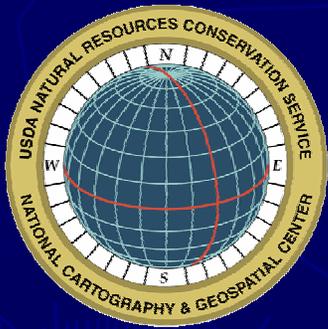




U.S. Department of Agriculture



USDA Imagery Meeting February 3-4, 2004

Anthony Kimmet, Cartographer/GIS Analyst
USDA, NRCS, National Cartography & Geospatial
Center, Fort Worth, Texas

NAIP 2004 Technical Options NRCS Perspective



NAIP 2004

- Geospatial Data Options
- Data Delivery
- Data Quality Issues



NAIP 2004

Geospatial Data Options

- 10 meter DEM's
- Puerto Rico (ADS40 Contract)
- NCGC/NDEP

- LIDAR
 - NW Group/ALS40-50
 - LIDAR based DEM's

NAIP 2004

Geospatial Data Options

- Stereo Imagery Collection (ADS40)
- NW Group collects all 8 bands during a flight
- NW Group estimates a 10% extra charge for CIR or RGB stereo imagery
- NCGC has received request for stereo data collection
- NCGC has purchased Stereo Emitters, 3-D Graphics Cards and ERDAS Stereo Analyst/ArcGIS Stereo Analyst Software

NAIP 2004 Data Delivery

- Firewire Disc Drive
- Contractors
- FSA NAIP Partners
- GDW

NAIP 2004

Data Quality Issues

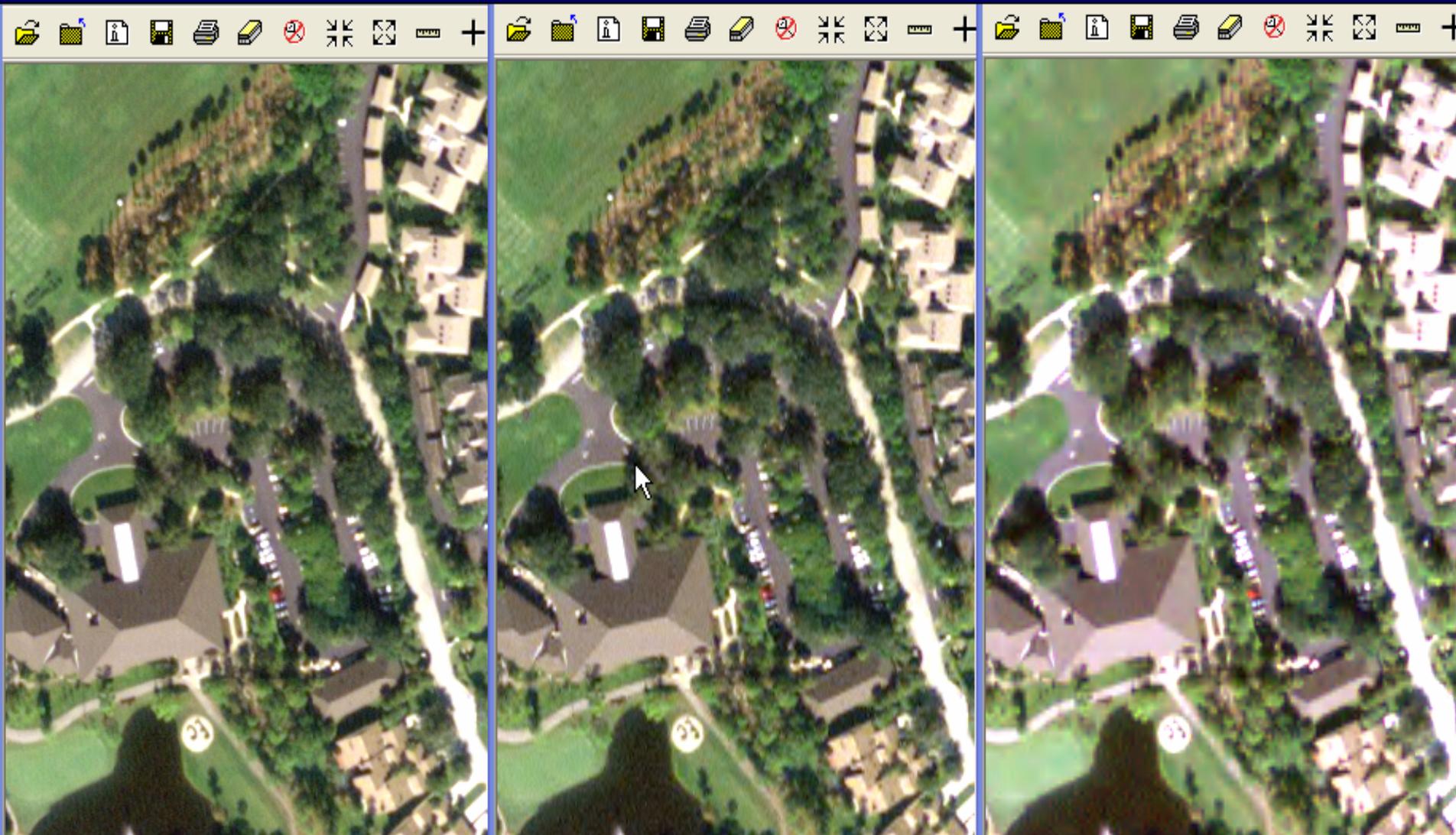
- Require Tone Balancing on next contract
- NDOP has requested a report on histogram adjustments for orthoimagery
- Compressed county mosaics compatibility with ArcGIS
- Compressed county mosaics need final file naming standards
- Request cost for 1 meter and 2 ft. data collection for ADS40

NAIP 2004

Geospatial Data Options

- Compressed County Mosaic Issues
- Support APFO decision on using MrSID MP2 format for NAIP 2004
- NCGC has reservations about using JPEG2000
- NCGC suggests a compression ratio of 1 : 25
- NCGC has the following compression software
 - MrSIDS 1.4, 1.5, 3.0, 4.0
 - ER MAPPER 6.4
 - JPEG2000 (GeoJP2) from Mapping Sciences

