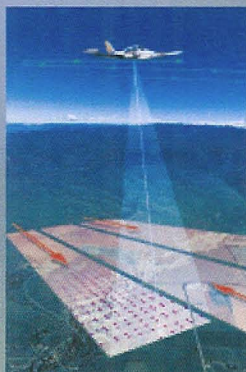


RED RIVER BASIN MAPPING INITIATIVE



“Redefining the Landscape”

SUMMER 2009 UPDATE

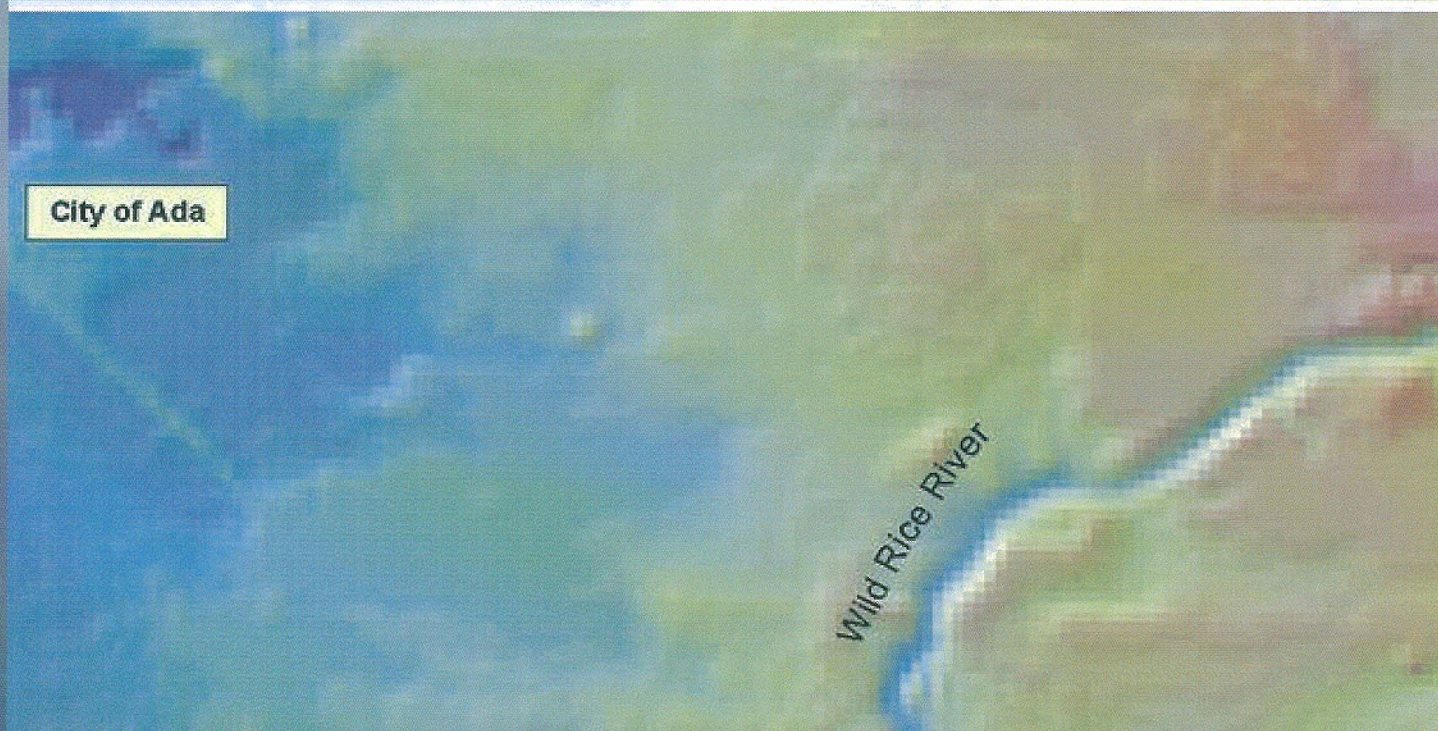
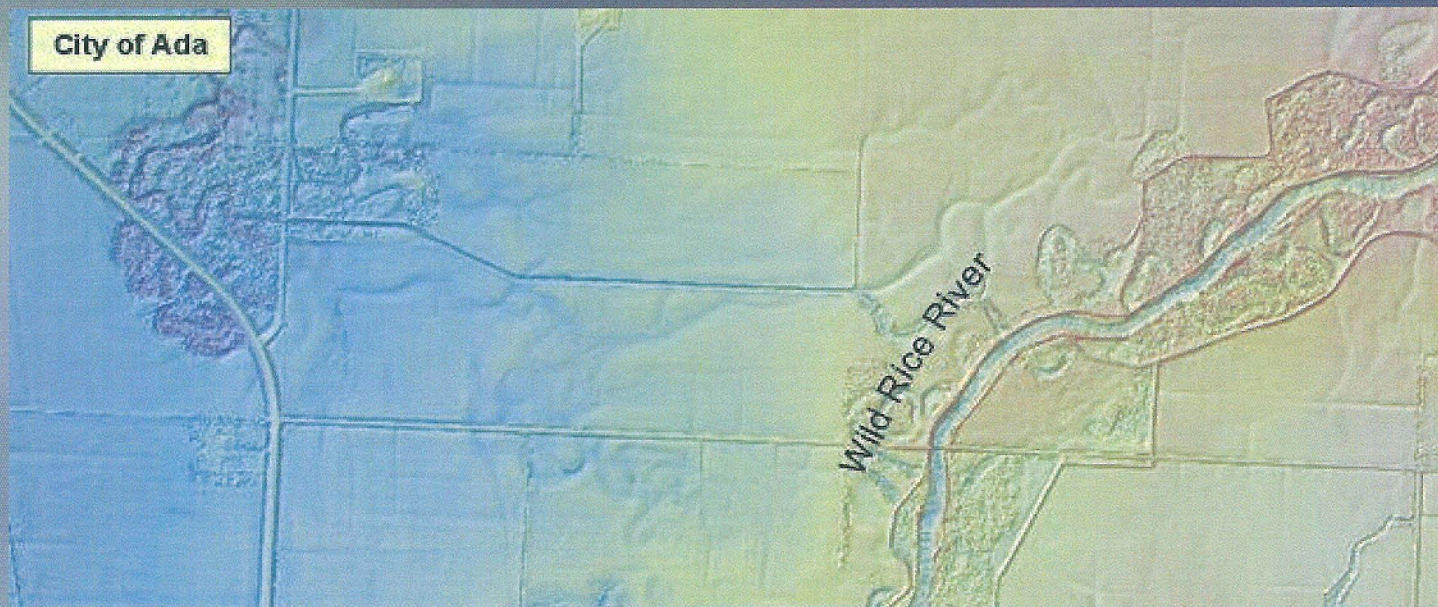


