

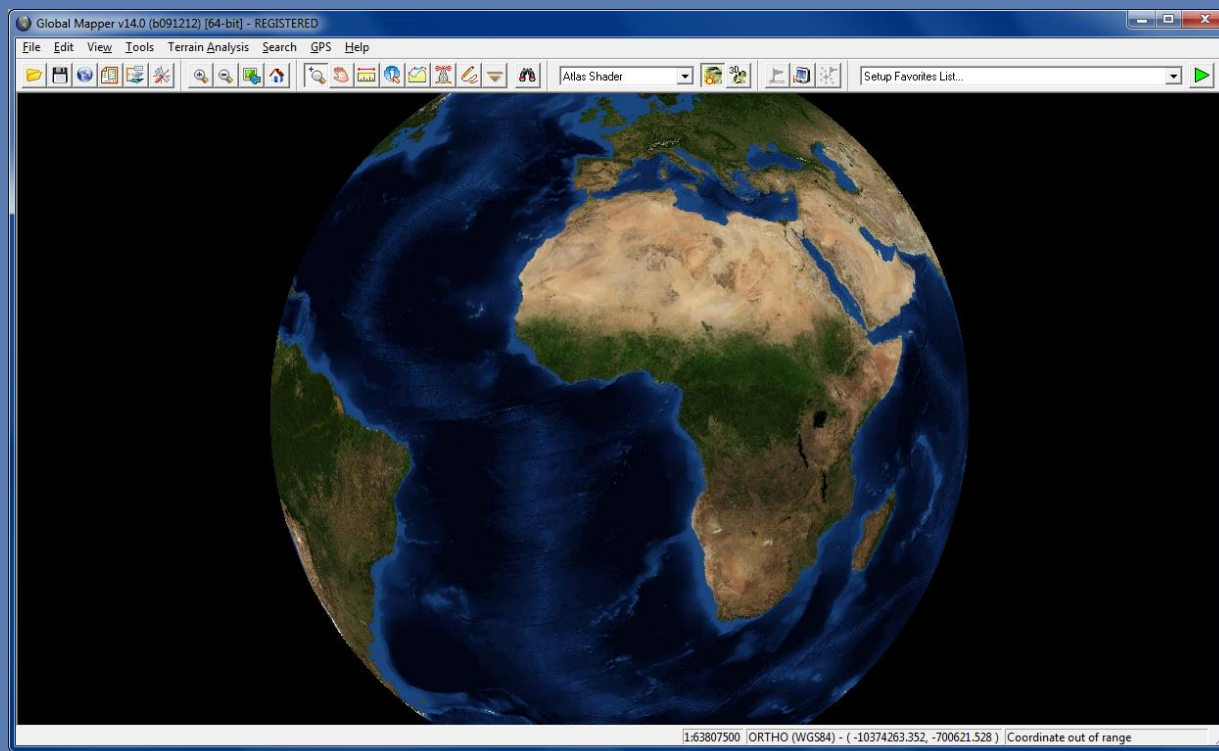


BLUE MARBLE
GEOGRAPHICS

WHERE GIS DATA CONVERSION SOLUTIONS ARE BORN

Low Cost GIS for Government

MundoGeo Connect (May, 2014)



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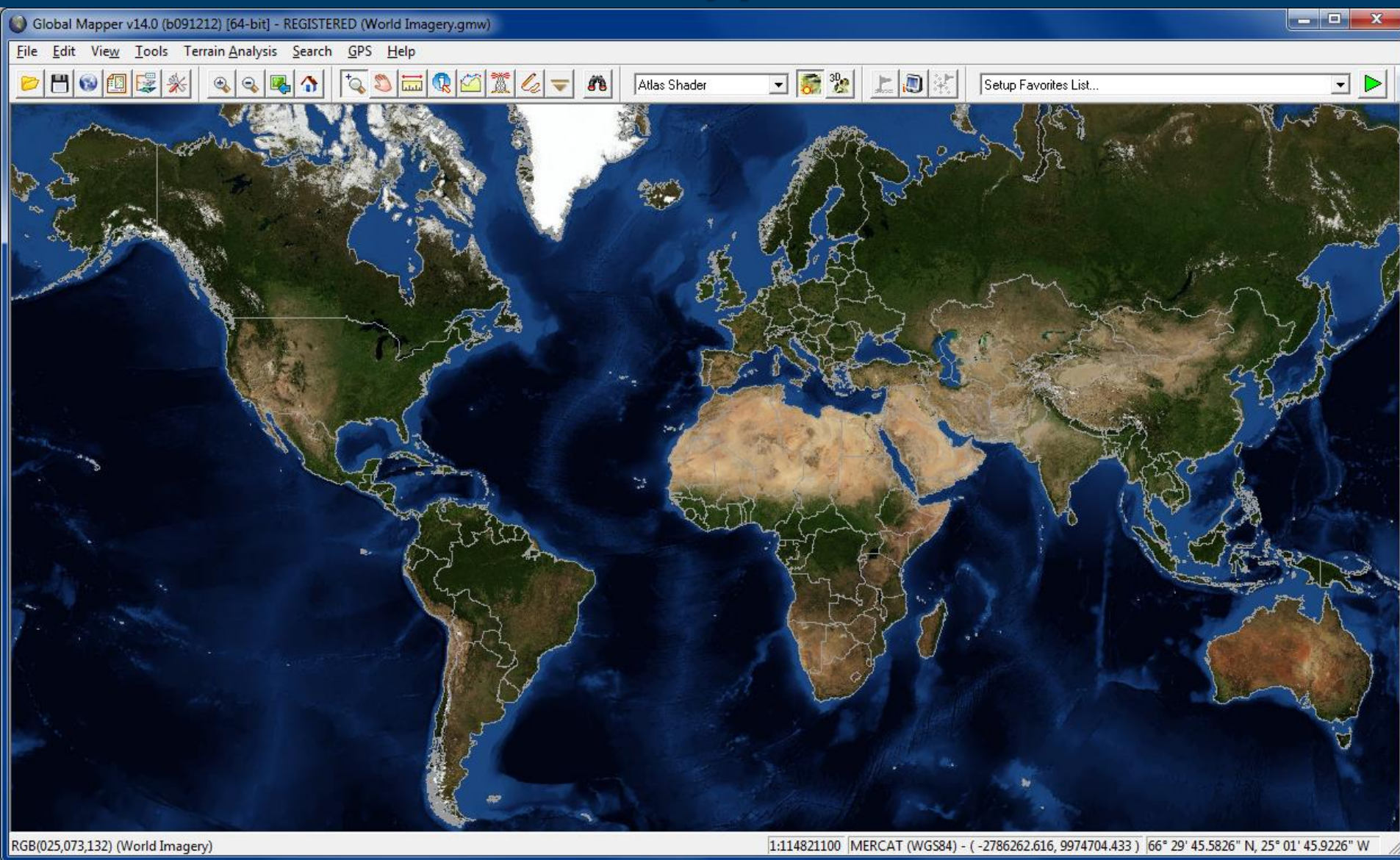
What is Global Mapper?

- Affordable and easy-to-use GIS software
- Provides unparalleled access to hundreds of spatial data file formats and numerous free online datasets
- Offers a variety of drawing tools for creating or editing map features
- Includes a wide array of analysis functions including watershed delineation and flood zone modeling
- Provides just the right level of GIS functionality to satisfy both GIS professionals and mapping novices

Low Cost GIS

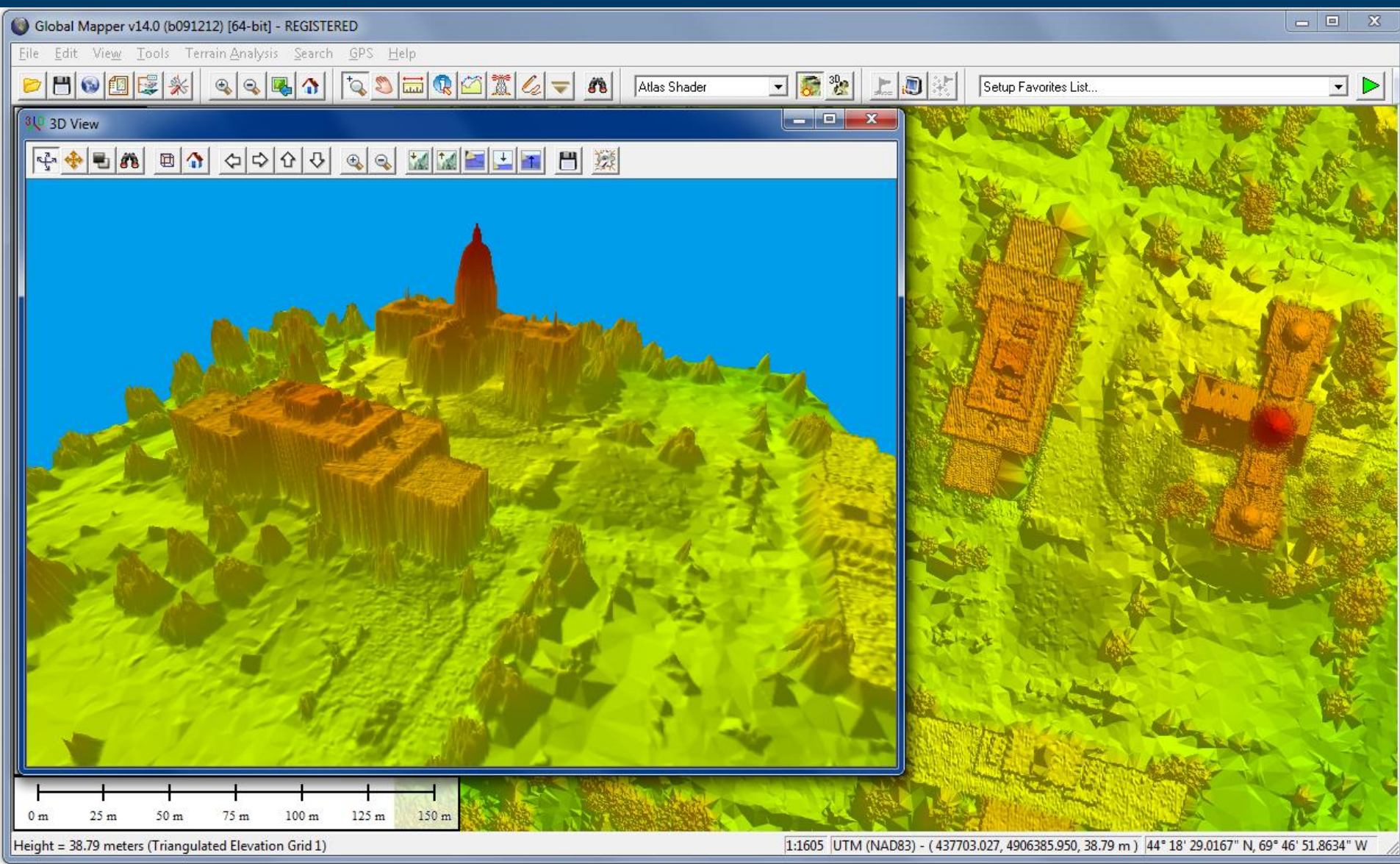
- “Data Mining” – extract value from old datasets once thought dormant
- By taking advantage of free data and low cost software, powerful analyses can be performed more easily than ever
- 3d modeling of terrain and structures can save money and time by evaluating potential construction sites for wind turbines, cellular towers, or other structures, without setting foot in the field until later in the process
- The data required in order to execute these processes is often freely available
- Leverage simple, freely available sources of data to perform advanced terrain-based site analysis, with a minimum of investment and training