ADS40, Collier County, FL. 2 Ft. Resolution

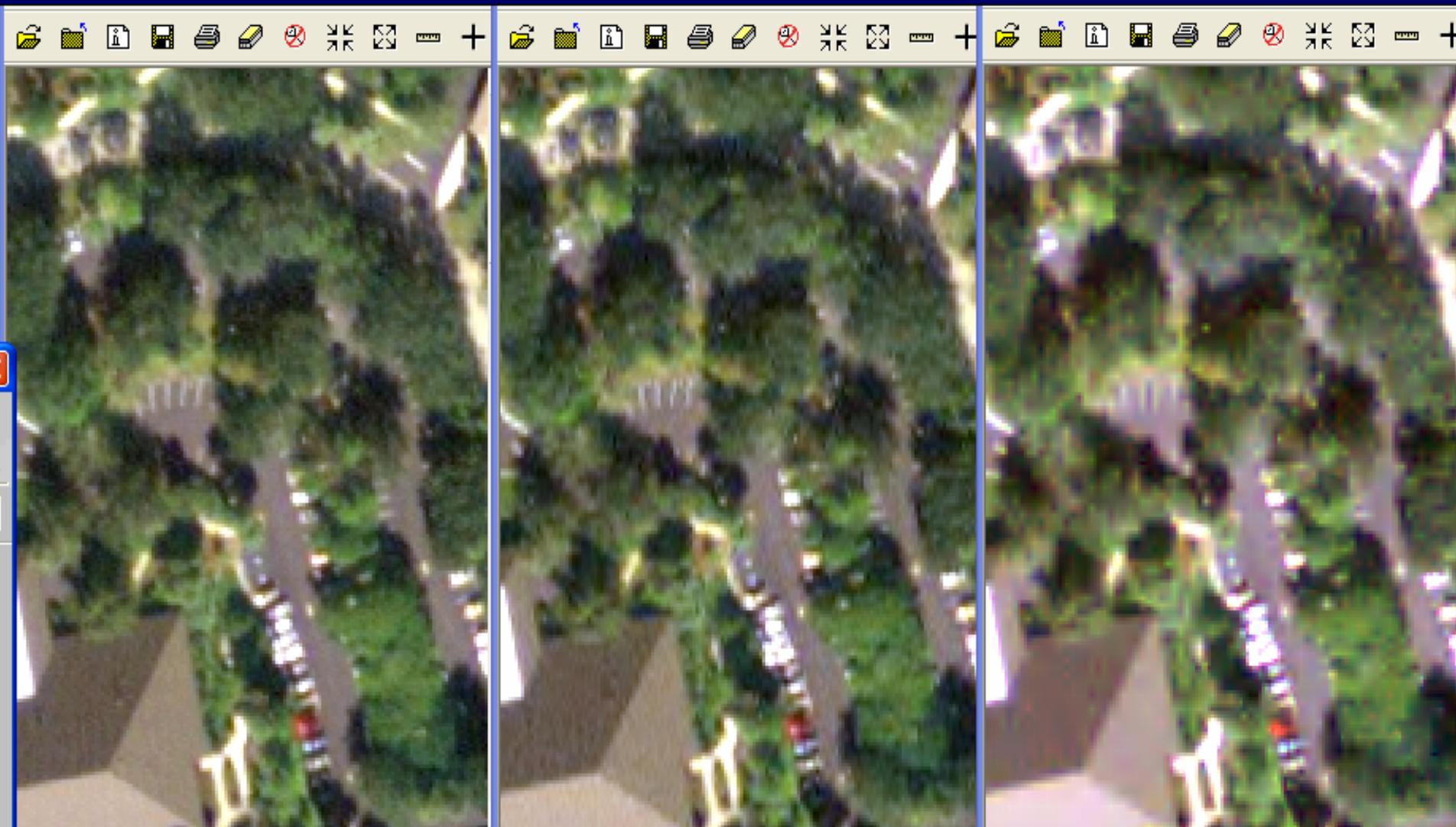


Uncompressed

MrSIDS 20 : 1 (MP2, V 1.5)

JPEG2000 20 : 1

ADS40, Collier County, FL. 2 Ft. Resolution

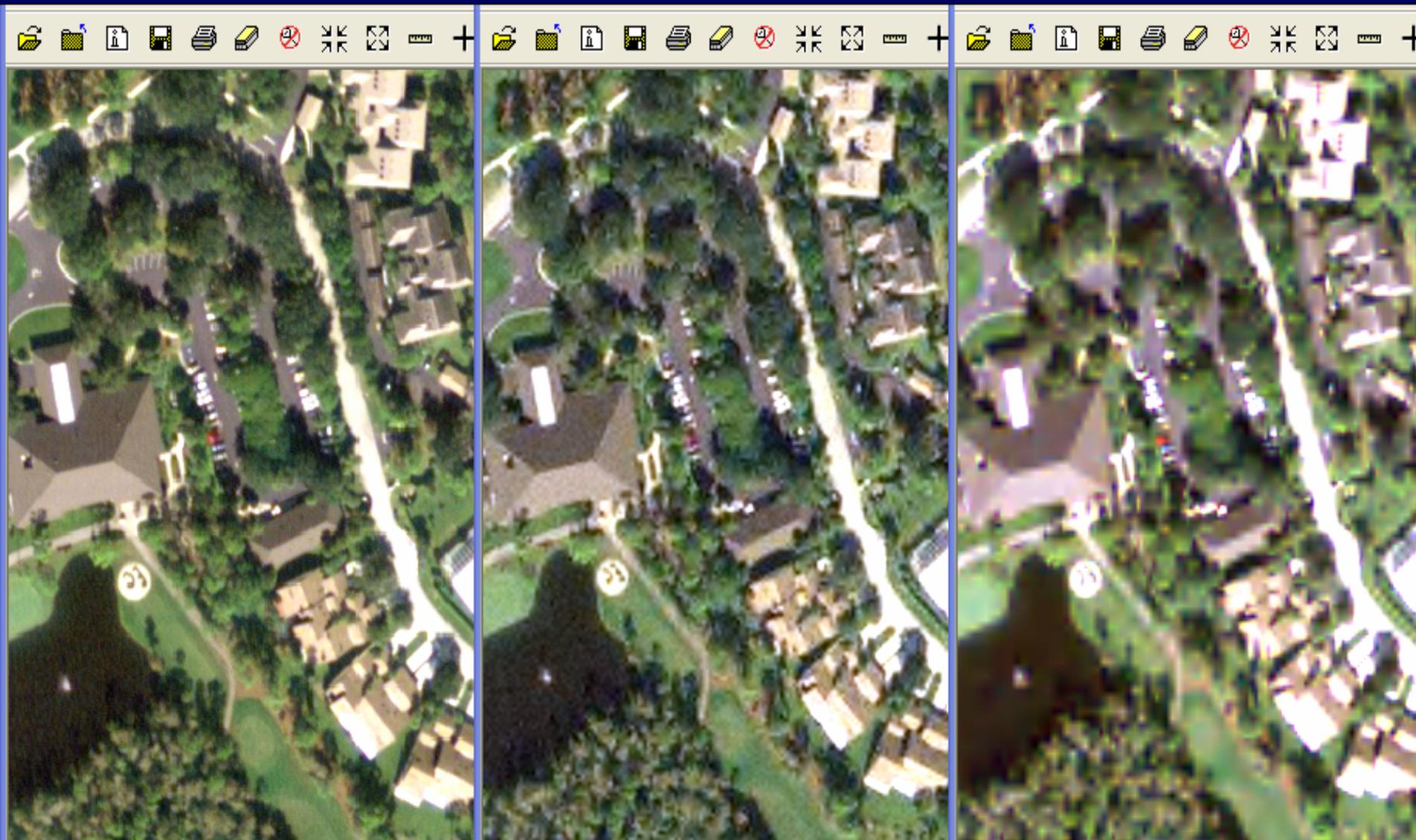


Uncompressed

MrSIDS 20 : 1 (MP2, V 1.5)

