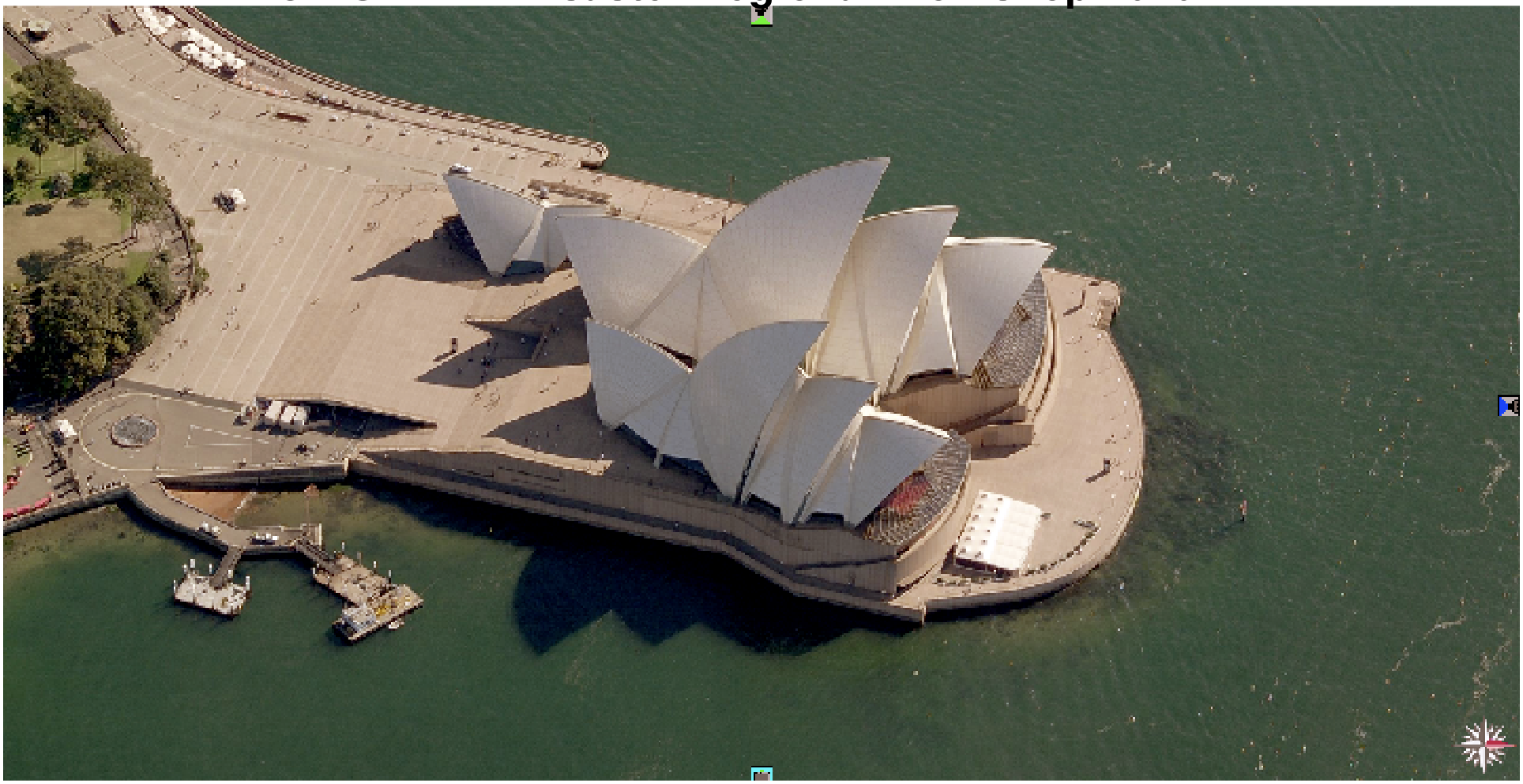
UN-SPIDER Disaster Regional Workshop 2010



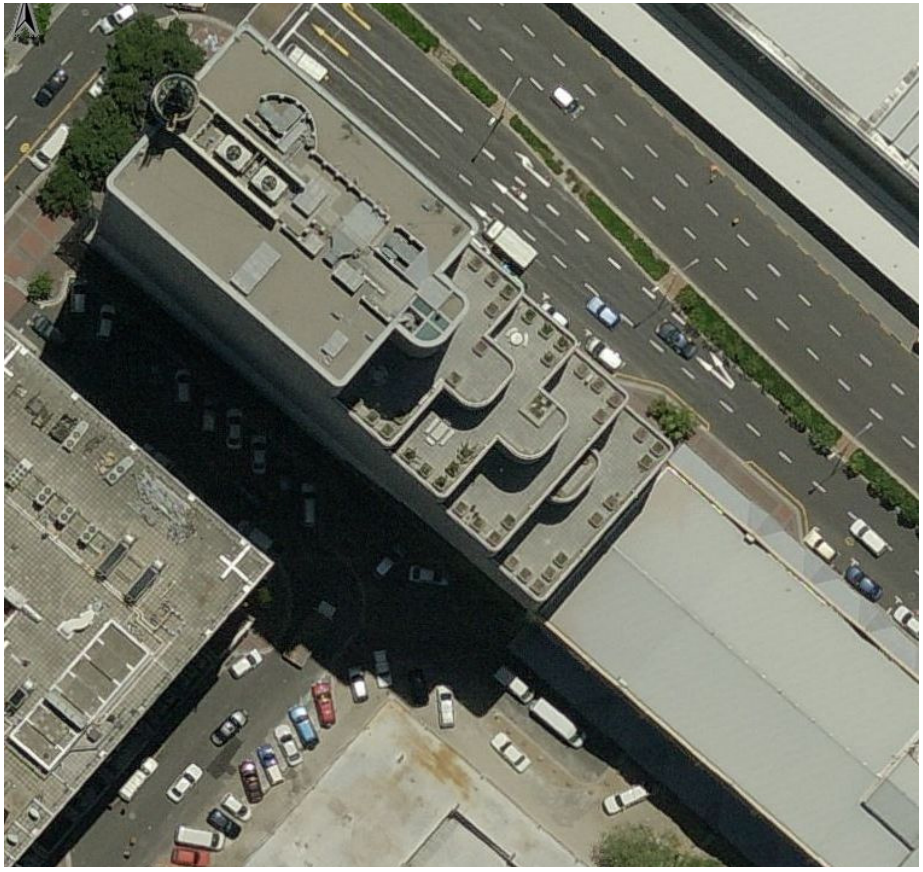
Pictometry and its uses in Disaster Planning and Response

Robert Carroll
President International Division
Pictometry International Corp.

Pictometry Intelligent Images

Visual Perspective

Pictometry
Intelligent Images



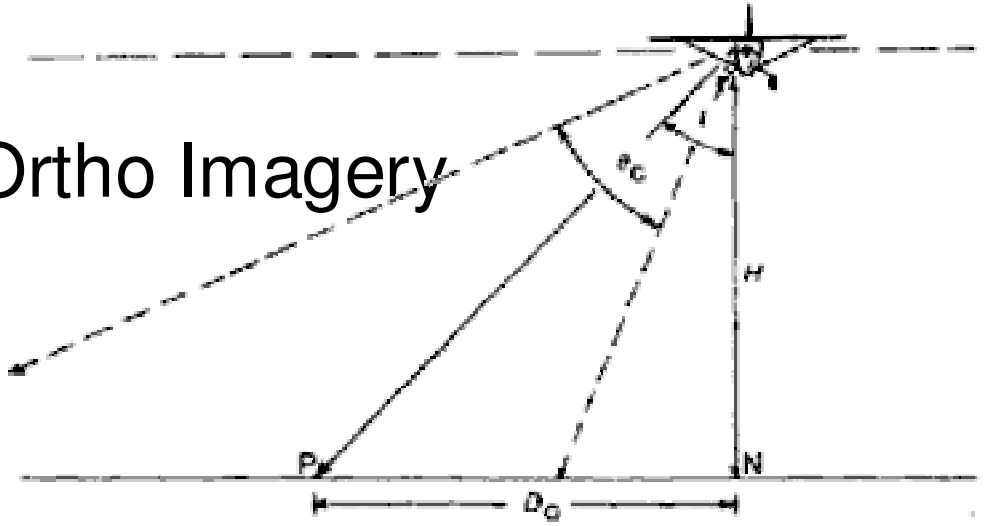
Pictometry
Intelligent Images

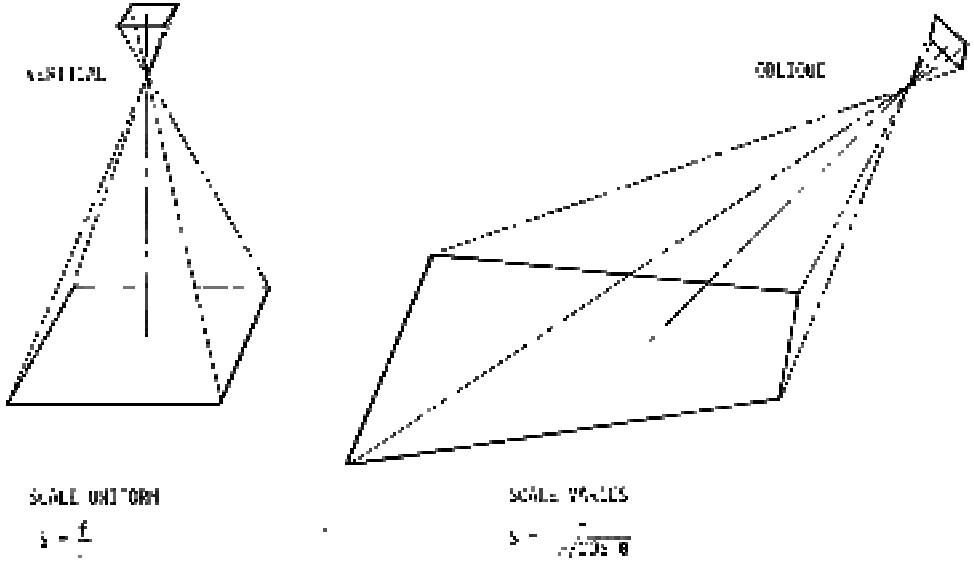
What is Oblique Imaging Technology?

- Oblique refers to the camera angle at which an image is captured
    - Pictometry images are captured at a 40 degree angle
- Due to this angle, Pictometry images reveal greater detail, provide different oriented views, and give lay-users a natural perceptive
- Example: users can see all of a builing's features such as the front door, back door, windows and more.

