USGS science for a changing world

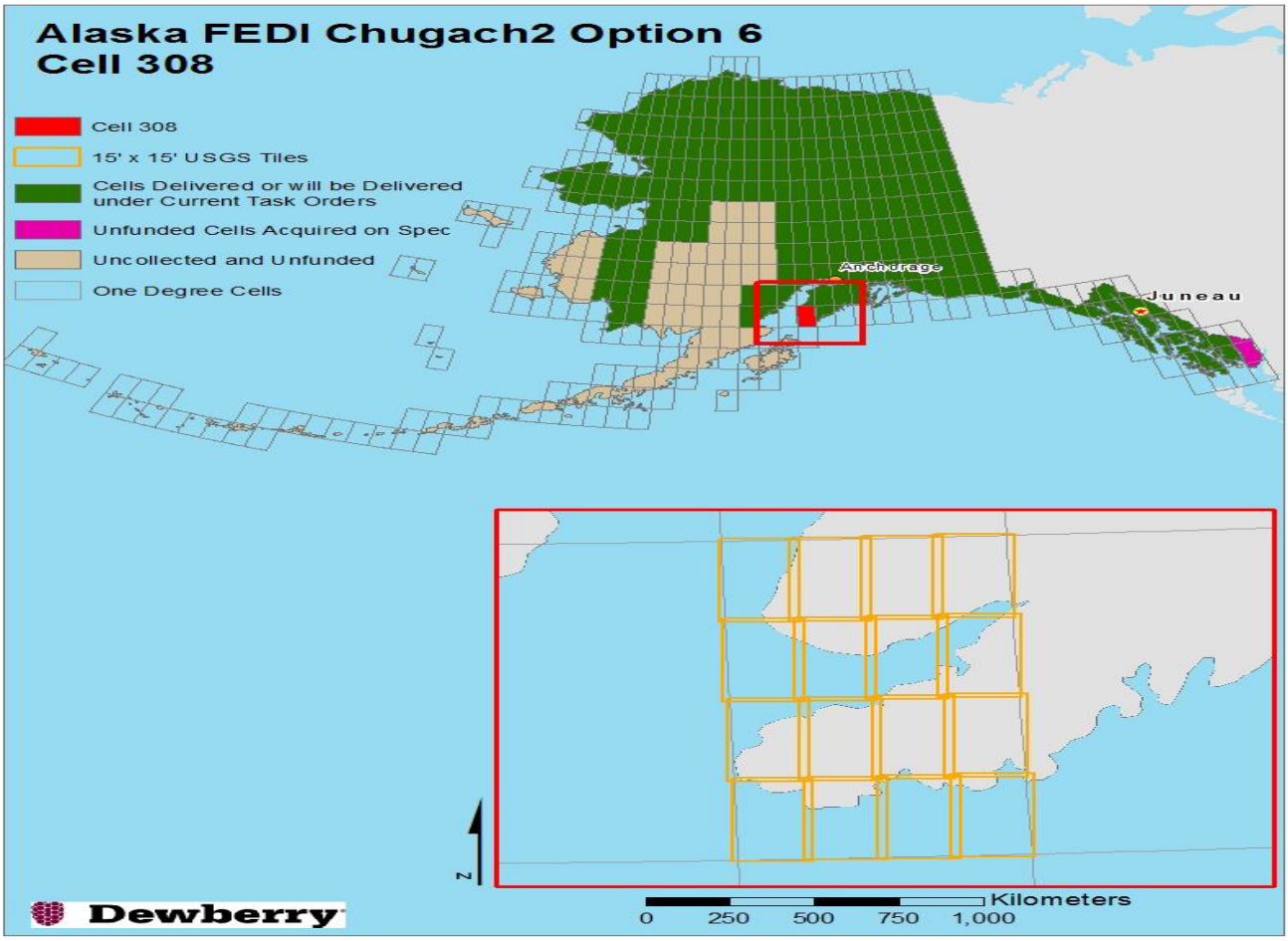
IFSAR Quality Assessment Report

AK Chugach2 IFSAR C308 2016

NGTOC

2017-05-19

S Ruhl



Project Information

Project: AK Chugach2 IFSAR C308 2016

Contractor: Dewberry *Project Type:* GPSC

Project Points of Contact:

Name:	Type:	Phone:	Email:
Pat Emmett	CPT	573-308-3587	pemmett@usgs.gov

REPORT QUALIFICATION SUMMARY:

Task Order Overall:
meets requirements

Metadata:
1 of 1 Reviews Accepted
0 Reviews Not Accepted

Vertical Accuracy:
1 of 1 Reviews Accepted
0 Reviews Not Accepted

Vertical Offset:
1 of 1 Reviews Accepted
0 Reviews Not Accepted

Void Fill:
1 of 1 Reviews Accepted
0 Reviews Not Accepted

Breakline:
1 of 1 Reviews Accepted
0 Reviews Not Accepted

DEM(s):
1 of 1 Reviews Accepted
0 Reviews Not Accepted

DSM(s):
1 of 1 Reviews Accepted
0 Reviews Not Accepted

ORI(s):
1 of 1 Reviews Accepted
0 Reviews Not Accepted

NED Review:
1 of 1 DEM tile reviews recommended for NED 1/3rd
0 of 1 DEM tile reviews recommended for NED 1/9th

Project Subdivision: Cells

List Cells:
- *283, 284, 312*

Dates Collected Range:
Collection Start: 8/29/2012
Collection End: 9/12/2014

Sensor Type:
GeoSAR

Project Aliases:

Licensing:
public domain

Project Description:

This project is for the IfSAR acquisition, processing, and delivery of a mid-accuracy DEM with 20-foot contour accurate bare earth data for the AOI's depicted in Attachment A, potentially comprising with the options, approximately a total of 42,214 square km (16,299 sq mi) of *landmass.* Additionally, the USGS would like Dewberry to include in their technical and cost proposal, the ellipsoid processing (to provide ellipsoid heights) of the data processed in this task. For all areas, the contractor shall collect and provide

a mid-accuracy Digital Elevation Model with a 20’ contour accuracy and an Orthorectified RADAR Image (ORI) or similar product at a pixel resolution of 5.0m or better. Reflective Digital Surface Model (DSM) and a bald-earth Digital Terrain Model (DTM) DEM data with regular 5-meter post spacing shall also be provided for all areas. Additionally, HRTe3 data format for the entire area will be provided. FGDC-compliant metadata shall be provided for each data file and an ISO 9001 data-quality certification report shall be provided for each 15-minute tile.

Applicable Specification: AK Mid Accuracy

Review Information

Reviewer: S Ruhl

Date Delivered: 5/12/2017

3rd Party QA Performed: ☐

Date Assigned: 5/15/2017

Action To Contractor Date:	*Issue Description:*	*Return Date:*
	All DSM & DTM NODATA values are set to -32767 XML Metadata Error: The required vertical accuracy, actual tested vertical accuracy and number of points used by the contractor are required to be reported in the <vertacc> section of the DTM xml. The .xml does not match the cell 308 LiDAR Report. **DSM observation** The DSM has been bare earthed is not a true 1st return surface. The DSM should have been processed as a first return surface taking in all heights including buildings, tree canopy, rock formations and other manmade and natural features. This condition has also been noticed in all past projects and the concern has previously been noted.	

Review Complete:
5/19/2017

Dates Project Worked:

Start:	5/17/2017
End:	5/19/2017

Project Materials Received

METADATA

Deliverables	Delivered	XML Metadata	Required	Format	Quantity	Additional Details
Collection Report:	☑		☐	PDF	1	
Survey Report:	☑		☐	PDF	1	
Processing Report:	☑		☐	PDF	1	
QA/QC Report:	☑		☐	Select...	1	
Project Level XML Metadata:	☐		☐	XML		
Project Extent:	☑	☐	☐	.shp	1	
Tile Scheme:	☑	☐	☐	.shp	1	
Checkpoints:	☑	☐	☐	.shp	1	
Void Mask:	☑	☐	☐	.shp	16	
Slope Mask:	☑	☐	☐	.shp	16	
Fill Source Mask:	☑	☐	☐	.shp	16	

Additional Comments:	data is on 2 hard drives

NED

Deliverables	Delivered	XML Metadata	Required	Format	Quantity	Additional Details
DEM Tiles:	☑	☑	☑	TIF	16	
Breaklines:	☑	☐	☑	.shp	16	

Additional Comments:	

OTHER

Deliverables	Delivered	XML Metadata	Required	Format	Quantity	Additional Details
DSM(s):	☑	☑	☑	TIF	16	
ORI(s):	☑	☑	☑	TIF	16	
Flightline (SBETs):	☐	☐	☐	Select...	0	

Additional Comments:	xml metadata not required for breakline, checkpoint or void fill .shp files