JPEG2000 20 : 1

ADS40, Collier County, FL. 2 Ft. Resolution

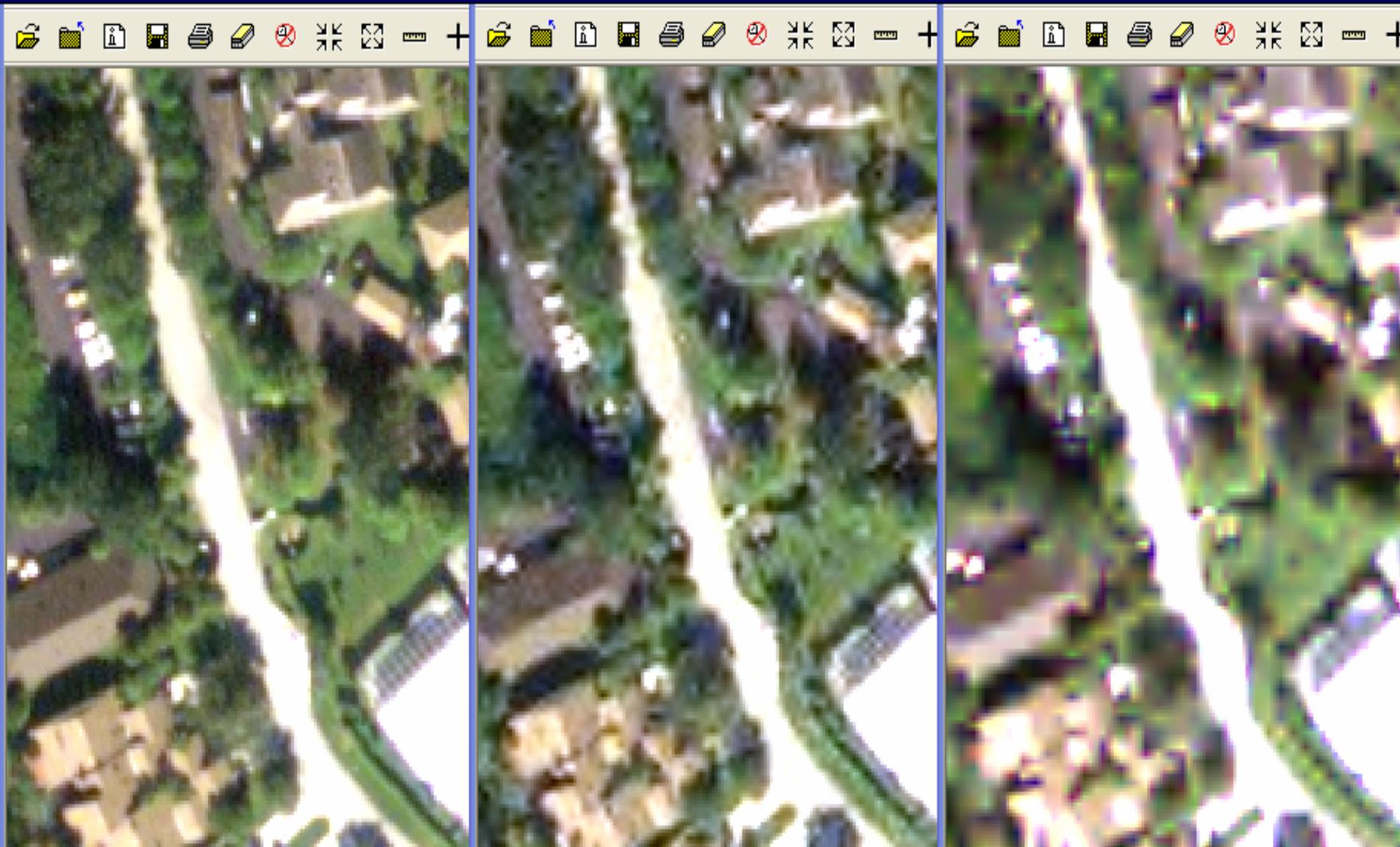


Uncompressed

MrSIDS 50 : 1 (MP2, V 1.5)

JPEG2000 50 : 1

ADS40, Collier County, FL. 2 Ft. Resolution



Uncompressed

MrSIDS 50 : 1 (MP2, V 1.5)

JPEG2000 50 : 1

Kennedy Space Center, 1 Meter Resolution

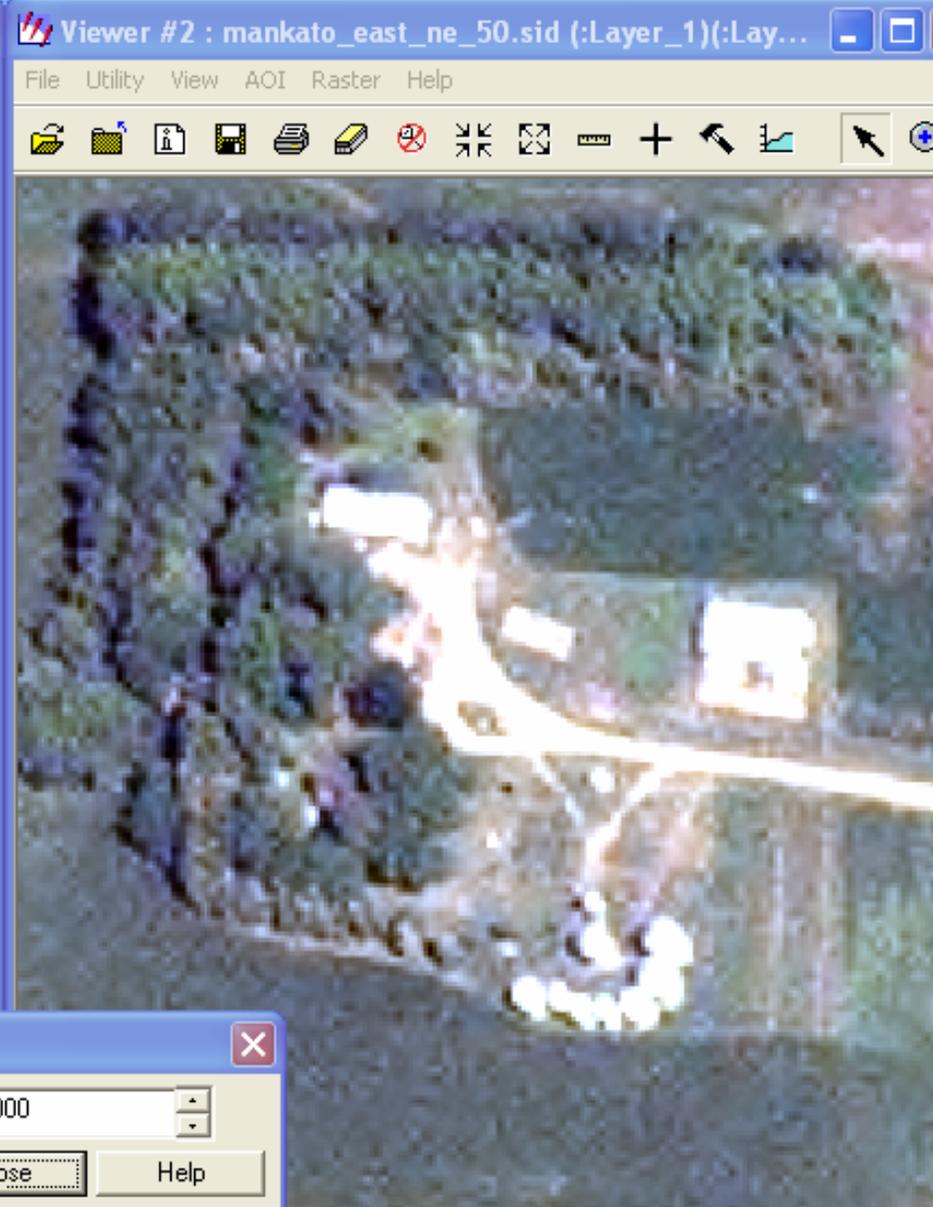
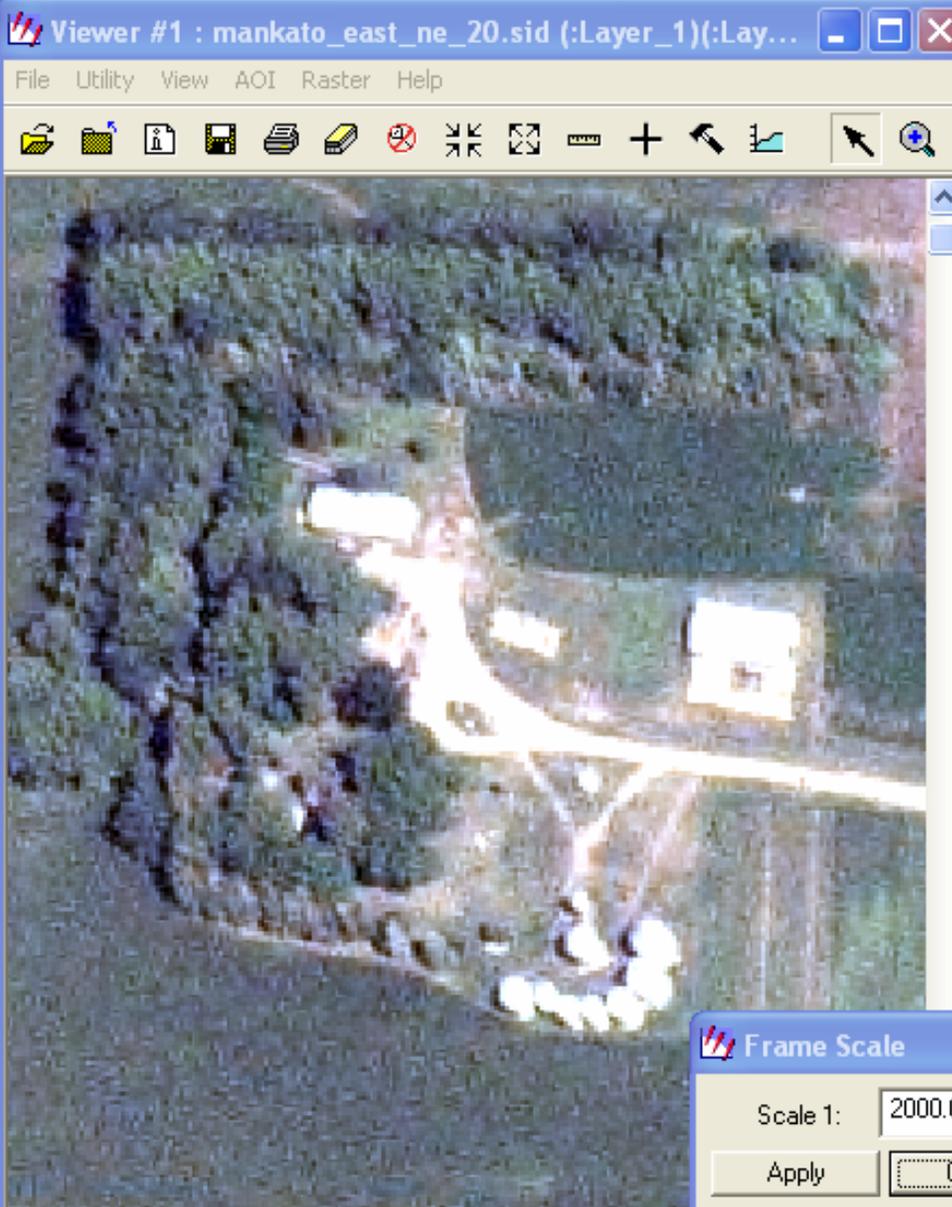