Global Mapper v15.2



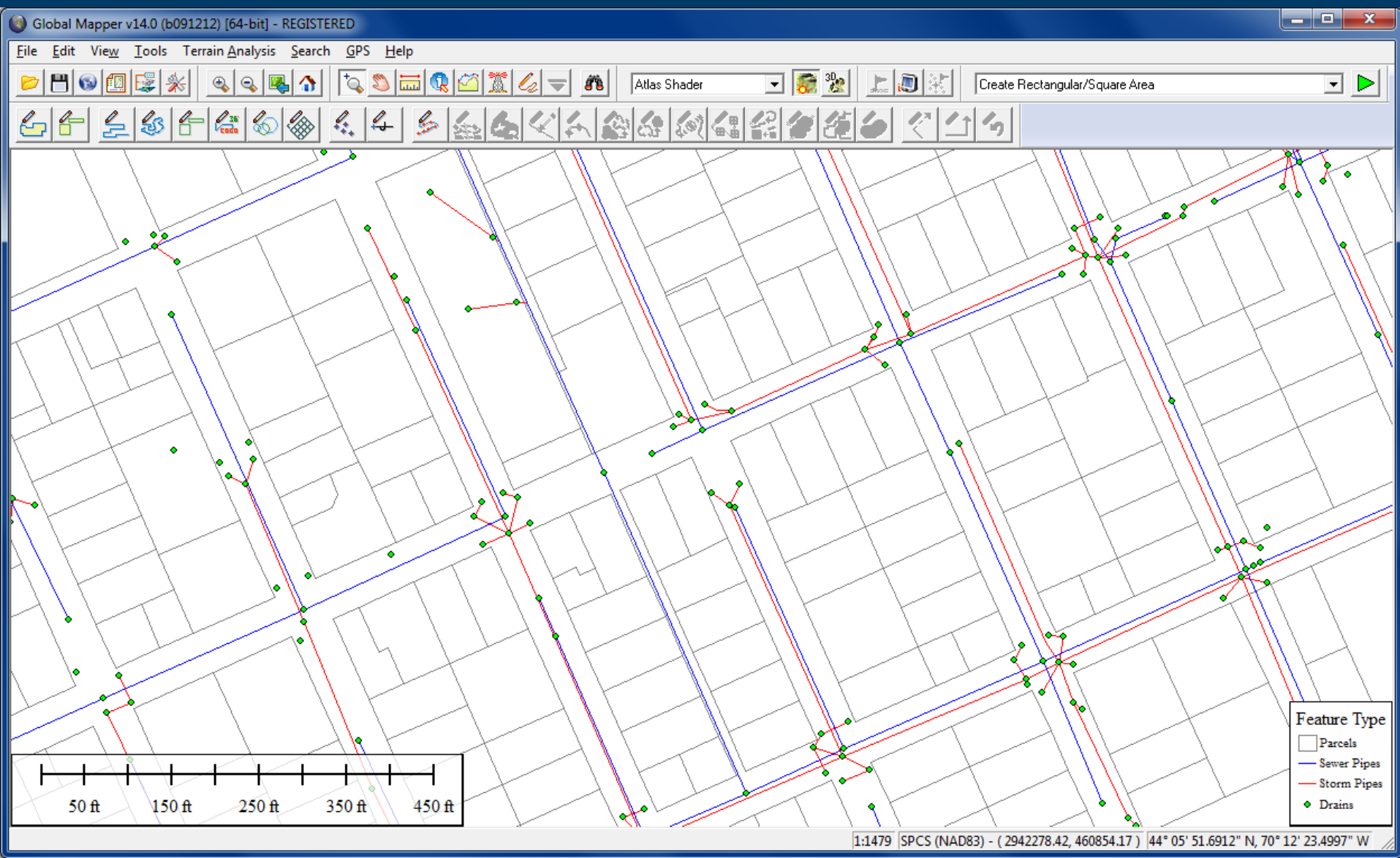
Support for over 200 file formats

Copyright 2012 Blue Marble Geographics



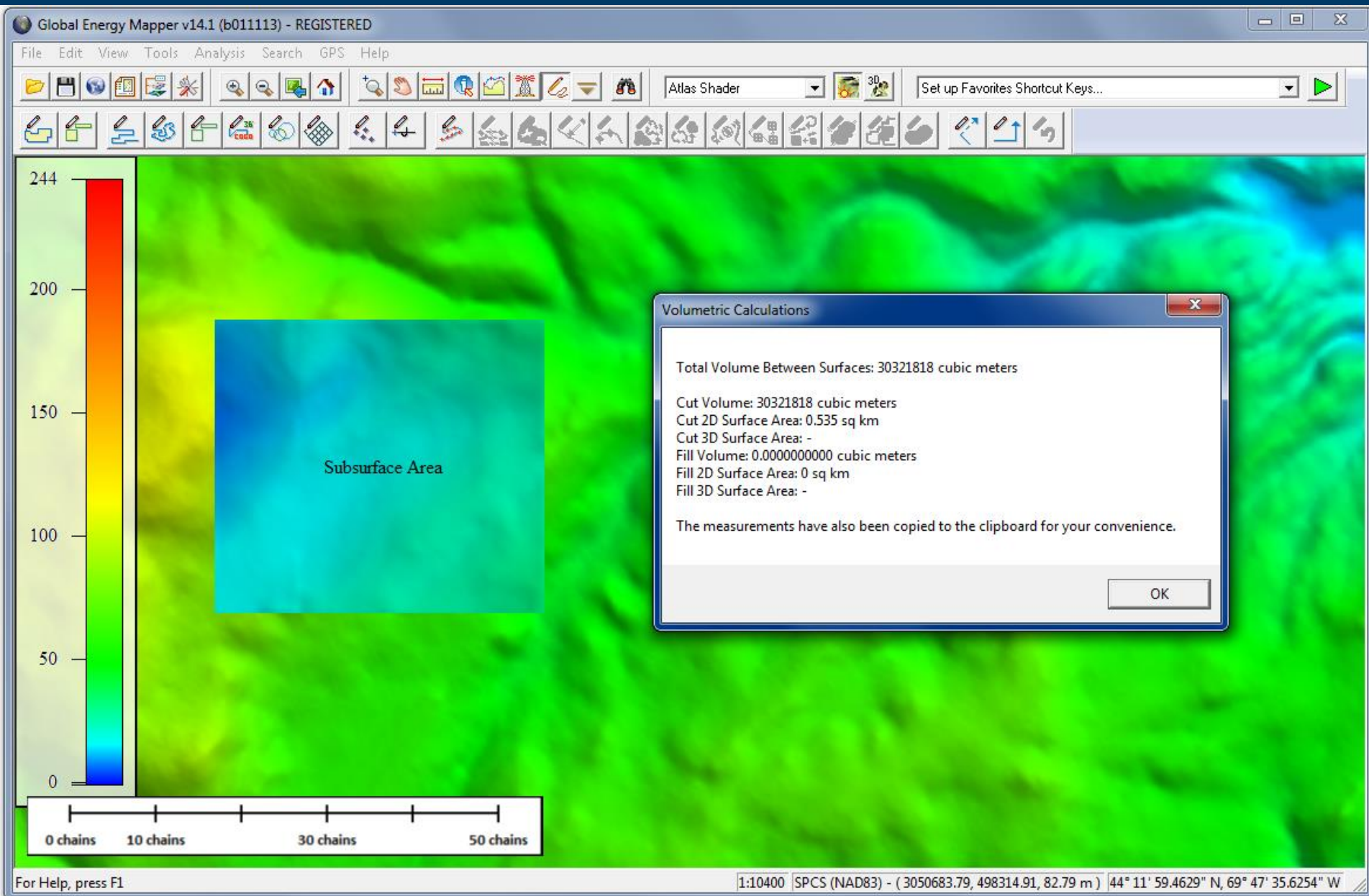
Advanced LiDAR processing and terrain surface modeling

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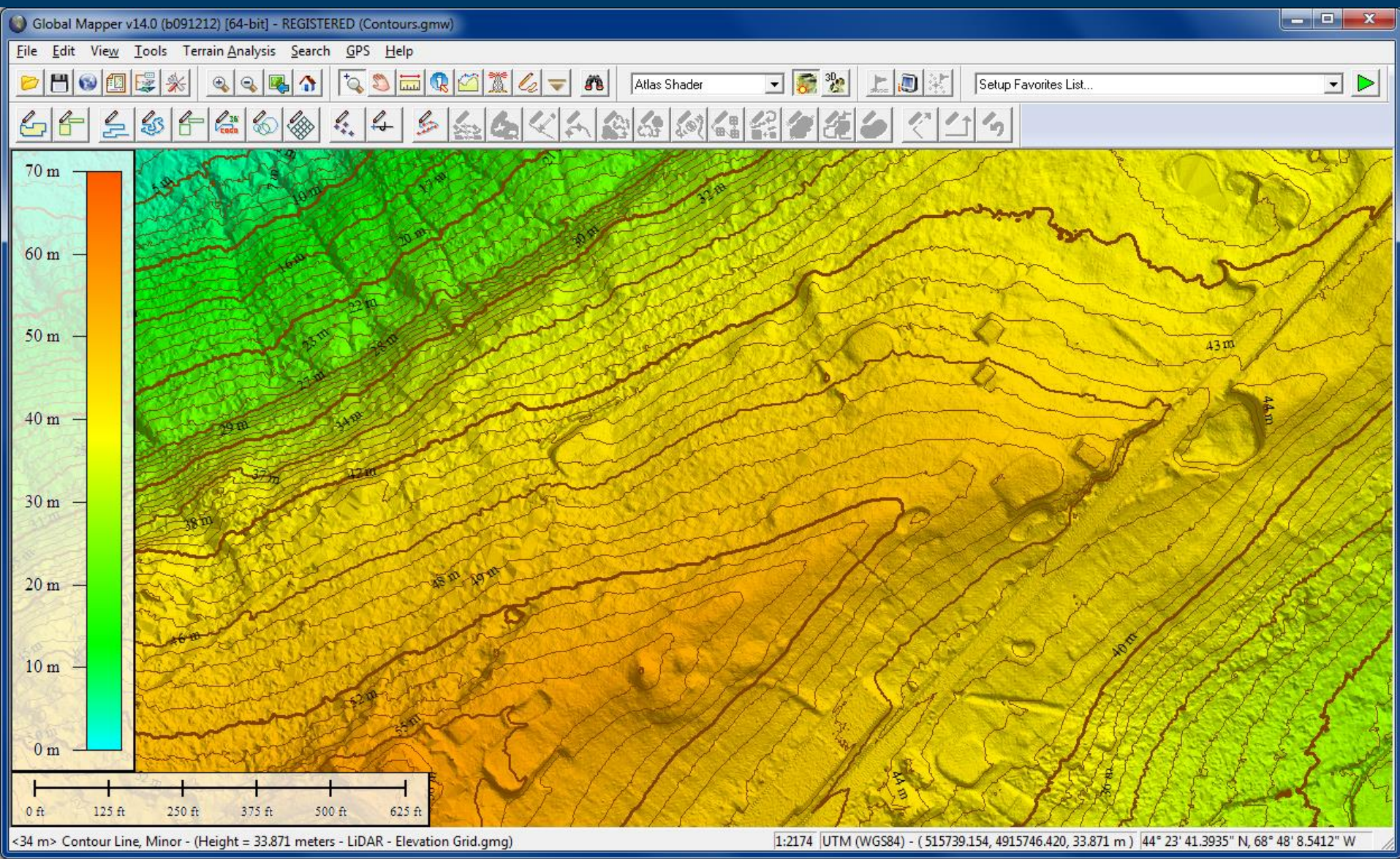
Infrastructure mapping

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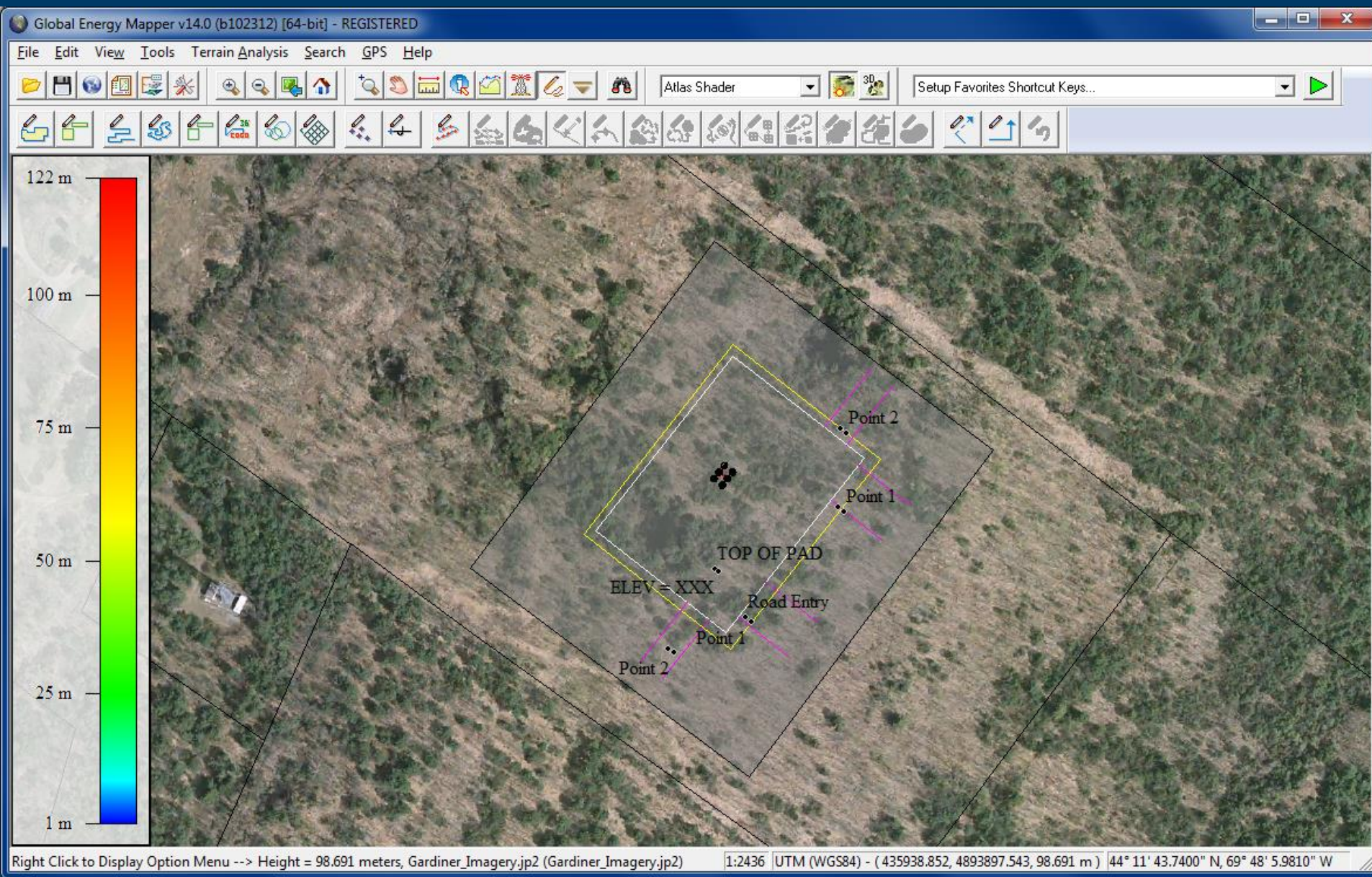
Accurate volumetric calculation

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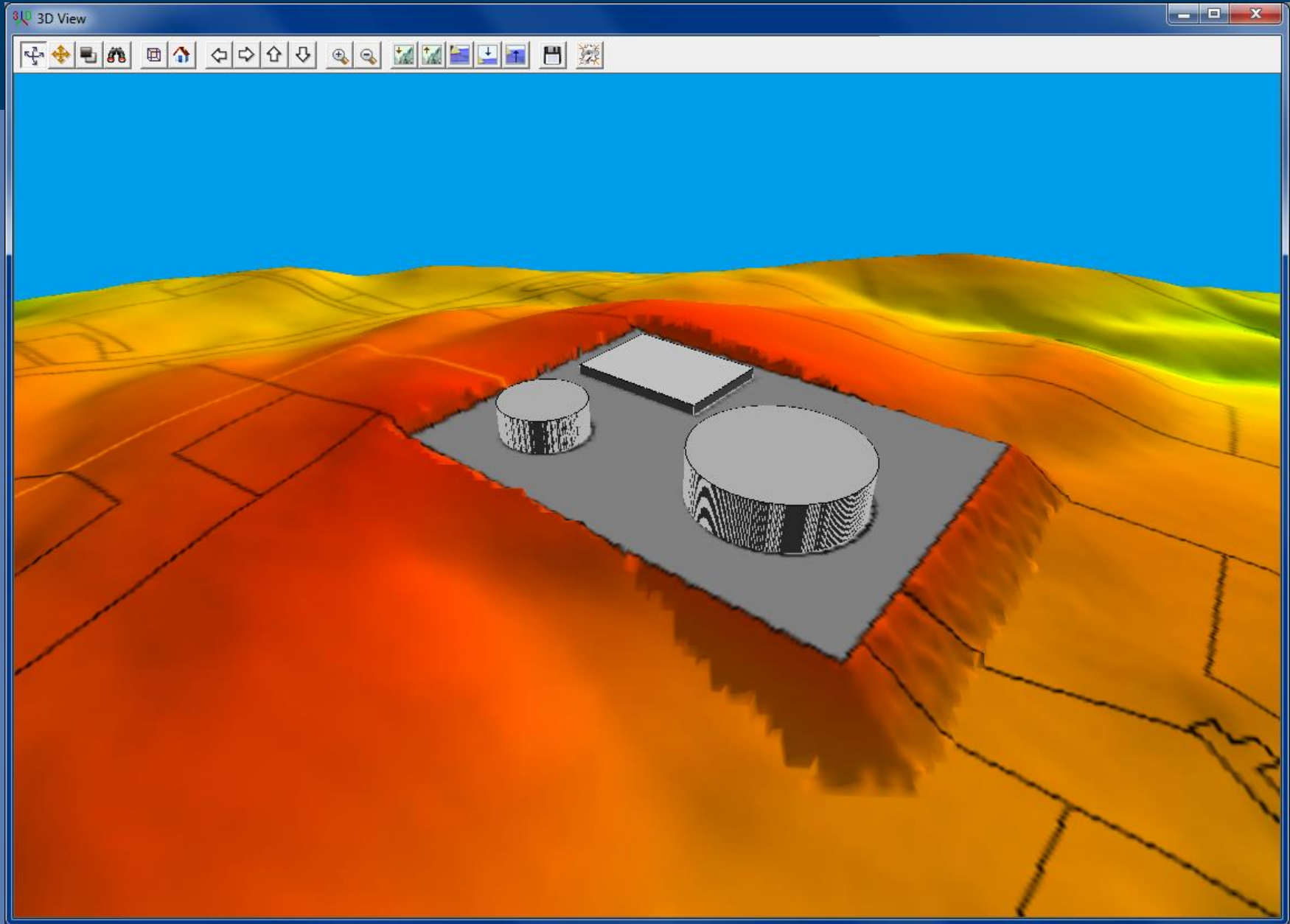
Custom contour generation

