

Land Information Ontario

Technical Documentation

Digital Raster Acquisition Project East – 2014 (DRAPE 2014)

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Digital Raster Acquisition Project East – 2014 (DRAPE 2014)

Citation Information	
Originator	Fugro Geospatial
Publication Date	20150200
Title	Digital Raster Acquisition Project East - 2014 (DRAPE2014)
Geospatial Data Presentation Form	Remote-sensing image
Publication Place	Ontario Ministry of Natural Resources and Forestry (OMNRF)
Publisher	Ontario Ministry of Natural Resources and Forestry (OMNRF)

Technical Information	
Attribute Accuracy Report	<p>GPS phase data was post processed with continuous kinematic survey techniques using "On the Fly" (OTF) integer ambiguity resolution. The GPS data was processed with forward and reverse processing algorithms. The results from each process, using the data collected at the airport, were combined to yield a single fixed integer phase differential solution of the aircraft trajectory. The differences between the forward to reverse solution within the project area were within project specifications (<10cm) in both the horizontal and vertical components, indicating a valid and accurate solution. An IMU was used to record precise changes in position and orientation of the ADS100 Digital Camera System. All IMU data was processed post flight with a filter to integrate inertial measurements and precise phase differential GPS positions. The resulting solution contains geodetic position, omega, phi, kappa, and time for digital image processing.</p>
Logical Consistency Report	Tiling is based on 1,000m x 1,000m tiles. All DRAPE 2014 deliverables are in UTM Z18.
Completeness Report	Complete
Horizontal Positional Accuracy Report	<p>2.4.3 Accuracy</p> <p>2.4.3.1 The image Deliverables (orthorectified imagery, stereo models) must have a horizontal accuracy of ± 0.5 metre or better, based on CMAS statistics, with a confidence level of 90%.</p> <p>2.4.3.2 Elevation products (DEM, stereo models, mass points and breaklines etc.) must have a horizontal and vertical accuracy of sufficient quality to meet or exceed the requirements to obtain the accuracy, set out in section 2.4.3.1 for the orthorectification of the imagery Deliverables.</p>

	<p>2.4.3.3 Ground control points that are used to georeference the imagery must be collected with an accuracy level suitable to obtain the required accuracy for the orthorectified image products, as stated in 2.4.3.1.</p> <p>2.4.3.4 Any Deliverable found to be outside the required accuracy set out in section 2.4.3.1 will be rejected and will result in more extensive testing and review by the Ministry. Any corrections or recollection of ground control points will be completed by the Supplier, at its own expense.</p>
Vertical Positional Accuracy Report	The source data vertical accuracy supports horizontal accuracy requirements.
Source Scale Denominator	N/A (Digital Push Broom Sensor)
Type of Source Media	Digital Data
Beginning Date	2014/04/28
Ending Date	2014/06/07
Source Currentness Reference	Publication Date
Source Citation Abbreviation	Orthorectified Imagery
Source Contribution	Leica ADS100 Sensor
Process Description	<p>The Leica GeoSystems XPro software was used for downloading and preparing imagery collected with the ADS100 Airborne Digital Sensor for softcopy photogrammetric use. The raw image was downloaded in the field with XPro to a portable workstation. This enabled a quick look at image quality and coverage. Using the Leica Geosystems IPAS software package the GPS data was differentially processed against a base station. After the differential GPS solution was checked and verified the Leica Geosystems IPAS program was used to compute an integrated GPS/IMU navigation solution at one-second intervals. Using the GPS/IMU trajectory computed by the Leica Geosystems IPAS software and the camera calibration, XPro computed a full x,y,z, omega, phi, kappa exterior orientation of each scan line. Using the orientation data file produced the L0 imagery was resampled. The resampling removes most aircraft motion and provides epipolar geometry imagery for stereo viewing, automated aerotriangulation and automated DEM extraction. The Level 1 epipolar- resampled and georeferenced imagery usually will provide a pixels true ground location to within a few pixels without any additional</p>

	<p>processing. To improve accuracy, a fully automatic aerotriangulation process was performed to minimize the residual errors in the GPS/IMU derived exterior orientations. The aerotriangulation also allowed the introduction of ground control and checkpoints to ensure the accuracy specifications were achieved. Automated aerotriangulation of ADS100 imagery was performed with the Xpro. A digital elevation model (DEM) was required for orthophoto production. DEM was autocorrelated and used to generate the ortho-rectification imagery. The orthorectified imagery was created utilizing LeicaGeosystem XPro software. The orthos were mosaicked together using proprietary image database and mosaicking software. The database was edited for seamlines, and other artifacts. The imagery was clipped out of the database into the sheet layout generated based on client use requirements. In the clipping stage, the coordinate system and georeferencing was embedded into the header of the TIFF file. The stereo and orthorectified imagery was QC'ed and delivered on external hard drives.</p>
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Hours of Service	8am-5pm Mountain Time
Direct Spatial Reference Method	Raster
Raster Object Type	Pixel
Row Count	5000
Column Count	5000
Vertical Count	4
Grid Coordinate System Name	Universal Transverse Mercator
UTM Zone	18 (long -75)

Number	
Scale Factor at Central Meridian	0.9996
Longitude of Central Meridian	-075.000000
Latitude of Projection Origin	+00.000000
False Easting	500000
False Northing	0
Planar Coordinate Encoding Method	row and column
Abscissa Resolution	0.2
Ordinate Resolution	0.2
Planar Distance Units	Meters
Horizontal Datum Name	UTM18 NAD83CSRS meters
Ellipsoid Name	Geodetic Reference System 80
Semi-major Axis	6378137.0
Denominator of Flattening Ratio	298.257222101
Altitude Datum Name	CGVD28(1978) CGG2000 HT2 meters
Altitude Resolution	0.001
Altitude Distance Units	Meters
Altitude Encoding Method	Explicit elevation coordinate included with horizontal coordinates
Entity and Attribute Overview	20 cm GSD pixel orthorectified imagery
Entity and Attribute Detail Citation	Not Applicable

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