

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

### Reference to Master DM Plan (if applicable)

As stated in Section IV, Requirement 1.3, DM Plans may be hierarchical. If this DM Plan inherits provisions from a higher-level DM Plan already submitted to the Repository, then this more-specific Plan only needs to provide information that differs from what was provided in the Master DM Plan.

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

## 1. General Description of Data to be Managed

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

Massachusetts Bay - Internal wave packets digitized from SAR imagery

### 1.2. Summary description of the data:

This feature class contains internal wave packets digitized from SAR imagery at 1:350,000 scale in Massachusetts Bay. Internal waves are nonsinusoidal waves that occur at the interface between two layers of ocean water of differing densities (Brown et al., 1989 p.9). They occur when seasonally stratified water is forced by diurnal tides over abrupt topographic features, such as banks or ledges. These processes often produce several internal waves at once and as a result, internal waves usually propagate horizontally in groups or packets. As these packets approach shallow water (typically 25 to 40 m in depth), they gradually disappear due to increasing bottom attenuation, disrupting the pycnocline and vertically mixing water of differing densities (Jackson and Apel, 2004 p.198).

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

One-time data collection

### 1.4. Actual or planned temporal coverage of the data:

1998-05-14 to 2003-09-29

### 1.5. Actual or planned geographic coverage of the data:

W: -70.783468, E: -69.587833, N: 42.762758, S: 41.530974

### 1.6. Type(s) of data:

*(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)*  
vector digital 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.)*

### 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:**

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

**2.1. Name:**

NCCOS Scientific Data Coordinator

**2.2. Title:**

Metadata Contact

**2.3. Affiliation or facility:**

**2.4. E-mail address:**

NCCOS.data@noaa.gov

**2.5. Phone number:**

**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:**

NCCOS Scientific Data Coordinator

**3.2. Title:**

Data Steward

**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?**

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

**5. Data Lineage and Quality**

*NOAA has issued Information Quality Guidelines 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):*

Process Steps:

- 2006-01-01 00:00:00 - BACKGROUND: Synthetic Aperture Radar (SAR) can detect internal waves by emitting pulses of X-band (3cm), C-band (6cm) and L-band (24 cm) microwave energy, producing a two-dimensional radar backscatter map of the roughness of the ocean surface (Jackson and Apel, 2004 p.21, 41). In SAR imagery, internal waves appear as packets or groups of waves characterized by: 1) Alternating bands of bright and dark bands. The bright band is associated with the convergence zone, as determined by the orbital particle motion within the internal wave. 2) Curvilinear wave crests bent by refraction 3) Decreasing wave crest lengths from front to back of each packet 4) Decreasing wavelengths from front to back of each packet, indicating propagation direction and that nonlinear wave dispersion is in effect. 5) Decreasing wave amplitudes from front to back of each packet 6) Propagation parallel to significant isobaths Less often, internal waves may also be seen composed of only dark bands with no associated bright bands. This varying appearance is due to sensitivity to wind speed and wind direction, as well as to the orientation of the wave groups to the radar platform (Jackson and Apel, 2004 p.47). METHODS: In this study, the following methodology was used to identify and delineate internal wave packets in ESRI ArcGIS (ArcView) 9.1. First of all, a search extent was defined in order to narrow the geographic area in which to look for the internal waves. This area roughly covered from 42 deg 44 min 19 sec N to 41 deg 30 min 2 sec N and from 71 deg 8 min 3 sec W to 69 deg 36 min 30 sec W. Each of the 66 SAR images (which were taken between May 14, 1997 and August 29, 2003) were examined for internal waves, using the internal wave packet characteristics listed above as an identification guide. A ESRI polygon shapefile was created with columns recording the SAR image tile name, its year, date and time, as well as the internal wave packet area, packet propagation direction and moon phase during which it occurred. All internal wave packets were digitized at a 1:350,000 scale and saved in this shapefile, along with the necessary attribute information. The internal wave packet data were analyzed using a non-parametric Kruskal-Wallis test for significant differences in the median with a Dunn's post hoc test.

**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):**

## **6. Data Documentation**

*The EDMC Data Documentation Procedural Directive 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?**

No

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

Missing/invalid information:

- 1.7. Data collection method(s)
- 4.1. Have resources for management of these data been identified?
- 4.2. Approximate percentage of the budget for these data devoted to data management
- 5.2. Quality control procedures employed
- 7.1. Do these data comply with the Data Access directive?
  - 7.1.1. If data are not available or has limitations, has a Waiver been filed?
  - 7.1.2. If there are limitations to data access, describe how data are protected
- 7.2. Name of organization of facility providing data access
  - 7.2.1. If data hosting service is needed, please indicate
- 7.4. Approximate delay between data collection and dissemination
- 8.1. Actual or planned long-term data archive location
- 8.3. Approximate delay between data collection and submission to an archive facility
- 8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?

**6.2. Name of organization or facility providing metadata hosting:**

NMFS Office of Science and Technology

**6.2.1. If service is needed for metadata hosting, please indicate:****6.3. URL of metadata folder or data catalog, if known:**

<https://www.fisheries.noaa.gov/inport/item/39341>

**6.4. Process for producing and maintaining metadata**

*(describe or provide URL of description):*

Metadata produced and maintained in accordance with the NOAA Data Documentation Procedural Directive: [https://nosc.noaa.gov/EDMC/DAARWG/docs/EDMC\\_PD-Data\\_Documentation\\_v1.pdf](https://nosc.noaa.gov/EDMC/DAARWG/docs/EDMC_PD-Data_Documentation_v1.pdf)

**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 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?****7.1.1. If the data are not to be made available to the public at all, or with**

**limitations, has a 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:**

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

**7.2.2. URL of data access service, if known:**

**7.3. Data access methods or services offered:**

Please contact the Stellwagen Banks NMS Research Coordinator for additional information on data access (david.wiley@noaa.gov);

**7.4. Approximate delay between data collection and dissemination:**

**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 NCEI-MD, NCEI-CO, NCEI-NC, NCEI-MS, 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:**

**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):**

National Centers for Coastal Ocean Science - Silver Spring, MD

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

**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*

**9. Additional Line Office or Staff Office Questions**

*Line and Staff Offices may extend this template by inserting additional questions in this section.*