

NODC Submission Information Form

(V1.3, Revised 01/2009)

FORM APPROVAL PENDING

Following the definitions and principles of the *Open Archival Information System (OAIS) Reference Model (ISO 14721:2003)*, this form documents the mutual understanding between a *Producer*, defined as a person or organization who provides information to be preserved, and an *Archive*, defined as the organization that intends to preserve information for access and use over the long term. It should accompany all data submissions to the National Oceanographic Data Center (NODC) and be completed to the extent possible.

The information contained on this form may be used to:

1. Populate NODC's Accession Tracking Data Base and product-specific databases
2. Create metadata records conforming to the Content Standard for Digital Geospatial Metadata (CSDGM), Vers. 2 (FGDC-STD-001-1998) and/or ISO 19115
3. Generate a formal archive appraisal package, for submissions requiring management level approval
4. Develop a list of *Producer* requirements requested of the *Archive*

The information contained on this form is true and correct to the best understanding of the *Producer* and *Archive* at the time of its submission. In the future, this information may be amended, updated, or revised as necessary and some submissions may require management level approvals before archival services can be provided.

Instructions:

This form is divided into six sections. Section 1 provides only the most basic Tracking Information and is the only section absolutely required at the time of submission. **However, within 1 month all submissions must also include information for Section 2**, which provides basic Data Discovery and Usage Information, and all submissions should strive to provide information through Sections 3 and 4, which provide more comprehensive and detailed information on the data set and its requirements for long term stewardship. Section 5 is required for submissions to the *Archive* that are expected to be periodic or routine in nature, and supports automation of archival services. Section 6 is optional and is only required for submissions that are expected to need management level approval and a formal archive appraisal package. The *Archive* Point of Contact will provide guidance as needed on all of these questions and will work with the *Producer* to ensure both parties reach a mutual understanding.

When complete, please email the signed form (see the last page of the document) to the *Archive* Point of Contact with a copy to NODC.DataOfficer@noaa.gov. Closing the email with "Signed," followed by your name is an acceptable form of signature.

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Section 1 – Basic Tracking Information

All elements in this section are REQUIRED, and will enable the *Archive* to establish a unique and durable tracking number known as an NODC Accession Number for the submission. It also clearly establishes whether the *Archive* is able to freely redistribute the data, and if not, what the restrictions are. When appropriate, the *Producer* will be provided the Accession Number in a confirmation receipt, along with the web address where the *Producer* can access the data set. When Section 1 is complete, the submission is considered “Initialized”.

1. Date of submission of this form (or its update):

October 4, 2010 (initial agreement to archive data at NODC)

January 20, 2017 (Update and submission)

2. Describe the scope of this data submission information.

SAIC will provide the following types of data in the formats described below to the US National Oceanographic Data Center (NODC) as part of contractual agreements established with the US Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE)

(M10PC00112). Data types include: [Data to be collected and submitted to NODC will be RAFOS drifters data (date/time, latitude, longitude, temperature, pressure, u- and v-velocity) at two depths, 1500 and 2500m and APEX profiling drifter data (surface position, T/S profiles and optical parameters: chlorophyll, fluorescence, total particle concentration and dissolved organic matter (CDOM fluorescence)]. **This is a five (5) year program beginning on the contract award date (September 20, 2010).** There is a 10-month pre-deployment period, then 3-years of in water data collection, followed by 14-months for analyses, synthesis and report preparation. The data submission to NODC will follow the approved final report and data submission to BOEMRE at the end of this program.

3. What is the Data Set title? A useful title includes a listing of two or three of the observed variables, the name of one or two of the platforms used to collect data or the project responsible for the data collection activity, the location, and the range of observation dates. For example, “Temperature, salinity, and nutrient data from bottle casts from the *Akademic Korolev*, *Alpha Helix*, *Polar Star*, and *Surveyor* in the Bering and East Siberian Seas from 1987-1999.”

“A Lagrangian Approach to Study the Gulf of Mexico’s Deep Circulation”

4. Primary Point of Contact for *Producer* – please provide name, organization, position, address, telephone, fax, and e-mail address.

