NAIP18.sid

Raster Dataset

Identification_Information:

Citation:

Citation_Information:

Originator: USDA-FSA-APFO

Publication_Date: 20190102

Title: USDA-FSA-APFO Digital Ortho Mosaic

Publication_Information:

Publication_Place: Salt Lake City, Utah

Publisher: USDA_FSA_APFO Aerial Photography Field Office

Description:

Abstract: This data set contains imagery from the National Agriculture Imagery Program (NAIP). The NAIP acquires digital ortho imagery during the agricultural growing seasons in the continental U.S. A primary goal of the NAIP program is to enable availability of ortho imagery within one year of acquisition. The NAIP provides 60-centimeter ground sample distance (GSD) ortho imagery rectified to a horizontal accuracy within +/- 4 meters of reference digital ortho quarter quads (DOQQ's) from the National Digital Ortho Program (NDOP) or from the National Agriculture Imagery Program (NAIP). The tiling format of NAIP imagery is based on a 3.75' x 3.75' quarter quadrangle with a 300-pixel buffer on all four sides. The NAIP imagery is formatted to the UTM coordinate system using the North American Datum of 1983 (NAD83). The NAIP imagery may contain as much as 10% cloud cover per tile. This file was generated by compressing NAIP imagery that cover the county extent. Two types of compression may be used for NAIP imagery: MrSID and JPEG 2000. The target value for the compression ratio is 40:1 for imagery.

Purpose: The NAIP imagery is typically available for distribution within 60 days of the end of a flying season and is intended to provide current information of agricultural conditions in support of USDA farm programs. For USDA Farm Service Agency, the 1 meter and 1/2-meter GSD product provides an ortho image base for Common Land Unit boundaries and other data sets. The NAIP imagery is generally acquired in projects covering full states in cooperation with state government and other federal

agencies who use the imagery for a variety of purposes including land use planning and natural resource assessment. The NAIP is also used for disaster response often providing the most current pre-event imagery.

Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Calendar_Date: 2019

Currentness_Reference: Photography Source Image Dates.

Status:

Progress: Complete

Maintenance_and_Update_Frequency: Irregular

Spatial_Domain:

Bounding_Coordinates:

West_Bounding_Coordinate: -91.690882

East_Bounding_Coordinate: -91.113361

North_Bounding_Coordinate: 31.818242

South_Bounding_Coordinate: 31.179179

Keywords:

Theme:

Theme_Keyword_Thesaurus: None

Theme_Keyword: farming

Theme_Keyword: Digital Ortho rectified Image

Theme_Keyword: Mosaic

Theme_Keyword: Quarter Quadrangle

Theme_Keyword: Ortho Rectification

Theme_Keyword: Compression

Theme_Keyword: MrSID

Theme_Keyword: JPEG 2000

Theme_Keyword: NAIP

Theme_Keyword: Compliance

Theme_Keyword: Aerial Compliance

Place:

Place_Keyword_Thesaurus: Geographic Names Information System

Place_Keyword: MS

Place_Keyword: Adams

Place_Keyword: Adams CO MS FSA

Place_Keyword: 28001

Access_Constraints: There are no limitations for access.

Use_Constraints: None, The USDA-FSA Aerial Photography Field Office asks to be credited in derived products. If defects are found in the NAIP imagery during the 1-year warranty period such as horizontal offsets, replacement imagery may be provided. Imagery containing defects that require the acquisition of new imagery, such as excessive cloud cover, specular reflectance, etc., will not be replaced within a NAIP project year.

Point_of_Contact:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization: USDA-FSA Aerial Photography Field Office

Contact_Address:

Address_Type: mailing and physical address

Address: 2222 West 2300 South

City: Salt Lake City

State_or_Province: Utah

Postal_Code: 84119-2020

Country: USA

Contact_Voice_Telephone: 801-844-2922

Contact_Facsimile_Telephone: 801-956-3653

Contact_Electronic_Mail_Address: apfo.sales@slc.usda.gov

Native_Data_Set_Environment: NAIP 3.75 Quarter Quadrangles mosaicked into a County format using data compression software. The target value for the compression ratio is 40:1 for the imagery.

