Data Management Plan: Gliders

NOAA Data Sharing Template

I. Type of data and information created

What data will you collect or create in the research?

Contextual statement describing what data are collected and relevant URL (IOOS Certification, f 1. ii)

Gliders are autonomous underwater vehicles that measure pressure, temperature, salinity, velocity (depth-averaged and depth dependent), fluorescence, acoustic backscatter.

What data types will you be creating or capturing?

We have worked to create a standard CF-compliant netcdf format for glider data. This format allows for exchange between US glider operators, submission to a glider data assembly center, and subsequent distribution to GTS. We send data in netcdf to the ERDDAP group at NOAA SWFSC. In turn, ERDDAP makes the data publically available, and forwards the data through a national glider data assembly center to NDBC for distribution on GTS.

How will you capture or create the data?

Describe how the data are ingested (IOOS Certification, f 2.)

Data are sent back from the glider at every surfacing, on roughly a 3 hour interval. Every 4 hours, on a regular schedule all recent dives are forwarded to ERDDAP.

Describe how data are managed (IOOS Certification, f 2.)

Data are ingested through the source provider and managed in-house.

Describe the data quality control procedures that have been applied to the data. (IOOS Certification, f 3.)

Data are quality controlled by the source provider.

If you will be using existing data, state that fact and include where you got it.
What is the relationship between the data you are collecting and the existing data?

N/A

II. Expected schedule for data sharing

Adheres to the NOAA Data Sharing Procedural Directive. The System is an operational system; therefore the RICE should strive to provide as much data as possible, in real-time or near real-time, to support the operation of the System. (IOOS Certification, f. 4.)

How long will the original data collector/creator/principal investigator retain the right to use the data before opening it up to wider use?
Data are available in near real-time on a regular 4-hour schedule.

How long do you expect to keep the data private before making it available? Explain if different data products will become available on different schedules (Ex: raw data vs processed data, observations vs models, etc.)
Real-time data is run through automatic QC and made available on a 4-hour schedule.

Explain details of any embargo periods for political/commercial/patent reasons? When will you make the data available?
N/A

III. Standards for format and content

Which file formats will you use for your data, and why?
How can the information be accessed? (IOOS Certification, f 1. ii)
These data can be accessed through NOAA's ERDDAP and IOOS THREDDS.

What file formats will be used for data sharing?
ERDDAP is a data server that gives you a simple, consistent way to download subsets of gridded and tabular scientific datasets in common file formats and make graphs and maps.

- ERDDAP offers all data as .html table, ESRI .asc and .csv, Google Earth .kml, OPeNDAP binary, .mat, .nc, ODV .txt, .csv, .tsv, .json, and .xhtml.

THREDDS makes data available through OPenDAP and SOS protocols and raw NetCDF files.

What metadata/ documentation will be submitted alongside the data or created on deposit/ transformation in order to make the data reusable?
FDGC and ISO 19115 metadata are available through NOAA's ERDDAP and IOOS THREDDS.
http://coastwatch.pfeg.noaa.gov/erddap/info/scrippsGliders/index.html
http://data.ioos.us/gliders/thredds/catalog/deployments/drudnick/catalog.html

What contextual details (metadata) are needed to make the data you capture or collect meaningful?
Contextual details within the metadata describe each attribute. A brief description of the glider program can be found on http://spray.ucsd.edu/pub/rel/info/spray_description.php

How will you create or capture these details?
These details are captured through the metadata.

What form will the metadata describing/documenting your data take?
ERDDAP has Web Accessible Folders (WAF) with FGDC and ISO 19115-2/19139 .xml metadata files for all of the geospatial datasets.

Which metadata standards will you use and why have you chosen them? (e.g. accepted domain-local standards, widespread usage)
FGDC and ISO 19115 metadata are both accepted standards and mandated by the US Federal Government.

IV. Polices for stewardship and preservation

What is the long-term strategy for maintaining, curating and archiving the data?
Points of contact- Individuals responsible for the data management and coordination across the region (CV's attached); (IOOS Certification f 1. i)
Dan Rudnick, Employee, Principal Investigator
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IOOS National Glider Data Assembly Center are responsible for submitting data for long-term archival at the National Centers for Environmental Information (NCEI)

Identify the procedures used to evaluate the capability of the individual (s) identified in subsection 997.23(f)(1) to conduct the assigned duties responsibly. (IOOS Certification, f 1. iii)
The University of California has a process in place for personnel evaluation. These evaluations are on file with UC San Diego Human Resources. All personnel listed have received excellent evaluations.