MrSIDS 50 : 1 (MP2, V 1.5)



JPEG2000 50 : 1

NAIP 2003, Nicollet County, MN



Frame Scale

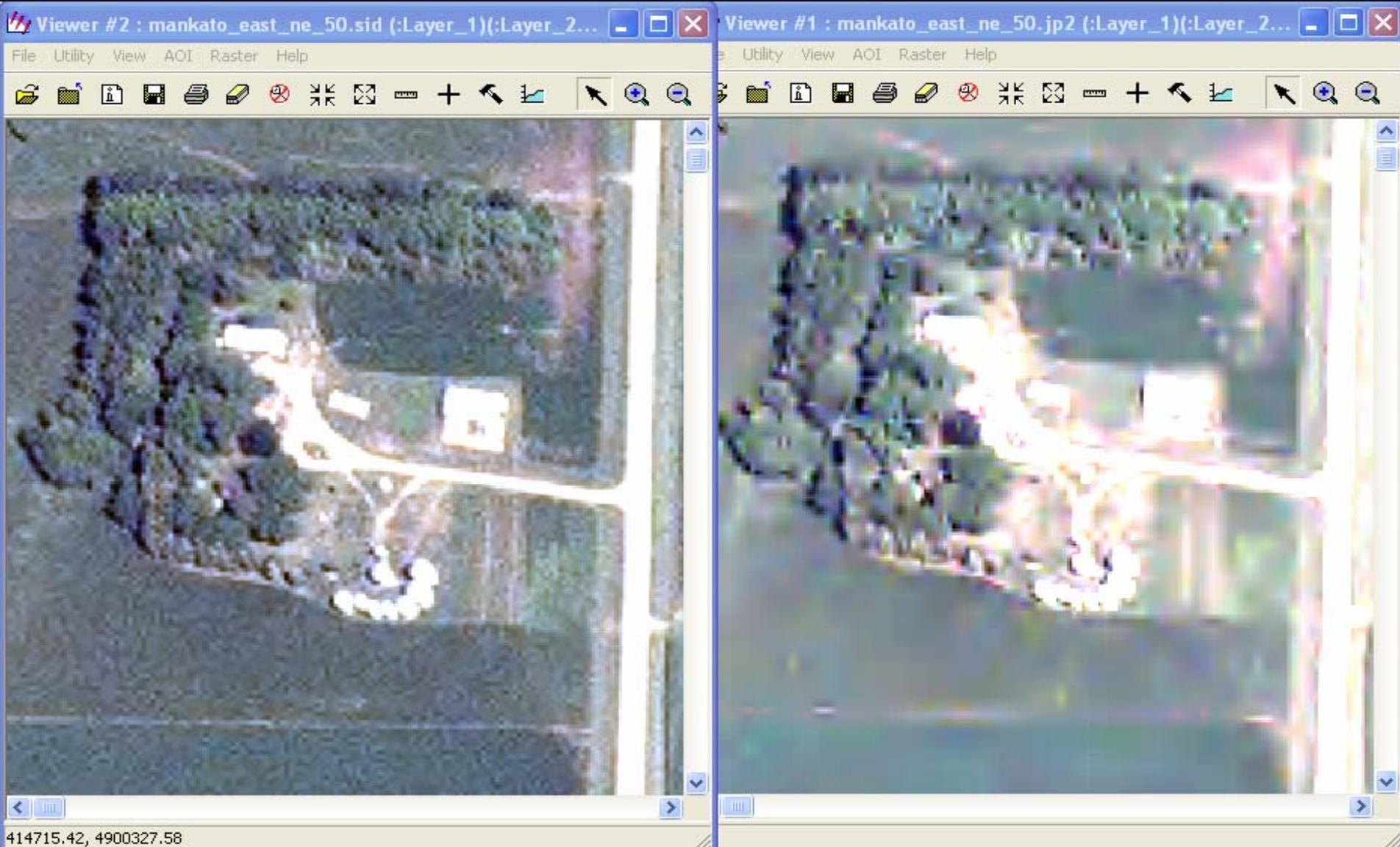
Scale 1: 2000.0000

Apply Close Help

MrSIDS 20 : 1 (MP2, V 1.5)

MrSIDS 50 : 1 (MP2, V 1.5)