Funding Partners

- State of North Dakota
- Southeast Cass Joint Water Resources District
- US Geological Survey
- US Natural Resources Conservation Service (North Dakota)
- US Army Corps of Engineers
- ND Red River Joint Water Resources Board
- MN Red River Watershed Management Board
- MN Buffalo-Red Watershed District
- State of Minnesota
- MN Department of Transportation
- City of Fargo, ND
- City of Moorhead, MN
- City of Breckenridge, MN
- City of Wahpeton, ND
- City of East Grand Forks, MN
- City of Grand Forks, ND

Project Team

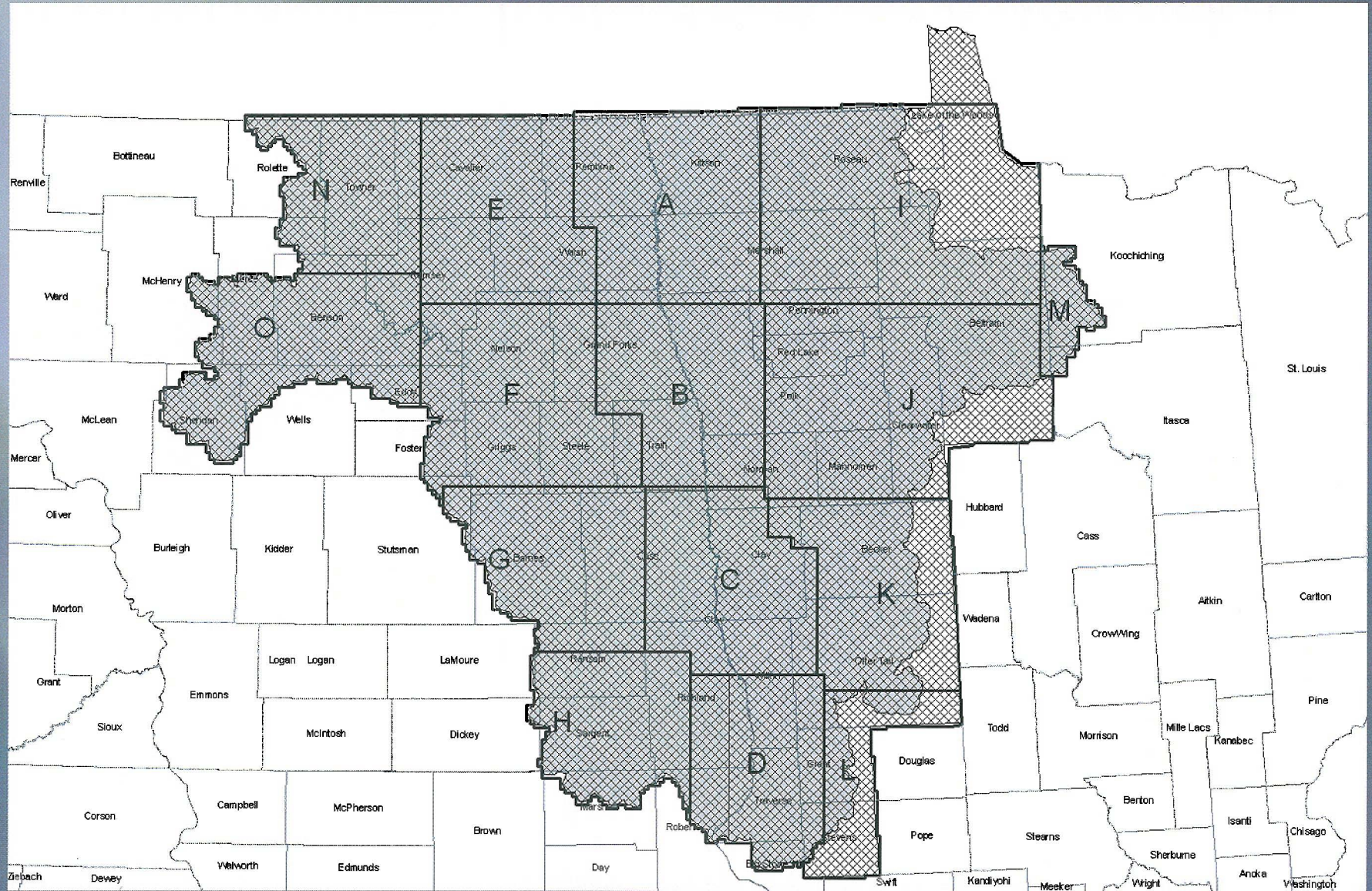




PROJECT OBJECTIVES

1. Collect high-resolution elevation data
 - 15cm vertical and 1meter horizontal RMSE (FEMA Floodplain Specifications/Standards)
 - Entire US Portion of Red River of the North Basin (39,400 miles²)
 - Red River Valley Imagery (1 meter resolution)
2. Third party quality assurance/quality control
3. Establish web-based public data archival and dissemination vehicle
4. Public Outreach

Project Scope



RRBMI Accuracy Results

(Project Specification - 15cm/5.9")

BLOCK	# Ground Control Points	RMSE _(z) (cm)	RMSE _(z) (inches)
A	69	9.6	3.84
B	58	13.4	5.28
C	49	8.4	3.31
D/H	49	9.5	3.74
G	60	10.3	4.06