Geographic Information

Area Extent: 3407 Sq. KM

Tile Size: 1 x 1 Degrees

DEM/DTM Grid Spacing: 5 Meters

Coordinate Reference System:

NAD83, GRS80

Projection: Alaska Albers

Horizontal Datum: NAD83

◉ Meters ○ U.S. Feet ○ Int'l Feet

Vertical Datum: NAVD88

◉ Meters ○ U.S. Feet ○ Int'l Feet

THIS PROJECTION COORDINATE REFERENCE SYSTEM IS CONSISTENT ACROSS THE FOLLOWING DELIVERABLES:

- ☑ Project Extent
- ☑ Project Tile Scheme
- ☑ Checkpoints
- ☑ Void Mask
- ☑ Slope Mask
- ☑ Fill Source Mask
- ☑ Breakline(s)
- ☑ DEM(s)
- ☑ DEM XML Metadata
- ☑ DSM(s)
- ☑ DSM XML Metadata
- ☑ ORI(s)
- ☑ ORI XML Metadata

Additional Comments:

Project Review

Cell 308

Metadata Review

cell 308

Provided metadata files have been parsed using 'mp' metadata parser. Any errors generated by the parser are documented below for reference and/or corrective action.

The DEM XML Metadata parsed without errors.

Check if 'Best Use' metadata for NED: ☑ *Project Level* ○ *Tile Level* ◉

The DSM XML Metadata parsed without errors.

Check if 'Best Use' metadata for NED: ☐ *Project Level* ○ *Tile Level* ◉

The ORI XML Metadata parsed without errors.

Check if 'Best Use' metadata for NED: ☐ *Project Level* ○ *Tile Level* ◉

Based on this review, the USGS accepts the xml metadata provided.

Additional Comments:

End of cell 308 Metadata Review

Vertical Accuracy Review

cell 308

Required Vertical Accuracy

◉ *Yes* ○ *No*

REQUIRED PRIMARY VERTICAL ACCURACY

Primary Vertical Accuracy Type:	Slope 0-10 degree
Confidence Interval Required:	95 th % CI
Required Unit:	Meters
Required # of checkpoints:	6
Required RMSEz:	1.85
*Required Vertical Accuracy (RMSEz * .% CI)*	3.63
Additional Required Vertical Accuracy Information:	

Reported Vertical Accuracy

◉ *Yes* ○ *No*

REPORTED PRIMARY VERTICAL ACCURACY

Primary Vertical Accuracy Type:	Slope 0-10 degree
Confidence Interval Reported:	95 th % CI
Reported Unit:	Meters
Reported # of checkpoints:	7
Reported RMSEz:	0.60
*Reported Vertical Accuracy (RMSEz * .% CI)*	1.18
Additional Reported Vertical Accuracy Information:	From its initial technical proposal, FEDI indicated that it would make a best effort to meet specifications in areas of slope greater than 10 degrees, but can only commit to reach vertical accuracy specifications for un-obstructed areas with slopes less than 10 degrees where standard GCP layout can be established. For this reason Dewberry computed accuracy statistics separately for the mandatory slope category of 0 to 10 degrees. Table 3 outlines the calculated RMSEz, vertical accuracy, and associated statistics for checkpoints located within the 0°-10° slope category. These checkpoints pass vertical accuracy testing. No checkpoints in the FEDI Chugach2 Base Order cells are located in slope categories other than 0°-10°.