Copyright 2012 Blue Marble Geographics



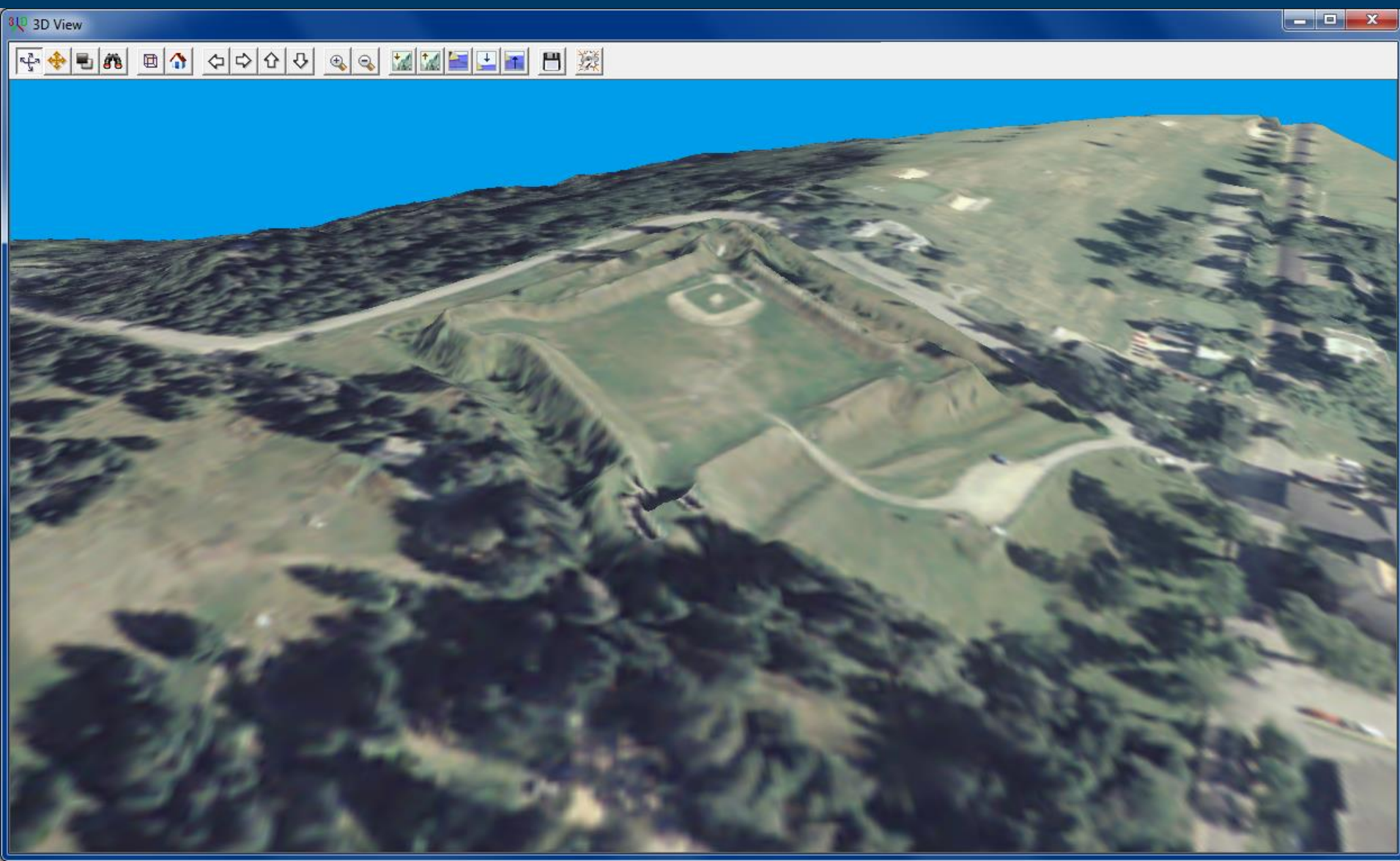
Powerful well pad placement function

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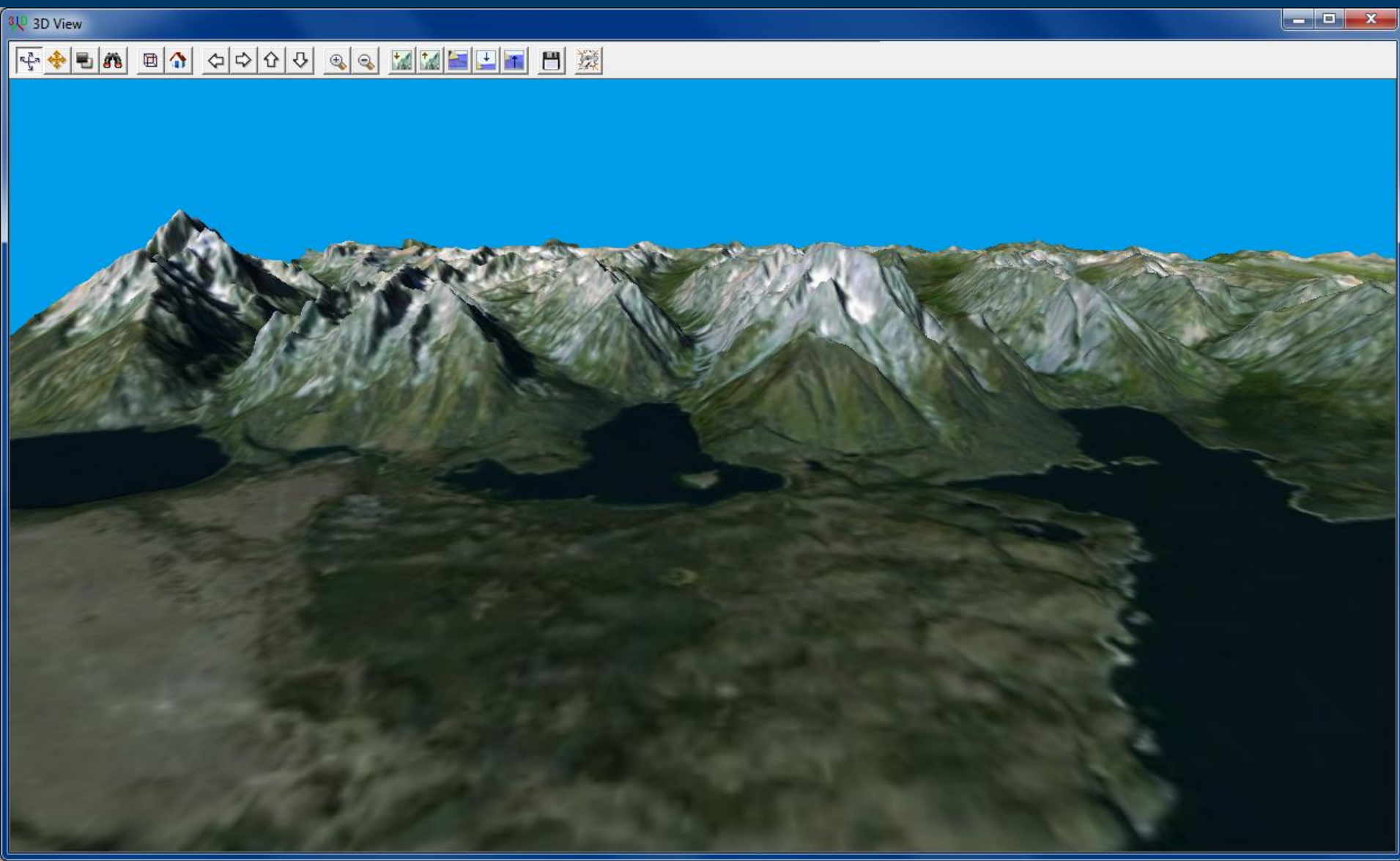
3D terrain and vector modeling

Copyright 2012 Blue Marble Geographics



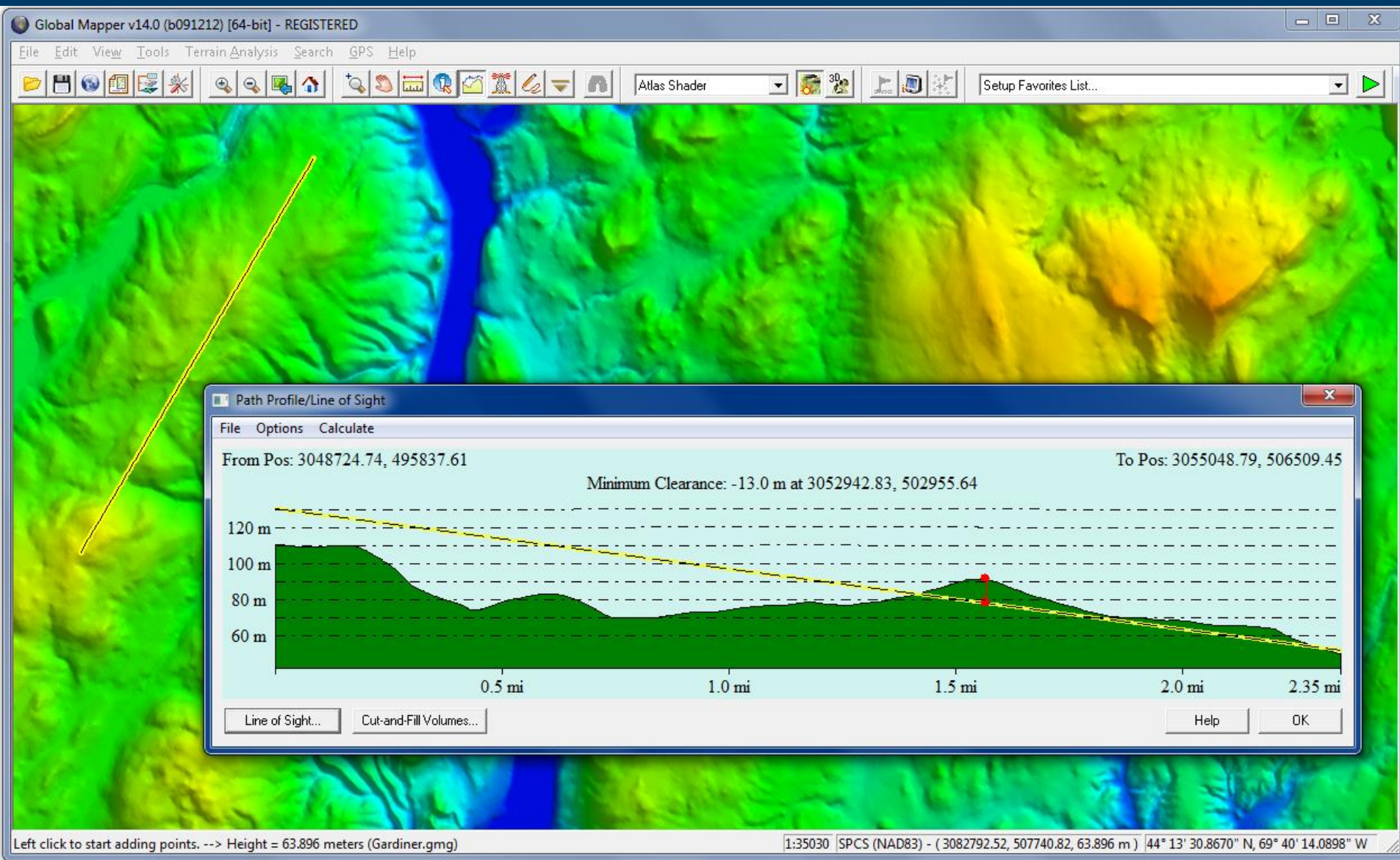
Raster processing and image rectification

