

NAIP_2013_3ft_color_wsps_83h_img

Metadata:

Identification_Information:

Citation:

Citation_Information:

Originator: USDA-FSA-APFO Aerial Photography Field Office

Publication_Date: 20130823

Title: NAIP Digital Ortho Photo Image

Geospatial_Data_Presentation_Form: remote-sensing image

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 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.

Purpose:

NAIP imagery is 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 1 meter and 1/2 meter NAIP imagery is generally acquired in projects covering full states in

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cooperation with state government and other federal agencies that use the imagery for a variety of purposes including land use planning and natural resource assessment. The NAIP is also used for disaster response. While suitable for a variety of uses, prior to 2007 the 2 meter GSD NAIP imagery was primarily intended to assess "crop condition and compliance" to USDA farm program conditions. The 2 meter imagery was generally acquired only for agricultural areas within state projects.

Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 20130630
Currentness_Reference: Ground Condition

Status:
Progress: Complete
Maintenance_and_Update_Frequency: Irregular

Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate: -116.9375
East_Bounding_Coordinate: -116.8750
North_Bounding_Coordinate: 46.0000
South_Bounding_Coordinate: 45.9375

Keywords:
Theme:
Theme_Keyword_Thesaurus: None
Theme_Keyword: farming
Theme_Keyword: Digital Ortho rectified Image
Theme_Keyword: Ortho Rectification
Theme_Keyword: Quarter Quadrangle
Theme_Keyword: NAIP
Theme_Keyword: Aerial Compliance
Theme_Keyword: Compliance

Place:
Place_Keyword_Thesaurus: Geographic Names Information System
Place_Keyword: WA
Place_Keyword: Asotin
Place_Keyword: 53003
Place_Keyword: WA003
Place_Keyword: ASOTIN CO WA FSA
Place_Keyword: 4511601
Place_Keyword: JIM CREEK BUTTE, NE
Place_Keyword: JIM CREEK BUTTE

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.

Point_of_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Aerial Photography Field Office (APFO)
Contact_Address:
Address_Type: mailing and physical address
Address: 2222 West 2300 South
City: Salt Lake City

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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

Browse_Graphic:
Browse_Graphic_File_Name: None
Browse_Graphic_File_Description: None
Browse_Graphic_File_Type: None
Native_Data_Set_Environment: Unknown

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:
NAIP horizontal accuracy specifications have evolved over
the life of the program. From 2003 to 2004 the
specifications were as follows: 1-meter GSD imagery was
to match within 3-meters, and 2-meter GSD to match within 10
meters of reference imagery. For 2005 the 1-meter GSD
specification was changed to 5 meters matching the reference
imagery. In 2006 a pilot project was performed using true
ground specifications rather than reference imagery. All
states used the same specifications as 2005 except Utah,
which required a match of +/- 6 meters to true ground.
In 2007 all specifications were the same as 2006 except
Arizona used true ground specifications and all other states
used reference imagery. In 2008 and subsequent years
no 2-meter GSD imagery was acquired and all specifications
were the same as 2007 except approximately half of the
states acquired used true ground specifications and the
other half used reference imagery. The 2008 states that
used absolute ground control where; Indiana, Minnesota,
New Hampshire, North Carolina, Texas, Vermont, and Virginia.
From 2009 to present all NAIP imagery acquisitions used
the +/- 6 meters to ground specification.

Lineage:
Source_Information:
Source_Citation:
Citation_Information:
Originator: USDA-FSA-APFO Aerial Photography Field Office
Publication_Date: 20130823
Title: JIM CREEK BUTTE, NE
Geospatial_Data_Presentation_Form: remote-sensing image
Type_of_Source_Media: UnKnown
Source_Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 20130630
Source_Currentness_Reference:

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Aerial Photography Date for aerial photo source.
Source_Citation_Abbreviation: Georectified Image
Source_Contribution: Digital Georectified Image.