Pictometry
Intelligent Images

Oblique vs Ortho Imagery





Pictometry
Intelligent Images

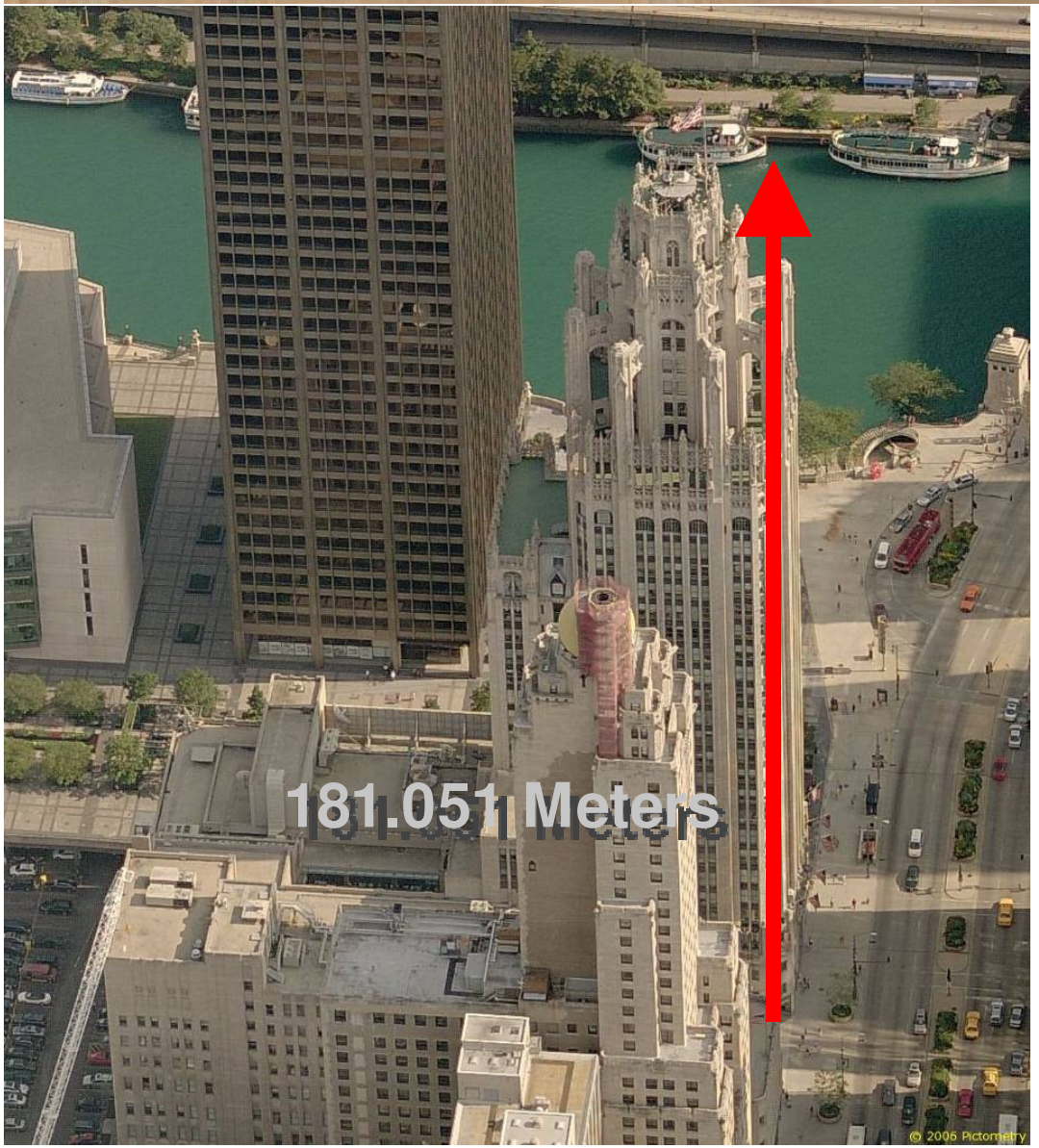

Ortho
Providence, Rhode Island


North
Providence, Rhode Island


East


South
Providence, Rhode Island


West
Providence, Rhode Island

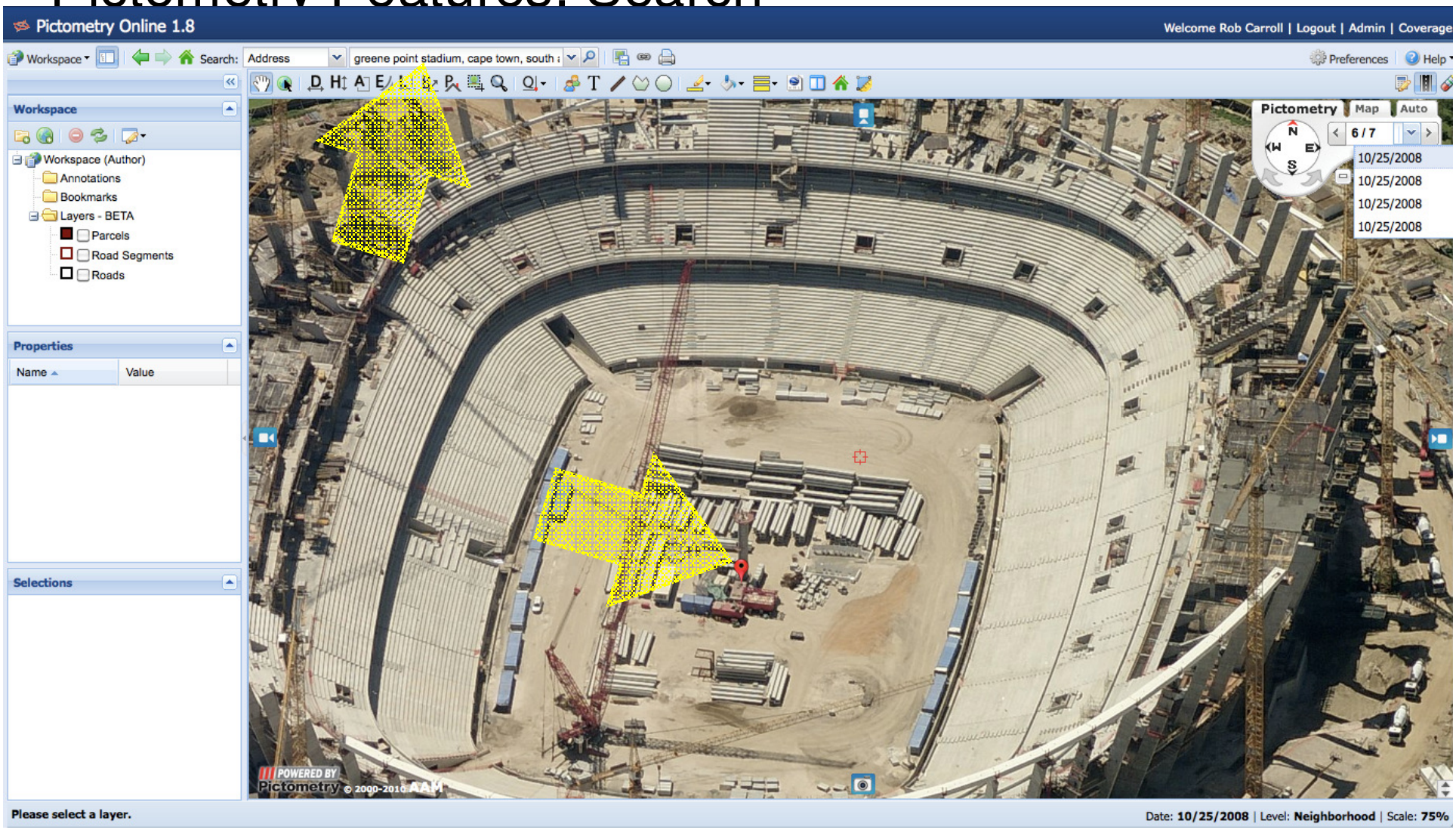


Each image pixel has an X, Y and Z value. You can measure right on the image for:

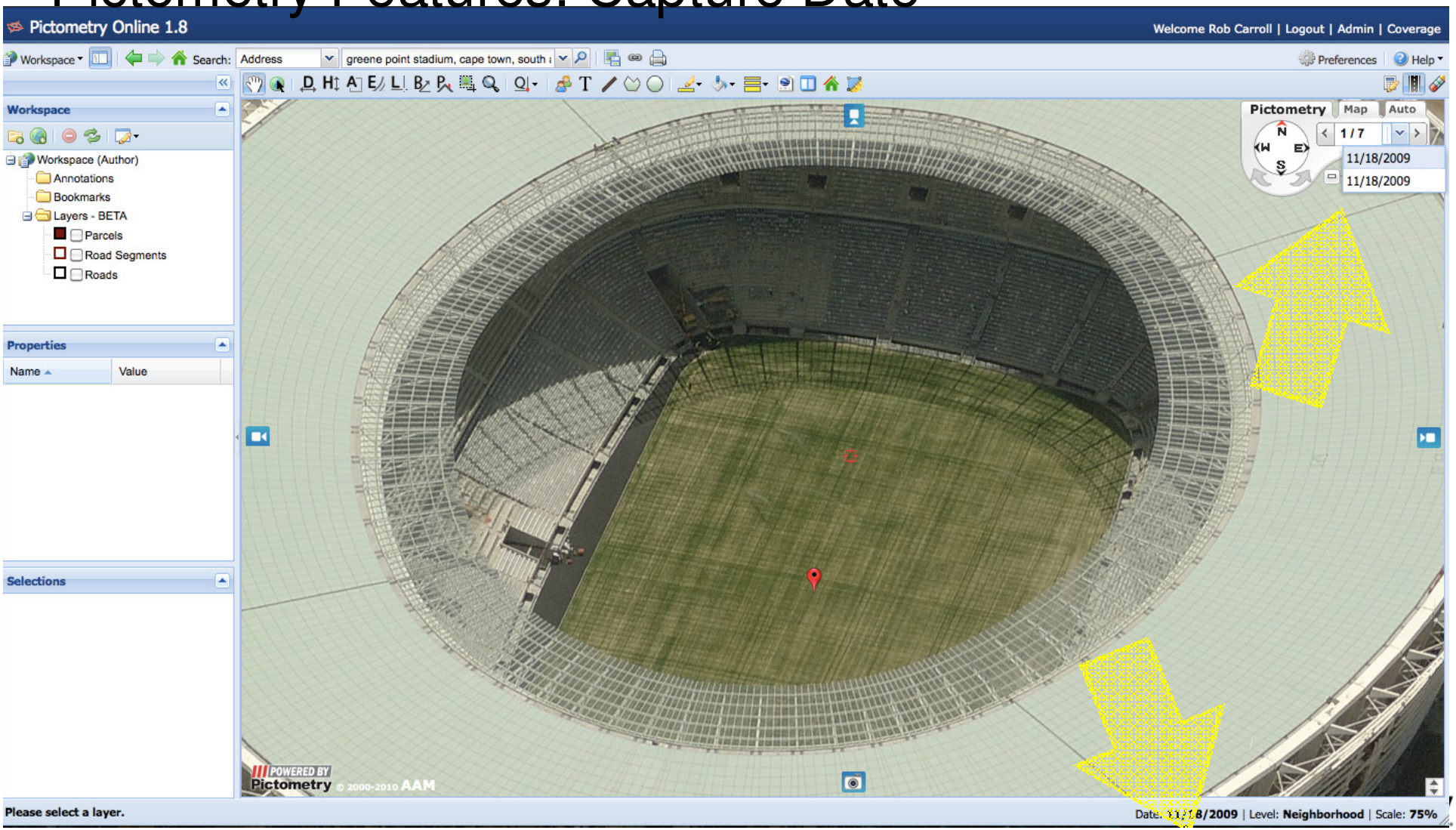
- **Height**
- **Distance**
- **Area**
- **Bearing**
- **Pitch**
- **Latitude/Longitude**
- **Elevation/Slope**