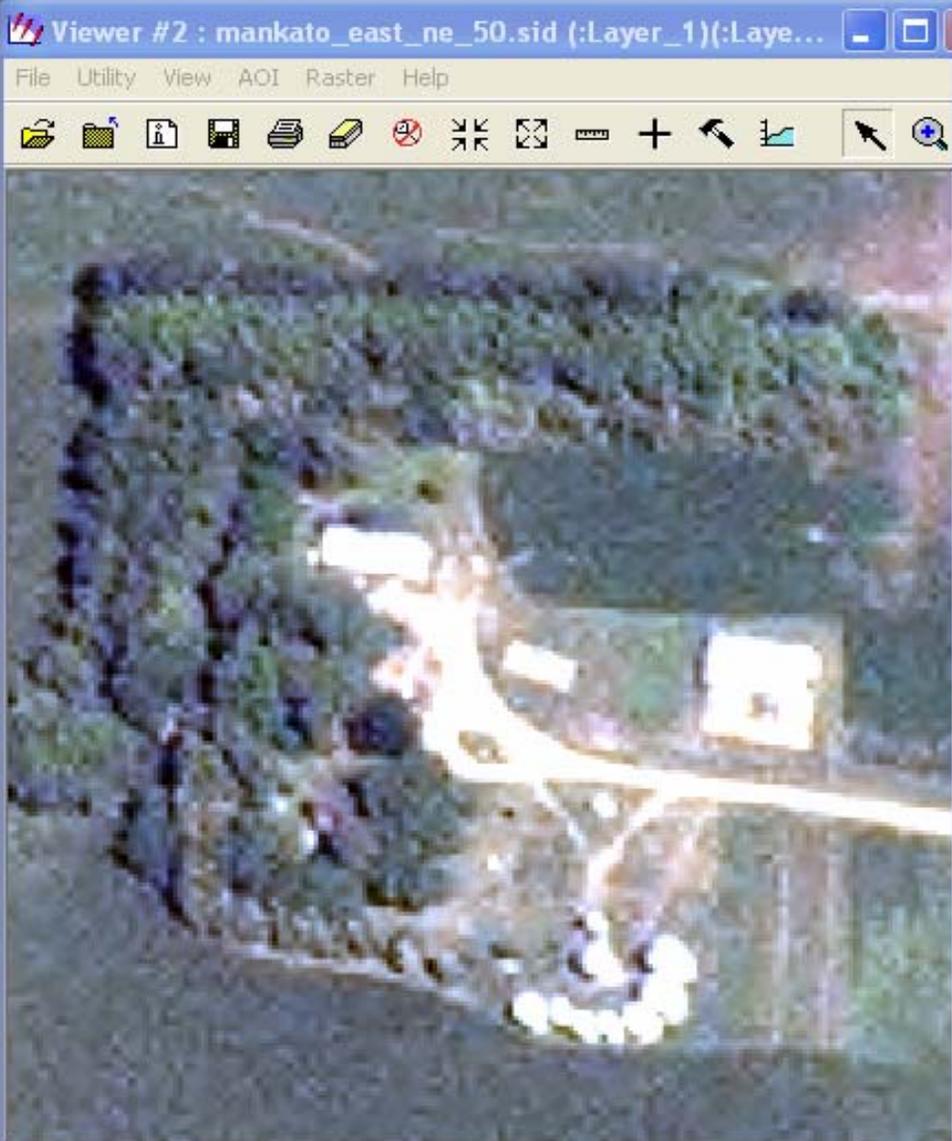
NAIP 2003, Nicollet County, MN



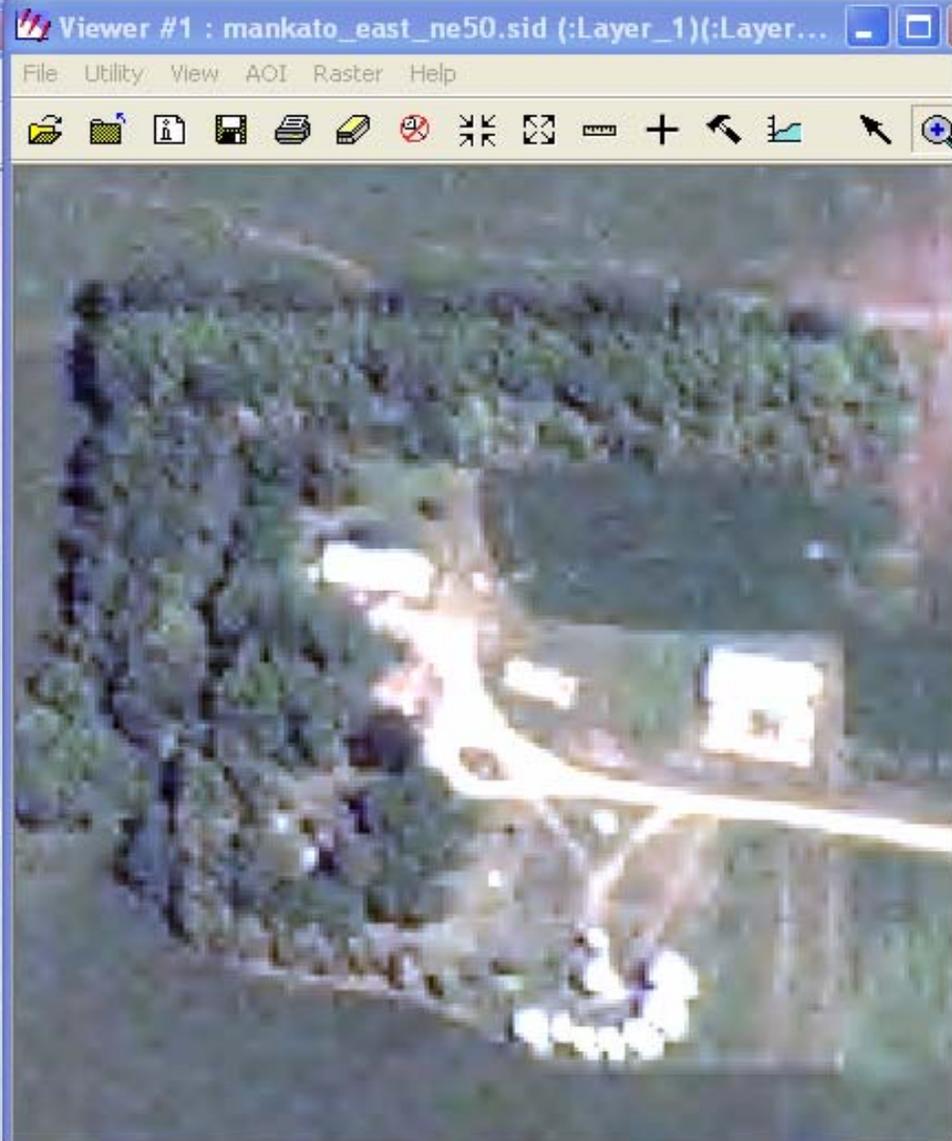
MrSIDS 50 : 1 (MP2, V 1.5)

JPEG2000 50 : 1

NAIP 2003, Nicollet County, MN



MrSIDS 50 : 1 (MP2, V 1.5)



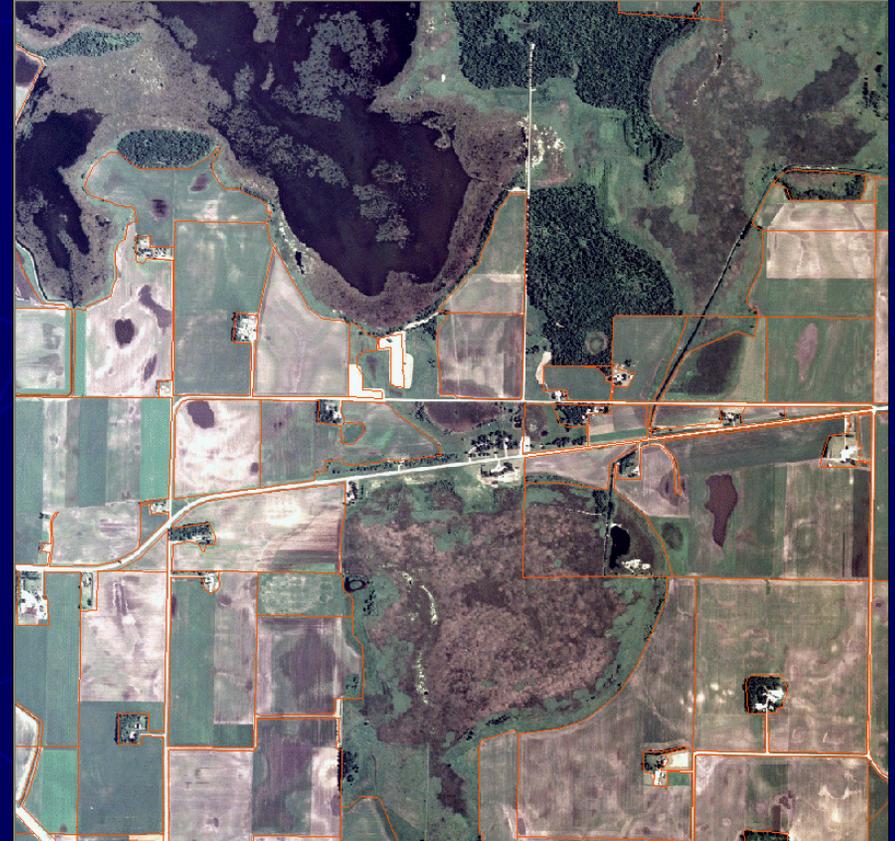
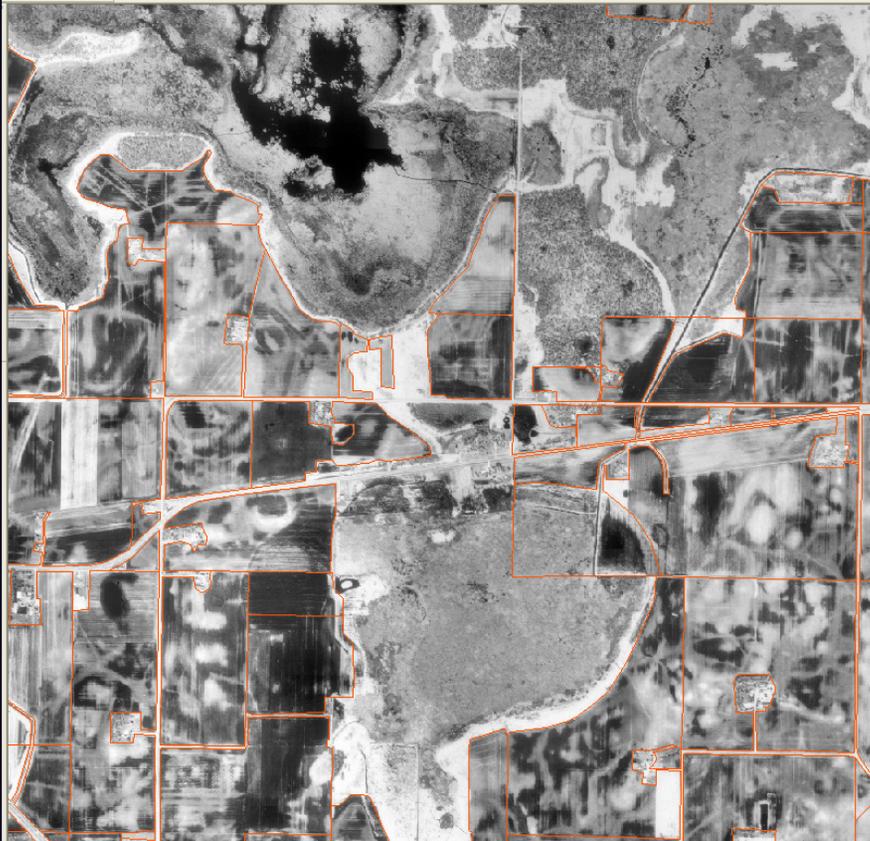
MrSIDS 50 : 1 (MP3, V 4.0)

