

TOP – 2008/2009 0.5 Meter DOQQ Metadata
Dataset Level

Citation Information:

Publisher: 2008-2009 Texas Orthoimagery Program
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Originator: Texas Strategic Mapping Program (StratMap), TNRIS

Abstract:

The 0.5-meter 2008/2009 digital orthophoto quarter quads (DOQQs) were collected through a partnership between the Texas Orthoimagery Program (TOP) and the USDA National Agriculture Imagery Program (NAIP). The 2008-2009 TOP consists of a consortium of federal and state agencies including the USDA Natural Resources Conservation Service (NRCS), the United States Geological Survey (USGS), the Commission on State Emergency Communications (CSEC), the Texas Commission on Environmental Quality (TCEQ) Air Division and Facilities/Water Supply Division, the Texas General Land Office (GLO) through the Coastal Impact Assistance Program, and the Texas Water Development Board (TWDB). The project is managed by the Texas Strategic Mapping Program (StratMap), a division of the Texas Natural Resources Information System (TNRIS) and the TWDB.

Under NAIP, 213 Texas counties were acquired in 2008 during leaf-on conditions. Under TOP, the remaining 41 East Texas counties were collected during leaf-off conditions in January 2009 to complete statewide coverage. The January 2009 acquisition also included 18 coastal counties that were previously collected during the leaf-on 2008 acquisition. Through TOP, both 2008 and 2009 acquisitions were made available at 0.5-meter ground sample distance (GSD) as two 3-band datasets (natural color and color infrared). The 0.5-meter orthoimagery are rectified to within 3 – 5 meters or better of true ground, referencing absolute ground control collected for this project as well as ground control assembled for the state archive. The tiling format of the imagery is based on a 3.75' x 3.75' quarter quadrangle with a 150 meter buffer on all four sides. The quarter quads are projected to the UTM coordinate system, NAD83 datum. These image data may contain as much as 10% cloud cover per tile.

Image products at 1m GSD were processed from the same 2008 and 2009 acquisitions and are available through TNRIS.

Purpose:

Orthoimagery datasets are valuable mapping assets for the state of Texas, benefitting natural resource, energy, environmental, emergency management, land use planning, economic development, and policy interests of the State. These image data are often used as the base reference layer for development or enhancement of other vector datasets including statewide transportation, hydrography, and soils layers available through StratMap.

Access Constraints:

None.

Use Constraints:

None.

Time Period of Content:

Acquisitions are April – October 2008 (leaf-on) and January 2009 (leaf-off). Acquisition date is in the filename, DDMMYYYY.

Filename Convention:

TNRISLetterDegreeBlock_7.5'Quad#_Quarter-Quad#_color combo_DDMMYYYY.format

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Status:

Progress:

Complete

Update Frequency:

Irregular. Dependent upon partnerships, funding, and necessity.

Data Quality:

Logical Consistency Report:

All 0.5-meter image data should meet national map accuracy standards for 1:12,000 or better scale products.

A quality assurance report conducted by the TWDB/TNRIS is forthcoming. Imagery may be replaced to address defects found in a small number of products through quality assurance processes. Imagery containing defects that require the acquisition of new imagery, such as excessive cloud cover, specular reflectance, etc., will not be replaced within a TOP project year.

Cloud Cover:

All 0.5-meter image data should contain less than 10% cloud cover.

Horizontal Accuracy:

The 0.5-meter orthoimagery are rectified to within 3 – 5 meters or better of true ground, referencing absolute ground control collected for this project.

Coordinate System:

Projected Coordinate System: NAD_1983_UTM_Zone_13N (or 14N) (or 15N)

Geographic Coordinate System: GCS_North_American_1983

Datum: D_North_American_1983

Spheroid: GRS_1980, 6378137,298.257222101

Prime Meridian: Greenwich, 0

Unit: Degree, 0.017453292519943295

Projection: Transverse Mercator

Parameter: False Easting, 500000

Parameter: False Northing, 0

Parameter: Central Meridian, 105 Zone13N (or -99.0 Zone14N) (or -93.0 Zone15N)

Parameter: Scale Factor, 0.9996

Parameter: Latitude of Origin, 0

Unit: Meter, 1

Spatial Data Organization Information:

Direct Spatial Reference Method: Raster

Raster Object Type: Pixel

Keywords:

Theme: Digital Orthophoto Quarter Quadrangle, Orthorectification, GeoTIFF, JPEG2000, TOP, NAIP, Aerial

Thesaurus: None

Place: Texas

Thesaurus: None

Process Steps:

1. Aerial imagery were acquired with the Leica ADS40 SH52 digital camera sensors, 2nd generation sensor heads. The raw data were captured at 0.75m x approx. 0.35m ground sample distance (GSD). The data were downloaded from the sensor into 12 bit TIFF format and resampled to square 0.5m pixels using Leica GPro software. The resampling method was bicubic spline interpolation.

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2. The raw TIFF imagery is then geo-referenced and re-projected using GPS/INS 200Hz exterior orientation information (x/y/z/o/p/k). Technicians precisely measure ground control and tie points in 3 bands or looks (Back, Nadir, and Forward) for each line. The resulting point data, ground control, and orientation data are used to perform a full bundle adjustment. Any geometric errors are removed, and weak areas are manually supplemented to ensure good point coverage. Once the point data are cleaned and point coverage is acceptable, photo-identifiable GPS-surveyed ground control points are introduced in the corners and center of the block being adjusted. The output from this bundle adjustment process are revised exterior orientation (EO) data for the sensor. The result models and compensates for any GPS/INS, datum, and sensor calibration errors. Using the revised EO data, orthorectified image strips are created using the USGS NED DEMs, 10m where available and 30m elsewhere. The orthorectified strips are overlaid with each other and with the ground control to check accuracy.
3. Once the accuracy of the orthorectified image strips is validated, the strips are processed with a North West Geomatics proprietary dodging package that compensates for the bi-directional reflectance function that is caused by the sun's position relative to the image area. The image data are then imported into Inpho's OrthoVista 4.0 which is used for the final radiometric balance, mosaic, and DOQQ tile creation. The final DOQQ tiles contain a 150m minimum buffer around all four sides. The final DOQQ tiles are edge inspected to the existing MDOQQ (Mosaic DOQQ) sheets for accuracy validation.
4. During the previous steps, the data were rescaled to 8bit and split into two different color composites, natural color and color infrared.
5. The 0.5m 3-band GeoTIFFs were converted to JPEG2000 using GeoExpress, 8:1 compression.

Data Formats:

GeoTIFF and JPEG2000 (compressed at 8:1)

Entity and Attribute Overview:

8bit pixels per band, brightness values 0 – 255

Band Assignments:

3-Band Natural Color (nc) Image:

Band 1 = Red Band
Band 2 = Green Band
Band 3 = Blue Band

3-Band Color Infrared (cir) Image:

Band 1 = Near Infrared Band
Band 2 = Red Band
Band 3 = Green Band

Standard Order Process:

The 2008/2009 0.5m DOQQs in JPEG2000 format will be available for download through the [TNRIS Data Delivery System](#). The JPEG2000s and GeoTIFFs are available by request using the [TNRIS Digital Data Order Form](#).

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.

Optimal Viewing Scales:

Data Product	Min Scale	Optimal Scale	Max Scale
0.5m Quarter Quad TIFF	1:1,000	1:1,890	1:30,000 (full Quarter Quad extent)
0.5m Quarter Quad JPEG2000	1: 1,200	1:1,890	1:30,000 (full Quarter Quad extent)

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Metadata Date:

08-13-2009

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