Pictometry
Intelligent Images

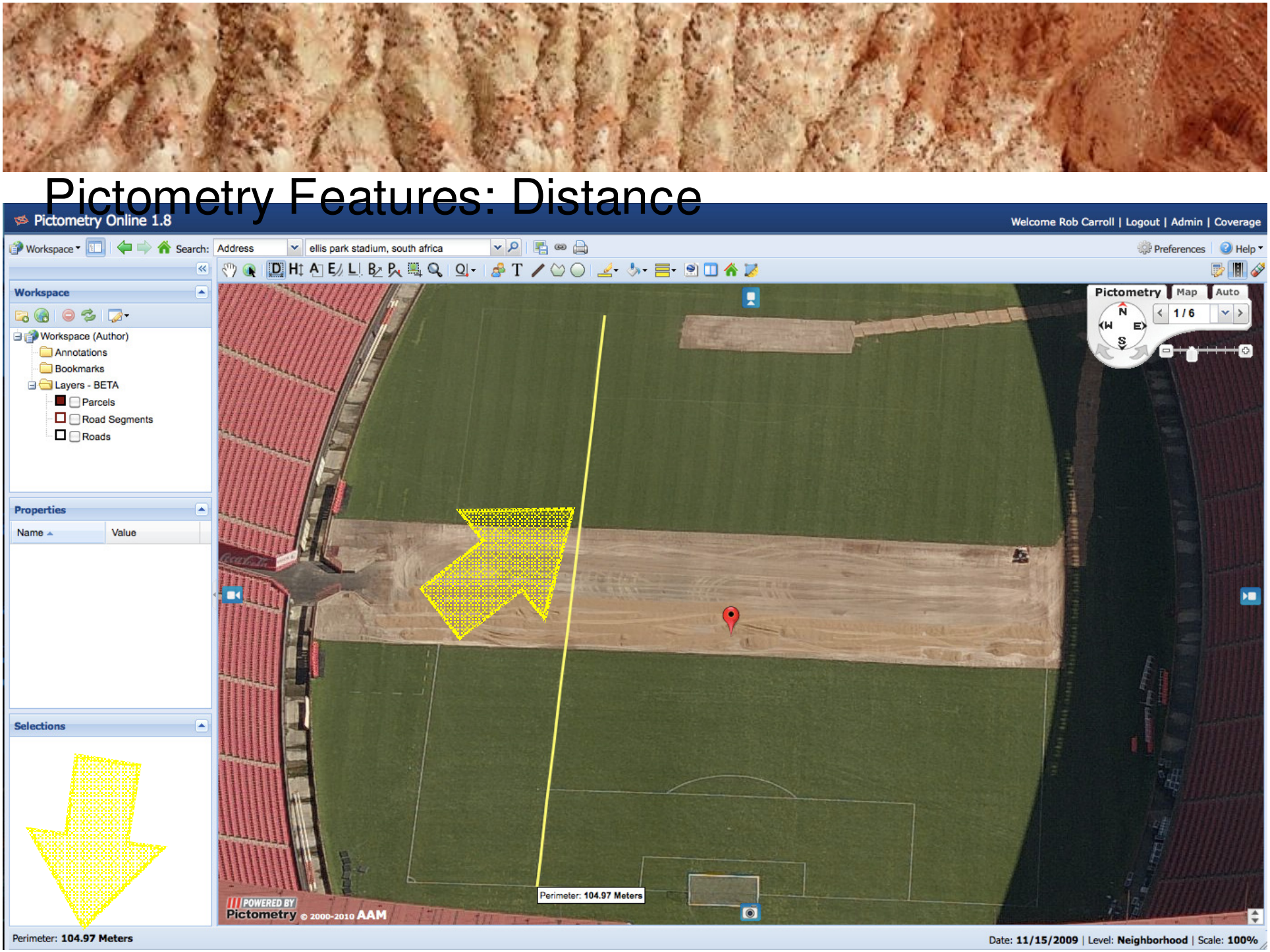
Pictometry Features: Search



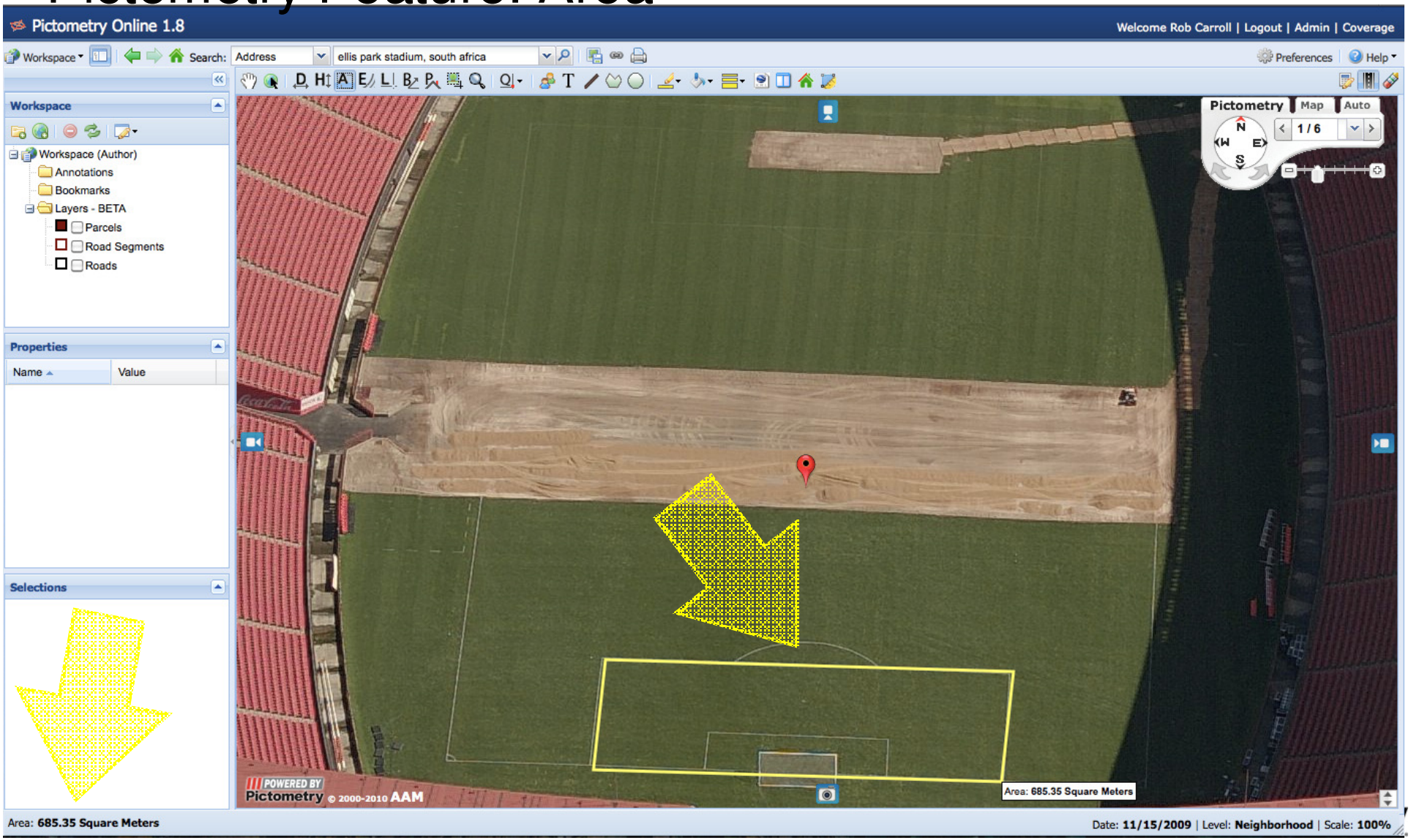
Pictometry Features: Capture Date



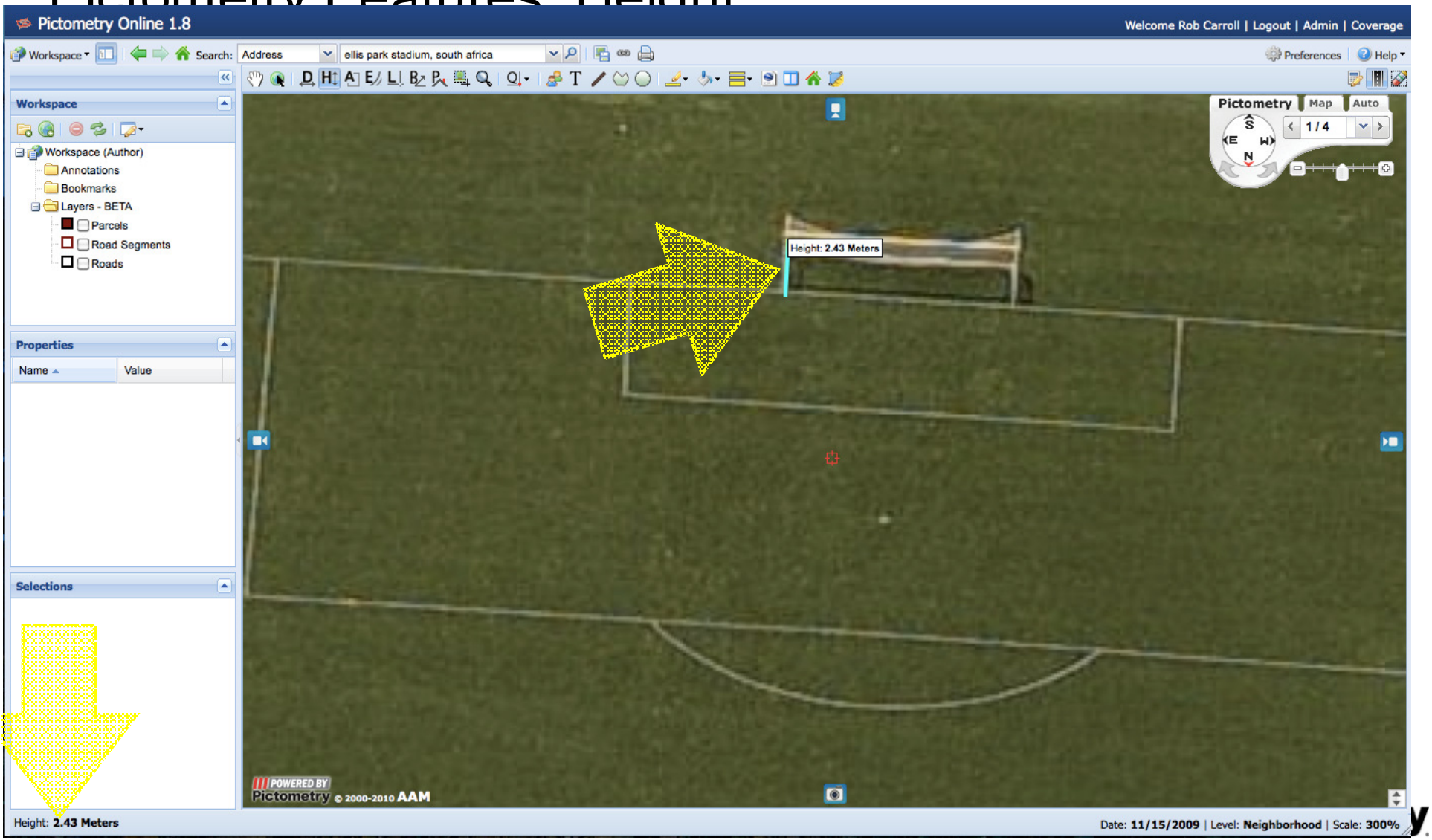
Pictometry Features: Distance

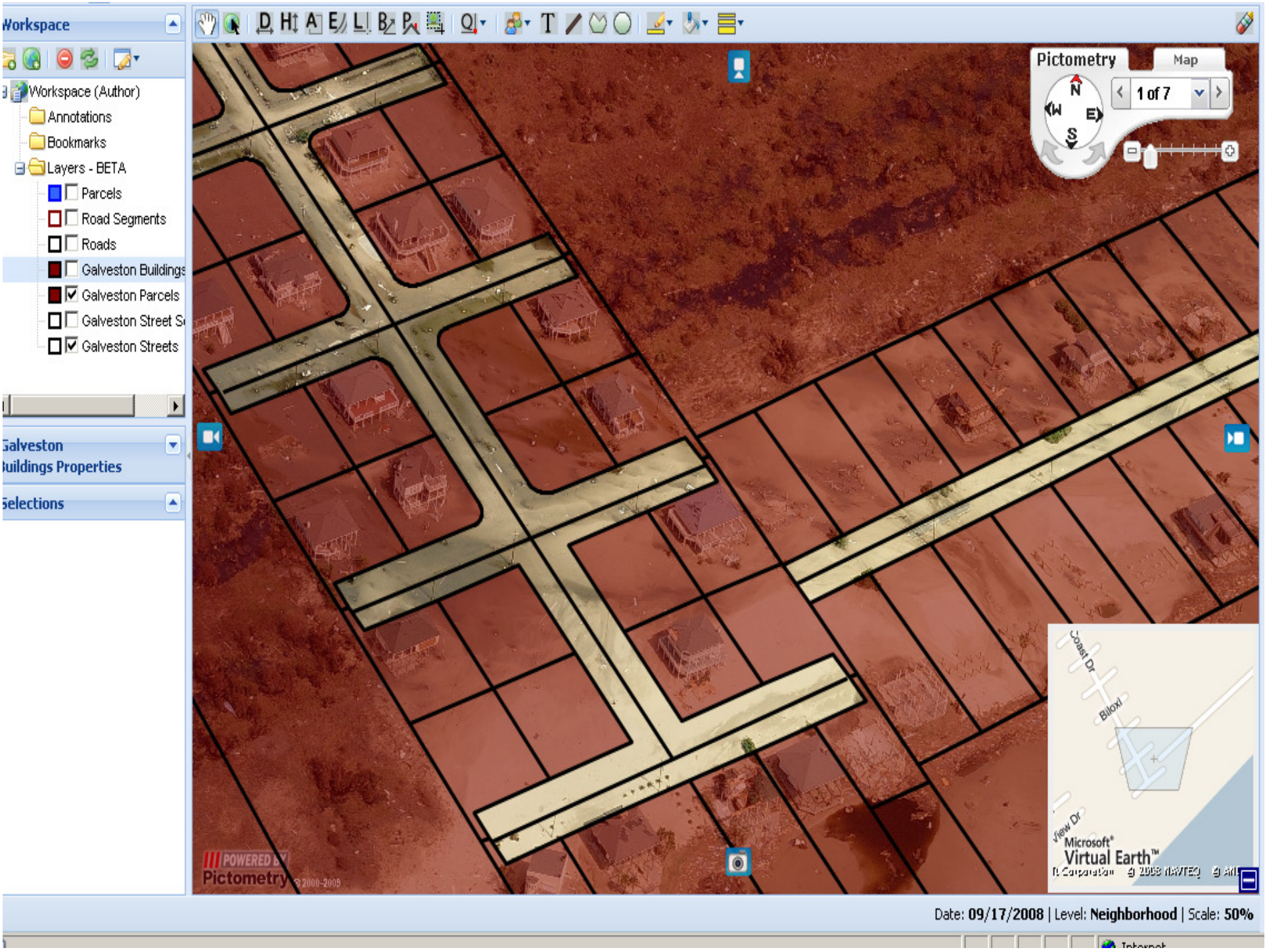


Pictometry Feature: Area



Pictometry Features: Height




Workspace
Workspace (Author)
Annotations
Bookmarks
Layers - BETA
Parcels
Road Segments
Roads
Galveston Buildings
Galveston Parcels
Galveston Street S
Galveston Streets
Galveston
Buildings Properties
Selections
Pictometry
Map
