

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:

Tropical Cyclone Wind Exposure

1.2. Summary description of the data:

Hurricanes and other tropical cyclones pose a high risk to people, property, and ecosystems along the coastline of the United States. The impact of these storms can cascade through the nations economy and affect communities far from the coast. Understanding the geographic limit of and exposure to winds from tropical cyclones can help citizens, businesses, and government agencies build resilience to these pending dangers.

These data portray wind exposure between 1988 and 2022 in the North Atlantic and Eastern Pacific Ocean basins and between 2001 and 2022 in the Western Pacific Ocean basin. Exposure was quantified using intersecting storm tracks, overlapping wind intensity areas, and calculated return intervals.

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

1.4. Actual or planned temporal coverage of the data:

1.5. Actual or planned geographic coverage of the data:

W: -180, E: 180, N: 70.2, S: 4.5

1.6. Type(s) of data:

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

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:

2.2. Title:

Metadata Contact

2.3. Affiliation or facility:

2.4. E-mail address:

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:

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:

- 2024-02-01 00:00:00 - Grids Grids were created using the ArcGIS Pro Generate Tessellation feature to create hexagon tessellations (100 square kilometers). Grid extents were based generally on the minimum extent of cumulative storm tracks per ocean basin.
- 2024-02-01 00:00:00 - Tracks International Best Track Archive for Climate Stewardship (Ibtracs) storm track features were selected based on the period of interest (1988 to 2022), wind intensity (34-knot wind speed or greater) and storm type (Tropical storm, Extratropical, or Subtropical storm). Tracks that crossed the International Dateline were clipped to avoid issues with buffering later in the process. In order to match the wind radius data, the tracks were dissolved from 3-hour time steps to 6-hour time steps.
- 2024-02-01 00:00:00 - Wind Radii The Extended Best Track (EBT) data contain the radius of winds speeds at 34, 50, and 64 knots across four quadrants - NE, SE, SW, and NW. These data were matched to the individual track line using the storm ID, date, and time values. For 2022 storm tracks, HURDAT2 data was used, as it was not included in the EBT data. To provide wind radius values for tracks that did not have available data, averages of the EBT data for several categories were calculated. EBT data was filtered to include only storms since 1988, tropical, extratropical, or subtropical storms, with wind speeds of 34 knots or above, and with at least one wind speed radius greater than zero in one of the four quadrants. Each location was defined as land or water, based on a 150NM buffer of the ArcGIS online World Countries file, with islands less than 2,000 square kilometers excluded from the buffering process. The same categorization and land/water status was defined for the storm tracks. Based on available data, average values were not required for every combination of category and land/water status.
- 2024-02-01 00:00:00 - Buffers After wind radius values were assigned to each track segment for each appropriate wind speed and directional quadrant, left and right buffer values were calculated based on track segment direction, as follows: 1. Direction greater than 315 or less than or equal to 45 = Left: Maximum of NW and SW, Right: Maximum of NE and SE 2. Direction greater than 45 and less than or equal to 135 = Left: Maximum of NE and NW, Right: Maximum of SE and SW 3. Direction greater than 135 and less than or equal to 225 = Left: Maximum of NE and SE, Right: Maximum of NW and SW 4. Direction greater than 255 and less than or equal to 315 = Left: Maximum of SE and SW, Right: Maximum of NE and NW Using these values, left buffers and right buffers were created for each track segment (using "round" and "geodesic" methodology), using the North America Albers Equal Area Conic projection, for each wind speed (34, 50, and 64 knots). These buffers were merged, and then dissolved by storm ID. The tracks were also dissolved by storm ID.
- 2024-02-01 00:00:00 - Exposure Values In order to assign occurrence and return interval values to the grid cells, a "one to many" spatial join was performed with the grid, and each of the wind speed buffer sets for each ocean basin. The spatial join results were then summarized and joined back to the grid to determine the

number of occurrences for each wind speed. The same process was performed to determine the number of intersecting storm tracks. Return intervals were calculated by dividing the number of years (35) in the track dataset by the number of occurrences for each wind speed.

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:

- 1.3. Is this a one-time data collection, or an ongoing series of measurements?
- 1.4. Actual or planned temporal coverage of the data
- 1.7. Data collection method(s)
- 2.1. Point of Contact Name
- 2.4. Point of Contact Email
- 3.1. Responsible Party for Data Management
- 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
- 7.3. Data access methods or services offered
- 7.4. Approximate delay between data collection and dissemination
- 8.1. Actual or planned long-term data archive location
- 8.2. Data storage facility prior to being sent to an archive facility
- 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/72371>

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

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:

<https://marinecadastre.gov/data/>

<https://marinecadastre.gov/downloads/data/mc/TropicalCycloneWindExposure.zip>

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

Charleston, SC

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.