard and deployed instruments, and laboratory analyses.





ESSENTIAL PARTNERSHIPS IN THE DATA MANAGEMENT LIFE CYCLE



Recognizing this model does not always scale, and does not stop at the PI-data manager relationship, additional strategies and partnerships are necessary to create 'smart data'. Technologies adopted in close collaboration with groups that support other research communities help to integrate data repositories to build a valuable knowledge network. BCO-DMO has evolved to include Semantic Web technologies and Linked Open Data to connect our data with complementary information in other relevant repositories; the results of which enhance data discoverability, and access, and quality. 'Smart data' become a more interoperable and valued community resource.

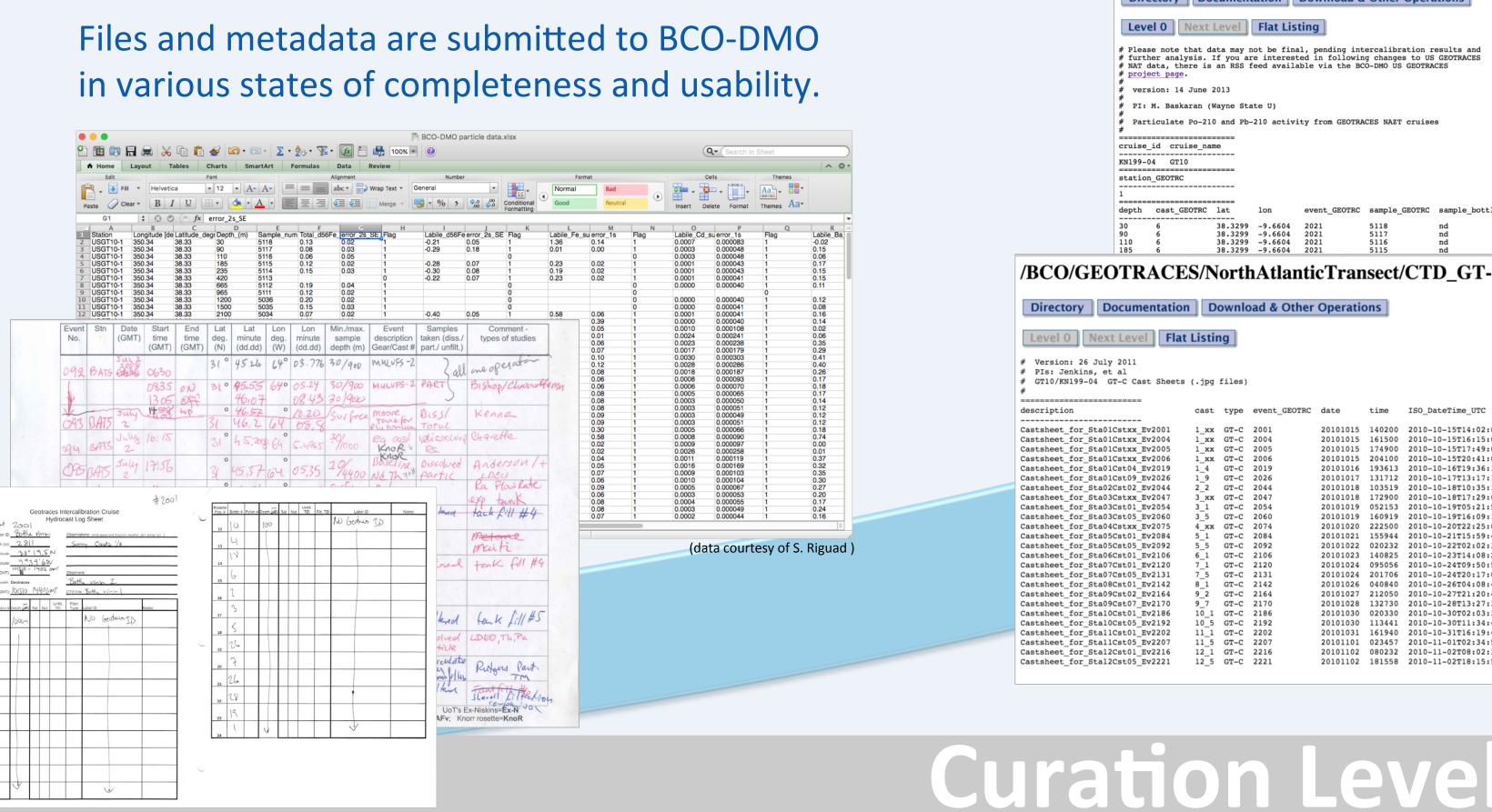
ing Deck to Repository (R2R rvdata.u

BCO-DMO and R2R use Linked Data to exchange resources curated at each of the repositories.