Peter Hamilton

Leidos

309 Duncan St

Raleigh, NC 27608

Peter_hamilton@ncsu.edu

(919) 828 4737 (voice)

5. Primary Point of Contact for *Archive* – please provide name, organization, position, address, telephone, fax, and e-mail address.

Donald Collins, Oceanographer/Archivist

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~~US National Oceanographic Data Center~~

SSMC3 Fourth Floor

1315 East West Highway

Silver Spring MD 20901-3282

301-713-3272 x154; 301-713-3302 (fax); Donald.Collins@noaa.gov

6. Can NODC freely and openly redistribute this dataset? If no, list the *Producer's* constraints of the Data Set in the *Archive* for Users in terms of:

NODC may freely and openly redistribute all or part of this dataset.

[The remainder of this document will be completed prior to sending data to NODC.]

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Section 2 – Basic Data Discovery and Usage Information

All elements in this section are REQUIRED if applicable and allow the *Archive* to enable users to find, access, and use the data described by this submission. It is strongly recommended that this information be provided at the time of the submission though it is acceptable if some elements are provided within **one month** of Initialization. When Section 2 is complete, the submission is considered “Active”.

1. What is the purpose for collecting this Data Set?
To observe and characterize the deep circulation of the Gulf of Mexico
2. Provide a general descriptive abstract about the Data Set.
The data acquisition had two main elements: 1) a deep drifter study employing RAFOS floats and sound sources, which provided Lagrangian drifter tracks at 1500 and 2500 m nominal depth in the Gulf of Mexico; and 2) a profiling float study employing APEX floats, similar to the US Argo program, where CTD profiles are obtained at regularly spaced time intervals from freely drifting floats. The APEX profiling floats were additionally equipped with WetLabs optical sensors that measured chlorophyll, particle backscatter, and colored dissolved organic matter (CDOM) through the water column from the surface to 1500 m, and RAFOS acoustic receivers. The latter were used to monitor the four sound sources, and provide additional trajectories at 1500 m (the rest depth of the floats). The program was supported with remote sensing (sea-surface temperature and ocean color), and altimetry for mapping sea surface height (remote sensing data is not included on the DVD).
3. What is the time period covered by the Data Set?
July 2011 through June 2015
4. What is the geospatial coverage of the Data Set (Easternmost longitude, westernmost longitude, northernmost latitude, southernmost latitude)? Note western longitudes and southern latitudes are negative, and use decimal degrees if possible.
-80.0 to -97.0° Longitude; 19.0 to 29.0° Latitude
5. List the measured variables or parameters in the Data Set (e.g., Temperature, Salinity, etc.)
**RAFOS: Location (longitude, latitude), temperature and pressure.
APEX: Salinity, temperature and depth (CTD); chlorophyll-A, turbidity, CDOM and depth (Wetlabs sensors); locations at 1500 m (RAFOS acoustics), and locations at the surface.**
6. List the platform(s) from which the Data Set is derived.
**RAFOS floats at 1500 and 2500 m.
APEX profiling floats**
7. List the instrument(s) used to derive the Data Set.
**RAFOS acoustics from Seascan, Inc through WHOI; sound sources from Teledyne Webb Research, and WHOI.
APEX profiling floats from Teledyne Webb Research equipped with CTD (Seabird SBE41-CP), Wetlabs bio-optical sensors (ECO FLbbCD-AP2), RAFOS acoustics for tracking underwater.**
8. List the observation types in the Data Set (e.g., Biological Data, Physical Data, etc.).
Physical and bio-optical data.