Copyright 2012 Blue Marble Geographics

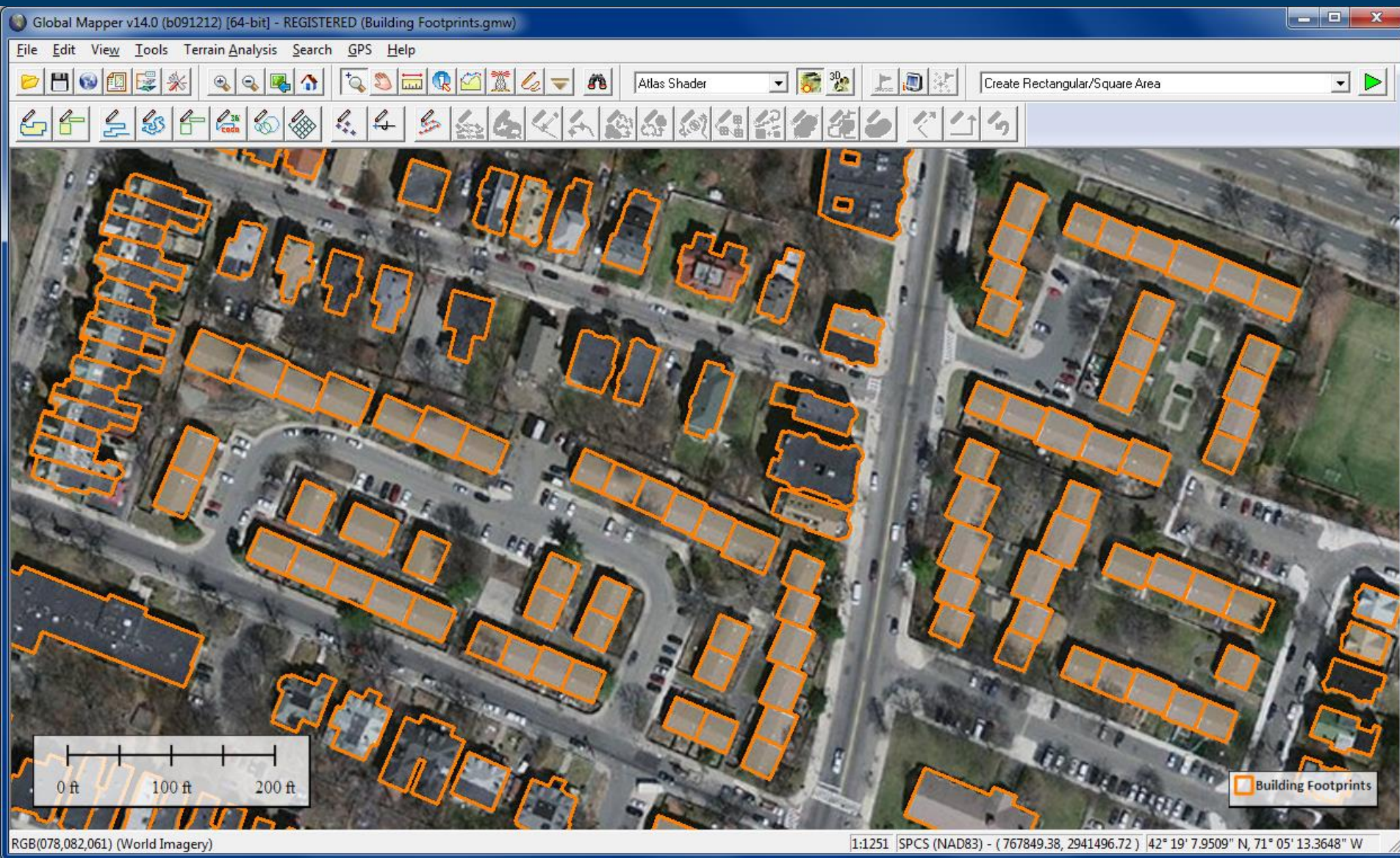


3D terrain rendering

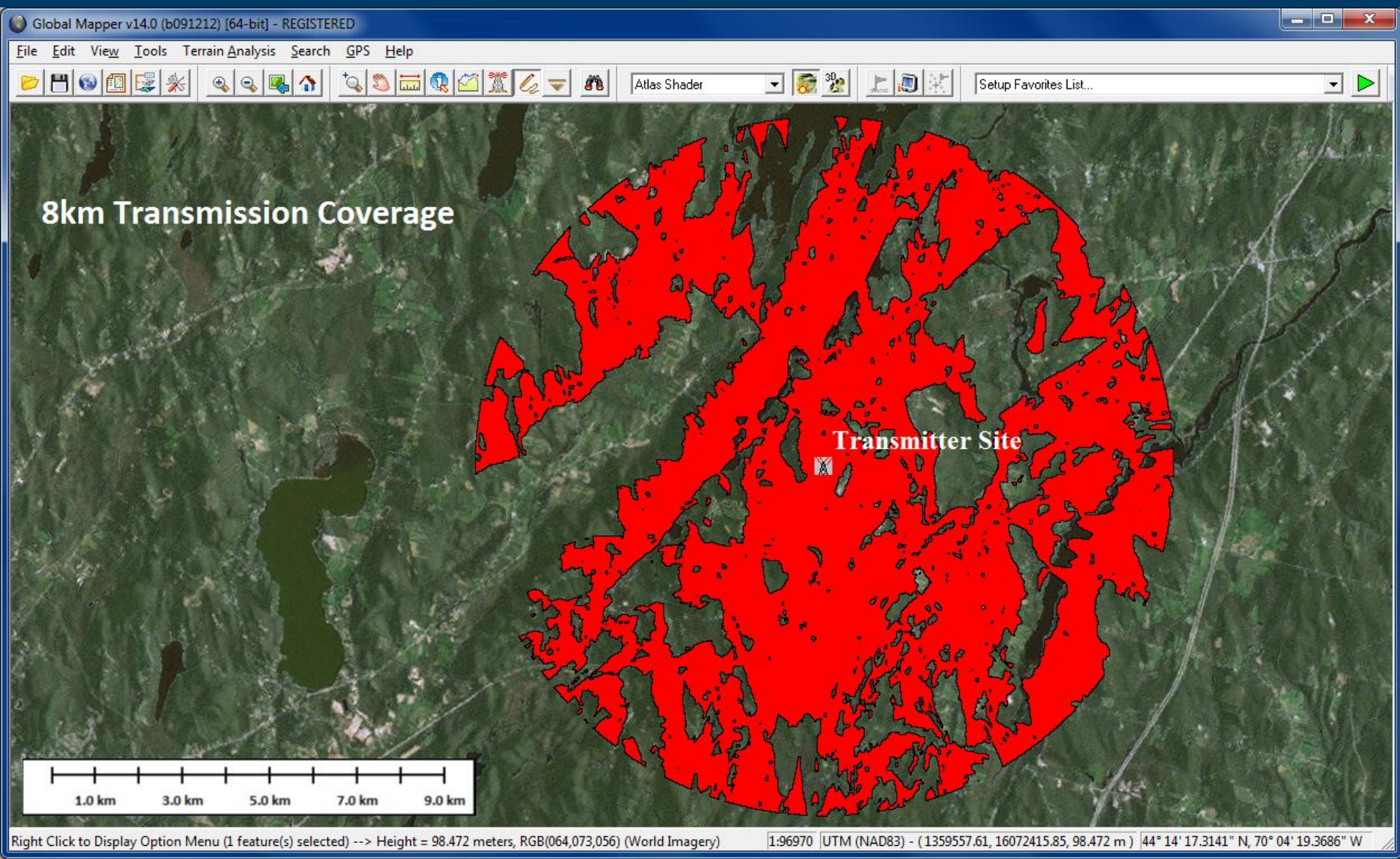
Copyright 2012 Blue Marble Geographics



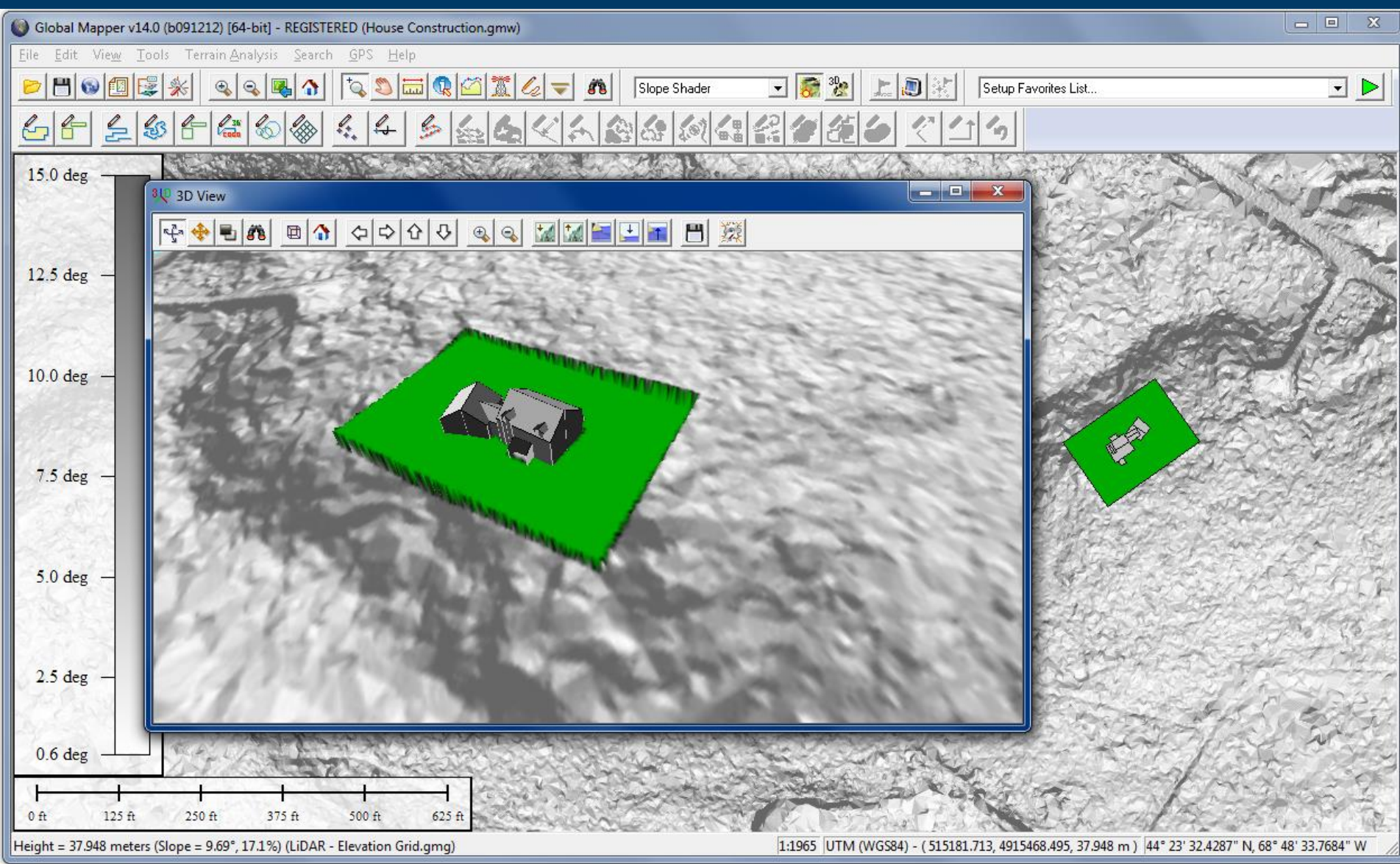
Terrain profiling and line-of-sight analysis



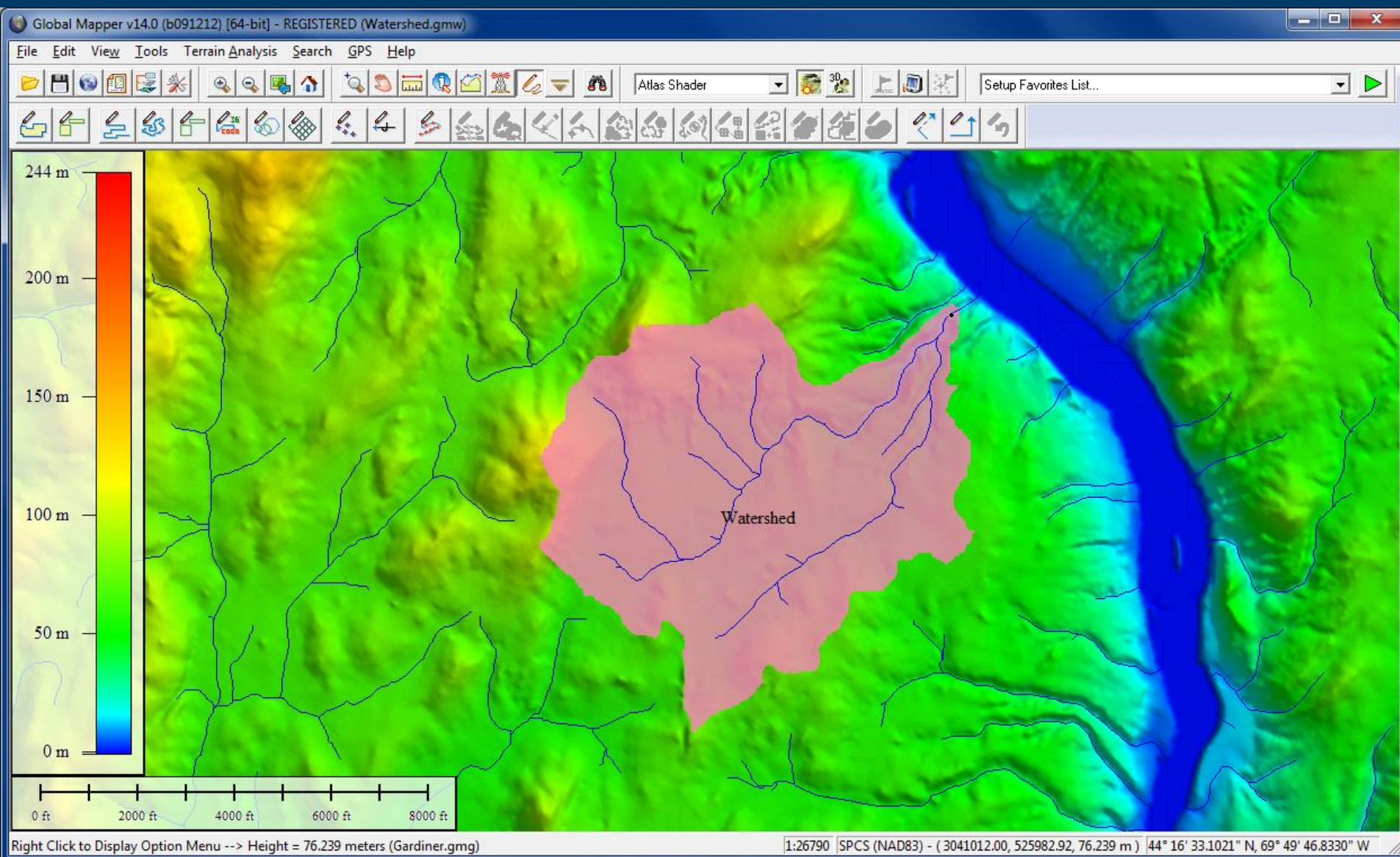
Advanced digitization and drawing functions



Multi-direction view shed analysis



Surface modeling and terrain flattening



Watershed creation and stream delineation

Web Mapping Services for S.A.