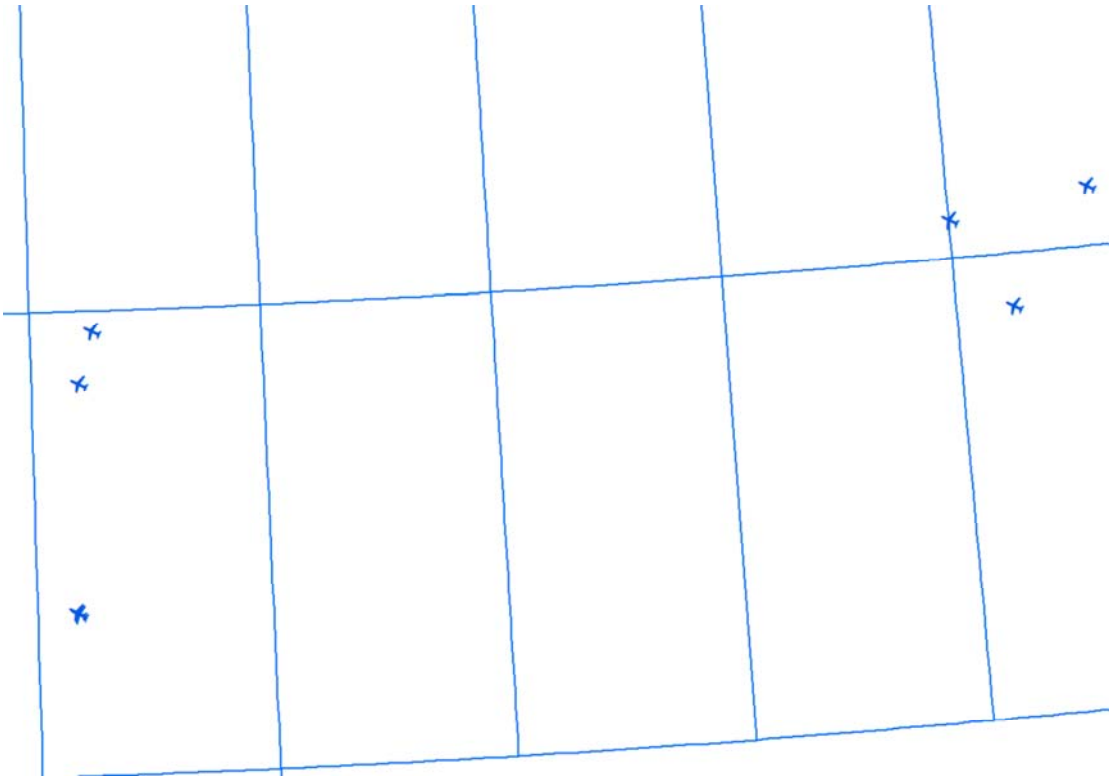
Reviewed Vertical Accuracy

◉ *Yes* ○ *No*

REVIEWED PRIMARY VERTICAL ACCURACY

Primary Vertical Accuracy Type:	Slope 0-10 degree
Confidence Interval Reviewed:	95 th % CI
Reviewed Unit:	Meters
Reviewed # of checkpoints:	7
Reviewed RMSEz:	0.61
*Reviewed Vertical Accuracy (RMSEz * .% CI)*	1.2
Checkpoints are well distributed?	☑
Enough checkpoints for task order?	☑
Enough checkpoints for NED?	☑

Checkpoint Distribution Image



Vertical Accuracy Results:

Additional Reviewed Vertical Accuracy Information:

Based on this review, the USGS accepts the vertical accuracy.

End of cell 308 Vertical Accuracy Review

Vertical Offset Review

cell 308

Review Required: (•) *Yes* ( ) *No*

Absolute maximum allowed: *Absolute actual Maximum:*

Absolute reported maximum: *Not reported* *Unit:* *Meters*

Based on this review, the USGS accepts the amount of vertical offset.

Additional comments:

cell 308 and joining cells have 0 difference

End of cell 308 Vertical Offset Review

Void Fill Review

cell 308

Review Required: ◉ *Yes* ○ *No*

VOID FILL CHARACTERISTICS

Maximum void allowed: (prior to fill)	3 %	*Maximum void allowed: (after fill)*	*not applicable*
Maximum void allowed per tile: (prior to fill)	5 %	*Maximum void allowed per tile: (after fill)*	*not applicable*
Maximum void reported: (prior to fill)	not reported	*Maximum void reported: (after fill)*	*not reported*
Maximum void reported per tile: (prior to fill)	not reported	*Maximum void reported per tile: (after fill)*	*not reported*
Maximum void reviewed: (prior to fill)	*0.203* %	*Maximum void reviewed: (after fill)*	*0* %
Maximum void reviewed per tile: (prior to fill)	*1.05* %	*Maximum void reviewed per tile: (after fill)*	*0* %

Void Fill Source:

NED

Based on this review, the USGS accepts the void fill(s).

Additional comments:

End of cell 308 Void Fill Review

Breakline Review

cell 308

Review Required: ◉ *Yes* ○ *No*

BREAKLINE FILE CHARACTERISTICS:

☑ Separate folder for breakline files.

☑ Breaklines contain elevation values.

Elevation values stored in Geometery (ZEnabled) .

Units: Meters

☑ Waterbody Breaklines.

Polyline ○ Polygon ◉

☐ Single elevation value per waterbody feature.
☑ Required.
Waterbody Elevations were created via Unknown waterbody level techniques.