1 of 7
N
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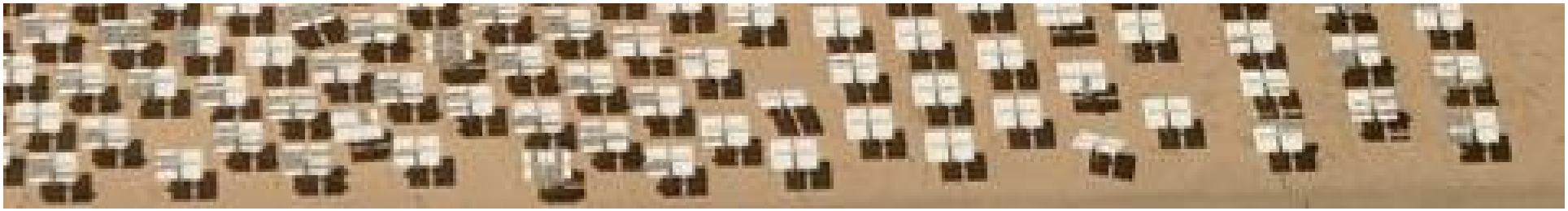
POWERED BY
Pictometry
© 2000-2005
Coast Dr
Biloxi
View Dr
Microsoft
Virtual Earth™
Date: 09/17/2008 | Level: Neighborhood | Scale: 50%

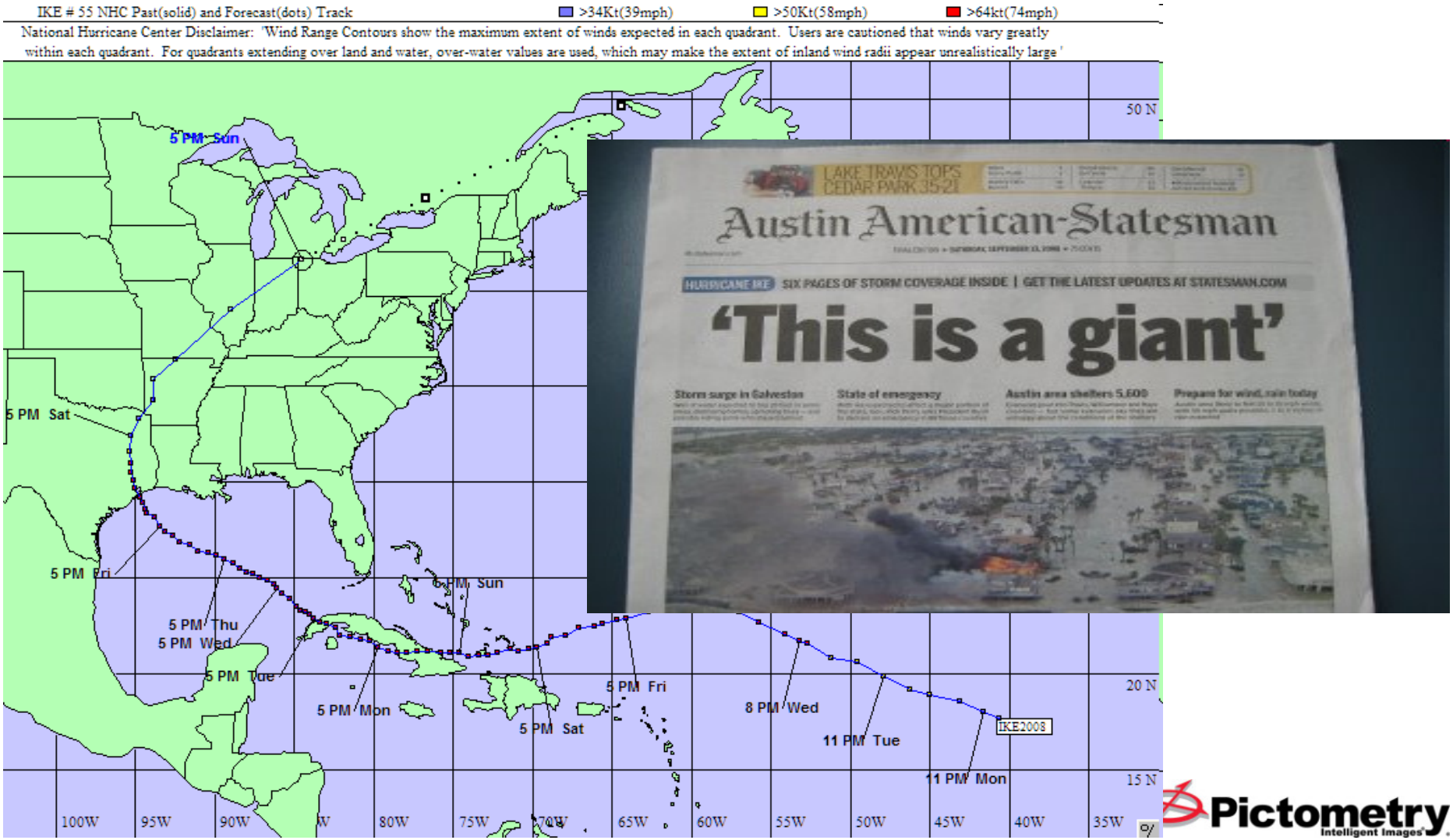


Realised Return on Investment

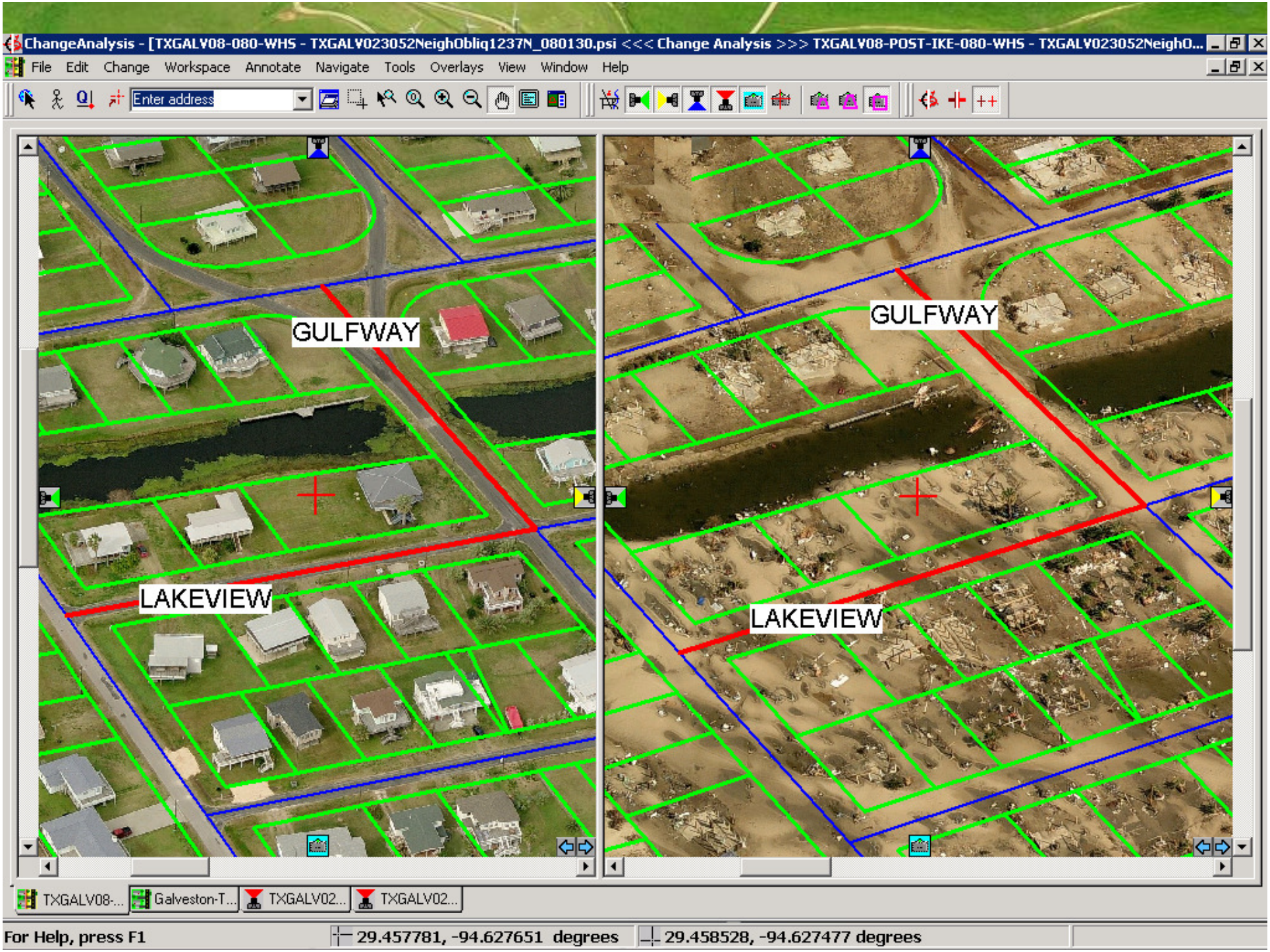
- Cost Avoidance
  - Reduced temporary staff for field study
  - Reduced field visits / fleet costs
- Reduced Risk
  - Improved risk assessment estimates through comprehensive data
  - Minimized staff exposure to hazardous areas