BCO-DMO partners with the National Center for **Environmental Information (NCEI) for long-term** preservation of curated BCO-DMO data.





Strategic curation along the data's lifecycle increases the usability of individual datasets to a level where interoperability and integration are achievable

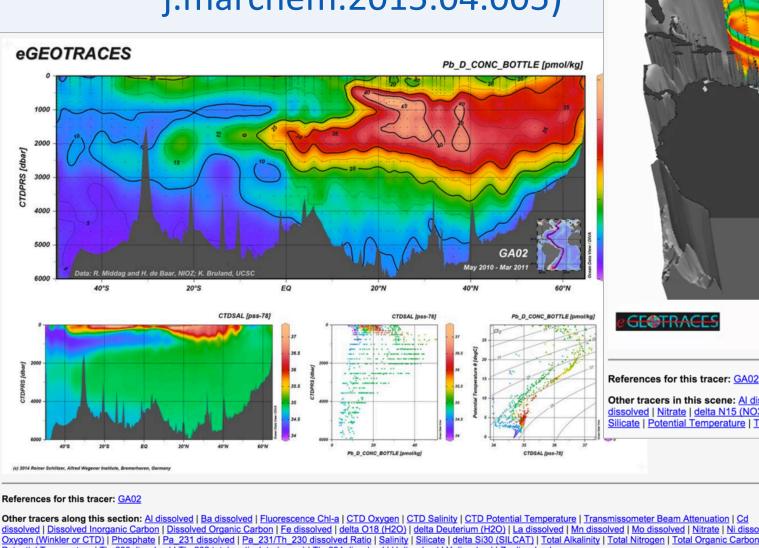
Value added along the data life cycle produces high quality data available for use in products such as the GEOTRACES IDP 2014. (Data available from: Mawji, E., et al., The GEOTRACES Intermediate Data Product 2014, Mar. Chem (2015) http://dx.doi.org/10.1016/ j.marchem.2015.04.005)

Other Strategic Partnerships



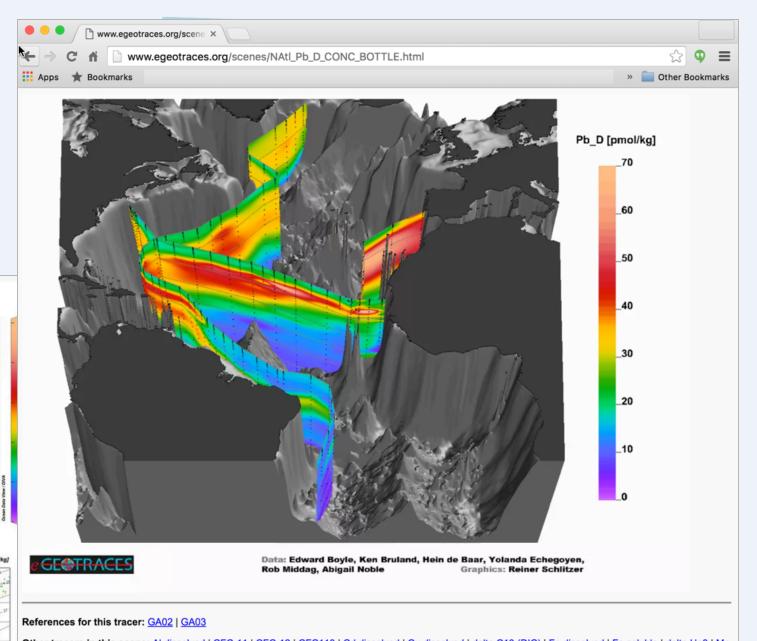
BCO-DMO and R2R federate controlled vocabulary terms (e.g., Instruments) using the NERC Vocabulary Server (NVS 2.0; Leadbetter, 2013).