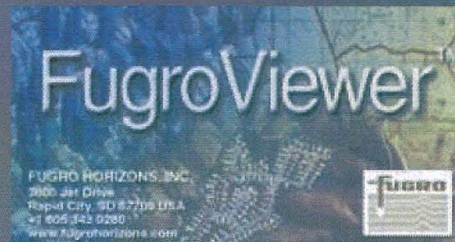


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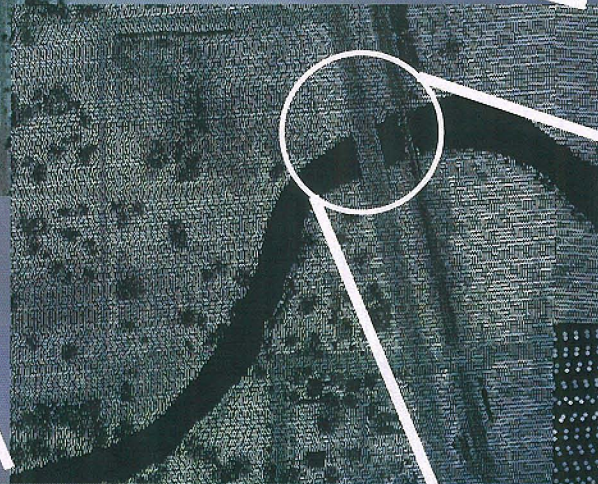
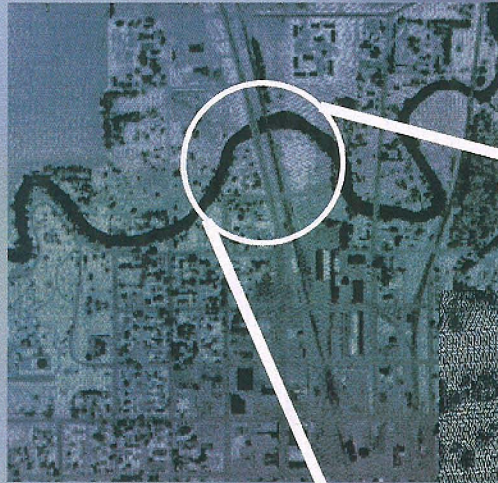
Flood research and watershed education for the Red River Basin

LIDAR DATA

Some examples...

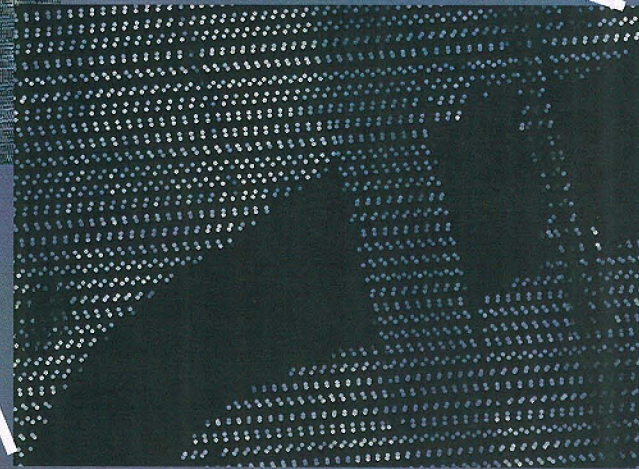


Light Detecting and Ranging (LiDAR) = *POINT* data



•Each Data Point - 4 Attributes:

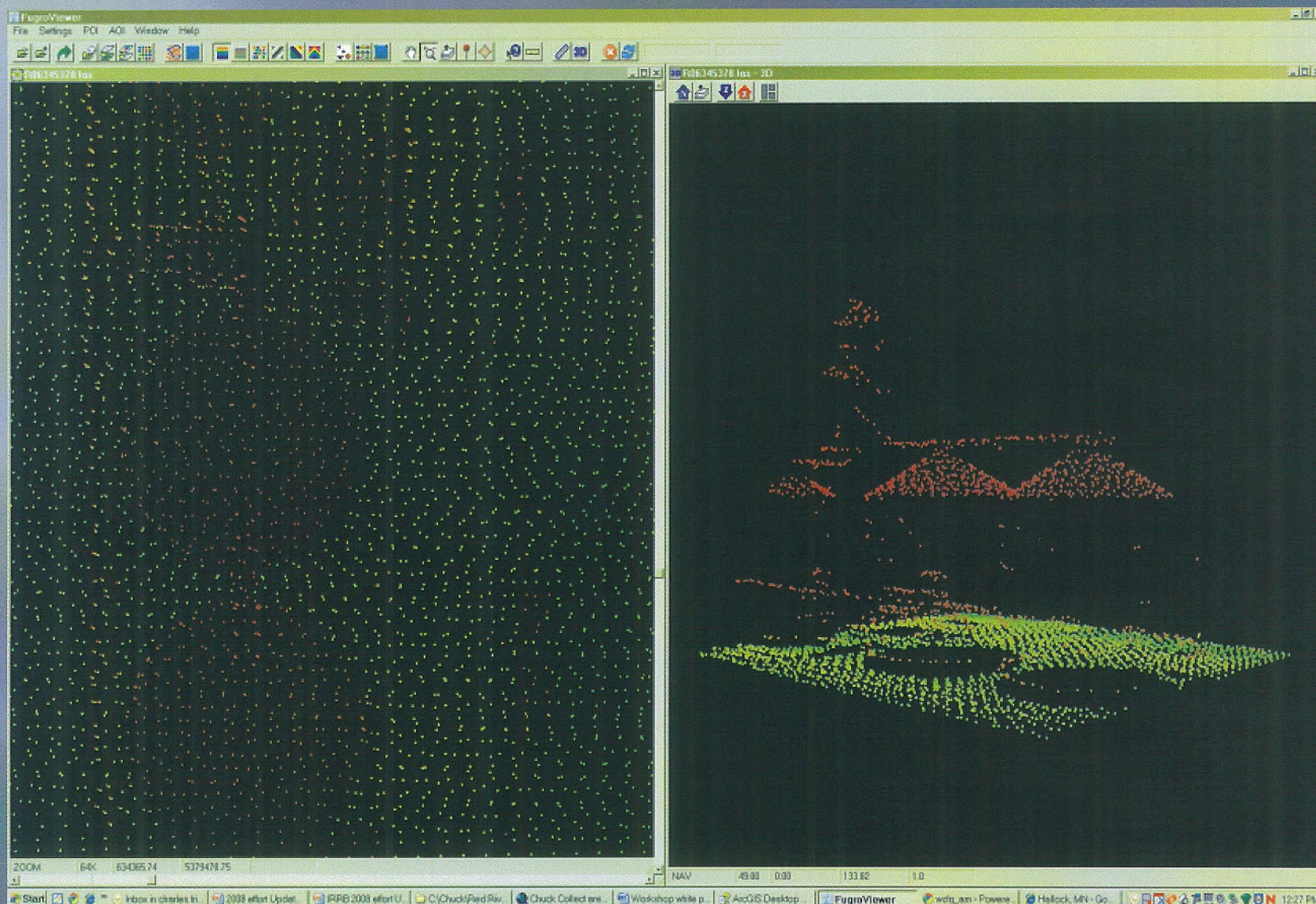
1. Latitude (X)
2. Longitude (Y)
3. Elevation (Z)
4. Classification (Ground, Low Veg., Med. Veg., high Veg., Building, Model Keypoint, Water...),