☐ Double Line Stream Breaklines (Streams Approximately > 50 ft).
☐ Single Line Breaklines.
☑ No missing or misplaced breaklines.

Based on this review, the USGS accepts the breakline files.

End of cell 308 Breakline Review

DEM Review

cell 308

BARE-EARTH DEM TILE CHARACTERISTICS:

☑ Separate folder for bare-earth DEM files
Raster File Type: TIF
Raster Cell Size: 5 Meters
Tile bit depth/pixel Type: 32_BIT_FLOAT
Interpolation or Resampling Technique: Unknown

DEM tiles overlap: ◉ Yes ○ No
☑ DEM tiles conform to Project Tiling Scheme
☑ Quantity of DEM files conforms to Project Tiling Scheme
☑ DEM tiles are uniform in size

☑ DEM tiles properly edge match and free of edge artifacts
☑ Tiles are free from Spikes and Pits
☑ Tiles are free from Data Holidays
☑ Tiles do not exhibit systematic sensor error or cornrowing

DEM tiles are properly Hydro Flattened ◉ Yes ○ No

☑ Waterbodies 2 Acers or greater are flattened
☑ Streams 50 ft or greater are flattened in a downstream manner
☑ Tidal Boundaries/Shorelines are flattened

☑ No missing islands
☑ Perennial ice/snow treated as terrain
☑ Annual ice/snow not treated as terrain
☑ Bridges/Overpasses are properly removed
☑ Culverts are maintained (Not Hydro Enforced)
☑ Depressions, Sinks, are not filled in (Not Hydro Conditioned)
☑ Vegetation properly removed
☑ Manmade structures properly removed

Tiles meet NED 1/3rd Requirements: ◉ Yes. ○ No.
Tiles meet NED 1/9th Requirements: ○ Yes. ◉ No.

Based on this review, the USGS accepts the DEM tiles.

End of cell 308 DEM Review

DSM Review

cell 308

Review Required: ◉ *Yes* ○ *No*

DSM TILE CHARACTERISTICS:

☑ Separate folder for bare-earth DEM files
Raster File Type: TIF
Raster Cell Size: 5 Meters
Tile bit depth/pixel type: 32_BIT_FLOAT
Interpolation or Resampling Technique: Unknown

DSM tiles overlap: ◉ Yes ○ No
☑ DSM tiles conform to Project Tiling Scheme
☑ Quantity of DSM files conforms to Project Tiling Scheme
☑ DSM tiles are uniform in size

☑ DSM tiles properly edge match and free of edge artifacts
☑ Tiles are free from Spikes and Pits
☑ Tiles are free from Data Holidays
☑ Tiles do not exhibit systematic sensor error or cornrowing

DSM tiles are properly Hydro Flattened ◉ Yes ○ No
☑ Waterbodies 2 Acers or greater are flattened
☑ Streams 50 ft or greater are flattened in a downstream manner
☑ Tidal Boundaries/Shorelines are flattened
☑ No missing islands
☑ Perennial ice/snow treated as terrain
☑ Annual ice/snow not treated as terrain
☑ Culverts are maintained (Not Hydro Enforced)
☑ Depressions, Sinks, are not filled in (Not Hydro Conditioned)

Based on this review, the USGS accepts the DSM tiles.

End of cell 308 DSM Review

ORI Review

cell 308

Review Required: ◉ *Yes* ○ *No*

ORI TILE CHARACTERISTICS:

☑ Separate folder for ORI files

Raster File Type: TIF

Raster Cell Size: 2.5 Meters

Tile bit depth/pixel type: 8_BIT_UNSIGNED

Interpolation or Resampling Technique: Unknown

ORI tiles overlap: ◉ Yes ○ No

☑ ORI tiles conform to Project Tiling Scheme

☑ Quantity of ORI files conforms to Project Tiling Scheme

☑ ORI tiles are uniform in size

☑ ORI tiles properly edge match and free of edge artifacts

☑ Tiles are free from Data Holidays

☑ Tiles do not exhibit systematic sensor error or cornrowing

☑ ORI tiles validate hydroflattening/breakline placement and quantity

Based on this review, the USGS accepts the ORI tiles.

End of cell 308 ORI Review

Based on this review, the provided delivery meets the Task Order requirements.

NED Information

Final to NED mosaic created: ○ *Yes* ○ *No*

Metadata Created: ○ *Yes* ○ *No*

Additional Comments:

END OF REPORT