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Metadata:

- [Identification Information](#)
- [Data Quality Information](#)
- [Spatial Data Organization Information](#)
- [Spatial Reference Information](#)
- [Distribution Information](#)
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Identification_Information:

Citation:

Citation_Information:

Originator: EarthData International, Inc.

Publication_Date: 20070201

Publication_Time: Unknown

Title:

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Edition: 1st Edition

Geospatial_Data_Presentation_Form: raster digital data

Publication_Information:

Publication_Place: Frederick, Maryland

Publisher: EarthData International, Inc.

Online_Linkage:

Description:

Abstract:

This metadata record describes the acquisition and production of natural color digital orthoimagery for the state of Mississippi. The digital orthoimagery was composed of 24 bit natural color digital orthos at a scale of 1 to 400 with a 2' ground sample distance (GSD) for the project area. The SID images were created using a 20:1 compression ratio.

This Mississippi Statewide orthophotography project was broken into 3 phases: Part A Acquisition, Part B

Acquisition, and Processing. Part A Acquisition occurred January through March, 2006. Part B Acquisition occurred January, 2007. The Processing was broken into 2 phases: Part A and Part B.

Part A aerotriangulation, digital elevation model, and digital orthophotography were completed by block. Part A consisted of 3 blocks. The following counties were processed within Part A and referenced to Mississippi State Plane East: Tishomingo, Alcorn, Tippah, Benton, Marshall, Prentiss, Union, Lafayette, Itawamba, Lee, Pontotoc, Monroe, Chickasaw, Calhoun, Lowndes, Clay, Webster, Oktibbeha, Choctaw, Noxubee, Winston, Attala, Kemper, Neshoba, Leake, Lauderdale, Newton, and Scott.

The following counties were processed within Part A and referenced to Mississippi State Plane West: DeSoto, Tate, Tunica, Panola, Quitman, Coahoma, Yalobusha, Tallahatchie, Sunflower, Bolivar, Grenada, Montgomery, Carroll, Leflore, Holmes, Humphreys, Washington, Madison, Yazoo, Sharkey, Issaquena, Rankin, Hinds, and Warren.

Part B aerotriangulation, digital elevation model, and digital orthophotography will follow the same processes as Part A; however, the final completion date of all processes is scheduled to be 7/30/07. The following counties will be processed within Part B and referenced to Mississippi State Plane East: Clarke, Jasper, Smith, Wayne, Jones, Covington, Green, Perry, Forrest, Lamar, George, Stone, Pearl River, Jackson, Harrison, and

Hancock.

The following counties will be processed within Part B and referenced to Mississippi State Plane West: Simpson, Copiah, Claiborne, Jefferson, Jefferson Davis, Lawrence, Lincoln, Franklin, Adams, Marion, Walthall, Pike, Amite, and Wilkinson.

The following contributed to this Mississippi Statewide orthophotography project:

EarthData International, Inc.

Mississippi Geographic Information, LLC

Mississippi Department Environmental Quality

NOAA Coastal Services Center

Mississippi DOT

Mississippi State University

Mississippi Coordinating Council for Remote Sensing and GIS

Purpose:

The acquisition and production of natural color digital orthoimagery covering the state of Mississippi will be packaged and delivered by county. The imagery may be used for cadastral (tax) or infrastructure mapping purposes.

Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Calendar_Date: 20070201

Currentness_Reference:

publication date

publication date

Status:

Progress: Complete

Maintenance_and_Update_Frequency: Unknown

Spatial_Domain:

Bounding_Coordinates:

West_Bounding_Coordinate: -89.109918

East_Bounding_Coordinate: -88.650311

North_Bounding_Coordinate: 33.568650

South_Bounding_Coordinate: 33.266035

Keywords:

Theme:

Theme_Keyword_Thesaurus: EarthData

Theme_Keyword: Digital Orthos

Theme_Keyword: Imagery

Theme_Keyword: Aerial photography

Theme_Keyword: Aerotriangulation

Theme_Keyword: ADS40

Theme_Keyword: DEM

Theme_Keyword: Digital Elevation Model

Theme_Keyword: orthoimagery

Theme_Keyword: Aerial Acquisition

Theme_Keyword: GSD

Theme_Keyword: Ground Sample Distance

Theme_Keyword: NED

Theme_Keyword: National Elevation Data

Place:

Place_Keyword_Thesaurus: Geographic Names Information System

Place_Keyword: Mississippi

Place_Keyword: USA

Access_Constraints: None

Use_Constraints:

None

None

Point_of_Contact:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization: EarthData International, Inc.

Contact_Person: Becky Jordan

Contact_Position: Project Manager

Contact_Address:

Address_Type: mailing and physical address

Address:

7320 Executive Way

7320 Executive Way

City: Frederick

State_or_Province: Maryland

Postal_Code: 21704

Country: USA

Contact_Voice_Telephone: 301-948-8550 x121

Contact_Facsimile_Telephone: 301-963-2064

Contact_Electronic_Mail_Address: bjordan@earthdata.com

Hours_of_Service: Monday through Friday, 8:30am to 5:00pm

Native_Data_Set_Environment:

Microsoft Windows XP Version 5.1 (Build 2600) Service Pack 2; ESRI

ArcCatalog 9.2.2.1350

Data_Quality_Information:

Attribute_Accuracy:

Attribute_Accuracy_Report:

This data has been produced to be fully compliant with the National Standard for Spatial Data Accuracy (NSSDA) at a scale of 1 to 400.

Logical_Consistency_Report:

Compliance with the accuracy standard was ensured by the collection of photo identifiable GPS ground control after the acquisition of aerial imagery. The following checks were performed.

1. The ground control and airborne GPS data stream were validated through a fully analytical bundle aerotriangulation adjustment. The RMSE is less than 1, 10,000th of the flying height.
2. The DEM data was checked against the project control. The technician visited and confirmed the accuracy of the points during initial processing.
3. Digital orthophotography was validated through an inspection of edge matching and visual inspection for image quality.

Completeness_Report:

The following methods are used to assure imagery accuracy.

1. Use of IMU (inertial measurement unit) and ground control network utilizing GPS techniques.
2. Use of airborne GPS (global positioning system) in conjunction with the acquisition of imagery. The following software is used for validation of the imagery and surface modeling.

1. Aerotriangulation - ISTAR
2. DEM data - ISTAR
3. Digital Orthophotography - ISTAR, OrthoPro, and Photoshop.
4. Bentley - MicroStation
5. ISTAR
6. ESRI - ArcView, ArcMap
7. EarthData proprietary software
8. Adobe - Photoshop

Positional Accuracy:

Horizontal Positional Accuracy:

Horizontal Positional Accuracy Report:

This data has been produced to be fully compliant with the National Standard for Spatial Data Accuracy (NSSDA) at a scale of 1 to 400 with a 2' GSD.

Lineage:

Source Information:

Source Citation:

Citation Information:

Originator: EarthData International, Inc. (Aviation Division)

Publication Date: 20060304

Title:

Aerial Imagery Acquisition

Edition: 1

Geospatial Data Presentation Form: remote-sensing image

Type of Source Media: firewire

Source Time Period of Content:

Time Period Information:

Range_of_Dates/Times:

Beginning_Date: 20060103

Ending_Date: 20060304

Source_Currentness_Reference:

ground condition

Source_Citation_Abbreviation:

Aerial Acquisition

Source_Contribution:

The aerial imagery acquisition for the Mississippi Statewide project (Part A) was flown to support the creation of digital orthophotography with a 2' GSD. The imagery was acquired in 31 lifts consisting of 285 lines running east, west. The imagery was flown at 18,900 feet above mean terrain. Imagery was flown with a 30% overlap between flight lines. All imagery was collected using the Leica ADS40 digital pushbroom sensor.