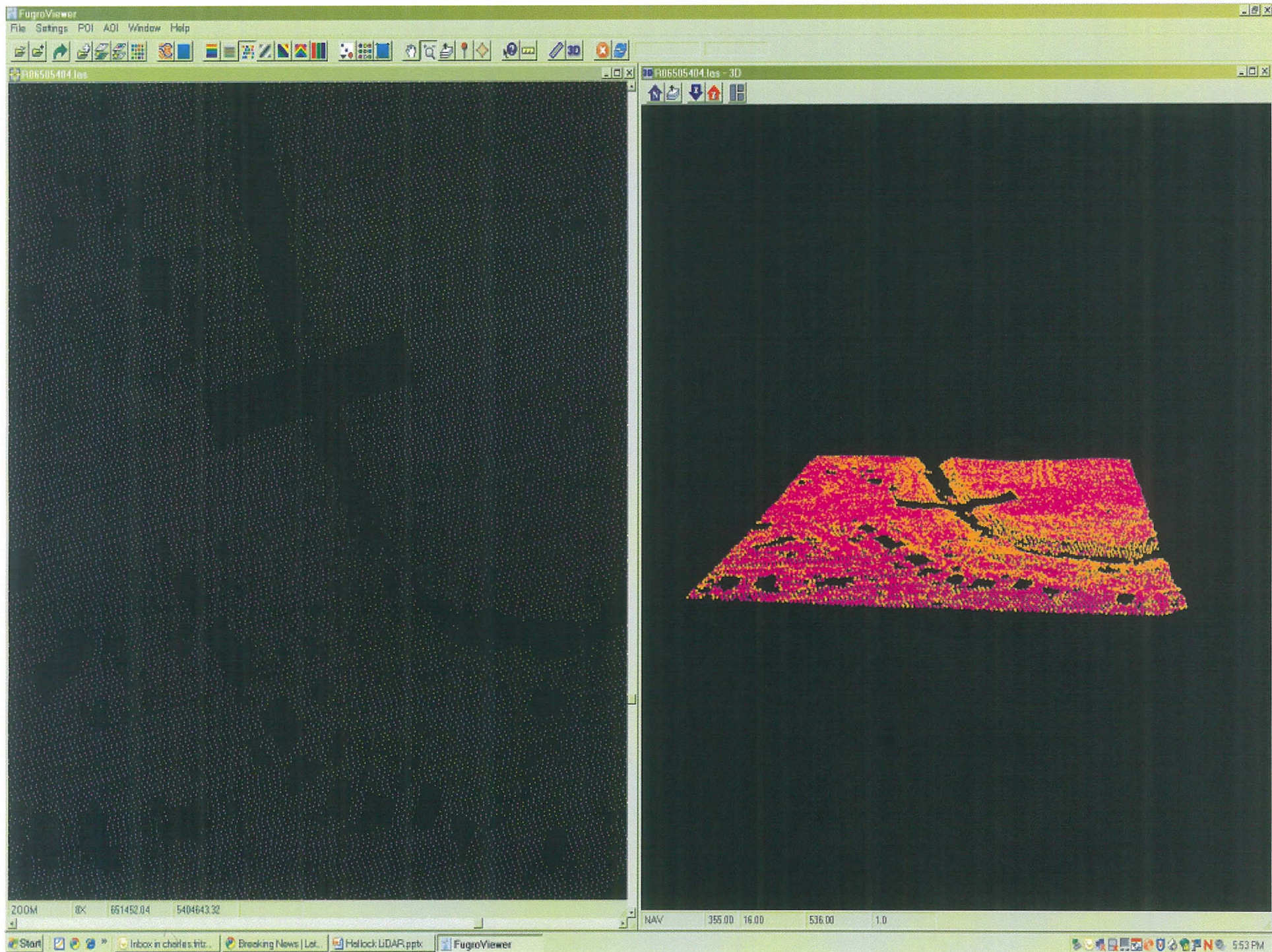
Google Earth Image - Drayton, ND