Data_Quality_Information:

Logical_Consistency_Report: NAIP 3.75-minute tile file names are based on the USGS quadrangle naming convention.

Completeness_Report: None

Positional_Accuracy:

Horizontal_Positional_Accuracy:

Horizontal_Positional_Accuracy_Report: FSA Digital Orthophoto Specs.

Vertical_Positional_Accuracy:

Vertical_Positional_Accuracy_Report: N/A 2d only

Lineage:

Process_Step:

Process_Description: Digital imagery was collected at a nominal GSD of 40cm using 10 Cessna 441's, one Cessna 414, one Reims F406, three Piper PA31's, one Piper PAY2 and one Swearingen Merlin-3 aircraft flying at an average flight height of 8400m AGL for the SH120 acquisition and 4400m AGL for SH100 acquisition. Aircraft flew with Leica Geosystem's ADS100/SH100 digital sensors with firmware 4.57 or ADS100/SH120 digital sensors with firmware 4.57. Each sensor collected 12 image bands Red, Green, Blue and Near-infrared at each of three look angles; Backward 19 degrees, Forward 26 degrees and Nadir for the SH100.   Backward 10 degrees, Forward 14 degrees, and Nadir for the SH120. The Nadir Green band was collected in high resolution mode effectively doubling the resolution for that band. The ADS100 spectral ranges are; Red 619-651nm, Green 525-585nm, Blue 435-495nm and Near-infrared at 808-882nm. The CCD arrays have a pixel size of 5.0 microns in a 20000x1 format at nadir; a 18000x1 format at the backward look angle and a 16000x1 format at the forward look angle. The CCD's have a dynamic range of 72db and the A/D converters have a resolution of 14bits. The ADS is a push-broom sensor the ground footprint of the imagery is approximately 8km wide at a nominal 40cm GSD by the length flight line. The maximum flight line length is limited to approximately 175km. The factory calibrations and IMU alignments for each sensor (Serial Numbers: 10510, 10511, 10512, 10514, 10519, 10552, 10522, 10527, 10528, 10530, 10531, 10534, 10537, 10540, 10554, 12529) were tested and verified by in-situ test flights before the start of the project. The Leica MissionPro Flight Planning Software is used to develop the flight acquisition plans. Flight acquisition sub blocks are designed first to define the GNSS base station logistics, and to break the project up into manageable acquisition units. The flight acquisition sub blocks are designed based on the specified acquisition season, native UTM zone of the DOQQs, flight line length limitations (to ensure sufficient performance of the IMU solution) as well as air traffic restrictions in the area. Once the sub blocks have been delineated they are brought

into MissionPro for flight line design. The design parameters used in MissionPro will be 30% lateral overlap and 40cm resolution. The flight lines have been designed with a north/south orientation or east/west where required for efficiency. The design considers the latitude of the state, which affects line spacing due to convergence as well as the terrain. SRTM elevation data is used in the MissionPro design to ensure the 50cm GSD is achieved over all types of terrain. The raw data was downloaded from the sensors after each flight using Leica XPro software. The imagery was then georeferenced using the 200Hz GPS/INS data creating an exterior orientation for each scan line (x/y/z/o/p/k). Leica Xpro APM software was used to automatically generate tiepoint measurements between the forward, nadir and backward look angles for each line and to tie all flight lines together. The resulting point data and exterior orientation data were used to perform a full bundle adjustment using ORIMA software. Blunders were removed, and additional tie points measured in weak areas to ensure a robust solution. Once the point data was clean and point coverage was acceptable, photo-identifiable GPS-surveyed ground control points were introduced into the block adjustment. The bundle adjustment process produces revised exterior orientation data for the sensor with GPS/INS, datum, and sensor calibration errors modeled and removed. Using the revised exterior orientation from the bundle adjustment, orthorectified image strips were created with Xpro software and the June 2018 USGS 10m NED DEM. The Xpro orthorectification software applies an atmospheric-BRDF radiometric correction to the imagery. This correction compensates for atmospheric absorption, solar illumination angle and bi-directional reflectance. The orthorectified strips were then overlaid with each other and the ground control to check accuracy. Once the accuracy of the orthorectified image strips were validated the strips were then imported into Inpho's OrthoVista 7.1.2 package which was used for the final radiometric balance, mosaic, and DOQQ sheet creation. The final DOQQ sheets, with a 300m buffer and a ground pixel resolution of 60cm were then combined and compressed to create the county wide CCMs.