Process_Step:

Process_Description:

DOQQ Production Process Description
USDA FSA APFO NAIP Program 2013
State: Washington

Digital imagery was collected at a nominal GSD of 1.0m using seven Cessna 441 aircrafts flying at an average flight height of 9052m AGL. All aircraft flew with Leica Geosystem's ADS80/SH82 digital sensors with firmware 3.20 or newer. Each sensor collected 11 image bands. PanF27A, PanF02A and PanB14A panchromatic bands with a spectral range of 465-676nm. RedN00a and RedB16a with a spectral range of 604-664nm. GrnN00a and GrnB16a with a spectral range of 533-587nm. BluN00a and BluB16a with a spectral range of 420-492nm and Near-infrared bands NirN00a and NirB16a with a spectral range of 833-920nm. The CCD arrays have a pixel size of 6.5 microns in a 12000x1 format. Both the CCD's and the A/D convertors have a dynamic range of 12bits. The data is stored in 16bit format. The ADS is a push-broom sensor and the ground footprint of the imagery at NAIP scale is 12km wide by the length flightline. The maximum flightline length is limited to approximately 240km. The factory calibrations and IMU alignments for each sensor (Serial Numbers: 1321, 1413, 1420, 30012, 30017, 30022, 30034, and 30110) were tested and verified by in-situ test flights before the start of the project. The Leica ADS Flight Planning and Evaluation Software (FPES) 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 FPES for flight line design. The design parameters used in FPES will be 30% lateral overlap and 1.0m resolution. The flight lines have been designed with a north/south orientation. The design takes into account the latitude of the state, which affects line spacing due to convergence as well as the terrain. SRTM elevation data is used in the FPES design to ensure the 1m GSD is achieved over all types of terrain. The raw data was downloaded from the sensors after

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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). Technicians precisely measured tie points in 3 bands/looks (Back/Nadir/Forward) for each line using Leica Xpro software. The resulting point data and exterior orientation data were used to perform a full bundle adjustment with 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 April 2013 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 4.6 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 1m.

Process_Date: 20130823
Spatial_Data_Organization_Information:
 Indirect_Spatial_Reference: Asotin County, WA
 Direct_Spatial_Reference_Method: Raster
 Raster_Object_Information:
 Raster_Object_Type: Pixel
 Row_Count: 1
 Column_Count: 1
Spatial_Reference_Information:
 Horizontal_Coordinate_System_Definition:
 Planar:
 Grid_Coordinate_System:
 Grid_Coordinate_System_Name: Universal Transverse Mercator
 Universal_Transverse_Mercator:
 UTM_Zone_Number: 11
 Transverse_Mercator:
 Scale_Factor_at_Central_Meridian: 0.9996
 Longitude_of_Central_Meridian: -117.0
 Latitude_of_Projection_Origin: 0.0
 False_Easting: 500000
 False_Northing: 0.0
 Planar_Coordinate_Information:

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Planar_Coordinate_Encoding_Method: row and column
Coordinate_Representation:
 Abscissa_Resolution: 1
 Ordinate_Resolution: 1
 Planar_Distance_Units: meters
Geodetic_Model:
 Horizontal_Datum_Name: North American Datum of 1983
 Ellipsoid_Name: Geodetic Reference System 80 (GRS 80)
 Semi-major_Axis: 6378137
 Denominator_of_Flattening_Ratio: 298.257
Entity_and_Attribute_Information:
 Overview_Description:
 Entity_and_Attribute_Overview:
 32-bit pixels, 4 band color(RGBIR) values 0 - 255
 Entity_and_Attribute_Detail_Citation: None
Distribution_Information:
 Distributor:
 Contact_Information:
 Contact_Person_Primary:
 Contact_Person: Supervisor Customer Services Section
 Contact_Organization:
 USDA-FSA-APFO 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
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 of its use (or the inability to use it).
Standard_Order_Process:
 Digital_Form:
 Digital_Transfer_Information:
 Format_Name: GeoTIFF - Georeferenced Tagged Image File Format
 Format_Information_Content: Multispectral 4-band
 Digital_Transfer_Option:
 Offline_Option:
 Offline_Media: CD-ROM
 Recording_Format: ISO 9660 Mode 1 Level 2 Extensions
 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

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Fees:

Contact the Aerial Photography Field Office
for more information

Resource_Description:

m_4511601_ne_11_1_20130630_20130820.tif

Metadata_Reference_Information:

Metadata_Date: 20130823

Metadata_Contact:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization:

USDA-FSA-APFO 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

Metadata_Standard_Name:

Content Standard for Digital Geospatial Metadata

Metadata_Standard_Version: FGDC-STD-001-1998