Global Mapper v15.1 (b033114) [64-bit] [+OTF] [+Lidar] [+GEM] - REGISTERED (castine.gmw)

File Edit View Tools Analysis Search GPS Help

Atlas Shader

Select Online Data Source to Download

Select Data Source

- Backup Source - SRTM Worldwide Elevation Data (3-arc-second Resolution)
- Brazil Topo Maps
- Global:Bathy:GEBCO - SpatialOnDemand.com [FREE REFERENCE SOURCE]
- Global:Geol:LandSat 7,4,2 - SpatialOnDemand.com [FREE REFERENCE SOURCE]
- Global:Imagery: Bing Maps Hybrid - SpatialOnDemand.com [FREE REFERENCE SOURCE]
- Global:Imagery:LandSat NC - SpatialOnDemand.com [FREE REFERENCE SOURCE]
- Global:Reference:Boundaries and Streets - SpatialOnDemand.com [FREE REFERENCE SOURCE]
- Intermap Europe DSM (Digital Surface Model) [PREMIUM CONTENT]
- Intermap Europe DTM (Digital Terrain Model) [PREMIUM CONTENT]
- Intermap Europe ORI (Imagery) [PREMIUM CONTENT]
- Intermap World30 DEM [PREMIUM CONTENT]
- Landsat7 Global Imagery Mosaic (Natural Color, Pan-Sharpener)
- Landsat7 Global Imagery Mosaic (Pseudo-Color, Pan-Sharpener)
- Landsat8 Global Imagery (Download via EarthExplorer)
- MapMart On Demand (Worldwide Data) [PREMIUM CONTENT]
- MapQuest OpenAerial Worldwide Imagery
- MapQuest OpenStreetMap Worldwide Street Maps

Add New Source... Remove Source Delete Cached Files... Add Sources from File... Load ECW from Web...

Select Area to Download

- ☒ Current Screen Bounds
- ☐ Within 1 miles of address
- ☐ Within 1 miles of latitude 44.3908460136152 longitude -68.8056789546431
- ☐ Specify Latitude/Longitude Bounds of Area
 - West -68.840253992175 North 44.4023234459162 East -68.771103917111 South 44.3793685813141
 - Draw Box...
- ☐ Entire Data Source Bounds

☐ Restrict Source to Selected Bounds (i.e. Don't Allow Download of Data Outside of Selected Bounds)

IMPORTANT NOTE: These data sources are on external servers and are not available at any time. We have no control over this.

Connect Close

Overlay Control Center (7 Layers, 1 Set)

Currently Opened Overlays (Right Click on Overlay to Remove)

- ☐ 10-m DEM
- ☐ LiDAR - Elevation Grid.gmg
- ☐ Castine Imagery Catalog
- ☒ LiDAR Point Cloud - Unclassified
- ☐ 24K_Topos_2011
- ☐ 5-Meter Contours [520 Features]
- ☐ 1-Meter Contours [3,272 Features]

Metadata... Options... Show Details

30 m

20 m

10 m

0 m

-5 m

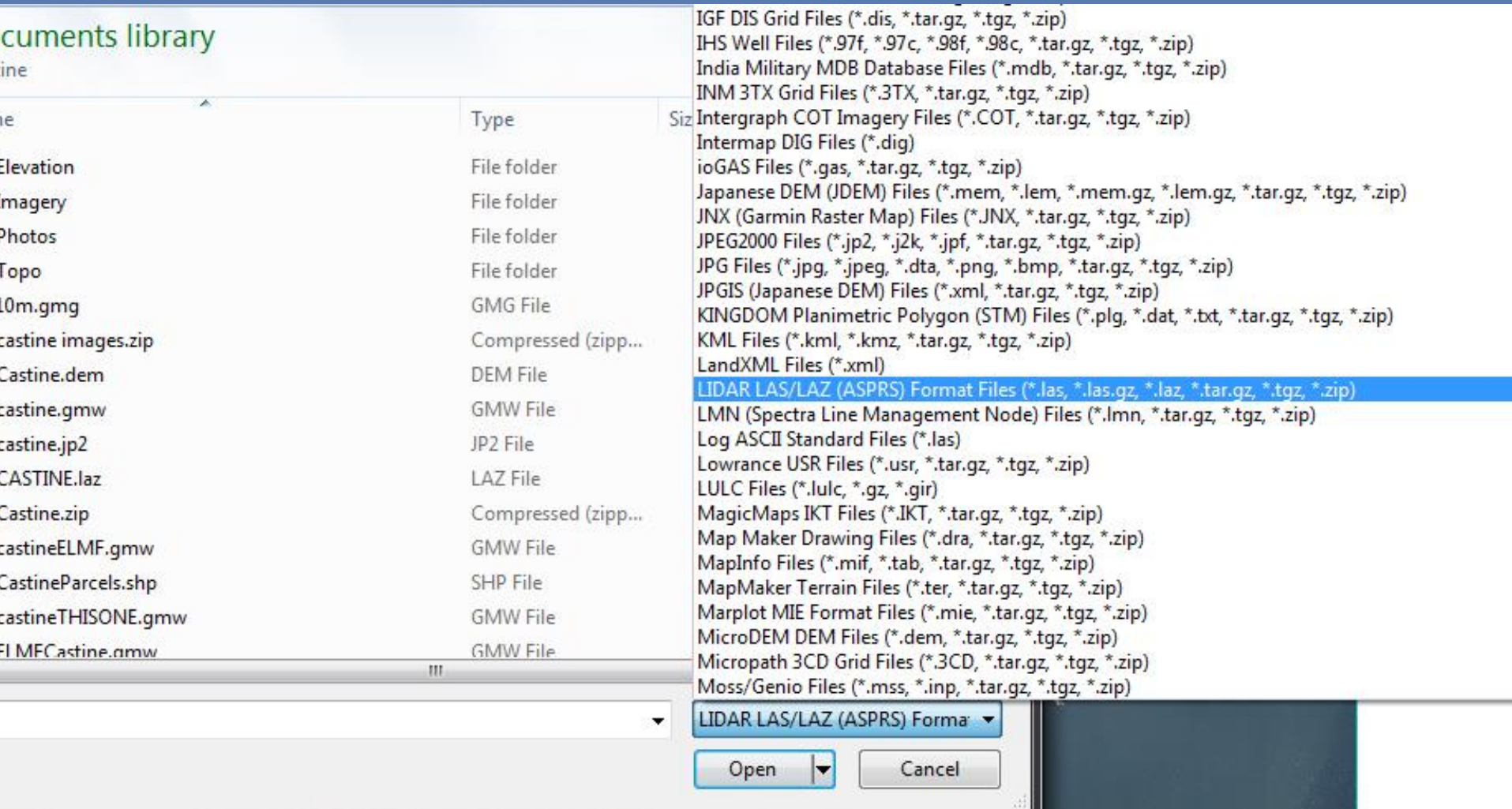
0 yards 500 yards 1000 yards 1500 yards

1:15270 UTM (WGS84) - (513303.201, 4916572.017) 44° 24' 8.3270" N, 68° 49' 58.5772" W

For Help, press F1

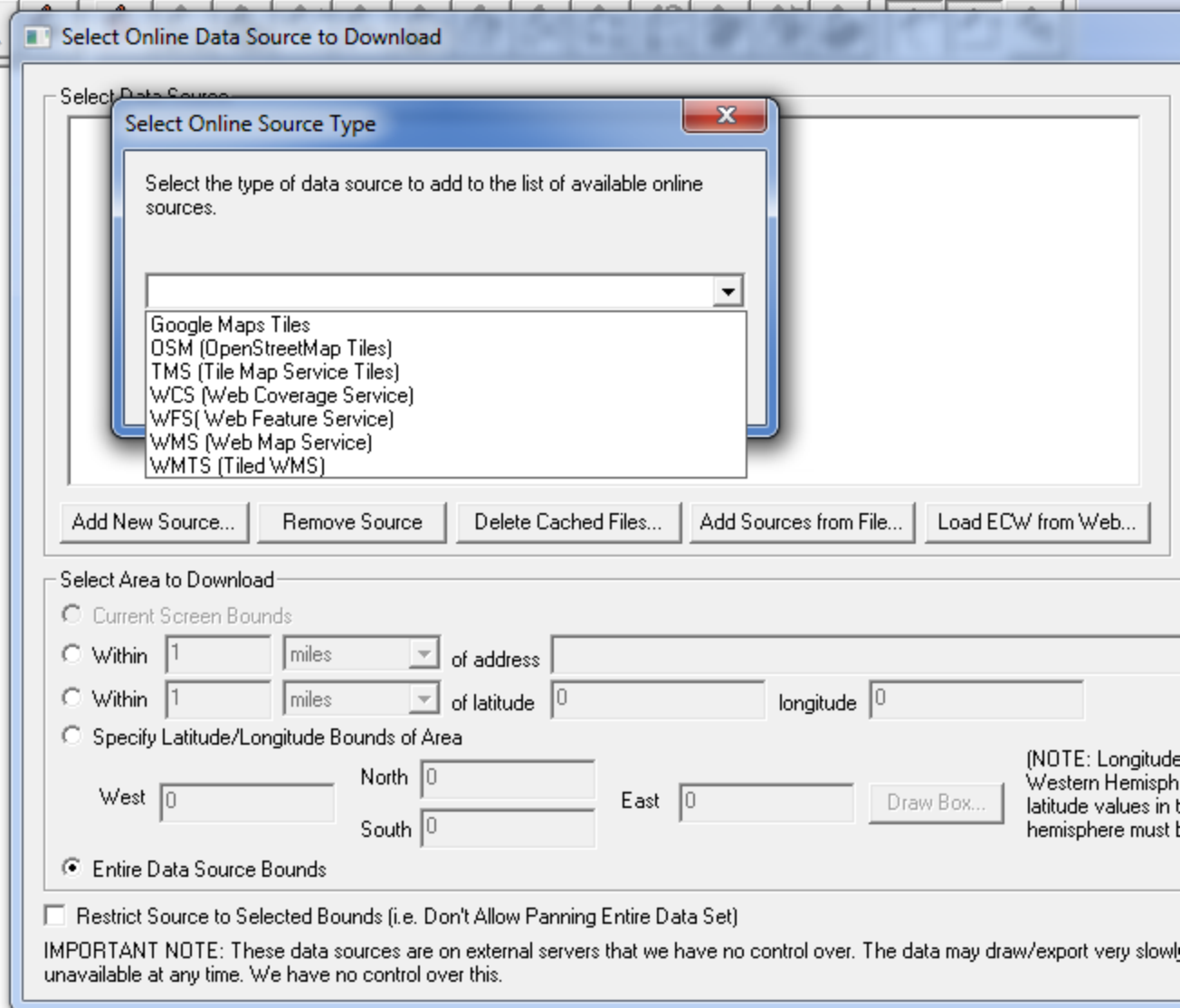
WMS – Web Mapping Services

Leveraging LiDAR for Terrain Analysis

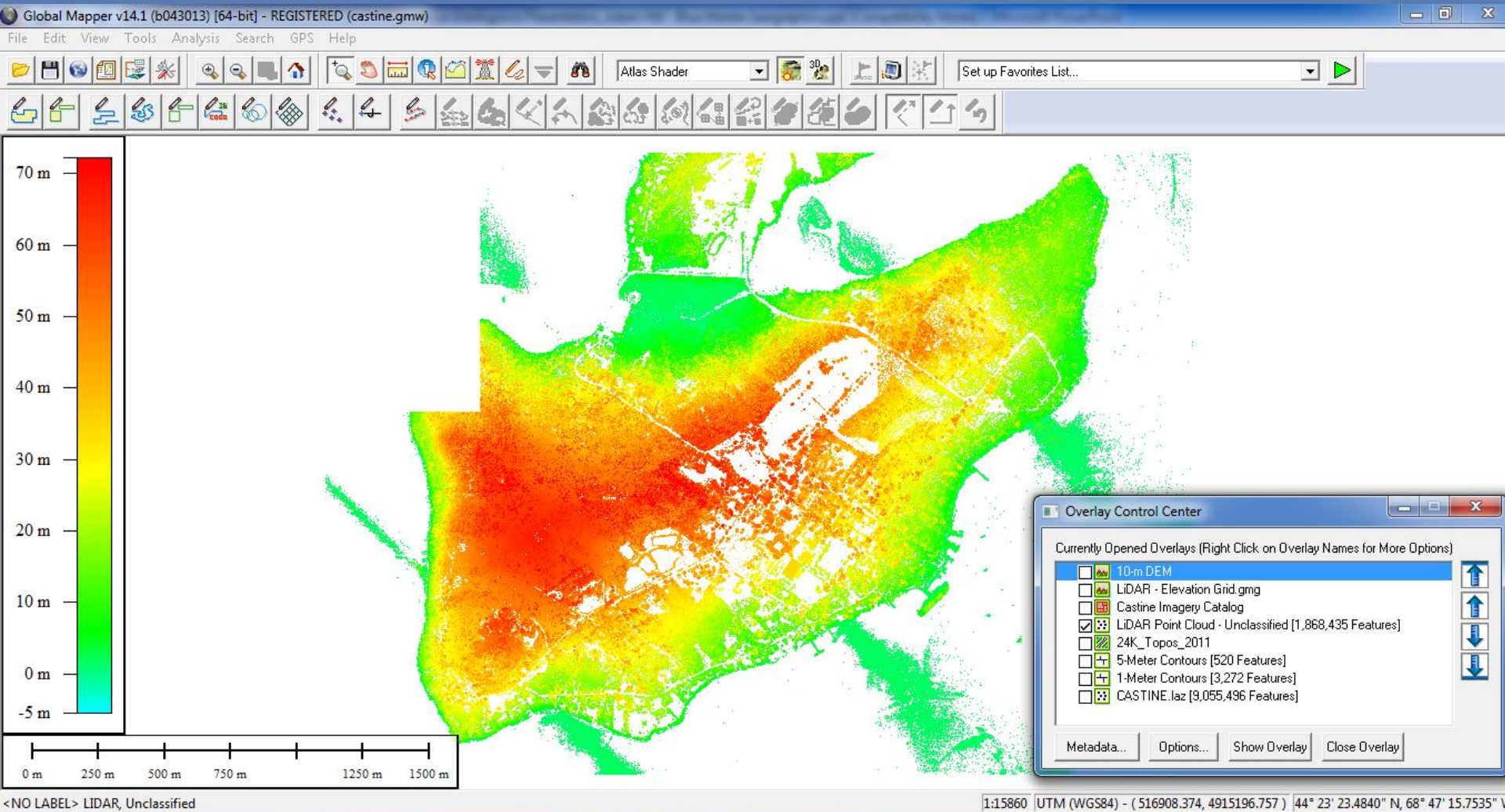




- Free data sources available
- Leverage existing data already collected
 - Many times data collection will involve the capture of many different types of data (ie. Imagery, lidar, etc)
- Global Mapper removes barriers to data access and allows users to build new data with existing data
- Extract a greater return on investment from your data



Leveraging LiDAR for Terrain Analysis



Leveraging LiDAR for Terrain Analysis

Lidar Load Options

Load Type

☒ Create Point Cloud (fast, can create grid later in Control Center)
Draw Mode: Use Colors if Present (Elevations Otherwise)
☐ Create Elevation Grid (slower and memory intensive)

Elevation Grid Creation Options

Elevation Grid "No Data" Distance Criteria

This setting controls how far from a known data point that an elevation grid cell has to be before it is considered invalid. The default setting assumes all grid points are valid. Lower values make the valid grid stay tighter around known data points.