Source_Information:

Source_Citation:

Citation_Information:

Originator: Waggoner Engineering, Inc.

Publication_Date: 20060607

Publication_Time: Unknown

Title:

Mississippi Statewide - Photo Control

Edition: 1

Geospatial_Data_Presentation_Form: model

Source_Scale_Denominator: 400

Type_of_Source_Media: electronic mail system

Source_Time_Period_of_Content:

Time_Period_Information:

Multiple_Dates/Times:

Single_Date/Time:

Calendar_Date: 20060413

Single_Date/Time:

Calendar_Date: 20060531

Source_Currentness_Reference:

Ground Condition

Source_Citation_Abbreviation:

Ground Control

Source_Contribution:

Waggoner Engineering, Inc., under contract to EarthData International, Inc. successfully established ground control for the Mississippi Statewide project (Part A). A total of 43 ground control points in Mississippi were acquired using GPS for both vertical and horizontal coordinate values. All 43 points utilized photo identifiable points.

Source_Information:

Source_Citation:

Citation_Information:

Originator: U.S. Geological Survey (USGS), EROS Data Center

Publication_Date: 1999

Title:

National Elevation Dataset

Type_of_Source_Media: online

Source_Time_Period_of_Content:

Time_Period_Information:

Single_Date/Time:

Calendar_Date: 1999

Source_Currentness_Reference:

Publication Date

Source_Citation_Abbreviation:

USGS NED

Source_Contribution:

The U.S. Geological Survey has developed a National Elevation Dataset (NED). The NED is a seamless mosaic of best-available elevation data. The 7.5-minute elevation data for the conterminous United States are the primary initial source data. In addition to the availability of complete 7.5-minute data, efficient processing methods were developed to filter production artifacts in the existing data, convert to the NAD83 datum, edge-match, and fill slivers of missing data at quadrangle seams. One of the effects of the NED processing steps is a much-improved

base of elevation data for calculating slope and hydrologic derivatives. The specifications for the NED Geographic coordinate system Horizontal datum of NAD83, Vertical datum of NAVD88, units of meters.

Process_Step:

Process_Description:

EarthData utilized an ISTAR workflow for processing the aerotriangulation (AT) for the orthoimagery covering the Mississippi Statewide project area (Part A). The airborne GPS data was processed and integrated with the inertial measurement unit (IMU). The resulting imagery and control were imported into the ISTAR system for use in the aerotriangulation. The ADS40 imagery was downloaded onto the EarthData server and brought over to the UNIX based ISTAR system. The ground control was used in conjunction with the processed airborne global positioning system (ABGPS) results for the AT. A total of 6 surveyed ground control points were not used (HV_B04 - This point was used only for elevation due to a possible survey error. HV_C01 - Point could not be measured because the stop bar blended into the dirt. HV_C02 - Not used because there were trees covering the point. HV_C04 - Not used because there were trees covering the point. HV_C05 - The newly poured concrete walkway surveyed was not there at the time of the flight. HV_D03 - Point could not be accurately measured due to building lean and the shadows from the building.). A total of 13 surveyed ground control points from previous 6" GSD projects were used (Tippah County, MS - 6 points;

Lauderdale County, MS - 2 points; Clay County, MS - 5 points). The ground control points were read in all available imagery and tie points between flight lines were selected. A fully analytical bundle adjustment was run. The properly formatted ISTAR results were used for subsequent processing. All final results were output into an AT report.

The AT for the Mississippi Statewide project (Part A) was completed by block. Part A consisted of 3 blocks. Block 1 AT was completed on 10/5/06. Block 2 AT was completed on 10/6/06. Block 3 AT was completed on 10/16/06.

Source_Used_Citation_Abbreviation:

Aerotriangulation

Process_Date: 20061016

Source_Produced_Citation_Abbreviation:

AT

Process_Contact:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization: EarthData International, Inc.