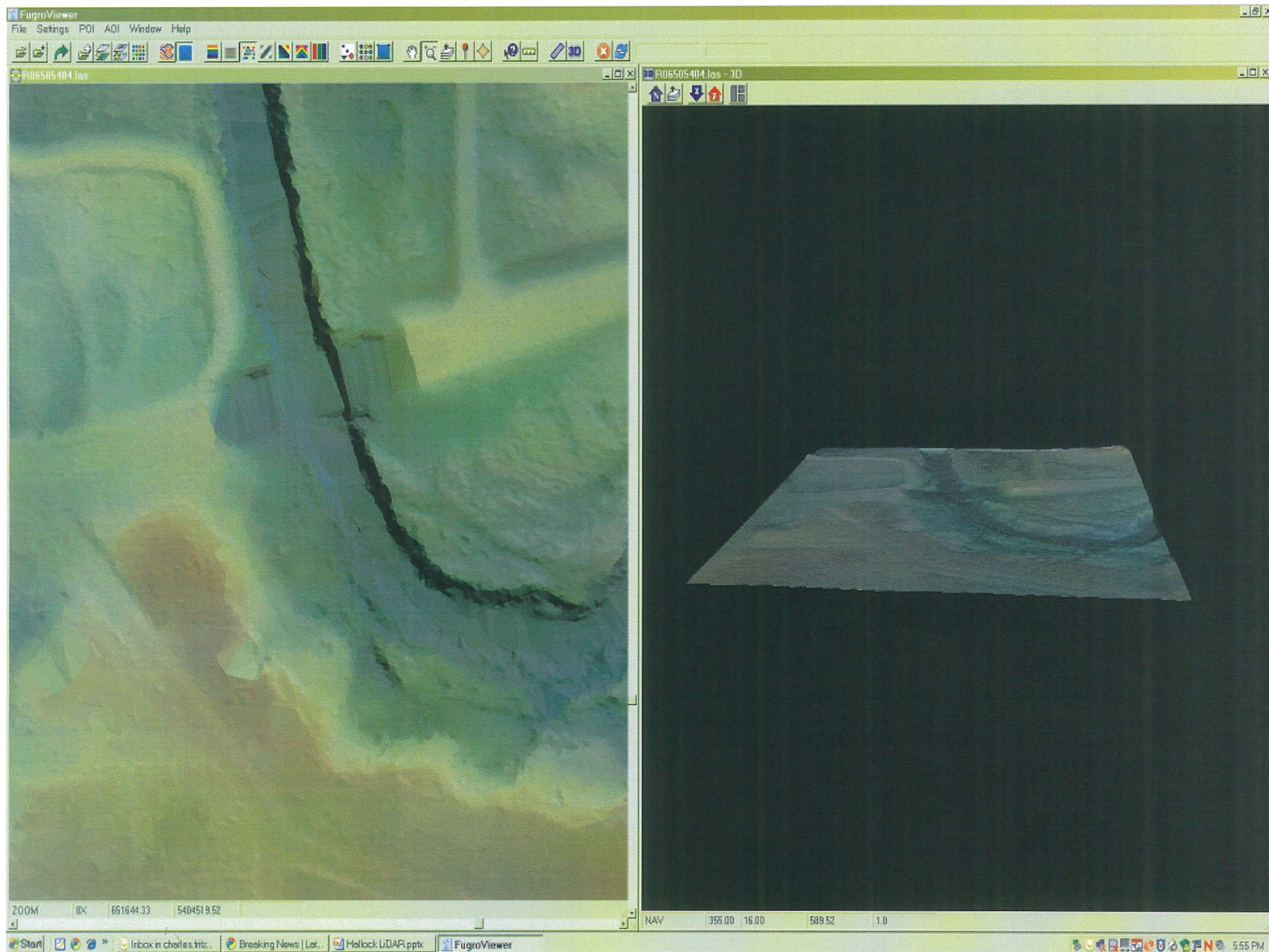


Raw LiDAR Data Resolution (Drayton, ND)