Tight

Loose

☐ Fill Entire Bounding Box Instead of Just Inside Convex Hull

☐ Only Load Points Within Bounds Select...

☐ Use Preview Mode. Load Only 1 of Every 10 Samples

☐ Delete Samples Over 3 Standard Deviations from Mean

☐ Treat Elevations as Depths (Multiply by -1)

☐ Use These Options for All Lidar Files in the Current Group

OK

Cancel

Select Lidar Point Classifications to Import

☒ 0 - Created, never classified
☒ 1 - Unclassified
☒ 2 - Ground
☒ 3 - Low Vegetation
☒ 4 - Medium Vegetation
☒ 5 - High Vegetation
☒ 6 - Building
☒ 7 - Low Point (noise)

Select All

Clear All

☐ Old LAS File (1.2 and Earlier) Has Classes Over 31

Select Lidar Return Types to Import

☒ Unknown
☒ First
☒ Second
☒ Last
☒ Single
☒ First-of-Many
☒ Second-of-Many
☒ Third-of-Many
☒ Last-of-Many

Select All

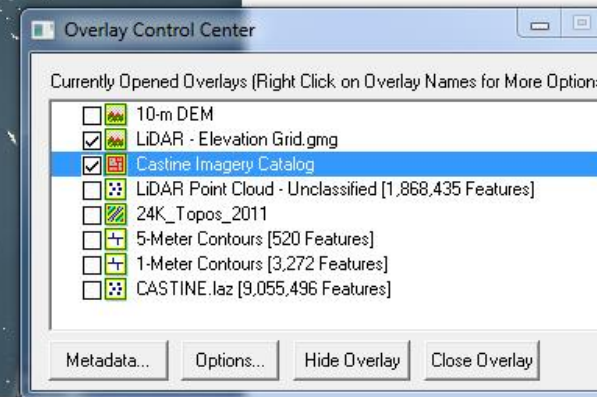
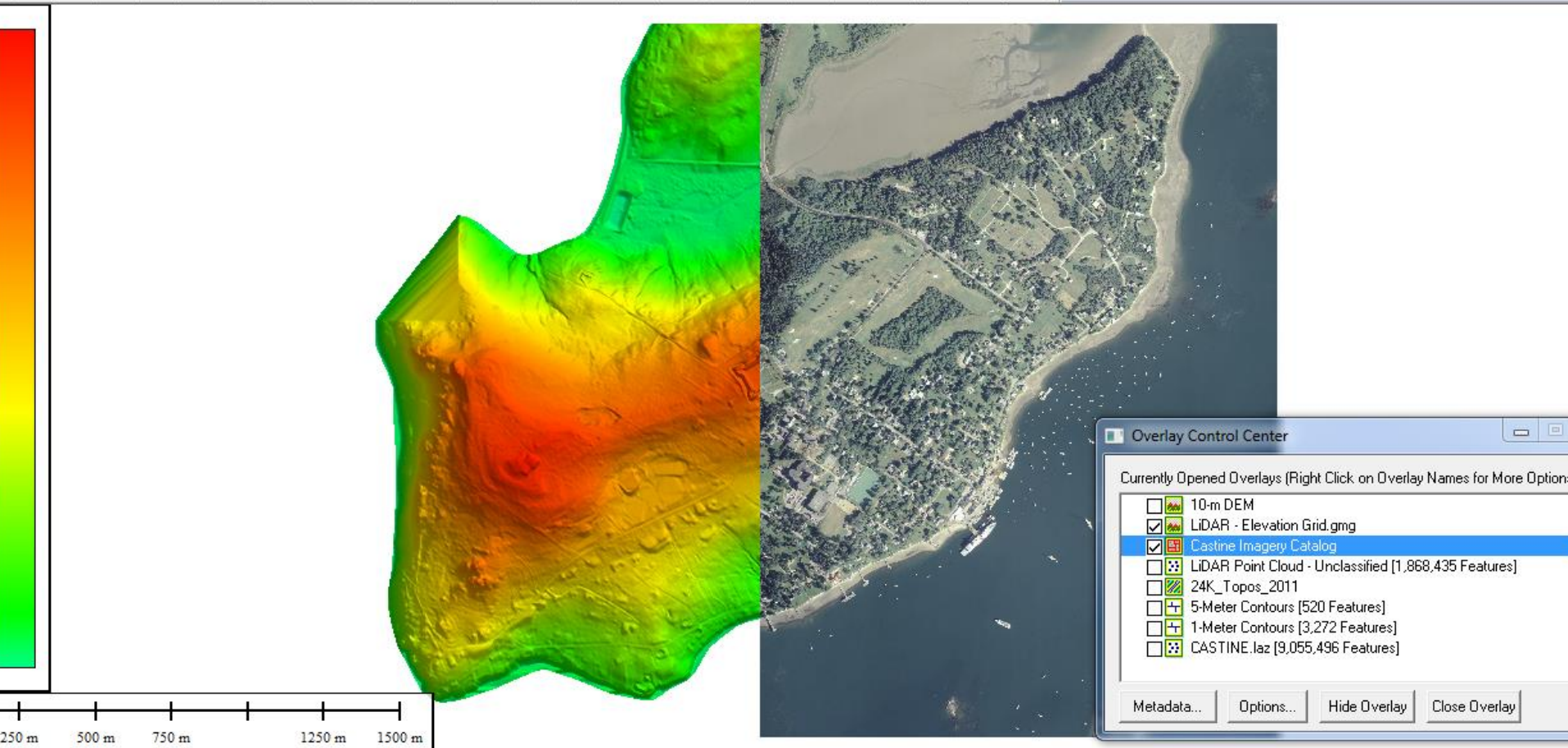
Clear All

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Leveraging LiDAR for Terrain Analysis

Mapper v14.1 (b043013) [64-bit] - REGISTERED (castine.gmw)

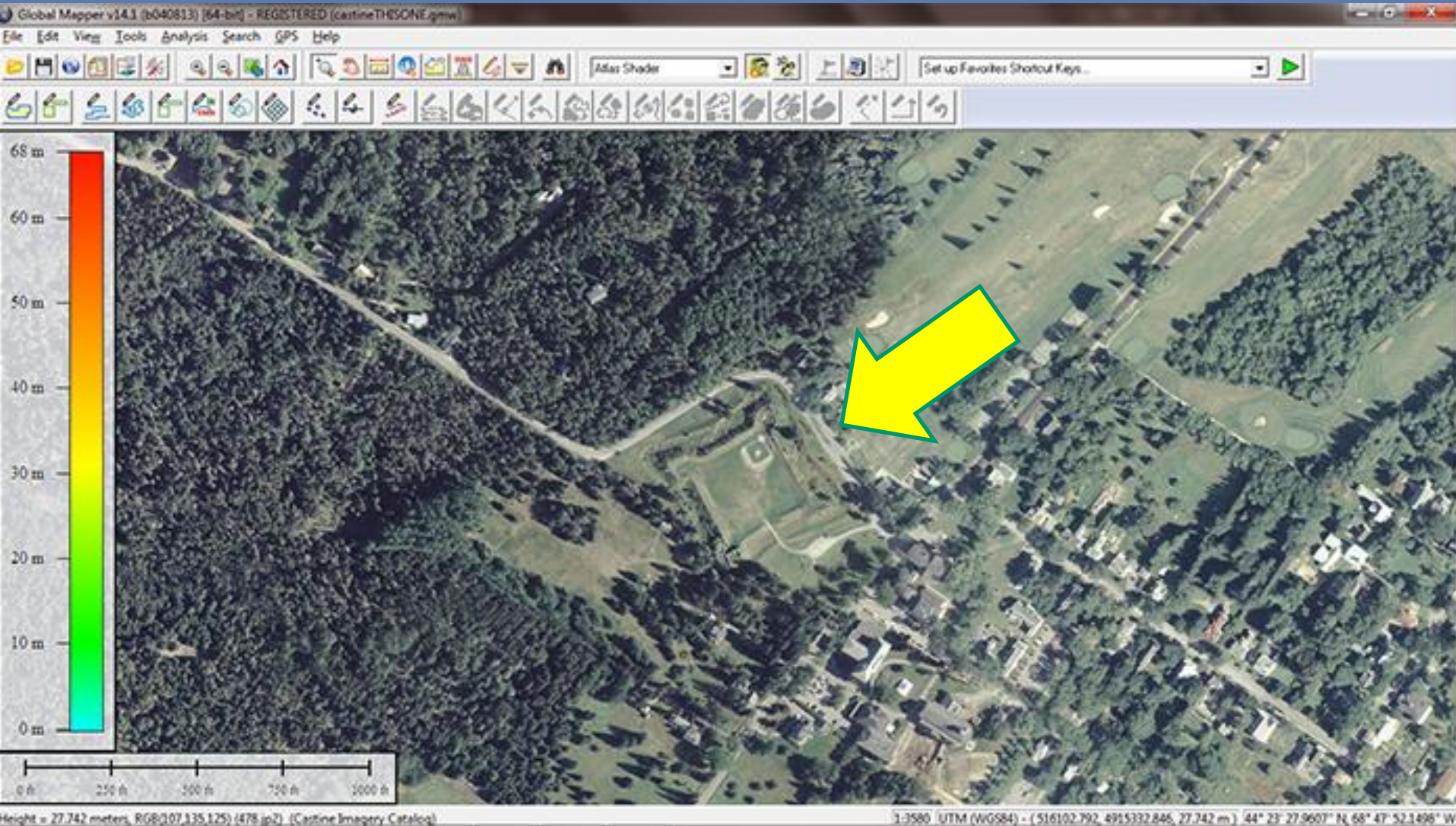
View Tools Analysis Search GPS Help



7 meters, RGB(163,164,143) (478.jp2) (Castine Imagery Catalog)

1:15860 UTM (WGS84) - (515489.716, 4915297.491, 56.166 m) 44° 23' 26.8629" N, 68° 48'

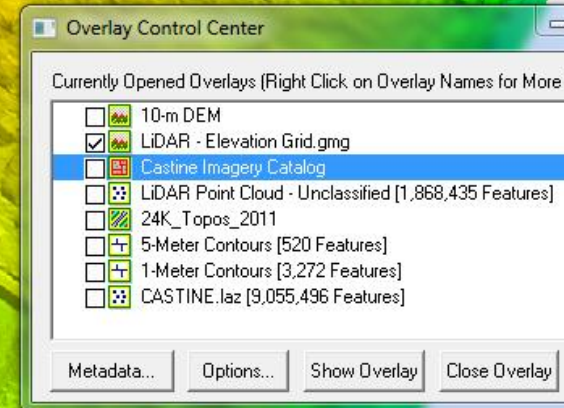
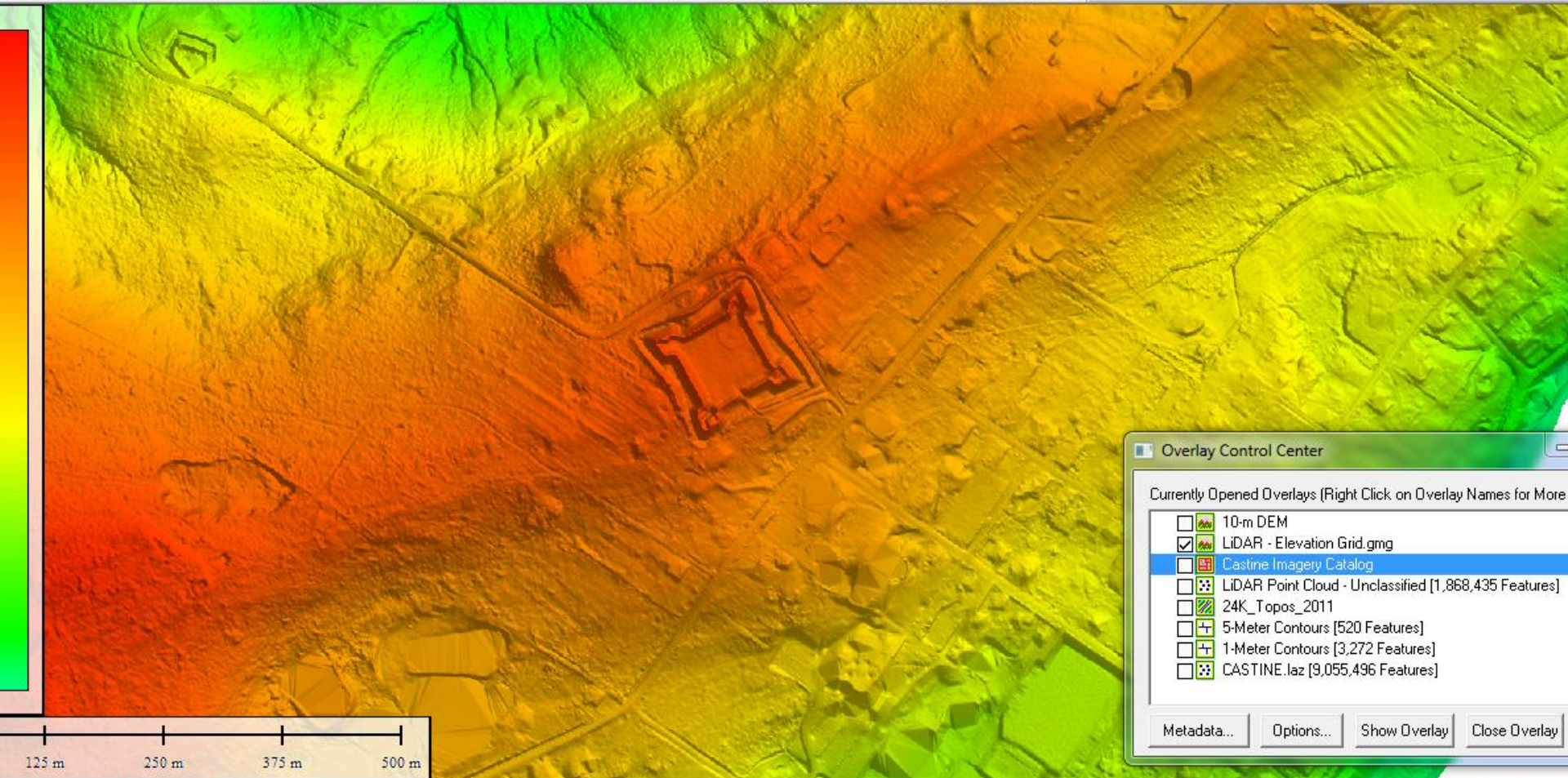
Leveraging LiDAR for Terrain Analysis