Contact_Person: Becky Jordan

Contact_Position: Project Manager

Contact_Address:

Address_Type: mailing and physical address

Address:

7320 Executive Way

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City: Frederick

State_or_Province: MD

Postal_Code: 21704

Country: USA

Contact_Voice_Telephone: 301-948-8550 x121

Contact_Facsimile_Telephone: 301-963-2064

Contact_Electronic_Mail_Address: bjordan@earthdata.com

Hours_of_Service: Monday through Friday, 8:30am to 5:00pm

Process_Step:

Process_Description:

The NED was downloaded from the USGS website.

Using the DEM data set, the technician verified that there were no voids, and that the data covered the project limits.

The technician then selected a series of areas from the dataset and inspected them where adjacent flight lines met. Ground control point checks were performed on the NED to ensure the accuracy specifications were met.

This DEM surface is used in the rectification of the orthoimagery.

The DEM for the Mississippi Statewide project (Part A) was completed by block. Part A consisted of 3 blocks.

Block 1 was completed on 11/16/06. Block 2 was completed on 11/7/06. Block 3 was completed on

12/13/06.

Source_Used_Citation_Abbreviation:

Digital Elevation Model

Process_Date: 20061213

Source_Produced_Citation_Abbreviation:

DEM

Process_Contact:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization: EarthData International, Inc.

Contact_Person: Becky Jordan

Contact_Position: Project Manager

Contact_Address:

Address_Type: mailing and physical address

Address:

7320 Executive Way

7320 Executive Way

City: Frederick

State_or_Province: MD

Postal_Code: 21704

Country: USA

Contact_Voice_Telephone: 301-948-8550 x121

Contact_Facsimile_Telephone: 301-963-2064

Contact_Electronic_Mail_Address: bjordan@earthdata.com

Hours_of_Service: Monday through Friday, 8:30am to 5:00pm

Process_Step:

Process_Description:

The digital orthophotography is comprised of a 24 bit, natural color, 2' GSD ground orthos for the Mississippi Statewide project (Part A). The ISTAR process was used in the generation of the orthoimagery covering the Mississippi Statewide project (Part A). The initial radiometric adjustments were performed on the imagery for each flight line attempting to reach the best possible histogram. The rectification process was then run using the DEM surface and the radiometrically balanced imagery on each flight line. The quicklook (reduced resolution rectification) of each flight line exported out of ISTAR. A second set of radiometric adjustments were made using EarthData proprietary tools. The radiometrically balanced imagery was then re-imported into the ISTAR system and the histogram from the quicklook was applied to the full resolution imagery. Mosaic lines were placed, joining the ADS40 imagery strips. An initial QA/QC was performed by the technician to ensure that the mosaic lines were appropriately placed and that there was appropriate imagery coverage. The final imagery data set is removed from the ISTAR environment in a process called "packaging" where the individual tiles are created. It is during packaging that final datum and projection are defined (Mississippi State Plane

East, NAD83/HARN, NAVD88, US Survey Feet). The created tiles are reviewed again for anomalies and interactive radiometric adjustment applied where needed. QA/QC was performed looking for anomalies, smears and other indications of problems within the digital orthophoto creation process, interactive radiometric adjustment applied where needed. Two additional radiometric adjustments are applied to the completed orthos in Adobe Photoshop. The first is a sharpening mask filter; this filter is used to help increase sharpness of a digital image. The basis for this filter is to locate pixels that differ in value from surrounding pixels by the threshold specified. It then increases the pixels' contrast by the value identified. For neighboring pixels specified by the threshold, the lighter pixels get even lighter and the darker pixels get even darker based on the specified amount. The changes made maintained the integrity of the original histogram curve. The final digital ortho product was GeoTIFF with TFW and a seamless mosaic for each county. All data was delivered on firewire.

The digital orthophotos for the Mississippi Statewide project (Part A) was completed by block. Part A consisted of 3 blocks. Block 1 was completed on 1/30/07. Block 2 was completed on 12/20/06. Block 3 is scheduled to be completed by 2/27/07.