Pictometry
Intelligent Images

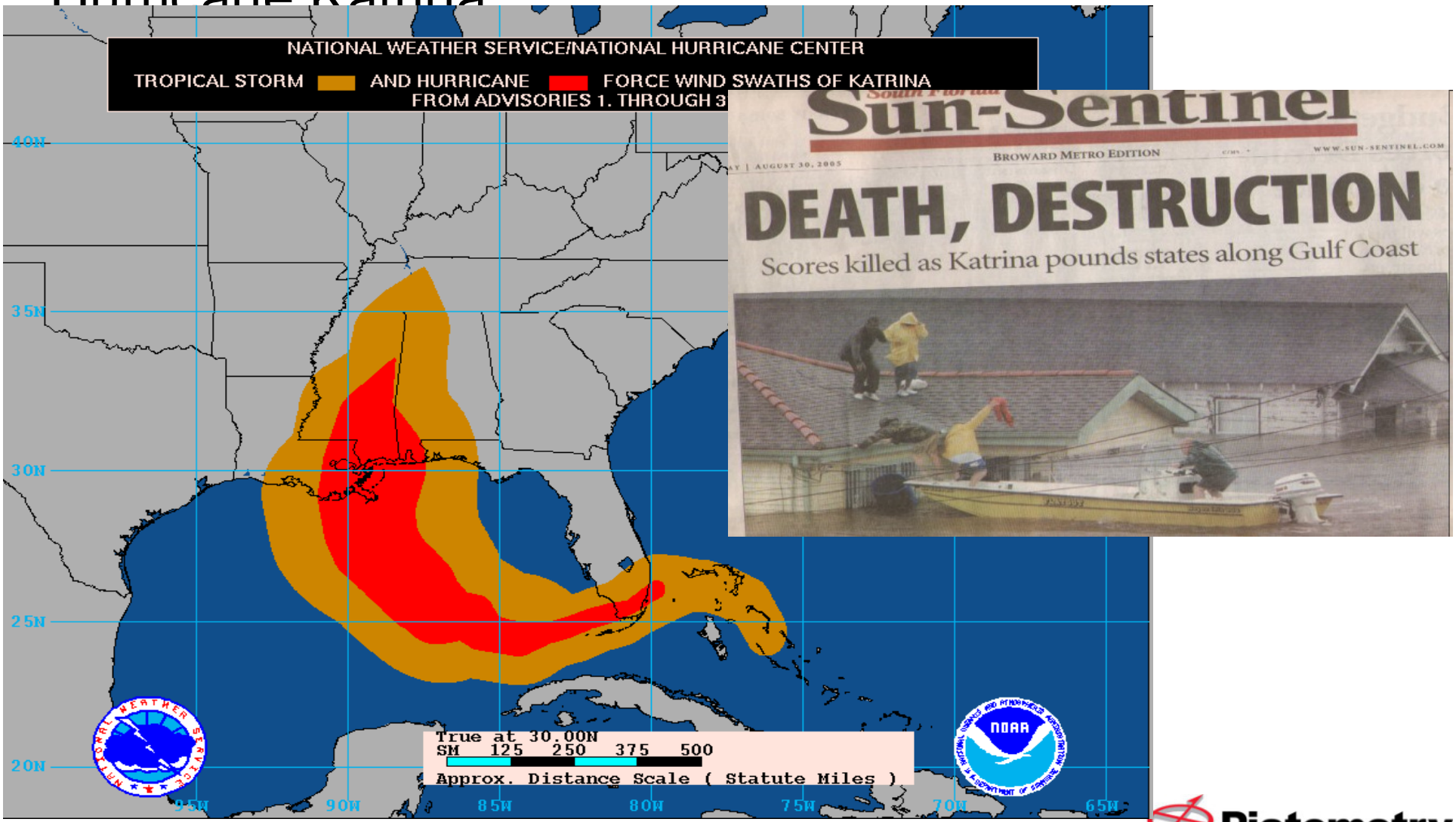
Hurricane Ike



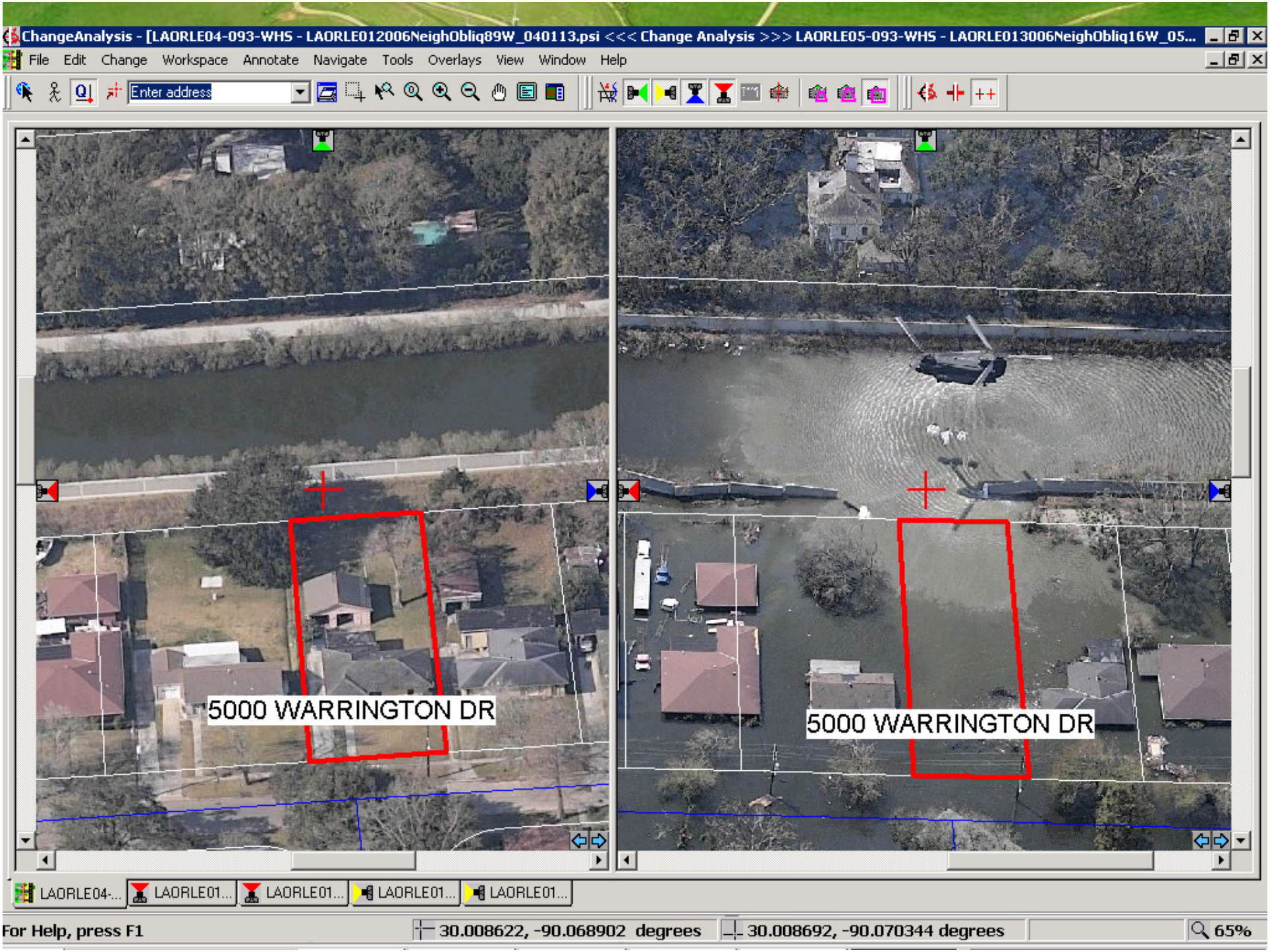
Pictometry
Intelligent Images


ChangeAnalysis - [TXGALV08-080-WHS - TXGALV023052NeighObliq1237N_080130.psi <<< Change Analysis >>> TXGALV08-POST-IKE-080-WHS - TXGALV023052NeighO...
File Edit Change Workspace Annotate Navigate Tools Overlays View Window Help
Enter address
GULFWAY
LAKEVIEW
GULFWAY
LAKEVIEW
TXGALV08-...
Galveston-T...
TXGALV02...
TXGALV02...
For Help, press F1
29.457781, -94.627651 degrees
29.458528, -94.627477 degrees

Hurricane Katrina



Pictometry
Intelligent Images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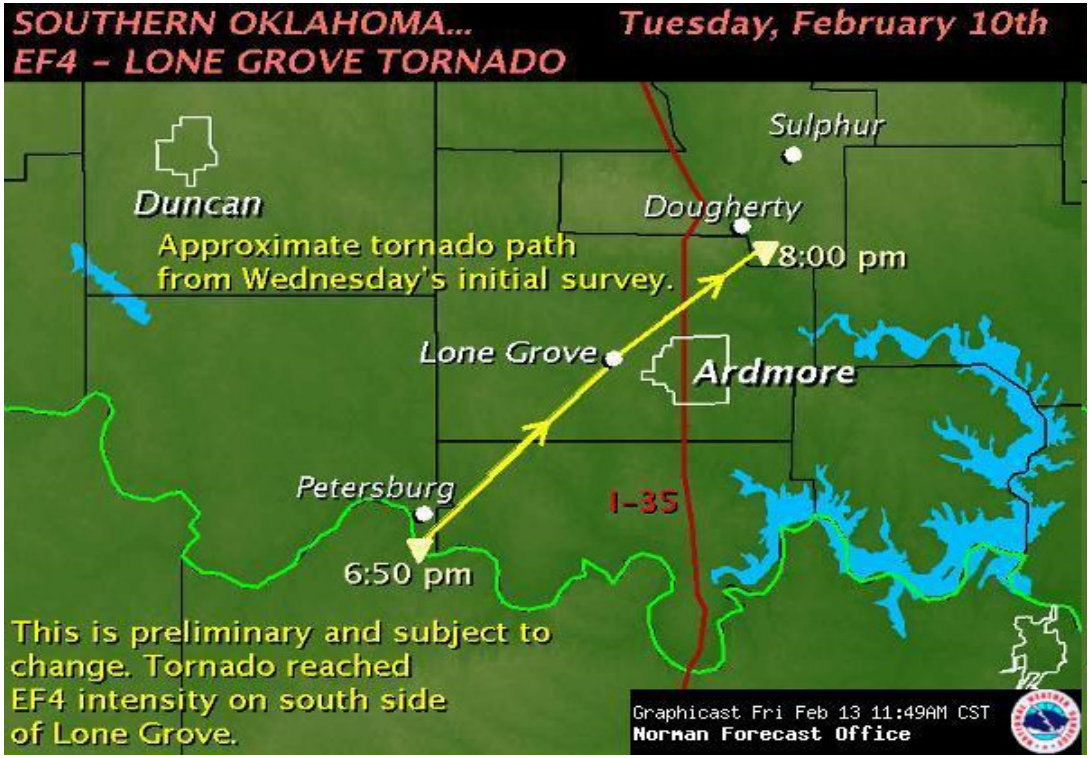
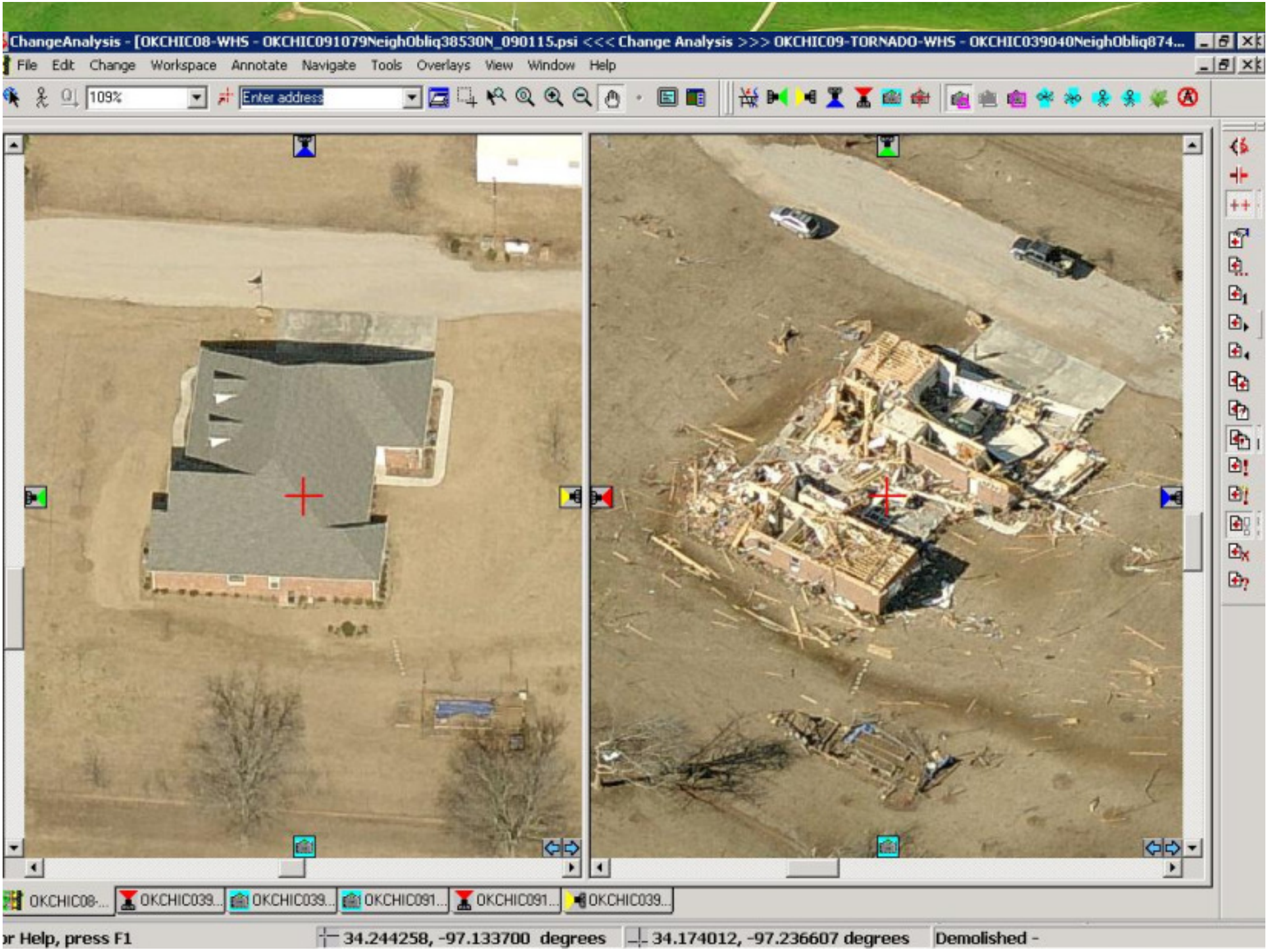
File Edit Change Workspace Annotate Navigate Tools Overlays View Window Help
Enter address
5000 WARRINGTON DR
5000 WARRINGTON DR
LAORLE04-...
LAORLE01...
LAORLE01...
LAORLE01...
LAORLE01...
For Help, press F1
30.008622, -90.068902 degrees
30.008692, -90.070344 degrees
65%