NAIP 2004

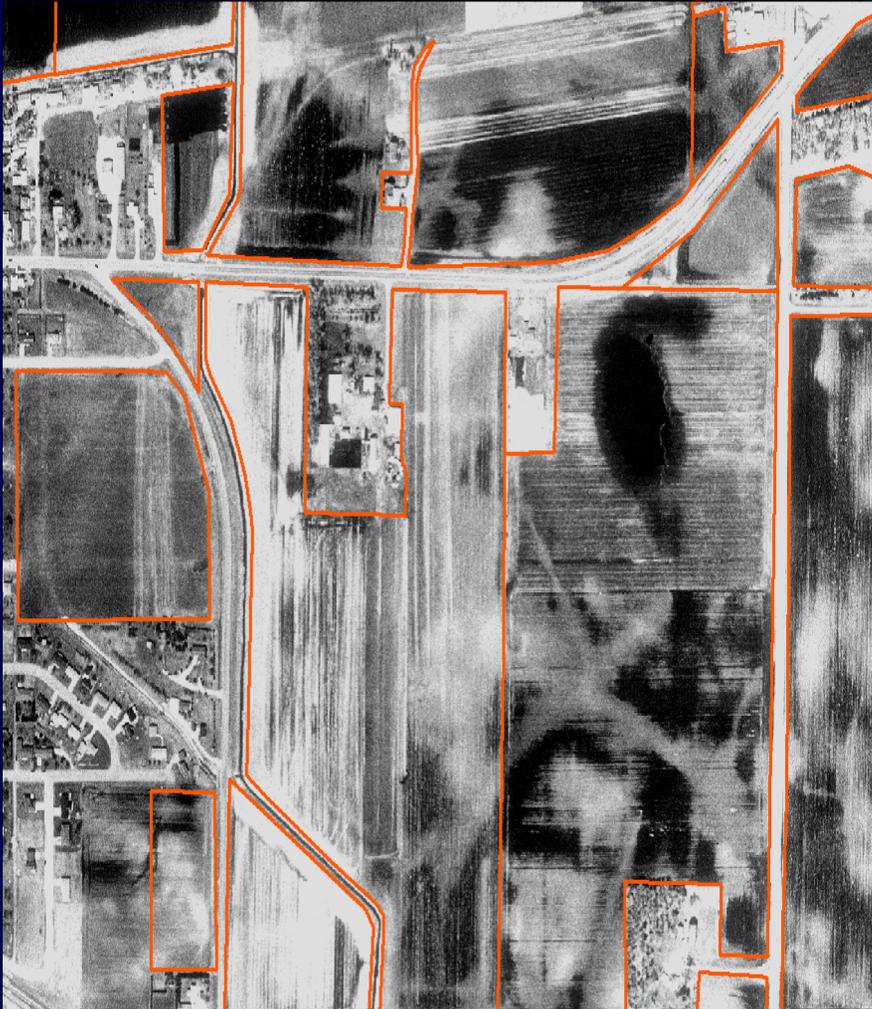
NRCS Recommendations

- NCGC provide a 10 meter DEM list for the “Optional” Section of NAIP 2004
- NCGC can assist with the inspections of DEM data
- Collect Stereo Imagery for a selected test area utilizing the ADS40
- Change the contract specification for MrSID (MP2) compression for county mosaics from 1 : 50 (NAIP 2003) to 1 : 25

Nicollet County, MN. NAPP DOQ (Left), NAIP DOQ (Right) with CLU



Nicollet County, MN. NAPP DOQ (Left), NAIP DOQ (Right) with CLU



NAIP Accuracy

- ▶ NAIP specifications require matching to original MDOQ to within +/- 3 Meters for 90% of points collected.
- ▶ Accuracy testing of NAIP Imagery samples of Nicollet County in Erdas 8.5 software showed that 41 of 43 points collected were within +/- 3 meters.
- ▶ Measurement testing of NAIP Imagery in Nicollet, MN. indicated the specifications were achieved.

Samples of NAIP Imagery on CD-ROM disc will be available.