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9. List the mission/project name(s) to which the Data Set contributes.
Bureau of Ocean Energy Management (BOEM) Environmental Studies Program.
 10. Give the expected size(s) in bytes and number of files in the submission.
112 Mbytes; Number of Data Files = 670.
 11. Give the file format and format version (e.g., netCDF-3, HDF-5, ASCII CSV, etc.).
netCDF-3, netCDF-4, ASCII Text.
 12. Does this Data Set conform to any file-level data content or metadata content standards? (e.g., COARDS/CF, HDF-EOS, WOCE, GHRSSST)
COARDS/CF
 13. Please describe the file contents. Include enough information to make these data understandable to future users. For example, a table containing as applicable: parameter definition, data type, byte size/length, scale factor, offset, precision, and units. This information is especially important for ASCII and other formats which are not self-describing like netCDF and HDF. If this information is already contained in a file or file headers included in this submission, please indicate the file name.
File formats and descriptions are given in the pdf's found in the folders "apex/docs" and "rafos/docs".
 14. Give the file-naming convention for the file(s) to be submitted, with the range/domain of each field value in the filename.

Folders	Filename	
apex/leidos	apx490nnnn_ctd.nc	nnnn=last four digits of the hull number
apex/optical_ctd	490nnnn_G490mmmm.nc	nnnn as above & mmmm = Wetlabs serial number
apex/usargo	490nnnn_meta.nc	meta data file (see usargo docs)
	490nnnn_prof.nc	profile data
rafos/leidos/raw	rf#_rfxxxx.nc	xxxx=RAFOS float number # = [c,0-5] segment number (see docs)
rafos/leidos/smooth	rs#_rfxxxx.nc	# = [0-5] segment number
rafos/rfc	rfcxxxx.rfc	ASCII data files from WHOI (see docs)
nnnn = [1042-2290]	xxxx=[1018-8512,9999]	
 15. Please provide a list of existing reports, publications, user guides, web sites, or other supporting documentation relevant to the Data Set.
User Guides are provided in the "docs" folders.
Study Final Report: Hamilton, P., A. Bower, H. Furey, R.R. Leben, P. Pérez-Brunius. 2016. Deep Circulation in the Gulf of Mexico: A Lagrangian Study. U.S. Dept. of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region, New Orleans, LA. OCS Study BOEM 2016-081. 289 pp.
- What metadata exists for this Data Set? Is it in a standard format/can it be automatically translated into a standard format? Describe the granularity of this metadata (For example, is it collection level metadata? If not, to what file or grouping of files does it apply?)
Metadata is provided at the file level, generally as netcdf attributes, or header preambles to ASCII data.
16. If applicable, describe the temporal resolution of the primary parameter(s) in the Data Set.
RAFOS: 8 hours; APEX: 14 days.
 17. If applicable, describe the horizontal resolution of the primary parameter(s) in the Data Set.
Lagrangian measurements so resolution varies with the measured flows.
 18. If applicable, describe the vertical resolution of the primary parameter(s) in the Data Set.
APEX CTD: 1-10 m, Bio-Optical: 5-50 m.

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19. If applicable, describe the projection grid or coordinate system used in the Data Set.
Latitude, Longitude, and Depth
20. If the Technical Contact for the *Producer* is different from the Primary Contact for the *Producer* (1.4), please provide name, organization, position, address, phone, fax, and email.
21. If the Metadata Contact for the *Producer* is different from the Primary Contact for the *Producer* (1.4), please provide name, organization, position, address, phone, fax, and email.
22. If the Technical Contact for the *Archive* is different from the Primary Contact for the *Archive* (1.5), please provide name, organization, position, address, phone, fax, and email.
23. If the Metadata Contact for the *Archive* is different from the Primary Contact for the *Archive* (1.5), please provide name, organization, position, address, phone, fax, and email.

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Section 3 – Detailed Data Processing and Quality Information

All elements in this section are STRONGLY RECOMMENDED and allow the *Archive* to enable more complete and thorough understanding of the data over the long term.