Lone Grove (OK) Tornado



Pictometry
Intelligent Images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File Edit Change Workspace Annotate Navigate Tools Overlays View Window Help
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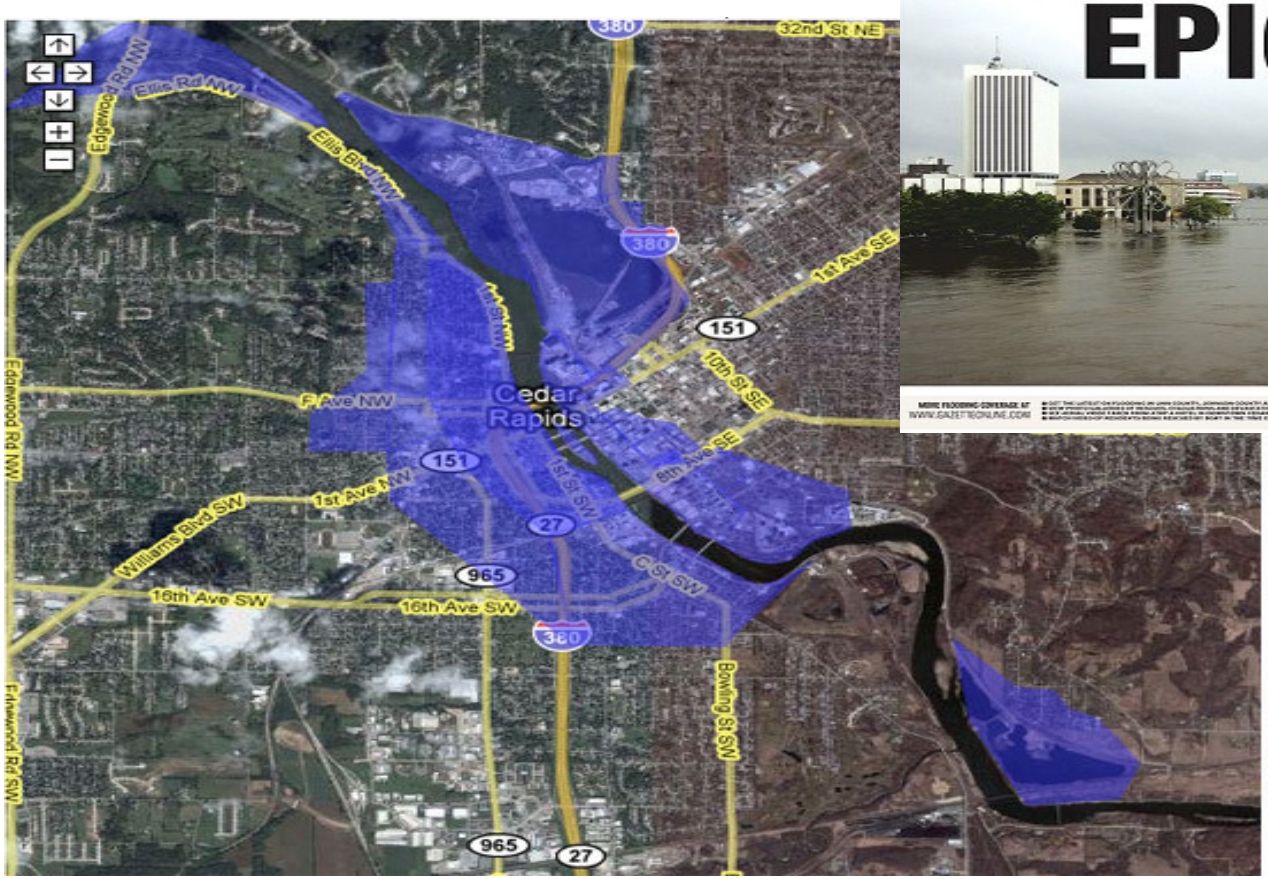
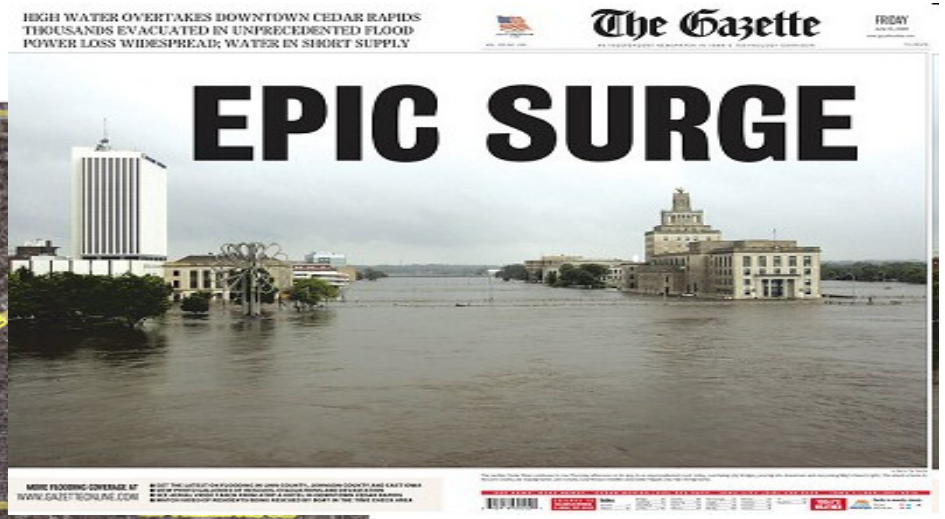
OKCHIC091...
OKCHIC091...
OKCHIC039...
r Help, press F1
34.244258, -97.133700 degrees
34.174012, -97.236607 degrees
Demolished -

Cedar Rapids Floods



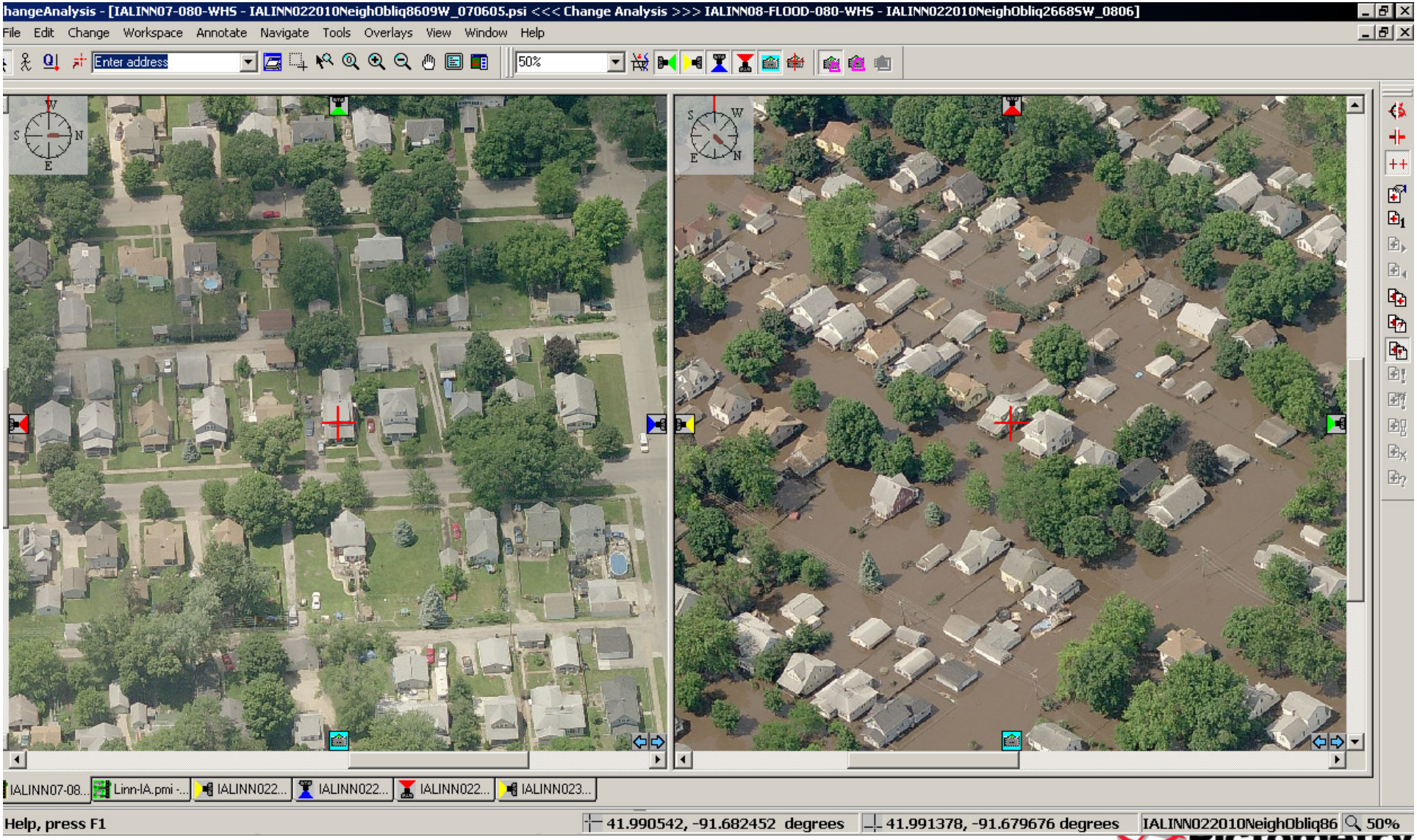

HIGH WATER OVERTAKES DOWNTOWN CEDAR RAPIDS
THOUSANDS EVACUATED IN UNPRECEDENTED FLOOD
POWER LOSS WIDESPREAD; WATER IN SHORT SUPPLY

