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:
2022 North Carolina NAIP 4-Band 8 Bit Imagery

1.2. Summary description of the data:
This data set contains imagery from the National Agriculture Imagery Program (NAIP). The NAIP program is administered by USDA FSA and has been established to support two main FSA strategic goals centered on agricultural production. These are, increase stewardship of America's natural resources while enhancing the environment, and to ensure commodities are procured and distributed effectively and efficiently to increase food security. The NAIP program supports these goals by acquiring and providing ortho imagery that has been collected during the agricultural growing season in the U.S. The NAIP ortho imagery is tailored to meet FSA requirements and is a fundamental tool used to support FSA farm and conservation programs. Ortho imagery provides an effective, intuitive means of communication about farm program administration between FSA and stakeholders. New technology and innovation is identified by fostering and maintaining a relationship with vendors and government partners, and by keeping pace with the broader geospatial community. As a result of these efforts the NAIP program provides three main products: DOQQ tiles, Compressed County Mosaics (CCM), and Seamline shape files. The Contract specifications for NAIP imagery have changed over time reflecting agency requirements and improving technologies. These changes include image resolution, horizontal accuracy, coverage area, and number of bands. In general, flying seasons are established by FSA and are targeted for peak crop growing conditions. The NAIP acquisition cycle is based on a minimum 3 year refresh of base ortho imagery. The tiling format of the NAIP imagery is based on a 3.75' x 3.75' quarter quadrangle with a 300 pixel buffer on all four sides. NAIP quarter quads are formatted to the UTM coordinate system using the North American Datum of 1983. NAIP imagery may contain as much as 10% cloud cover per tile.

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:
2022-05-28 to 2022-10-15

1.5. Actual or planned geographic coverage of the data:
W: -84.418, E: -75.146, N: 36.694, S: 33.587

1.6. Type(s) of data:
(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)
Image (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:
NOAA Office for Coastal Management (NOAA/OCM)

2.2. Title:
Metadata Contact

2.3. Affiliation or facility:
NOAA Office for Coastal Management (NOAA/OCM)

2.4. E-mail address:
coastal.info@noaa.gov

2.5. Phone number:
(843) 740-1202

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:
  - 2022-02-01 00:00:00 - DOQQ Production Process Description;   USDA FSA APFO NAIP Program 2021;   The imagery was collected using the following digital sensors: Leica ADS-100 (Serial Number 10530), Leica ADS-100 (Serial Number 10510),   Leica ADS-100 (Serial Number 10515),   Leica ADS-100 (Serial Number 10522),   Leica ADS-100 (Serial Number 10537),   Leica ADS-100 (Serial Number 10519),   Leica ADS-100 (Serial Number 10552)   with Flight and Sensor Control Management   System (FCMS) firmware: v4.57 and v4.6,   Cameras are calibrated radiometrically and geometrically   by the manufacturer and are all certified by the USGS.   Collection was performed using a combination of the   following twin-engine aircraft with turbines flying   at 27,100 ft above mean terrain.   Plane types: C441, C414, Rockwell Turbo Commander   Tail numbers: N441EH,   N414EH,   N440EH,   N441FS,   N2NQ,   N811HJ,N690LS,   With these flying heights, there is a 27% sidelap,   giving the collected data nominal ground sampling distance   of 0.60 meters.   Based-upon the CCD Array configuration present in the ADS digital sensor, imagery for each flight   line is 20,000-pixels in width. Red, Green, Blue,   Near-Infrared and Panchromatic image bands were collected.   The ADS 100 has the following band specifications: Red 619-651,   Green 525-585,   Blue 435-495,   Near Infrared 808-882,   all values are in nanometers.
  - 2022-02-01 00:00:00 - Flight planning was performed in Leica MissionPro over a   buffered boundary covering DOQQ extents provided by the USDA.   A 500m reduced resolution DEM file was used to determine   ground heights. A targeted flight altitude of approximately   27,000 feet above ground level for native 60cm image   acquisition with sidelap of 27% was used   for flight planning parameters. Five aircraft were utilized   for acquisition, the seamline   shapefile clarifies which aircraft were used for a given area.   All aircraft were equipped with Leica   ADS100 systems