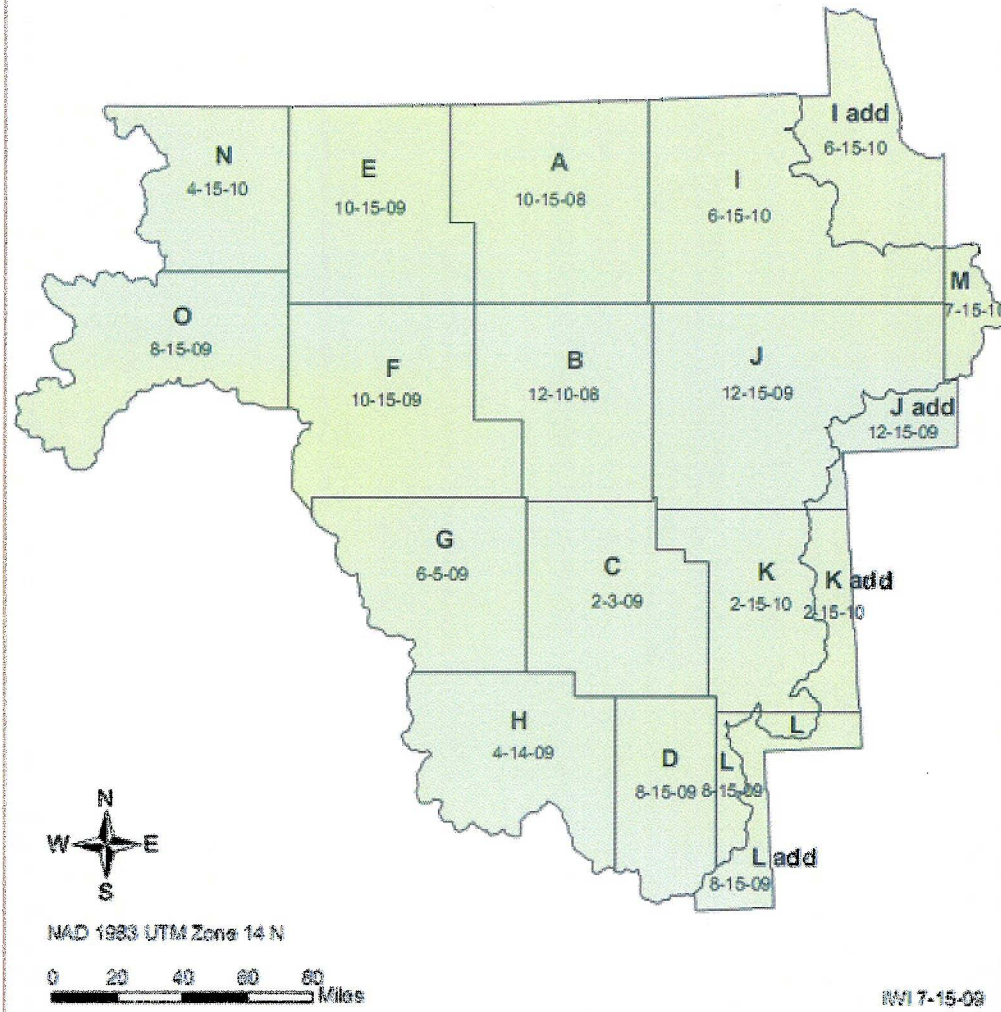
LIDAR DERIVED BARE EARTH DIGITAL ELEVATION MODEL (DEM)