The Gazette

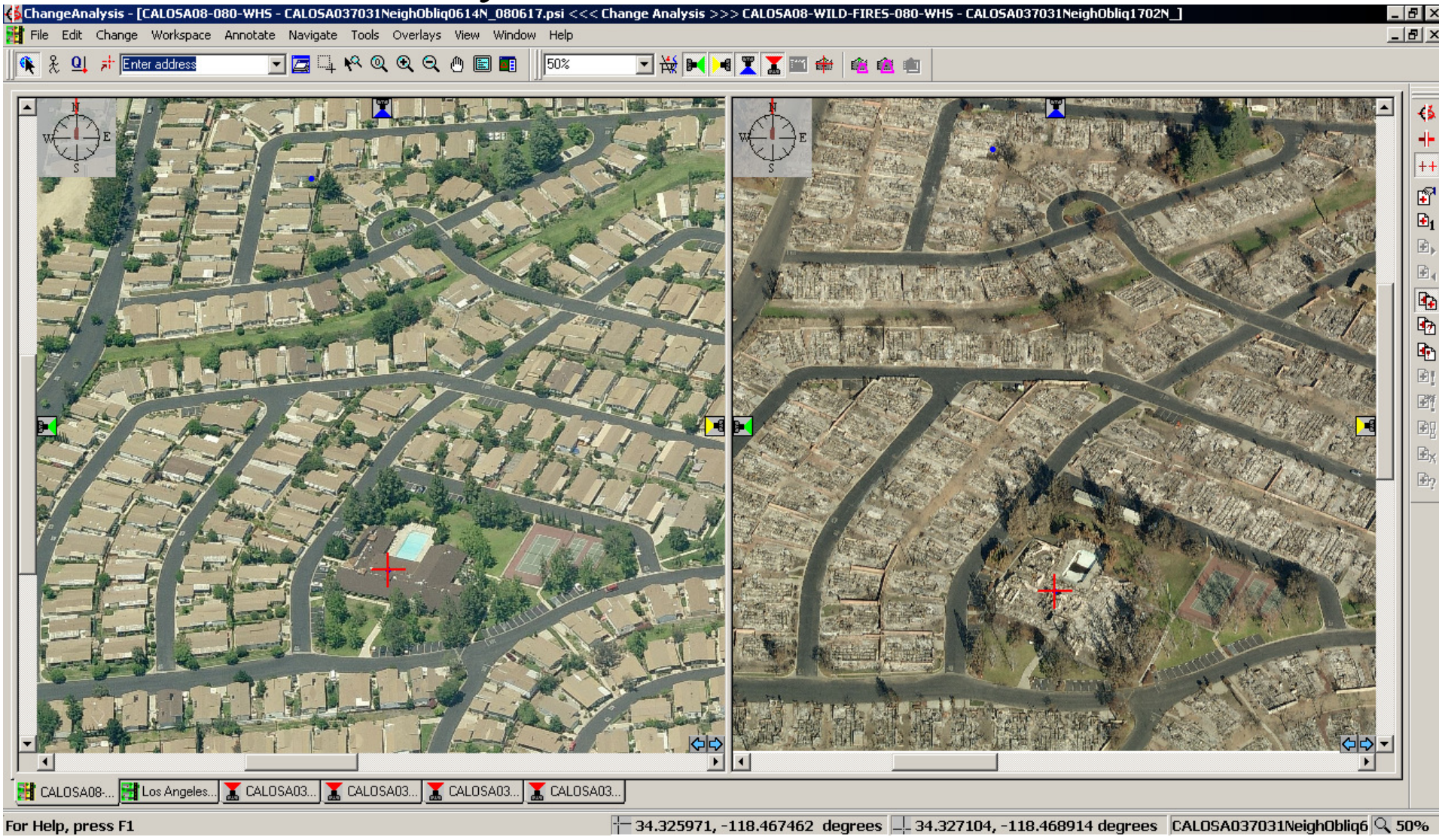
FRIDAY

EPIC SURGE

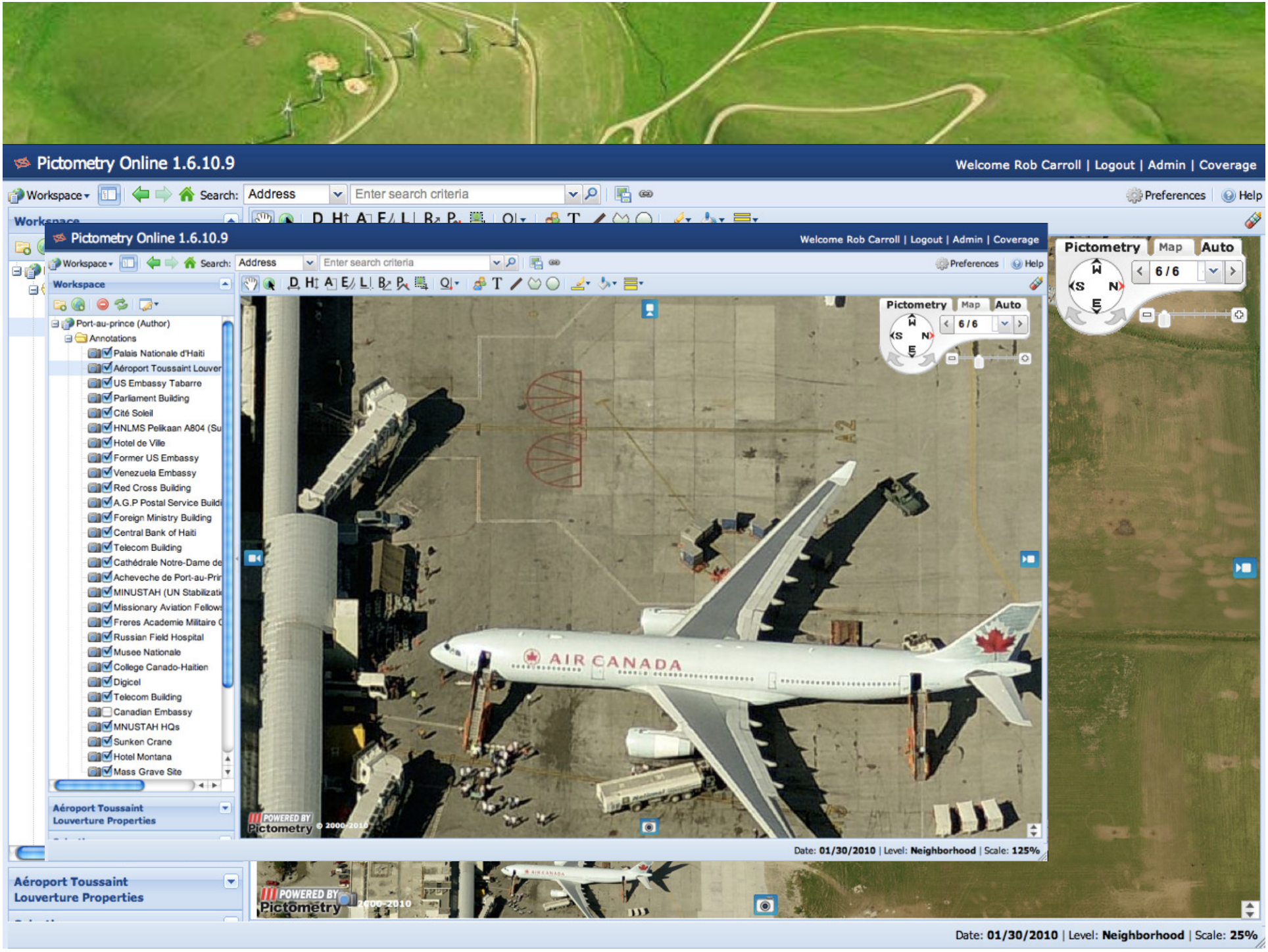
Pictometry
Intelligent Images



Wildfire LA County, CA 2008



Haiti Earthquake Jan 2010


Pictometry Online 1.6.10.9
Welcome Rob Carroll | Logout | Admin | Coverage
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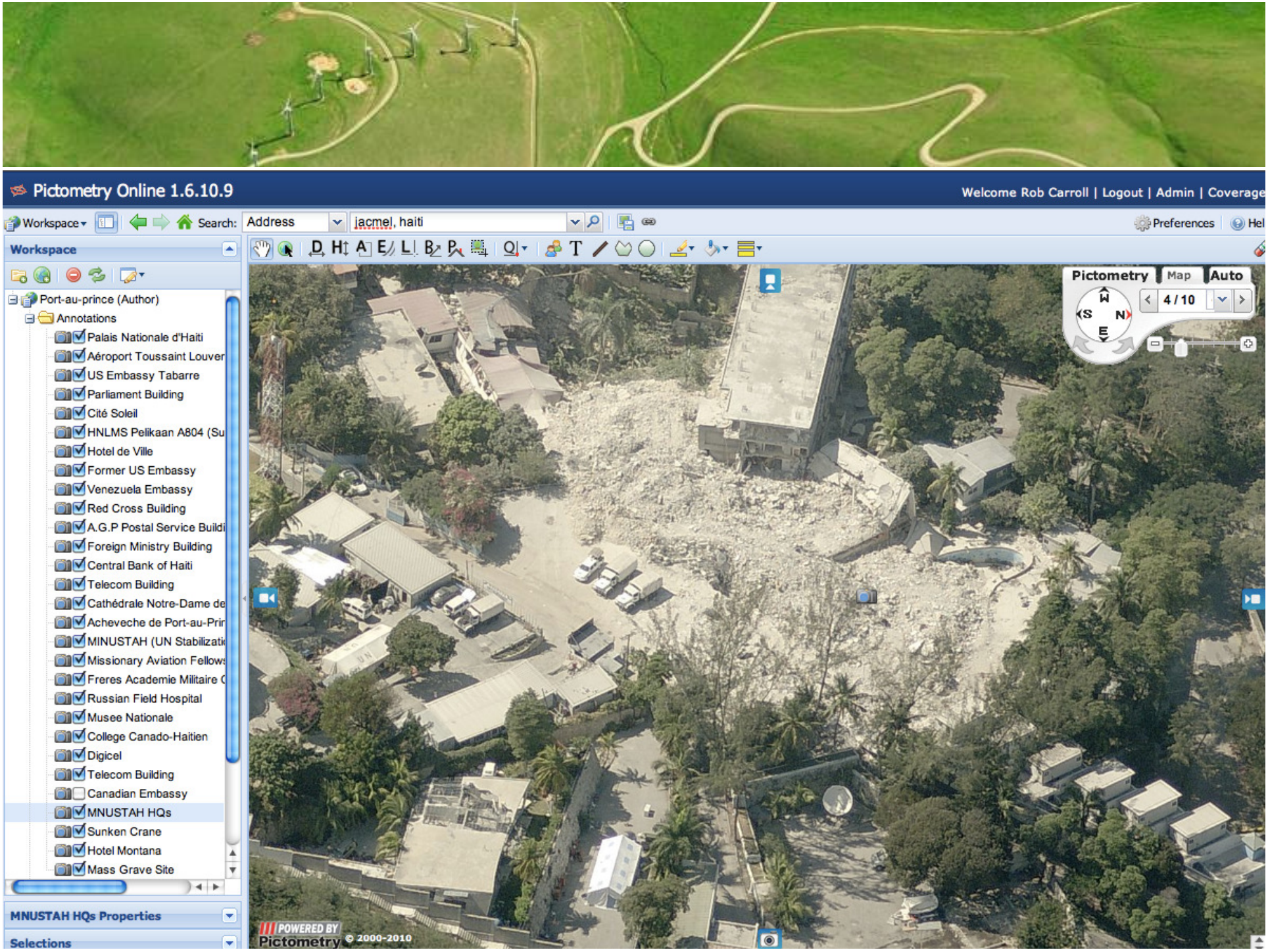
Search:
Address
Enter search criteria
Preferences
Help
Pictometry
Map
Auto
6 / 6
Port-au-prince (Author)
Annotations
Palais Nationale d'Haiti
Aéroport Toussaint Louver
US Embassy Tabarre
Parliament Building
Cité Soleil
HNLMS Pelikaan A804 (Su
Hotel de Ville
Former US Embassy
Venezuela Embassy
Red Cross Building
A.G.P Postal Service Build
Foreign Ministry Building
Central Bank of Haiti
Telecom Building
Cathédrale Notre-Dame de
Acheveche de Port-au-Prin
MINUSTAH (UN Stabilizati
Missionary Aviation Fellow
Freres Academie Militaire
Russian Field Hospital
Musee Nationale
College Canado-Haitien
Digicel
Telecom Building
Canadian Embassy
MNUSTAH HQs
Sunken Crane
Hotel Montana
Mass Grave Site
Aéroport Toussaint
Louverture Properties
AIR CANADA
POWERED BY
Pictometry
© 2000-2010
Date: 01/30/2010 | Level: Neighborhood | Scale: 125%
Date: 01/30/2010 | Level: Neighborhood | Scale: 25%


Pictometry Online 1.6.10.9
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Former US Embassy
Venezuela Embassy
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Acheveche de Port-au-Prin
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Russian Field Hospital
Musee Nationale
College Canado-Haitien
Digicel
Telecom Building
Canadian Embassy
MNUSTAH HQs
Sunken Crane
Hotel Montana
Mass Grave Site
MNUSTAH HQs Properties
Selections
Pictometry
Map
Auto
4 / 10
POWERED BY
Pictometry © 2000-2010

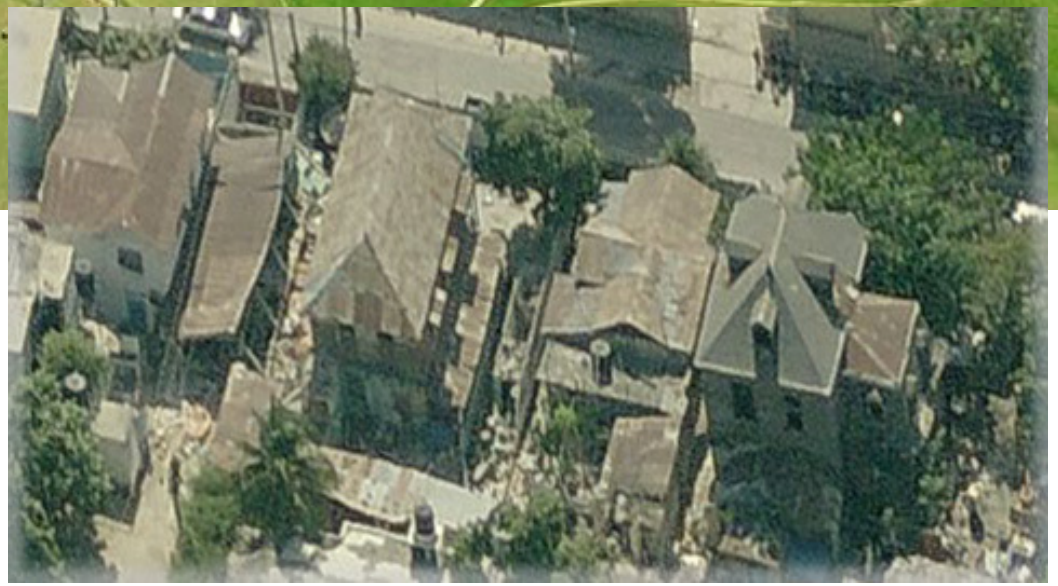
Port-au-Prince Earthquake Damage Assessment using Pictometry: ImageCAT Project