1. What is the overall completeness and quality of the Data Set?
Complete
2. Describe the data processing level of the Data Set. For example, is the Data Set unprocessed or minimally processed, quality controlled or calibrated, etc.? For satellite data, is it Level 0, 1, 2, 3, or 4?
All data is quality controlled, and calibrated by the study PI's and/or the manufacturer (see docs and Final Report).
3. Summarize the science algorithms(s) used to derive the Data Set.
Underwater locations found from acoustic travel times from precisely timed sound sources. CTD and bio-optical profiles use standard procedures.
4. Describe the steps taken to process the Data Set, including for each step the methodology, source data, and time/frequency, and listing any input data sets used to derive the Data Set.
See Chapter 2 of the Final Report.
5. Describe the Data Set's dependency on other data (e.g. ancillary files), processing systems, software, or entities that are not to be submitted to the Archive.
N/A
6. Detail any measures taken by the Producer to assess the quality of the Data Set, including data comparisons, and an assessment of the attribute accuracy. Give information about omissions, selection criteria, and other rules used to derive the Data Set.
See Chapter 2 of the Final Report
7. List any quality assessment parameters included in the Data Set. For example, this may be an explanation of quality flags and their range/domain of values.
N/A

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Section 4 – Data Stewardship Information

All elements in this section are **STRONGLY RECOMMENDED** and enable the *Archive* to provide more comprehensive *data stewardship* over the long term. Data stewardship requires a more extensive set of functions than traditional long-term preservation of data and information, and includes activities such as monitoring the needs of user communities, compliance testing, quality assurance, and use of this Data Set in larger integrated product databases. Importantly, this section provides the *Producer* with an opportunity to request specific services from the *Archive*. This document does not imply that all of these services will be provided, but typically the *Archive* will work to meet them on a best-effort basis.

1. Please describe any quality control or quality assurance procedures the *Archive* should perform on this Data Set when it is submitted to the *Archive*.
None
2. How will the *Producer* provide updates to the *Archive* when changes occur in the Data Set, transmission mechanism, format, content, etc.? How often might such changes be expected to occur?
The data have been thoroughly analyzed (see Final Report) and updates are not expected.
3. Does the *Producer* request reports on the *Archive*'s dissemination of the Data Set? If so, what statistics should be included? (Please note federal regulations strictly limit the amount and kind of information that can be recorded by federal agencies.)
No
4. Does the *Producer* request standards compliance testing on the Data Set? For example, should the *Archive* verify data files are meeting netCDF Climate and Forecast (CF) conventions, or should metadata records be checked for adherence to the FGDC content standard? Will the *Producer* perform standards compliance testing prior to submission to the *Archive*?
Netcdf files are COARDS/CF compliant. FGDC is not applicable to these data.
5. Suggest action(s) for the *Archive* in the case of an error in transmission (e.g. missing data, duplicate data, incorrect file name or size, failure of compliance checks).
Contact the provider or the BOEM Environmental Studies Program
6. Please list any known NODC product databases (e.g. World Ocean Data Base) that this Data Set should become a part of.
APEX data is already part of the USARGO database.
7. Please identify one or more Representative Users of the *Designated Community*. The Designated Community is defined in the OAIS Reference Model as the group of potential users who should be able to understand a Data Set over the long term. The *Archive* works specifically to preserve the data and information for this Designated Community.
 - a. Describe this user community and their requirements
 - b. Provide Contact Information for a representative of this community - please provide name, organization, position, address, telephone, fax, and e-mail address
8. List security requirements for dissemination of the Data Set from the *Archive* to the users.
None
9. Once the Data Set is transferred to the *Archive*, how long should it take for it to become searchable? How long should it take to become accessible online?
No restrictions

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10. Describe any preferred search criteria to be enabled for this Data Set in the *Archive* (e.g., search by time, search by geographic bounding box on a Polar Stereographic map, etc.)

Area: the Gulf of Mexico, time, and data type.

11. Describe any the preferred access mechanisms to be enabled for this Data Set in the *Archive* (e.g., OPeNDAP, Web Coverage Services, FTP, etc.)

OPeNDAP

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Section 5 – Logistics Information for Routine Transfers to the *Archive*

All elements in this section are REQUIRED for Data Sets that are expected to be routine, automated transmissions to the *Archive* from the *Producer*. This information is required for the *Archive* to establish and maintain the automated ingest and archive procedures. Questions 1 through 5 in Section 4 above are also required for automatic submissions.