Documentation assembled for projects and cruises provides context for complex data. BC - DM HOME DATA RESOURCES ABOUT US & Chemical Oceanography Data Management Office BCO-DMO repositor DATABASE — Available programs 🚱 – Project: U.S. GEOTRACES North Atlantic Transect GETRACES GEOTRACES Aerosol ... cronym/Short Name: U.S. GEOTRACES NAT 🗄 SEES-OA GEOTRACES IC roject URL: Project Web Site TEP Corals GEOTRACES: Intercal ... 🗄 U.S. CLIVAR Sources-Sinks Th-P U.S. GEOTRACES Start Date: 2010-U.S. GEOTRACES EPZT **U.S. GLOBEC** ∃ U.S. GEOTRACES NAT 3 U.S. JGOFS Include projects not belonging to any programs? olocation U.S. SOLAS Subtropical western and eastern North Atlantic Ocean Select all Select all Deselect all Deselect all ployments: 3 Cruisses 2 /BCO/GEOTRACES/NorthAtlanticTransect/PoPb_partic_joined_2b ---- Level 2 Directory Documentation Download & Other Operations Level 0 Next Level Flat Listing # Please note that data may not be final, pending intercalibration results and # further analysis. If you are interested in following changes to US GEOTRACES # NAT data, there is an RSS feed available via the BCO-DMO US GEOTRACES op that Particulate Po-210 and Pb-210 activity from GEOTRACES NAZT cruise BTL ISO DateTime UTC Po_210_sd Pb_210 McL-Prof McL-Prof McL-Prof McL-Prof n cycle, /BCO/GEOTRACES/NorthAtlanticTransect/CTD_GT-C_CastSheets_GT10 ---- Level 0 Recent Po_210 Po_210_sd Pb_210 0.398 0.023 0.27 0.323 0.021 0.225 0.306 0.023 0.427 0.431 0.026 0.443 Data managers work closely 20101015 140200 2010-10-15114:02100.002 38.32500 -9.66000 51 20101015 161500 2010-10-15T16:15:00.002 38.32500 -9.66000 51 20101015 174900 2010-10-15T17:49:00.002 38.32500 -9.66000 51 20101015 204100 2010-10-15T20:41:00.002 38.32500 -9.66000 51 20101016 193613 2010-10-16T19:36:13.202 38.32408 -9.66010 51 20101016 193613 2010-10-16T19:36:13.202 38.32408 -9.66010 51 with data originators to create 0101018 172900 2010-10-18T17:29:00.00Z 36.37500 -13.6016 0101019 160919 2010-10-19T16:09:19.20 robust metadata, perform 2010-10-22T02:02:31.80 140825 2010-10-23T14:08:25.202 10-10-24T09:50:55.80 gross quality control, and 0101026 040840 2010-10-26T04:08:40.20Z 2 0101027 212050 2010-10-27T21:20:49.80 2010-10-28T13:27:30.00Z 20101030 020330 2010-10-30T02:03:30.00Z determine the best way to 20101030 113441 2010-10-30T11:34:40.80Z 20101031 161940 2010-10-31T16:19:40.20Z 22.78317 StallCst01_Ev220 20101101 023457 2010-11-01T02:34:57.00Z 17.35011 -22.78351 StallCst05 Ev22 20101102 080232 2010-11-02T08:02:31.80Z 17.39977 -24.49982 Stal2Cst01 Ev22 20101102 181558 2010-11-02T18:15:58.20Z 17.40397 -24.49618 Stal2Cst05 Ev2 display their data.