 Process_Date: 20190102

Spatial_Data_Organization_Information:

 Indirect_Spatial_Reference: Mississippi

 Direct_Spatial_Reference_Method: Raster

 Raster_Object_Information:

  Raster_Object_Type: Pixel

Spatial_Reference_Information:

 Horizontal_Coordinate_System_Definition:

  Planar:

   Grid_Coordinate_System:

    Grid_Coordinate_System_Name: Universal Transverse Mercator

    Universal_Transverse_Mercator:

UTM_Zone_Number: 15

Transverse_Mercator:

Scale_Factor_at_Central_Meridian: 0.9996

Longitude_of_Central_Meridian: -93

Latitude_of_Projection_Origin: 0.0

False_Easting: 500000

False_Northing: 0.0

Planar_Coordinate_Information:

Planar_Coordinate_Encoding_Method: row and column

Coordinate_Representation:

Abscissa_Resolution: 0.6

Ordinate_Resolution: 0.6

Planar_Distance_Units: meters

Geodetic_Model:

Horizontal_Datum_Name: North American Datum of 1983

Ellipsoid_Name: Geodetic Reference System 80

Semi-major_Axis: 6378137

Denominator_of_Flattening_Ratio: 298.257

Entity_and_Attribute_Information:

Overview_Description:

Entity_and_Attribute_Overview: 8-bit pixels per band, 0-255, 4-band RGBiR

Entity_and_Attribute_Detail_Citation: None

Distribution_Information:

Distributor:

Contact_Information:

Contact_Person_Primary:

Contact_Person: Supervisor Customer Services Section

Contact_Organization: USDA-FSA Aerial Photography Field Office

Contact_Address:

  Address_Type: mailing and physical address

  Address: 2222 West 2300 South

  City: Salt Lake City

  State_or_Province: Utah

  Postal_Code: 84119-2020

  Country: USA

  Contact_Voice_Telephone: 801-844-2922

  Contact_Facsimile_Telephone: 801-956-3653

  Contact_Electronic_Mail_Address: apfo.sales@slc.usda.gov

Distribution_Liability: In no event shall the creators, custodians, or distributors of this information be liable for any damages arising out of its use (or the inability to use it).

Standard_Order_Process:

Digital_Form:

Digital_Transfer_Information:

  Format_Name: compressed county mosaic

  Format_Information_Content: compressed digital orthimagery

 Digital_Transfer_Option:

 Online_Option:

  Computer_Contact_Information:

   Network_Address:

    Network_Resource_Name: None

 Offline_Option:

  Offline_Media: DVD-R

  Recording_Format: ISO 9660

 Offline_Option:

  Offline_Media: USB Hard Disk

  Recording_Format: NTFS

Offline_Option:

Offline_Media: FireWire Hard Disk

Recording_Format: NTFS

Fees: Contact the Aerial Photography Field Office for more information

Resource_Description: none

Metadata_Reference_Information:

Metadata_Date: 20190102

Metadata_Contact:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization: USDA-FSA Aerial Photography Field Office

Contact_Address:

Address_Type: mailing and physical address

Address: 2222 West 2300 South

City: Salt Lake City

State_or_Province: Utah

Postal_Code: 84119-2020

Country: USA

Contact_Voice_Telephone: 801-844-2900