Red River Basin Mapping Initiative

Acquired Areas with Anticipated Delivery Dates



RRBMI PROJECT HIGHLIGHTS

- ▣ Winter 2007 – Project Initiated
- ▣ Spring 2008 – Acquisition (Priority Area 1)
 - Blocks A, B, C, and D (Red River Valley)
- ▣ Summer 2008 – Data Delivery and QA begins
 - Block A, B, C and D
- ▣ Fall 2008 – Acquisition (ND)
- ▣ Spring 2009 – Acquisition (MN)
 - Acquisition Completed!
- ▣ Summer 2009 – Data Delivery and QA continues
 - Blocks H, G, and O
- ▣ RRBMI LiDAR Viewer*

LiDAR Viewer/Elevation Data Extraction Tool

www.internationalwaterinstitute.org

▣ Users

- Local Sponsors (watershed managers)

▣ Desired Components

- Internet-based
- Seamless products (I.e. contours)
- No proprietary software (data downloadable)
- Best available imagery
- EASY to query elevation data and generate map products...

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[River of Dreams](#)

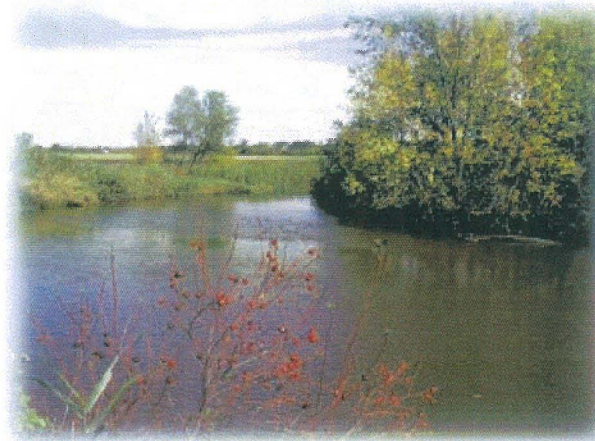
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[IWI Video](#)

[Past Projects](#)

[Career Guides](#)



USGS
LIDAR Viewer



Red River Basin
LIDAR Viewer



Fargo-Moorhead
Feasibility Study



Red River Basin
Decision Information Network
with Flood Forecast Tool

International Water Institute
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web questions: gill.may@ndsu.edu



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Houston Engineering, A/E: 853468.05, 5402633.70; L&L, Inc.: 46,7867, 95,9122

Scale for 7.503 Gold Developed By  Moose Powered

David

Start | Sample LIDAR.tif | Hallock LIDAR.ppt | BRWD Tour.ppt | C:\Chuck\Red River | 2008 effort Update 4 | IWI LIDAR Profiles

Internet 100%

Next Steps

- ▣ Continue Data QA
- ▣ Continue development/launch LiDAR Application Viewer (Map Generator)
 - Hardware and Software (Portal)
 - Assemble Seamless Database
 - Identify User Needs – what elevation product are desired?
 - Create LiDAR Derived Elevation Products (i.e. Contours)
 - “Clip and Ship” Capability
- ▣ Anticipated Project Completion:
 - Spring 2010



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Flood research and watershed education for the Red River Basin

*"Availability of good information lies at the heart of
effective and equitable decision making"*

(Allen and Kilvington 1999)

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