HF Radar

Please provide the following information and submit to the NOAA DM Plan Repository.

Reference to Master DM Plan (if applicable)

URL of higher-level DM Plan (if any) as submitted to DM Plan Repository:

NANOOS DMP: https://www.nanoos.org/documents/certification/DMP/2023/NANOOS-DMP.pdf

1. General Description of Data to be Managed

1.1. Name of the Data, data collection Project, or data-producing Program:

Surface Current mapping with land-based HF radar

1.2. Summary description of the data:

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.

1.3. Is this a one-time data collection, or an ongoing series of measurements?

This is an ongoing series of measurements.

1.4. Actual or planned temporal coverage of the data:

Mapped data are collected hourly.

1.5. Actual or planned geographic coverage of the data:

Waters of northern California, Oregon, and north through central Washington, from a few kilometers offshore to approximately 120 km offshore.

1.6. Type(s) of data:
(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.).

Digital numeric data.

1.7. Data collection method(s):
(e.g., satellite, airplane, unmanned aerial system, radar, weather station, moored buoy, research vessel, autonomous underwater vehicle, animal tagging, manual surveys, enforcement activities, numerical model, etc.)

Land-based HF surface current mapping systems manufactured by Codar Ocean Sensors.

1.8. If data are from a NOAA Observing System of Record, indicate name of system:

1.8.1. If data are from another observing system, please specify:

IOOS/NANOOS (Northwest Association of Networked Ocean Observing Systems)

2. Point of Contact for this Data Management Plan (author or maintainer)

2.1. Name: Michael Kosro

2.2. Title: Professor of Oceanography

2.3. Affiliation or facility: College of Earth, Ocean and Atmospheric Sciences, Oregon State University

2.4. E-mail address: mike.kosro@oregonstate.edu

2.5. Phone number: 541-737-3079

3. Responsible Party for Data Management

Program Managers, or their designee, shall be responsible for assuring the proper management of the data produced by their Program. Please indicate the responsible party below.

3.1. Name: Michael Kosro

3.2. Position Title:

3.3. Name of current Position holder:

4. **Resources**

Programs must identify resources within their own budget for managing the data they produce.

4.1. Have resources for management of these data been identified? Within reason

4.2. Approximate percentage of the budget for these data devoted to data management (specify percentage or "unknown"): 20% (estimated)

5. **Data Lineage and Quality**

NOAA has issued Information Quality Guidelines[1] for ensuring and maximizing the quality, objectivity, utility, and integrity of information which it disseminates.

5.1. Processing workflow of the data from collection or acquisition to making it publicly accessible *(describe or provide URL of description)*:

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.

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.

5.1.1. If data at different stages of the workflow, or products derived from these data, are subject to a separate data management plan, provide reference to other plan:

5.2. Quality control procedures employed *(describe or provide URL of description)*:

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

[1] http://www.cio.noaa.gov/services_programs/IQ_Guidelines_030414.html

equipment problems can be identified and addressed quickly. Automated counts 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.

6. **Data Documentation**

The EDMC Data Documentation Procedural Directive[2] *requires that NOAA data be well documented, specifies the use of ISO 19115 and related standards for documentation of new data, and provides links to resources and tools for metadata creation and validation.*

6.1. Does metadata comply with EDMC Data Documentation directive? Yes

6.1.1. If metadata are non-existent or non-compliant, please explain:

6.2. Name of organization or facility providing metadata hosting: National HFR DAC (cordc)

6.2.1. If service is needed for metadata hosting, please indicate:

6.3. URL of metadata folder or data catalog, if known:

https://hfrnet-tds.ucsd.edu/thredds/HFRADAR_USWC.html

6.4. Process for producing and maintaining metadata *(describe or provide URL of description)*:

https://cordc.ucsd.edu/projects/hfrnet/ "Documents" tab

7. **Data Access**

NAO 212-15 states that access to environmental data may only be restricted when distribution is explicitly limited by law, regulation, policy (such as those applicable to personally identifiable information or protected critical infrastructure information or proprietary trade information) or by security requirements. The EDMC Data Access Procedural Directive[3] *contains specific guidance, recommends the use of open-standard, interoperable, non-proprietary web services, provides information about resources and tools to enable data access, and includes a Waiver to be submitted to justify any approach other than full, unrestricted public access.*

7.1. Do these data comply with the Data Access directive? Yes

7.1.1. If the data are not to be made available to the public at all, or with limitations, has a

[2] https://www.nosc.noaa.gov/EDMC/PD.DD.php

[3] Data Access Directive currently in review; URL to be added.

Waiver (Appendix A of Data Access directive) been filed?

7.1.2. If there are limitations to public data access, describe how data are protected from unauthorized access or disclosure:

7.2. Name of organization of facility providing data access: National Center (cordc)

7.2.1. If data hosting service is needed, please indicate:

7.2.2. URL of data access service, if known:

https://nvs.nanoos.org

https://cordc.ucsd.edu/projects/hfrnet/

7.3. Data access methods or services offered:

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.

7.4. Approximate delay between data collection and dissemination: 3-6 hours

7.4.1. If delay is longer than latency of automated processing, indicate under what authority data access is delayed:

8. **Data Preservation and Protection**
The NOAA Procedure for Scientific Records Appraisal and Archive Approval describes how to identify, appraise and decide what scientific records are to be preserved in a NOAA archive.

8.1. Actual or planned long-term data archive location:
(Specify NODC, NCDC, NGDC, World Data Center (WDC) facility, Other, To Be Determined, Unable to Archive, or No Archiving Intended)

8.1.1. If World Data Center or Other, specify:

National HF Radar DAC/Network: This group archives the data for the national HF system and shares the data with national oceanographic data centers. We also maintain copies locally at OSU, triply-redundant.

8.1.2. If To Be Determined, Unable to Archive or No Archiving Intended, explain:

8.2. Data storage facility prior to being sent to an archive facility (if any):

Data are archived at each field site on removable drives, which are collected every 2 months. Those data are transferred to larger, triply-redundant disks at OSU, and stored in multiple locations.

8.3. Approximate delay between data collection and submission to an archive facility:

Data are transmitted to hfrnet.ucsd.edu within a 3-6 hours.

8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive? Discuss data back-up, disaster recovery/contingency planning, and off-site data storage relevant to the data collection:

Please see item 8.2 above.

9. **Additional Line Office or Staff Office Questions**
Line and Staff Offices may extend this template by inserting additional questions in this section.