Leveraging LiDAR for Terrain Analysis

Mapper v14.1 (b043013) [64-bit] - REGISTERED (castine.gmw)

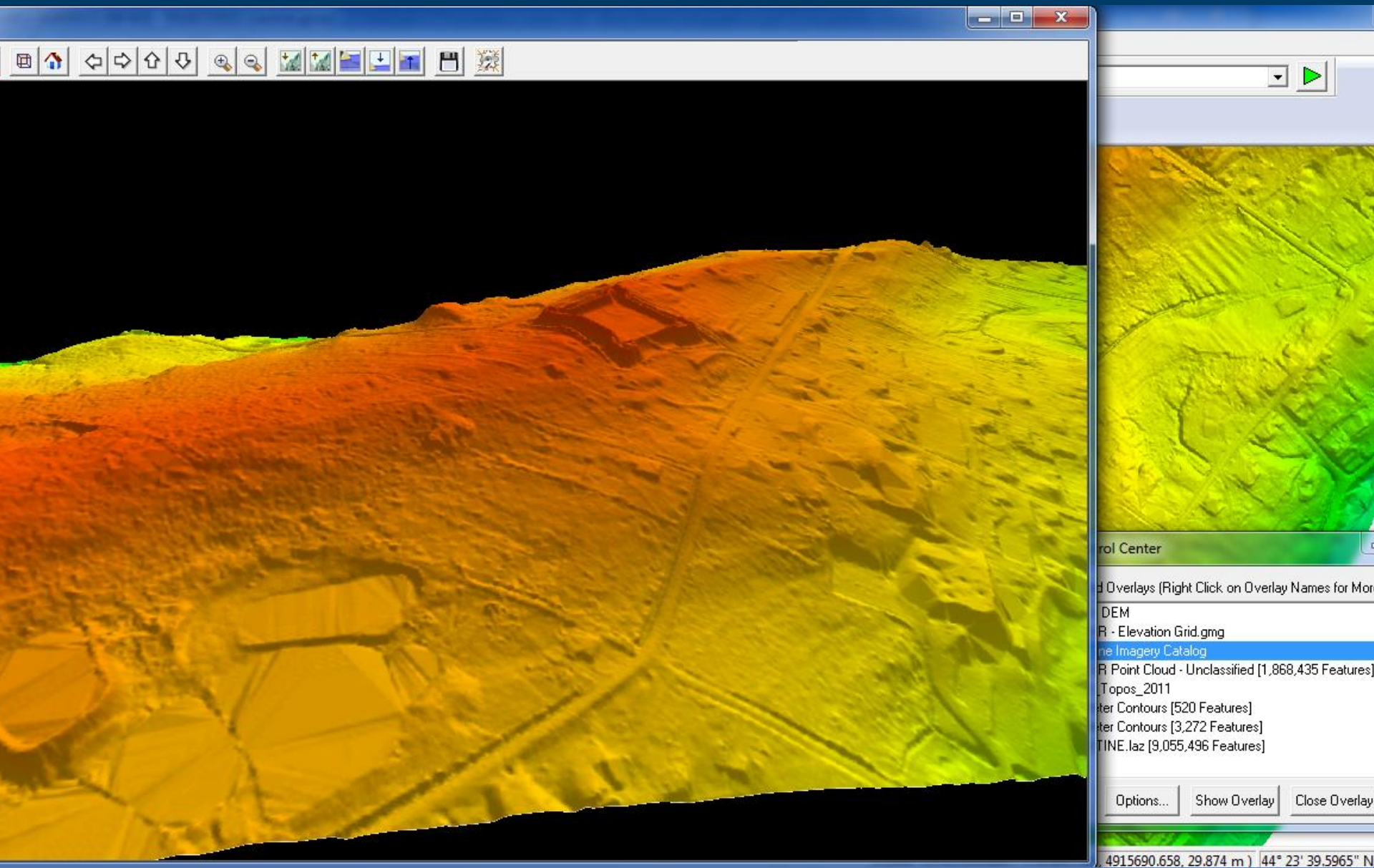
View Tools Analysis Search GPS Help



125 m 250 m 375 m 500 m
meters (LiDAR - Elevation Grid.gmg)

1:5261 UTM (WGS84) - (515721.826, 4915145.020, 36.528 m) 44° 23' 21.9033" N,

Leveraging LiDAR for Terrain Analysis



Leveraging LiDAR for Terrain Analysis

Mapper v14.1 (b043013) [64-bit] - REGISTERED (castine.gmw)

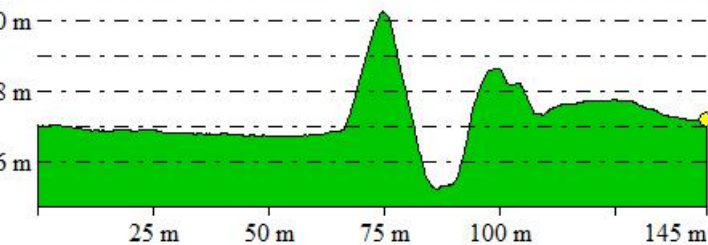
View Tools Analysis Search GPS Help



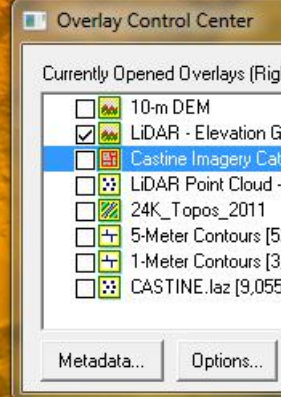
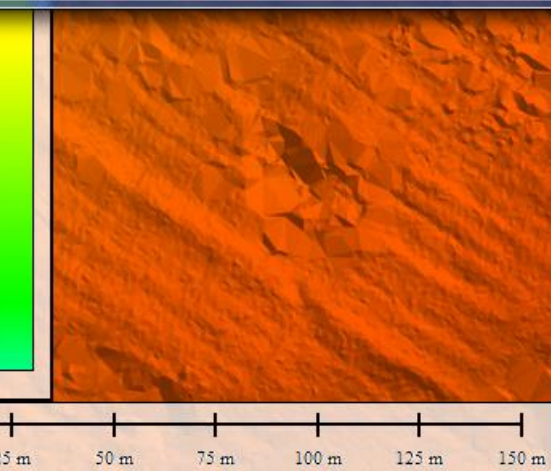
Path Profile/Line of Sight

Options Calculate

From Pos: 515494.089, 4915364.728 To Pos: 515388.383, 4915266.095



Line of Sight... Cut-and-Fill Volumes... Help OK



Start adding points. --> Height = 55.893 meters (LiDAR - Elevation Grid.gmg)

1:1485 UTM (WGS84) - (515384.846, 4915316.787, 55.893 m) 44° 23' 27.4964" N, 68° 44' 27.4964" W

Leveraging LiDAR for Terrain Analysis

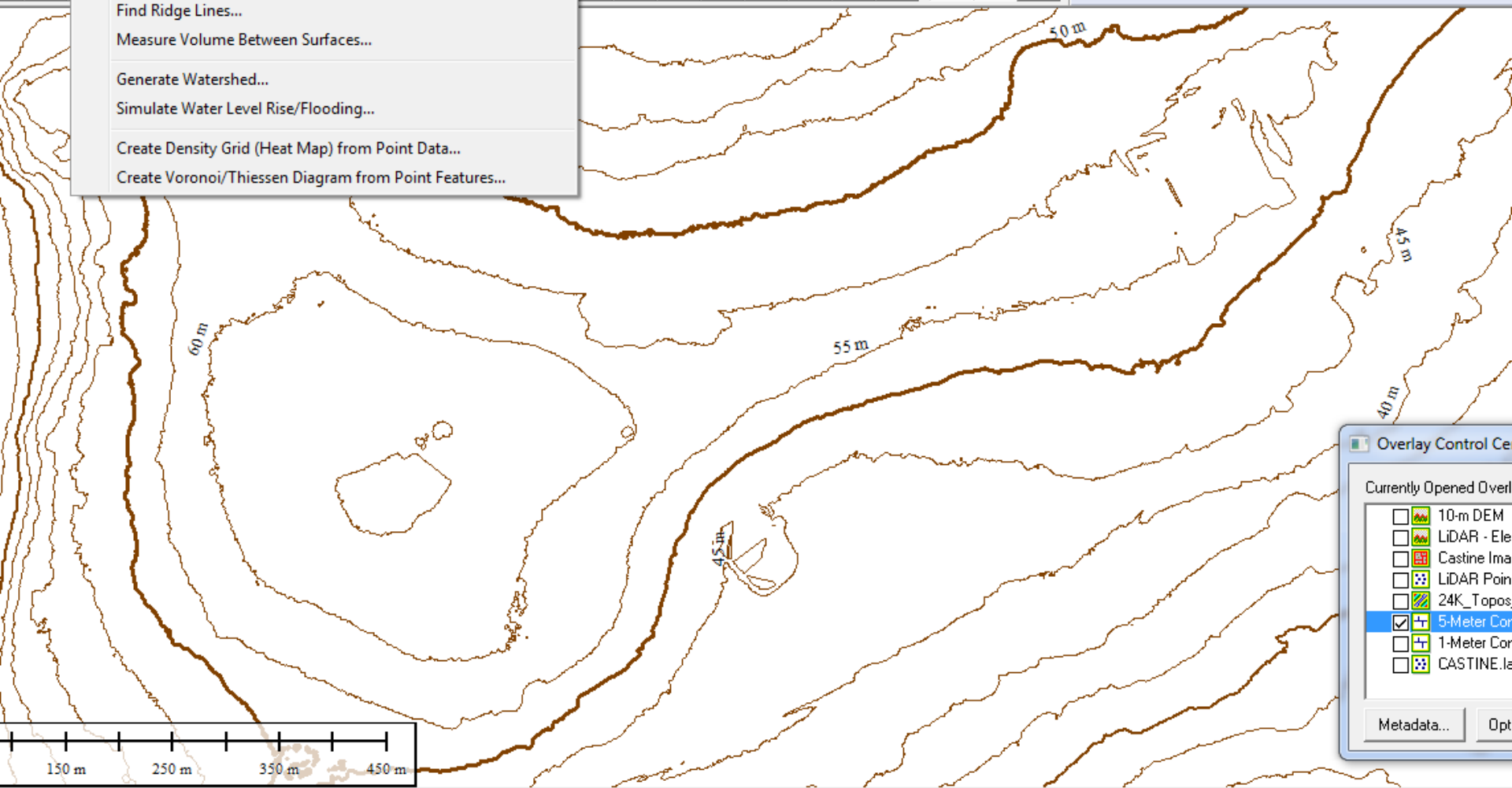
er v14.1 (b043013) [64-bit] - REGISTERED (castine.gmw)

Tools Analysis Search GPS Help

- Create Elevation Grid from 3D Vector Data...
- Combine/Compare Terrain Layers...
- Generate Contours...
- Find Ridge Lines...
- Measure Volume Between Surfaces...
- Generate Watershed...
- Simulate Water Level Rise/Flooding...
- Create Density Grid (Heat Map) from Point Data...
- Create Voronoi/Thiessen Diagram from Point Features...

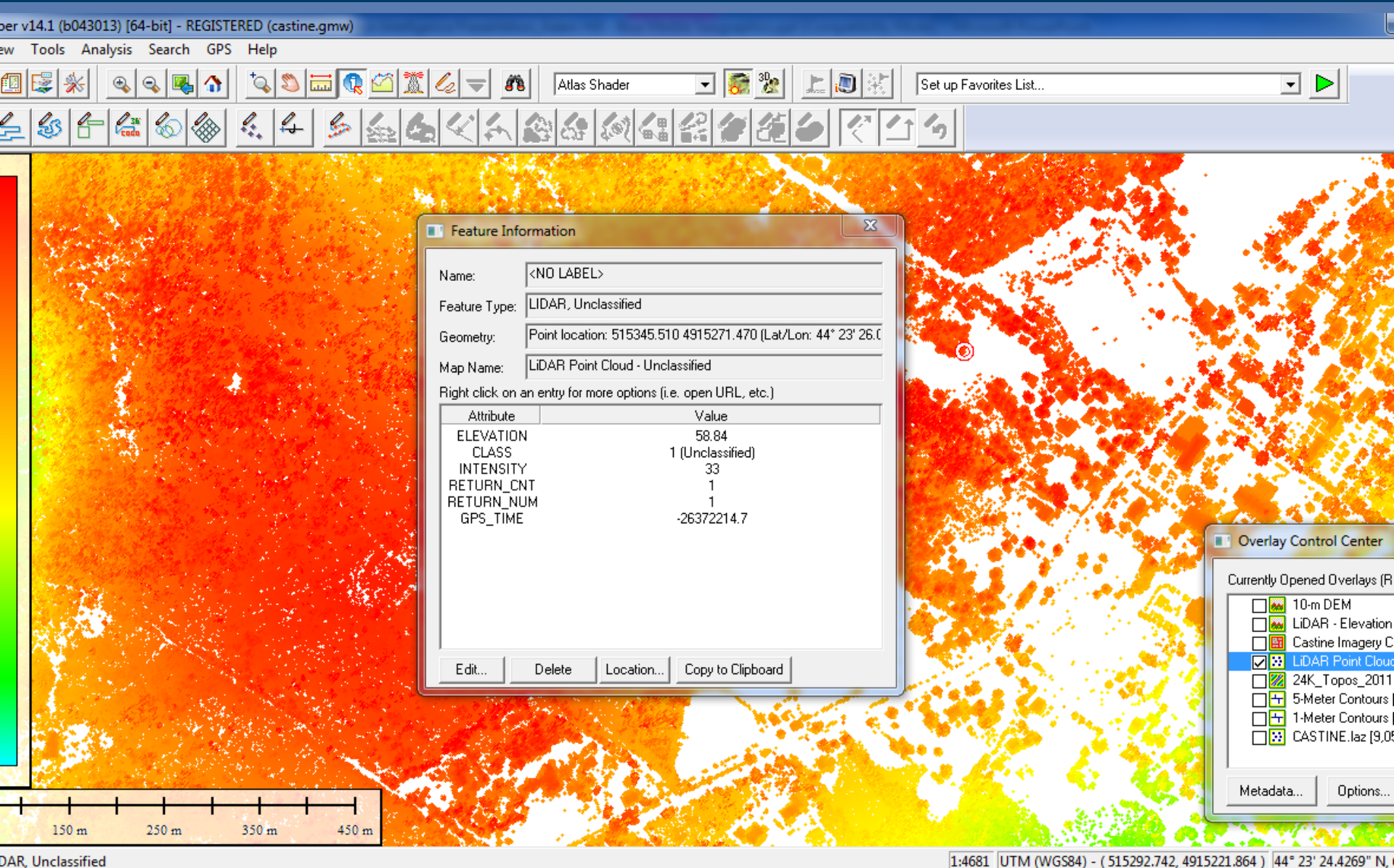
Atlas Shader

Set up Favorites List...