Digital Sensor (Camera) Information

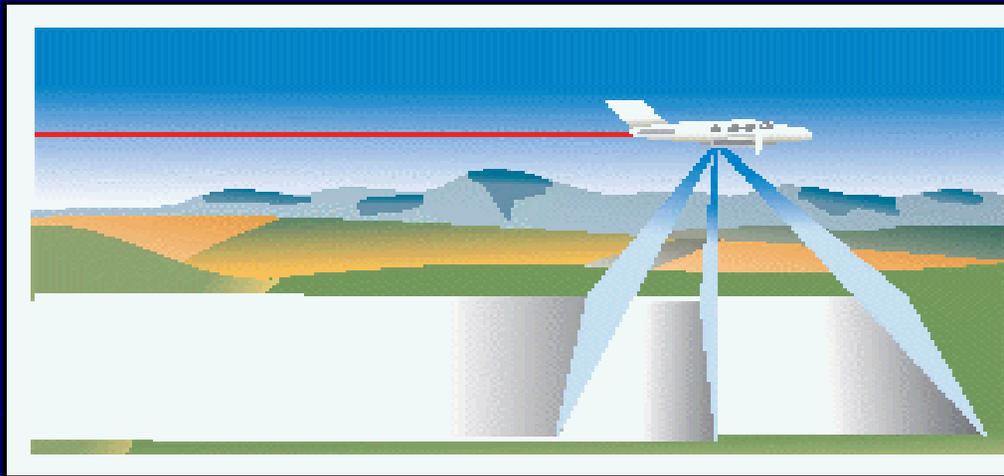




ADS40

***Photogrammetric Accuracy and
Remote Sensing Insight Combined***

Leica
Geosystems

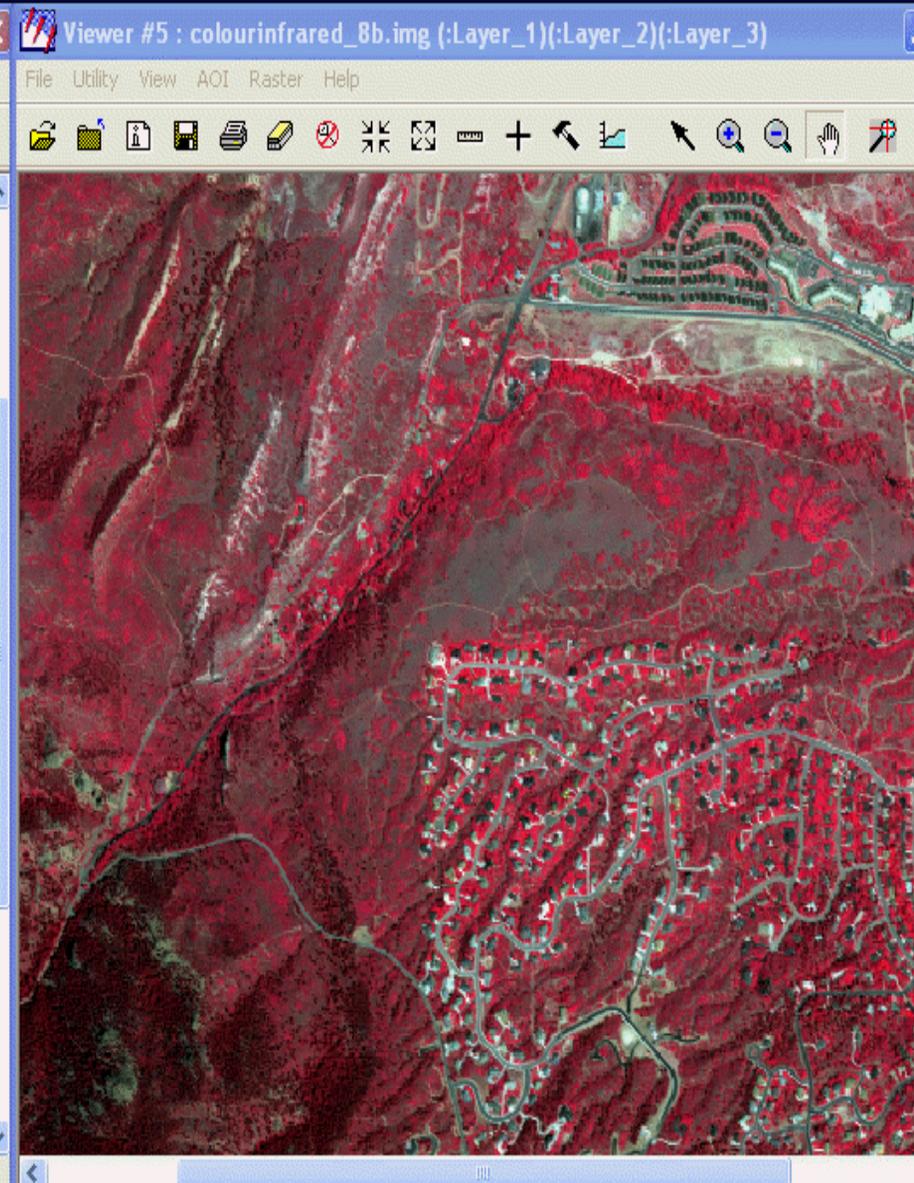
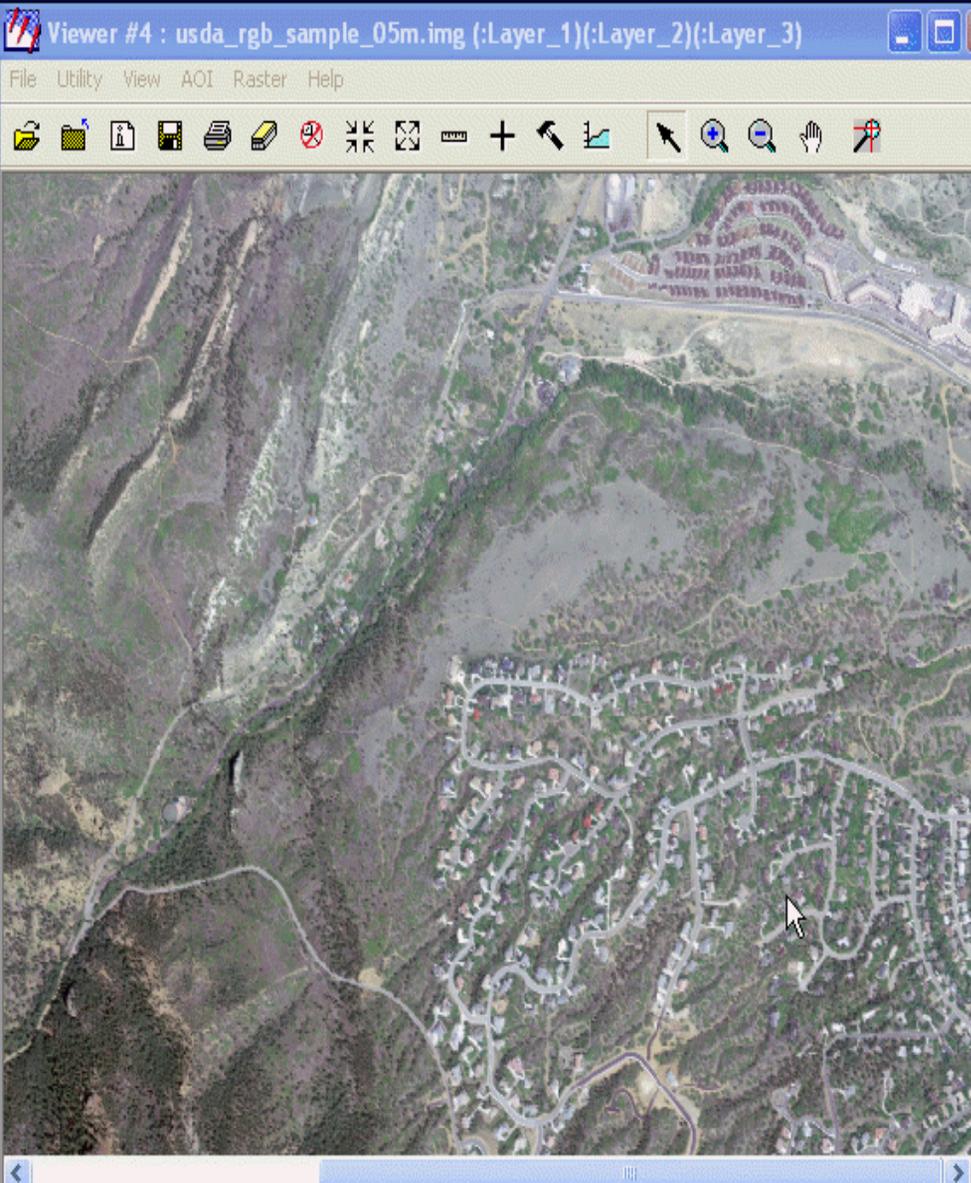


ADS40 Current Collection Capabilities:

- Continuous Collection of Seven Bands* for 10 Hours of Flight Time
- CCD Array Images 12,000 Pixels Wide