where utilized for data   capture. The Leica ADS100 pushbroom sensor   has been calibrated by the manufacturer as well as validated   against a local calibration range. The calibration includes   measuring the radiometric and geometric properties of the camera. These data are used in the Post Processing Software   to eliminate the radiometric and geometric distortion.   All aerial imagery was collected with associated GPS/IMU   data. ADS collection requires high quality IMU data for   processing and was critical for early access hosting of digital   data to the web for USDA interim access and review.   After early access web delivery was complete, all   imagery was triangulated using Leica XPro in which   the airborne GPS data was constrained to expected limits.   To validate the accuracy of the block adjustment derived from   GPS/IMU, sensor parameters and conjugate point measurements,   photo identifiable ground control points were field surveyed within   each State. These points were surveyed using GPS techniques to   produce coordinates that are accurate to +/- 0.25 meters RMSE in XYZ.   The GPS surveying techniques utilized assured that the coordinates   are derived in the required project datum and relative to an approved   National Reference System. If the block does not fit the control points within specifications the pass and tie   points were reviewed for blunders and weak areas. If,   after these corrections were made, the block still   does not fit the control well the GPS and IMU processing were   reviewed. Once the block has proper statistics and fits the   control to specifications, the final bundle adjustment was   made. As AT points are frequently on man-made and other vertical features not included in the DEM, these ortho   points can only be used to indicate regions of error by the   clusters of points that predict excessive horizontal displacement.

- 2022-02-01 00:00:00 - The final adjustments assure a high quality relative adjustment   and a high quality absolute adjustment limited to the   airborne GPS data accuracy. This process assures the final   absolute accuracy of all geopositioned imagery. Both   signalized and photo identified ground control were used to   QC and control the IMU/GPS based aerial triangulation bundle   block solution. Surdex Grouping Tool provides real-time updates   of the USDA APFO Image Metrics. The image technician adjusts   image correction parameters to bring the radiometric   characteristics of large groups of images within the Image Metrics ranges. For each project area the highest resolution   DEM or LiDAR was obtained and utilized for rectification of captured   imagery.   A visual inspection of the final DEM using color cycled   classification by elevation and a shaded relief was performed   to check for gaps, corruption and gross errors.   The predicted horizontal error for

each   point was added as an attribute in the SURDEX enterprise   database. An operator reviews ortho seams   in areas these predicted errors indicate horizontal error in   excess of the contract specifications. Any imagery errors   introduced by source DEM required patching from an alternate   perspective or strip of photography.   Processing hardware used included various brands of survey grade   GPS receivers, various brands and models of computers,   RAID6 storage, calibrated monitors, various brands of monitor   calibration colorimeters. Leica XPro was used for post   processing of ADS pushbroom data, triangulation and orthorectification. SURDEX software was used to color correct   and remove bidirectional reflectance, vignetting and other   illumination trends. USDA APFO Image Metrics are measured and   images corrected to conform to the Image Metrics using   SURDEX software. GPS/IMU data was reduced to projected   coordinates in the appropriate UTM zone using   Inertial Explorer software from Novatel. Aerial Triangulation   and orthorectification was performed using Leica XPro. SURDEX   software was used to adjust for minor radiometric   variation between adjacent images. SURDEX software was used   to calculate the optimal seam path, check seam topology and   create master tiles. SURDEX ortho software generates   occlusion/smear polygons used during seam review   of steep terrain. SURDEX software was used to   visually inspect master tiles for seam and image defects.   SURDEX software was used to project and cut final DOQQ image   files from masters.
- 2022-08-04 00:00:00 - SURDEX software was used to create CCM metadata. Lizardtech GeoExpress version 10.0.1.5035 was used   to create the CCM image file. SURDEX software was   used to perform final formatting, QC and naming of the DOQQ.   USGS metadata parser software was used to validate the metadata.   Various versions of Microsoft Windows were used in all phases of   production. Grouping Tool was used again after DOQQ and CCM   production to provide a quality assurance check. Individual   DOQQ and CCM may not meet the USDA APFO Image Metrics ranges   due to land cover. The goal is to have the state as a whole meet the Image Metrics. All products are reviewed   by independent personnel prior to delivery.   The delivery is checked for omissions, commissions,   naming, formatting, specification compliance and data integrity.

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)
- 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
- 7.3. 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
- 8.3. 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/70313

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:
NOAA Office for Coastal Management (NOAA/OCM)

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

7.2.2. URL of data access service, if known:
https://coast.noaa.gov/dataviewer/#/imagery/search/where:ID=9864
https://coastalimagery.blob.core.windows.net/digitalcoast/NC_NAIP_2022_9864/index.html

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):
Office for Coastal Management - 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.