Source_Used_Citation_Abbreviation:

Digital Orthophotos

Process_Date: Not complete

Source_Produced_Citation_Abbreviation:

Digital Orthos

Process_Contact:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization: EarthData International, Inc.

Contact_Person: Becky Jordan

Contact_Position: Project Manager

Contact_Address:

Address_Type: mailing and physical address

Address:

7320 Executive Way

7320 Executive Way

City: Frederick

State_or_Province: MD

Postal_Code: 21704

Country: USA

Contact_Voice_Telephone: 301-948-8550 x121

Contact_Facsimile_Telephone: 301-963-2064

Contact_Electronic_Mail_Address: bjordan@earthdata.com

Hours_of_Service: Monday through Friday, 8:30am to 5:00pm

Process_Step:

Process_Description:

Metadata imported.

Metadata imported.

Source_Used_Citation_Abbreviation:

Z:\MDEMTestData\orthoDownload\oktibbehat.xml

Cloud_Cover: 0

Spatial_Data_Organization_Information:

Direct_Spatial_Reference_Method: Raster

Raster_Object_Information:

Raster_Object_Type: Pixel

Row_Count: 55000

Column_Count: 70000

Vertical_Count: 1

Spatial_Reference_Information:

Horizontal_Coordinate_System_Definition:

Planar:

Map_Projection:

Map_Projection_Name: Transverse Mercator
Transverse_Mercator:
Scale_Factor_at_Central_Meridian: 0.999950
Longitude_of_Central_Meridian: -88.833333
Latitude_of_Projection_Origin: 29.500000
False_Easting: 984250.000000
False_Northing: 0.000000
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: row and column
Coordinate_Representation:
Abscissa_Resolution: 2.000000
Ordinate_Resolution: 2.000000
Planar_Distance_Units: survey feet
Geodetic_Model:
Horizontal_Datum_Name: D_North_American_1983_HARN
Ellipsoid_Name: Geodetic Reference System 80
Semi-major_Axis: 6378137.000000
Denominator_of_Flattening_Ratio: 298.257222
Vertical_Coordinate_System_Definition:
Altitude_System_Definition:
Altitude_Datum_Name: North American Vertical Datum of 1988
Altitude_Resolution: 2.0
Altitude_Distance_Units: Feet
Altitude_Encoding_Method: Implicit coordinate

Distribution_Information:

Distributor:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: Mississippi Geographic Information, LLC
Contact_Person: Bill McDonald
Contact_Position: Project Manager
Contact_Address:
Address_Type: mailing and physical address
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143-A LeFleurs Square
City: Jackson
State_or_Province: MS
Postal_Code: 39211
Country: USA

Contact_Voice_Telephone: 601-355-9526
Contact_Facsimile_Telephone: 601-352-3945
Contact_Electronic_Mail_Address: Bill.McDonald@waggonereng.com
Resource_Description: Downloadable Data
Distribution_Liability:
None
None

Metadata_Reference_Information:

Metadata_Date: 20070926
Metadata_Review_Date: 20070201
Metadata_Contact:
Contact_Information:
Contact_Organization_Primary:
Contact_Organization: EarthData International, Inc.
Contact_Person: Becky Jordan
Contact_Position: Project Manager
Contact_Address:
Address_Type: mailing and physical address
Address:
7320 Executive Way
7320 Executive Way
City: Frederick
State_or_Province: MD
Postal_Code: 21704
Country: USA
Contact_Voice_Telephone: 301-948-8550 x121
Contact_Facsimile_Telephone: 301-963-2064
Contact_Electronic_Mail_Address: bjordan@earthdata.com
Hours_of_Service: Monday through Friday, 8:30am to 5:00pm
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial
Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Use_Constraints:
None
Metadata_Extensions:
Online_Linkage: <http://www.esri.com/metadata/esriprof80.html>
Profile_Name: ESRI Metadata Profile