1:4681 UTM (WGS84) - (514799.790 4915455.954) 44° 23' 32.050'

Leveraging LiDAR for Terrain Analysis



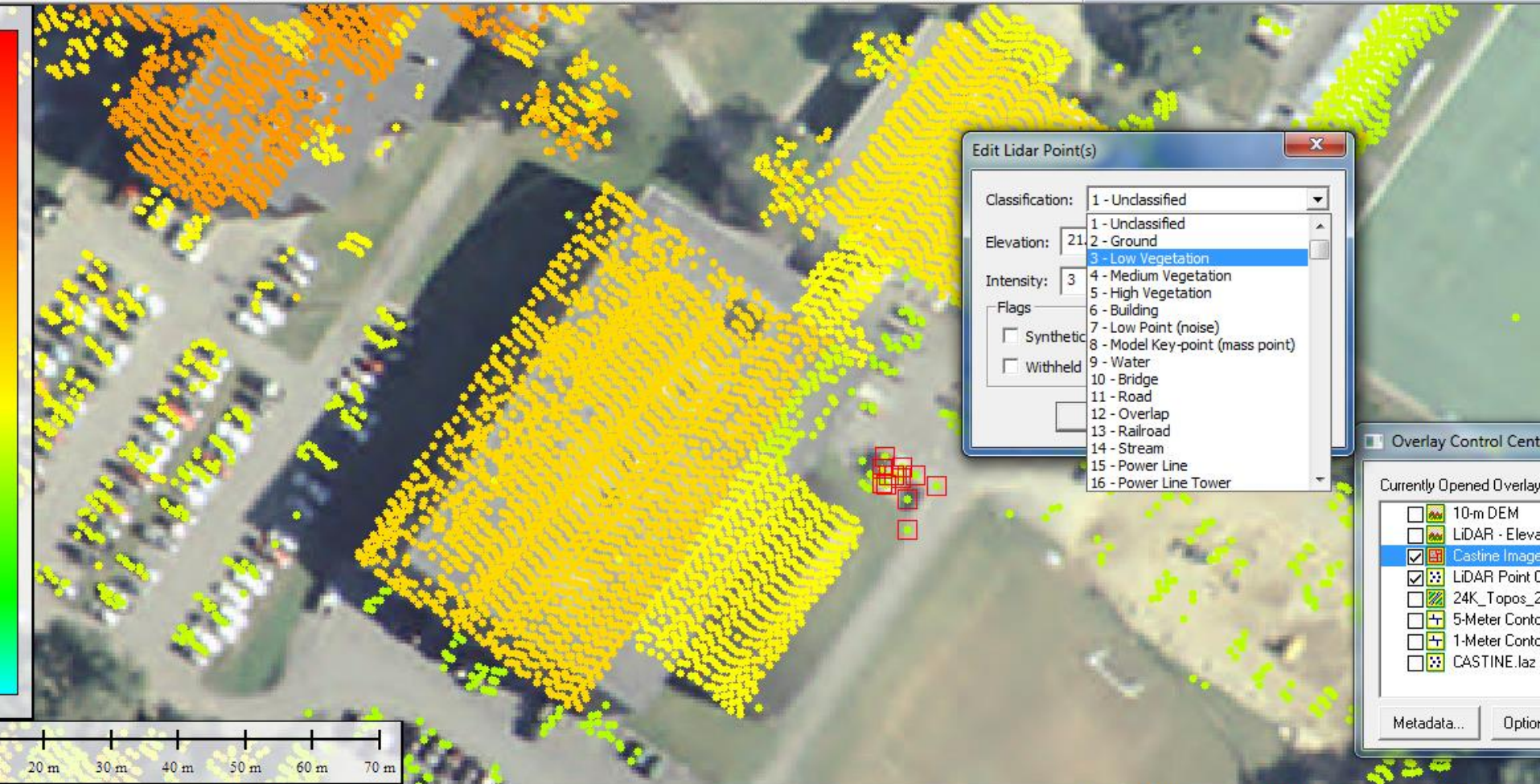
DAR, Unclassified

1:4681 UTM (WGS84) - (515292.742, 4915221.864) 44° 23' 24.4269" N,

Leveraging LiDAR for Terrain Analysis

ver v14.1 (b043013) [64-bit] - REGISTERED (castine.gmw)

File View Tools Analysis Search GPS Help



Edit Lidar Point(s)

Classification: 1 - Unclassified
1 - Unclassified
2 - Ground
3 - Low Vegetation
4 - Medium Vegetation
5 - High Vegetation
6 - Building
7 - Low Point (noise)
8 - Model Key-point (mass point)
9 - Water
10 - Bridge
11 - Road
12 - Overlap
13 - Railroad
14 - Stream
15 - Power Line
16 - Power Line Tower

Elevation: 21

Intensity: 3

Flags

☐ Synthetic

☐ Withheld

Overlay Control Center

Currently Opened Overlays

- ☐ 10-m DEM
- ☐ LiDAR - Elevation
- ☒ Castine Imagery
- ☒ LiDAR Point Cloud
- ☐ 24K_Topos_2011
- ☐ 5-Meter Contours
- ☐ 1-Meter Contours
- ☐ CASTINE.laz

Metadata... Options...

Display Option Menu --> <NO LABEL> LIDAR, Unclassified

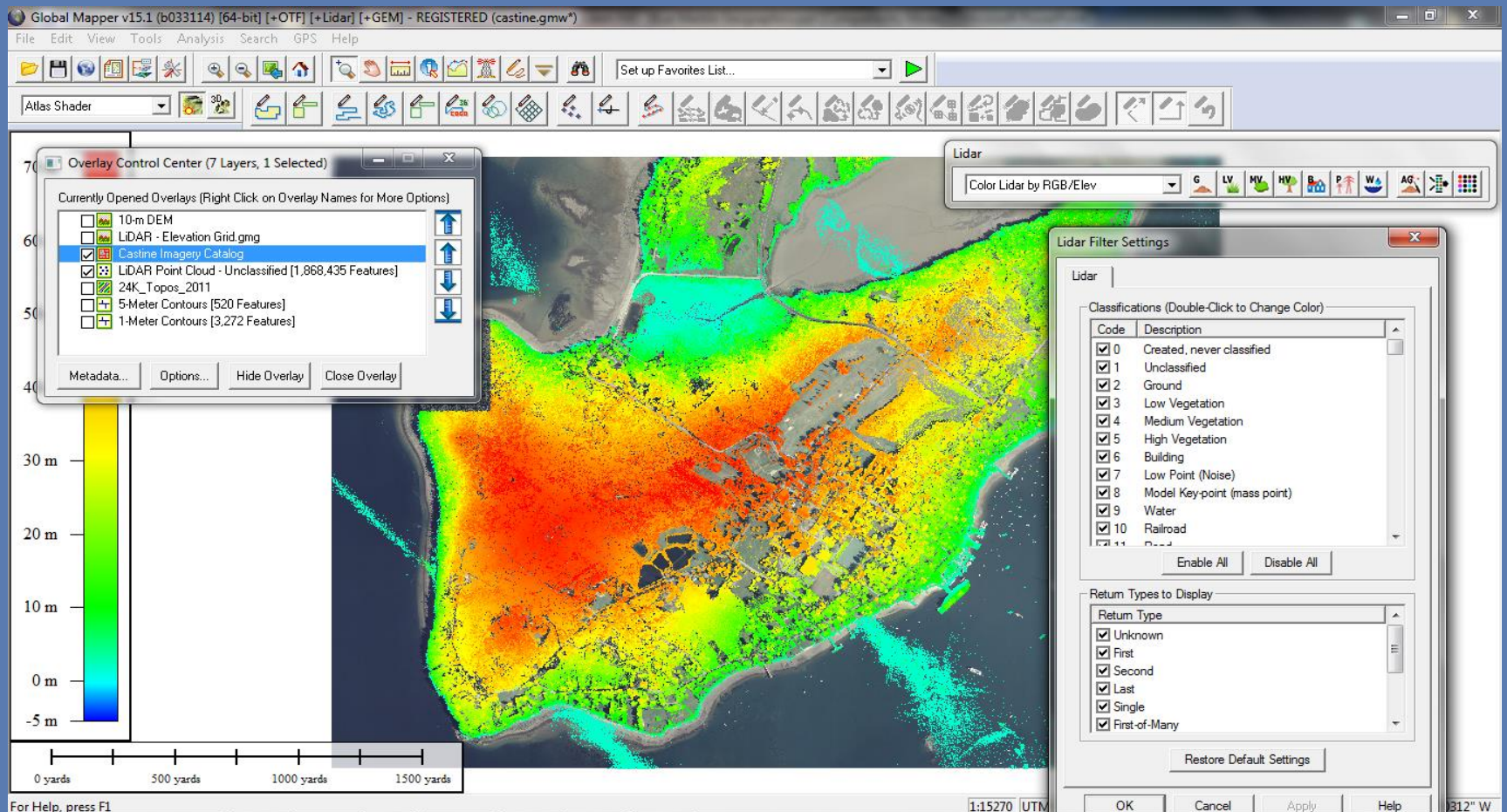
1:748 UTM (WGS84) - (515719.443, 4914904.452) 44° 23' 14.1067"

New Lidar Module Now Available

Global Mapper

Tecnologia GIS ao seu alcance!

Poderoso Módulo LiDAR

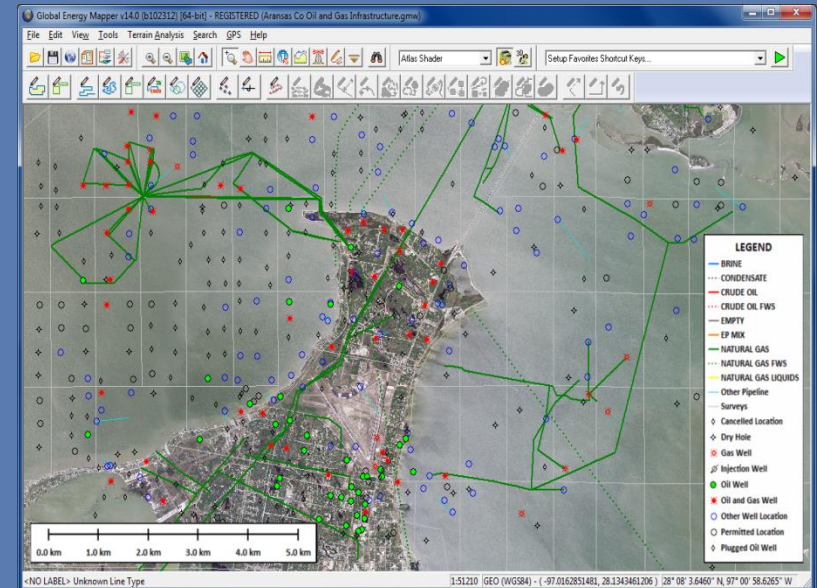


Know Your Data

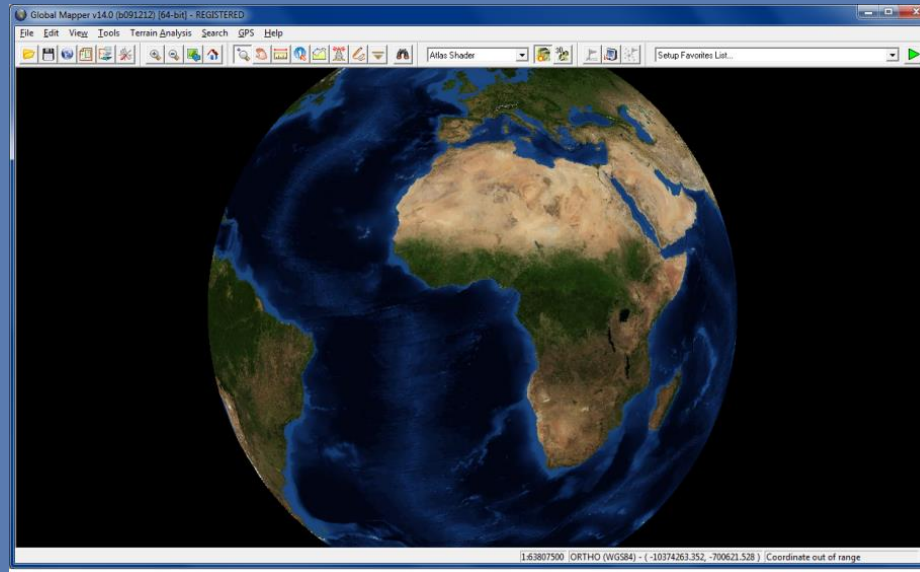
- LiDAR is widely available
 - Many freely available datasets can be leveraged for rich content extraction & analysis
 - DEM – Digital Elevation Model
 - Generate Contours
 - Line of Sight Calculations
 - Viewshed Analysis
 - Watershed Analysis
 - Flood modeling
 - Global Mapper allows for flexible analysis and offers a variety of features for creating your very own GIS data
- Manual Classification through Digitizer Tool
- Additional Auto-classification functionality is coming soon
- New features built per customer feedback

Free Support & Help Sources

- Free technical support
 - geohelp@bluemarblegeo.com
 - +1-207-622-4622
- Free Webinars
 - www.bluemarblegeo.com/products/webinars
 - Download Pre-recorded Webinars
- Software User Manuals
 - Getting Started Guides
 - Extensive Help Documentation
 - **Foreign Language Support**
 - Portuguese Version Coming Soon
- GeoPartner Representation in Brazil



Questions? Thank You!



Adam Hill
Senior Account Manager
Blue Marble Geographics

44° 17' 15.40" N, 69° 47' 24.55" W, WGS84

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