1. Provide the mechanisms used to transfer digital data to the *Archive*. For routine, repeated submissions include the server, location, and protocol used.
2. List any relevant Interface Control Document, Memorandum of Understanding, or other technical documents outlining how data will be transferred from *Producer* to *Archive*.
3. Describe the submission schedule in terms of starting/ending times and submission frequency for each submission session.
4. Give the volume of each submission session and the total anticipated volume per day or month in bytes.
5. List the steps in the transfer process from *Producer* to *Archive*.
6. List the *Producer's* preference for basic file validation routines (e.g. checksums, CRC32, MD5 or other).
7. Does the *Producer* request a periodic record of receipt from the *Archive* for purposes of tracking the submitted data?
8. List any security requirements needed during submission from the *Producer* to the *Archive*.
9. Is the content of each submission session considered by the *Producer* to be a continuation or new version of a previous submission, or is the content of each submission session considered by the *Producer* to be an independent or stand-alone collection of data?

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Section 6 – Archive Appraisal and Justification Information

Only in cases where a formal archive appraisal package is required by the *Archive* in order to gain management approval to provide archival services for this Data Set are these elements required. For these cases, also ensure the following questions have been answered: all of Section 2, and Section 3 questions 1 and 2. The Point of Contact for the *Archive* will provide additional guidance with this section.

1. What are the cost considerations for long-term maintenance of the Data Set? Are resources available for archiving and providing access to these records?
2. Has this Data Set ever physically resided at a scientific data center or center of data where stewardship was provided? Where does it reside now? What scientific expertise would best provide stewardship for this Data Set?
APEX data resides in the USargo database.
3. Where does this Data Set fit within NOAA's mission?
4. What is the value (scientific, public, government) of this Data Set in terms of current and anticipated future benefits?
These data are the first Gulf-wide exploration of deep circulations, and similarly the CTD data provide the first Gulf-wide survey of water masses since the 1970's. They are expected to provide an evolutionary change in scientific understanding of deep Gulf circulations, particularly in the western basin. Eventually they should lead to improvements in numerical modeling of the Gulf.
5. Does the Data Set have legal mandates which require its archive at NOAA? Are there existing NARA disposition schedules that pertain to these records? If yes, please describe.
The contract with BOEM requires submission of collected data to NODC.
6. Is the Data Set unique? If not, where else does it exist?
Yes
7. Is the Data Set related to other records in a NOAA *Archive* (i.e. an extension, a new version, improved quality, etc.)? If yes, to what degree does this Data Set add value to other data sets held by NOAA or others?
8. Has the Data Set undergone user evaluation and/or scientific peer review, been used extensively in publications, and/or subjected to other appraisal processes? If yes, please describe.
The final report has been reviewed by BOEM. Publications are in preparation.
9. What is the current storage media for the Data Set? If in electronic format, does it still exist on other media (e.g. paper, film)? If yes, is it required to maintain copies on other media?
DVD
10. Does appropriate hardware and software technology exist to enable usability of the Data Set? If yes, please describe.
Netcdf software from Unidata.
11. Does the Data Set have intrinsic value? Intrinsic value implies that an object containing data has value beyond the data content in the object. For example, the original deck logs from the HMS *Beagle* have intrinsic value, but the digitized observations from those logs do not because the digitized files are easily copied viewed, and/or redistributed.
No

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The signatures below indicate the belief that the information contained on this form is true and correct to the best understanding of the *Producer* and *Archive*. These signatures also acknowledge that in the future, this information may be amended, updated, or revised as necessary and that some submissions may require management level approvals before archival services can be provided.



Signed: Peter Hamilton

Point of Contact for the *Producer*
Printed Name and Date:
Peter Hamilton 1/20/2017

[signed] Donald W. Collins

Signed: Donald W. Collins

Point of Contact for the *Archive*
Printed Name and Date:
Donald W. Collins,