

Data Management Plan: HF Radar

I. Type of data and information created

1. What data will you collect or create in the research?

Contextual statement describing what data are collected and relevant URL (IOOS Certification, f 2)

This program uses land-based HF radiowave systems (e.g. CODAR SeaSondes) to remotely sense ocean near-surface currents as they vary in space and time.

2. What data types will you be creating or capturing?

We capture HF backscatter data, including cross-spectra, which are processed to radial current data (strength of current component directed toward the radar, as function of range and azimuth) and ancillary data quality measurements.

3. How will you capture or create the data?

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

Data are collected at each coastal measurement site and processed into range-series, cross-spectra, and then one-dimensional radial current vectors (toward or away from the site), using on-site data acquisition computers. Diagnostic data are also produced. Each site has connection to the internet, presently by cell-phone modem or DSL. Radial and diagnostic data are copied on a schedule over the internet to a central processing site at Oregon State University.

All data also are immediately copied to an on-site archive drive in real time. The archive drives are physically collected approximately once every 2 months, and contain all data transferred by internet, as well as the larger data sets (e.g. range-series and cross-spectra). The real-time radial data collected from our coastal sites are copied on a processing computer, and then to an ftp server, where they are available for download to our OSU HF portal. From the portal, the data are copied by script by the HF data collection center at Scripps, UCSD.

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

As above, the radial current data are transferred to the national network, which manages its further archival, distribution, and incorporation into national products.

Local archives of the data are maintained with triplicate and spatially-distributed disk copies.

In addition, vector-current fields are processed, distributed, and archived locally.

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

Each site has a web server for its radial, spectral and diagnostic data, which provide near-real-time information on the data and its quality. A heads-up display is always on at OSU so equipment problems can be identified and addressed quickly. Automated counts

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of expected files are conducted by scripts to check for site outages or improper operation. Periodic audits of operational parameters are conducted to ensure that changes in equipment are accounted for properly in system operations.

A nightly script updates a history of diagnostic data for each site in matlab format, so operational characteristics can be compared against recent and older results.

Systems are operated with ionospheric screening on.

And most importantly, operators look at the radial and total vector maps to spot potential anomalies.

As a NANOOS Observing System provider, we follow industry best practices and manufacturer guidance where applicable, to calibrate, operate, and maintain the equipment used in this effort, and will provide documentation of this upon request.

Further, we maintain equipment inventories, shipping logs, and instrument maintenance history logs, as appropriate, that are available upon request.

- 4. 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

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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)

Once radial data have been acquired, processed, and quality controlled, OSU provides the data for transmission to the national network, where it is shared within an hour.

1. How long will the original data collector/creator/principal investigator retain the right to use the data before opening it up to wider use?

N/A

2. 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.)

N/A

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

N/A

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III. Standards for format and content

1. Which file formats will you use for your data, and why?

How can the information be accessed? (IOOS Certification, f 2)

Data are collected and archived at OSU in manufacturer's binary (cross-spectra, CSS) and text (radials RDL, diagnostic STAT files) format, because much processing and analysis software expect data in these formats. We store locally generated analyses in matlab format.

The radial data, and the products from it, are shared in real time with the national HF network centers, which process them to national standard formats and share them in netCDF and GNOME formats, via their THREDDS server.

2. What file formats will be used for data sharing?

All of the Above.

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

Metadata are carried by the national network servers on hfrnet.ucsd.edu.

In addition, the radial files RDL are an ascii format which contain metadata in leading and trailing comment lines (lead character "%"), as documented here

http://support.codar.com/Technicians_Information_Page_for_SeaSondes/Manuals_and_Documentation_files/Docs/GuidesToFileFormats/File_LonLatUV_RDL_TOT_ELP.pdf.

Diagnostic data contain significant metadata in ascii files, with formats described here

http://support.codar.com/Technicians_Information_Page_for_SeaSondes/Manuals_Documentation_Release_8/File_Formats/File_STAT_RDT.pdf

4. What contextual details (metadata) are needed to make the data you capture or collect meaningful?

These are the metadata in the files noted in the preceding section.

5. How will you create or capture these details?

These data files are automatically archived using the CODAR application "Archivalist", transferred to OSU on an hourly basis. In addition, the on-site data disks are exchanged and returned to OSU for archiving with triple and geographically-distributed backups.

6. What form will the metadata describing/documenting your data take?

Please see above

7. Which metadata standards will you use and why have you chosen them? (e.g. accepted domain-local standards, widespread usage)

The metadata are the manufacturer and de-facto community standards for HF data collected from CODAR equipment.

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IV. Polices for stewardship and preservation

1. 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)

Michael Kosro, Professor 32 years, Principal Investigator
541-737-3079
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Anne Dorkins, Research Assistant, 17 years
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Erik Arnesen, Research Assistant, 5 years
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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)

Oregon State University has a process in place for personnel evaluation. These evaluations are on file with Oregon State University Human Resources. All personnel listed have received excellent evaluations.

2. 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).

National HF Radar Network hfrnet.ucsd.edu. This group archives the data for the national HF system, and shares the data with national oceanographic data centers.

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

Locally, triply-redundant geographically-distributed HDD archives, and nationally, archive provided through national HFR network.

4. How long will/should data be kept beyond the life of the project?

Data will be stored indefinitely.

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

All data are publicly available and preserved.

6. What transformations will be necessary to prepare data for preservation / data sharing?

Raw radial data are archived.

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

As provided by national HFR network.

8. What related information will be deposited?

Radial velocity files (RDL).

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V. Procedures for providing access

1. 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 and 4)

Via the HFR national network, data are available in near-real time in netCDF and GNOME format via THREDDS.

Maps are provided through the NANOOS Visualization System. ASCII files of daily-averaged currents with maps are available for download from <http://www.currents.coas.oregonstate.edu>.

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

NANOOS HF data and products are freely available for public use. When referenced, please provide a link to the OSU HF homepage. <http://bragg.coas.oregonstate.edu/>

Examples:

1) Standard html:

Data courtesy of [NANOOS HFR](http://www.currents.coas.oregonstate.edu/)

2) Offline references, choose the appropriate form from the recommended acknowledgements below.

- Short form (figure captions, etc)
“ ... data from NANOOS HFR, Oregon State University.”
- Longer form (in text)
“.. measurements were made by the NANOOS HF radar group, operated by Oregon State University, under the sponsorship of NOAA’s IOOS program.”

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

Data are publicly available.

4. Will a data sharing agreement be required?

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

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

N/A

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

The funding agency, NANOOS, and Oregon State University.