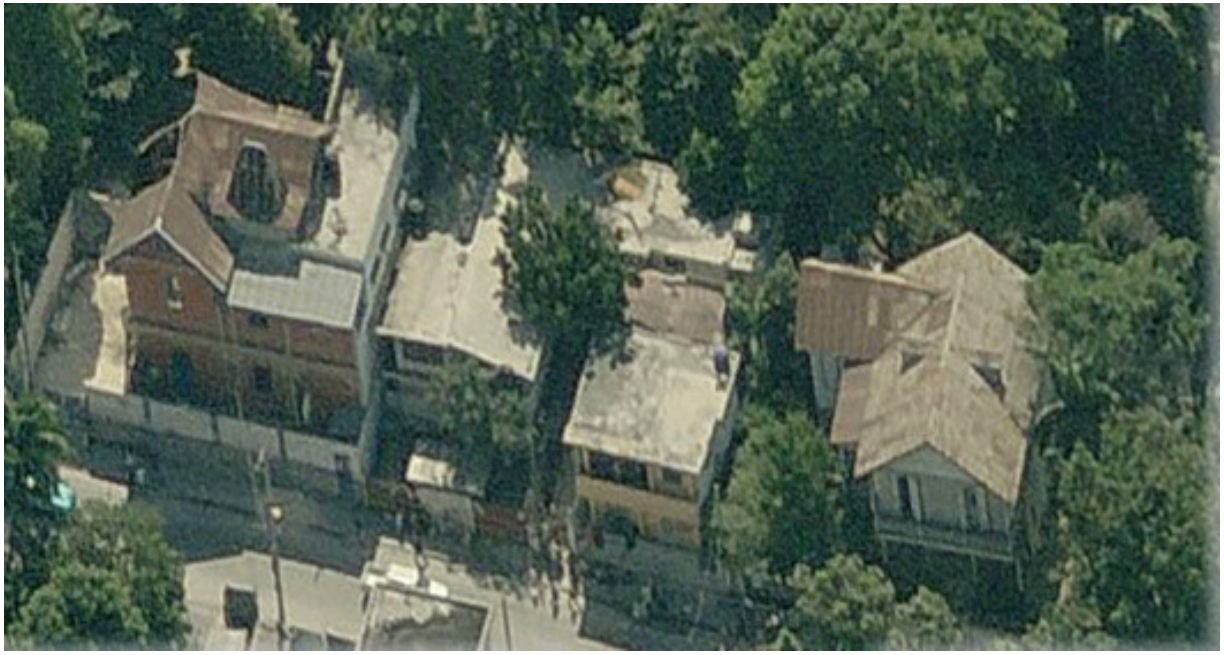
*Figure 8 (left) Four Pictometry buildings contained in one GEO-CAN building footprint drawn in red. Pictometry shows that Bdg 39.3 and Bdg 39.4 is one building. (Top right) Same four buildings seen in Pictometry from west to east, (bottom right) same set of buildings seen from east to west. *Note: in the GEO-CAN dataset dated 18th February 2010, the footprint for this building is smaller, with only Bdg 39.3 delineated as D5. The analysis carried out for this report is based on a GEO-CAN dataset dated 24th February 2010, which is shown in figure 8 above.*

Results from Project
(Report by Cambridge Architectural Research Ltd.)

- Pictometry has been shown to be a highly effective tool for quickly observing and recoding post event damage data.
- The Pictometry data reveals a significant amount of serious damage (levels D4 and D5) which is not visible in the vertical aerial photographs used for the GEO-CAN study. Much of this is damage to lower stories which can be seen in the oblique Pictometry images but not in a vertical view.
- Pictometry data also enables some but not all damage at lower damage levels (D2 and D3) to be identified, which cannot be seen at all in the vertical aerial imagery.

Pictometry
Intelligent Images





ICOMOS utilized Pictometry imagery to evaluate damage to landmark and plan preservation.

International Council on Monuments and Sites

Conseil International des Monuments et des Sites

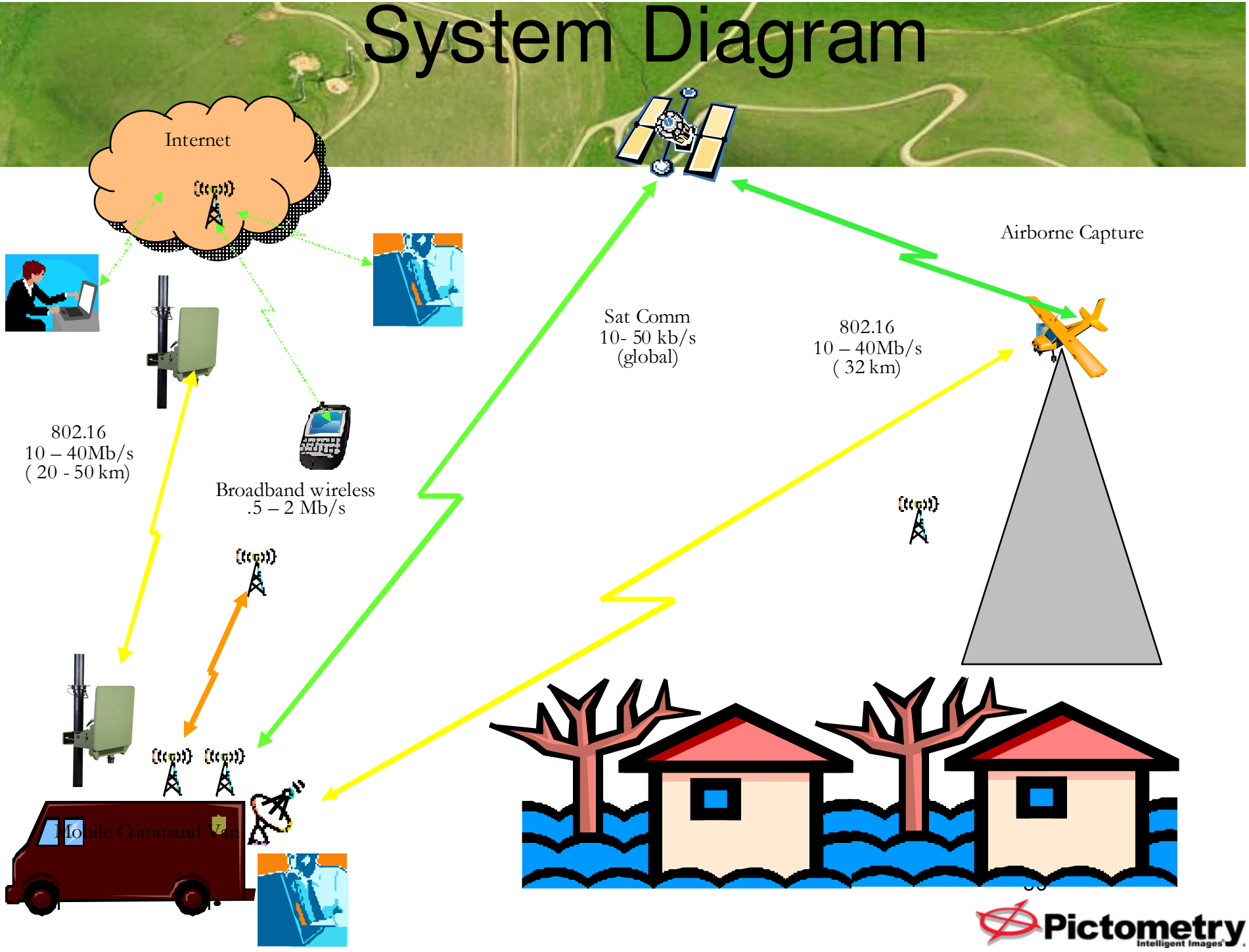
Pictometry Intelligent Images

Real-time Aerial Mapping System

- Varied suite of hardware
  - Pictometry systems
  - Harris high bandwidth communications
  - Iridium satellite low bandwidth communications
  - ITT image compression
- The objective of is to develop a system for rapid response that will support small events to large hurricane scenarios
- The design will utilize COTS hardware and software components

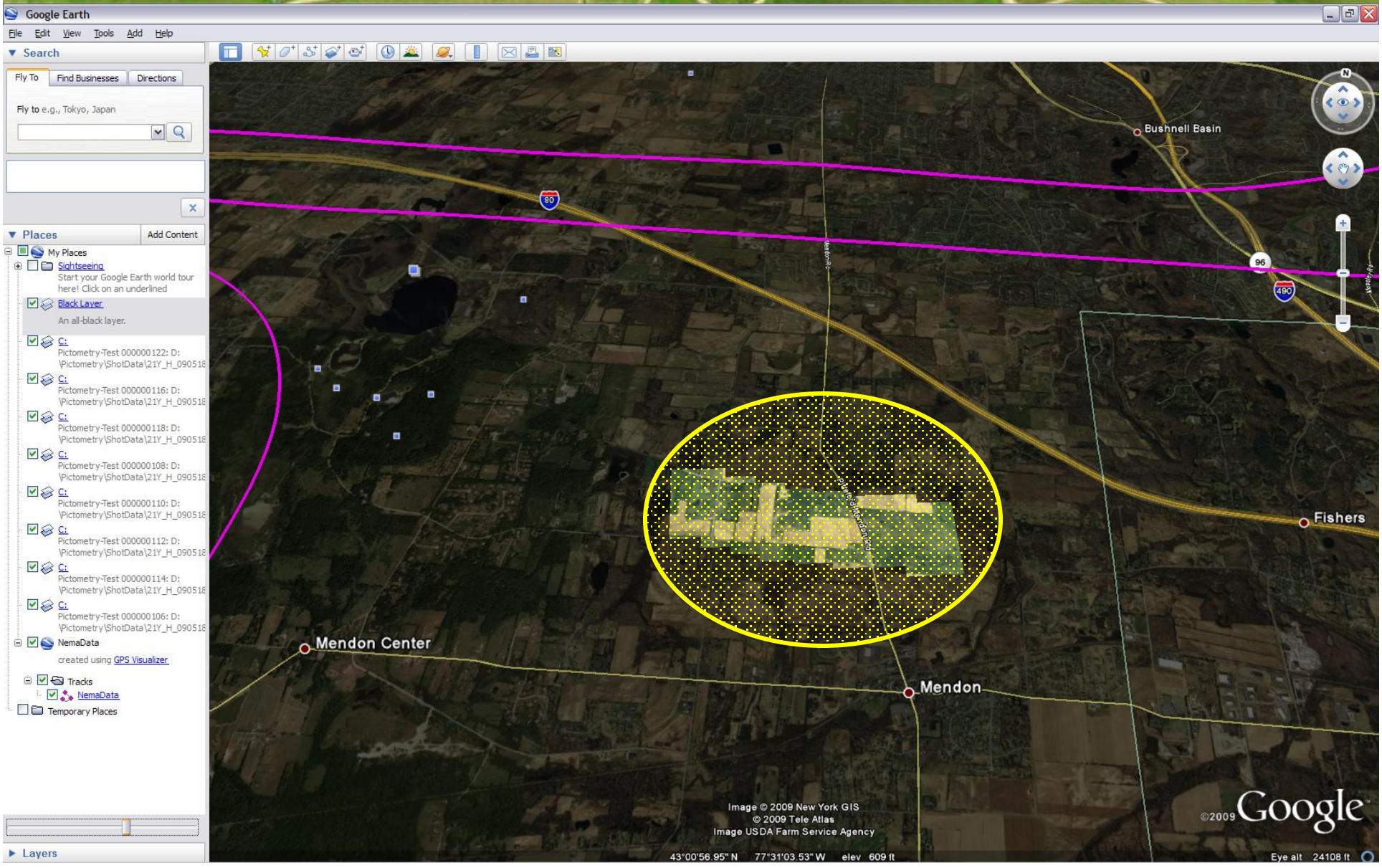
Pictometry
Intelligent Images

System Diagram



Pictometry
Intelligent Images

Real-Time Image Download



Summary

- Oblique imagery provides:
  - A better solution to field visits
  - Required information needed for risk assessment
  - Improved communication medium
  - Strong return on investment
  - Mutual benefits other sister organizations
- Pictometry is looking to develop Private/Public partnerships like our GISCorp relationship

Pictometry
Intelligent Images


Thank You
N64155