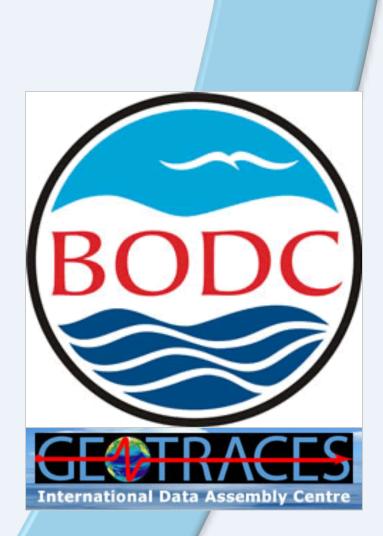
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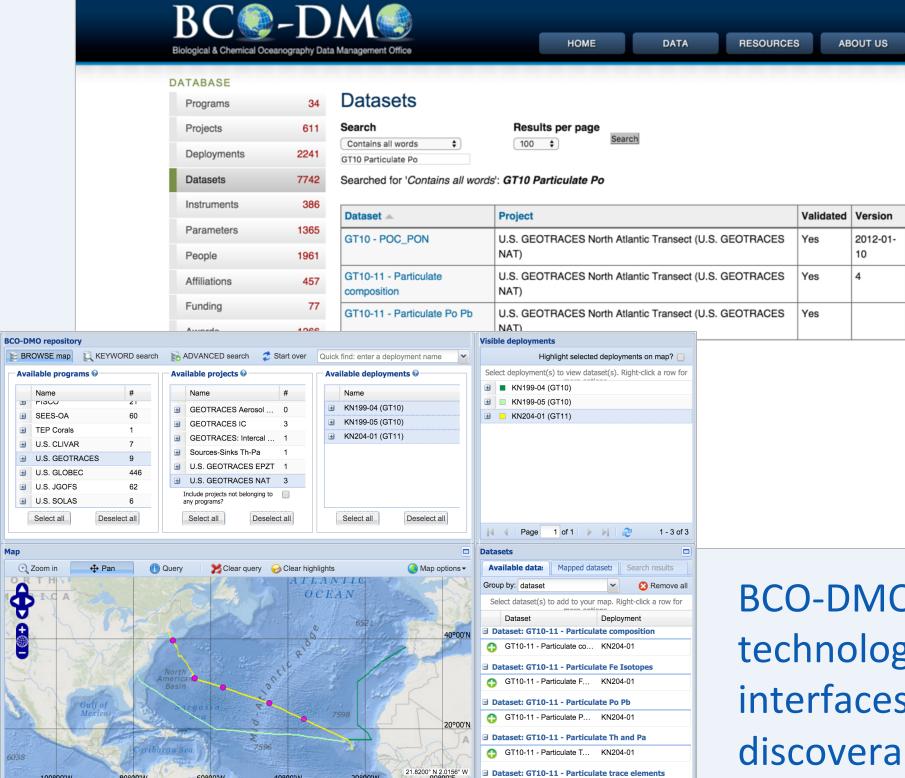


www.egeotraces.org, 2015)

Other tracers in this scene: Al dissolved | CFC-11 | CFC-12 | CFC113 | Cd dissolved | Cu dissolved | delta C13 (DIC) | Fe dissolved | Fe soluble | delta He3 | dissolved | Nitrate | delta N15 (NO3) | Ni dissolved | Oxygen (Winkler or CTD) | Phosphate | Pa 231 dissolved | Pa 231/Th 230 dissolved Ratio | Salinity | SF6 Silicate | Potential Temperature | Tritium | Th 230 dissolved | Th 232 dissolved | Th 234 dissolved | Zn dissolved om eGEOTRACES: Schlitzer, R., eGEOTRACESic Atlas of GEOTRACES Sections and Animated 3D Scenes.



Curated BCO-DMO 'smart data' is contributed to the International **GEOTRACES** data office at the British Oceanographic Data Center (BODC). These data are available with those from other international GEOTRACES investigators.



BCO-DMO uses Semantic Web technologies to enhance search interfaces for improved data discoverability and access.

ACKNOWLEDGEMENTS

This work is supported by NSF grant: OCE-1435578. We acknowledge the investigators who contribute data to BCO-DMO and the data managers who work to make those data available. Julie Allen and Katherine Joyce (WHOI) helped develop the BCO-DMO data system user interfaces and Charlton Galvarino (Second Creek Consulting, LLC) helped develop the map interface.