Which archive/repository/database have you identified as a place to deposit data?
Documents of the RICE's data archiving process or describes how the RICE intends to archive data at the national archive center (e.g., NODC, NGDC, NCDC) in a manner that follows guidelines outlined by that center. Documentation shall be in the form of a Submission Agreement, Submission Information Form (SIF) or other, similar data producer-archive agreement (IOOS Certification, f 6.).
Data will be submitted to NCEI

What procedures does your intended long-term data storage facility have in place for preservation and backup?

How long will/should data be kept beyond the life of the project?
Data will be stored indefinitely.

What data will be preserved for the long-term?
All data will be preserved.

What transformations will be necessary to prepare data for preservation / data sharing?
Raw data are analyzed and quality controlled.

What metadata/ documentation will be submitted alongside the data or created on deposit/ transformation in order to make the data reusable?
ERDDAP metadata documentation is available.

What related information will be deposited?

V. Procedures for providing access

What are your plans for providing access to your data? (on your website, available via ftp download, via e-mail, or another way)

Describe how data are distributed including a description of the flow of data through the RICE data assembly center from the source to the public dissemination/access mechanism. (IOOS Certification, f. 2.)

The data and/or data products are available on web pages http://spray.ucsd.edu and http://sccoos.ucsd.edu/data/spray/ NetCDP are files are transmitted to NOAA CoastWatch West Coast Regional Node where they are made available through ERDDAP. The IOOS Glider DAC then picked up the glider data and makes it available through ERDDAP & THREDDS and will then archive the data at NCEI.

Will any permission restrictions need to be placed on the data?

The data may be used and redistributed for free but is not intended for legal use, since it may contain inaccuracies. Neither the data Contributor, ERD, NOAA, nor the United States Government, nor any of their employees or contractors makes any warranty, express or implied, including warranties of merchantability and fitness for a particular purpose, or assumes any legal liability for the accuracy, completeness, or usefulness, of this information.

With whom will you share the data, and under what conditions?

Data are publicly available.

Will a data sharing agreement be required?

In general, a data sharing agreement will not be required. However, data should be properly acknowledged.

Are there ethical and privacy issues? If so, how will these be resolved?

N/A

Who will hold the intellectual property rights to the data and how might this affect data access?

Intellectual property rights belong to the principal investigator.

VI. Previous published data

Davis, R. E., M. D. Ohman, D. L. Rudnick, J. T. Sherman, and B. Hodges, 2008: Glider surveillance of physics and biology in the southern California Current system. *Limnol. Oceanogr.*, **53,** 2151-2168.

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Todd, R. E., D. L. Rudnick, M. R. Mazloff, R. E. Davis, and B. D. Cornuelle, 2011: Poleward flows in the southern California Current System: Glider observations and numerical simulation. *Journal of Geophysical Research*, **116,** C02026, doi:10.1029/2010JC006536.

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Rudnick, D. L., R. Baltes, M. Crowley, O. Schofield, C. M. Lee, and C. Lembke, 2012: A national glider network for sustained observation of the coastal ocean. *Oceans 2012*, doi: 10.1109/OCEANS.2012.6404956.

McClatchie, S., R. Cowen, K. Nieto, A. Greer, J. Y. Luo, C. Guigand, D. Demer, D. Griffith, and D. Rudnick, 2012: Resolution of fine biological structure including small narcomedusae across a front in the Southern California Bight. *Journal of Geophysical Research*, **117,** C04020, doi:10.1029/2011JC007565.

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Johnston, T. M. S. and D. L. Rudnick, 2015: Mixing estimates in the California Current System from sustained observations by underwater gliders. *Deep Sea Research Part II: Topical Studies in Oceanography*, **112,** 61-78, doi:10.1016/j.dsr2.2014.03.009.

Jacox, M. G., C. A. Edwards, M. Kahru, D. L. Rudnick, and R. M. Kudela, 2015: The potential for improving remote primary productivity estimates through subsurface chlorophyll and irradiance measurement. *Deep Sea Research Part II: Topical Studies in Oceanography*, **112,** 107-116, doi:10.1016/j.dsr2.2013.12.008.