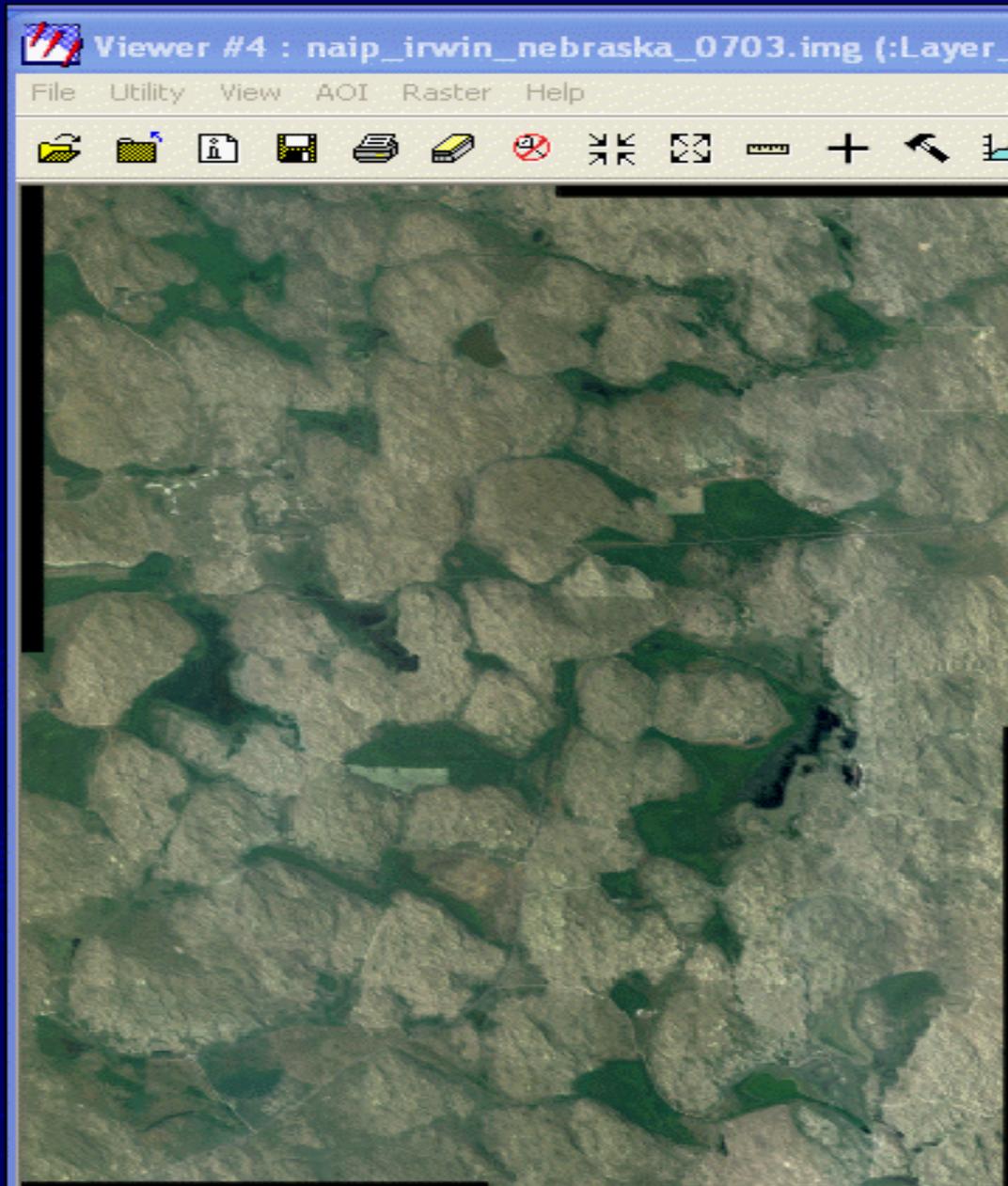
Colorado Springs, Colorado

ADS40 Digital Sensor, Image Date May 25, 2003



Cherry County, Nebraska

ADS40 Digital Sensor, Image Date July 20, 2003



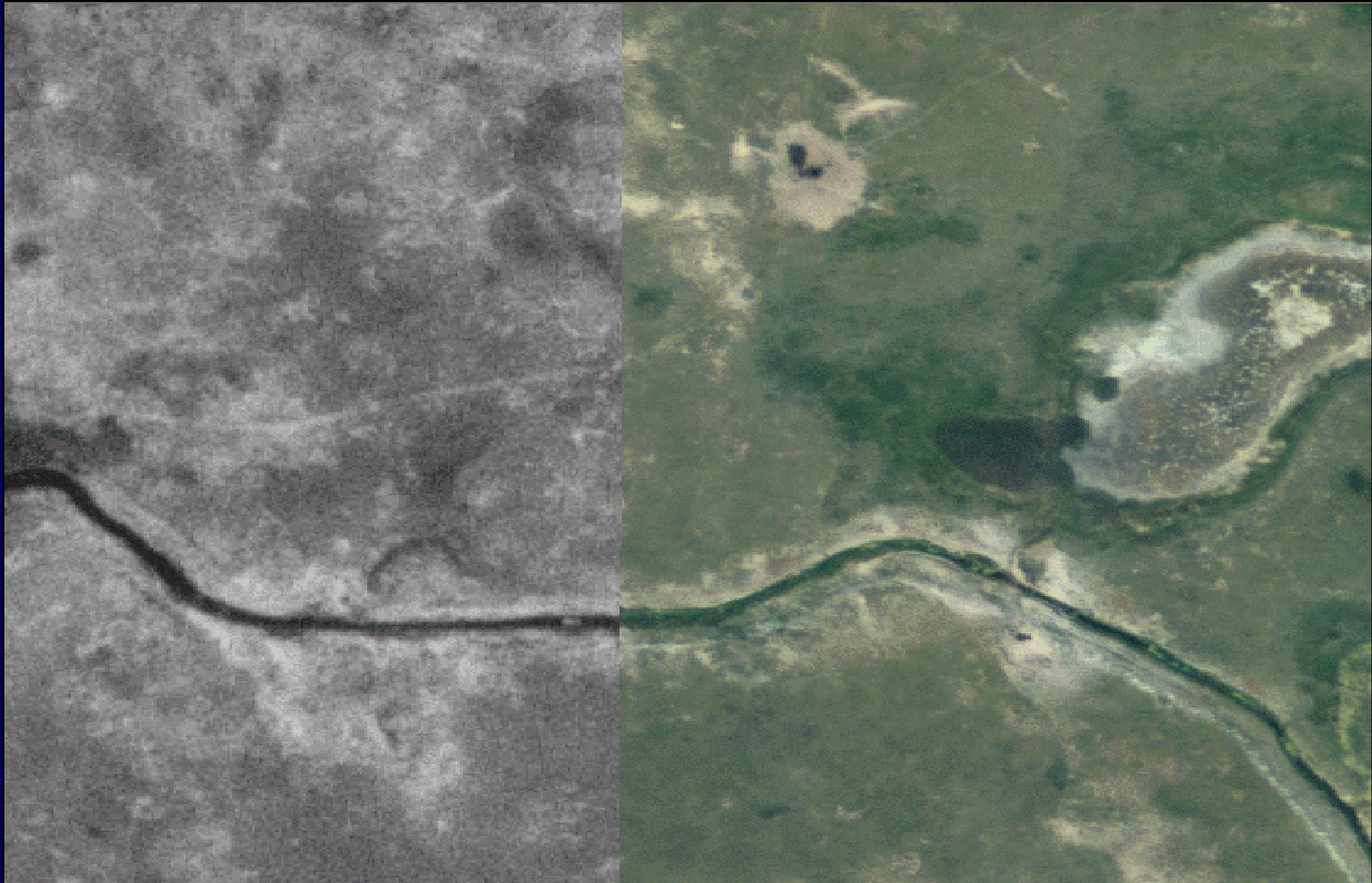
Cherry County, Nebraska
ADS40 Digital Sensor, Image Date July 20, 2003



Cherry County, Nebraska

ADS40 Digital Sensor, Image Date July 20, 2003

NAPP DOQ (Left), NAIP DOQ (Right)



Cherry County, Nebraska

ADS40 Digital Sensor, Image Date July 20, 2003



Advantages of ADS40 Digital Sensor

- ▶ Simultaneously Collection of Multiple Bands of Imagery
- ▶ DOQQ (1 Meter, Quarter Quad) is Imaged in One Pass
- ▶ Delivery Time for Imagery (Ortho) is Faster
- ▶ Increased Accuracy through Integrated ABGPS and IMU

Disadvantages of ADS40 Digital Sensor

- ▶ FCIR Problem. IR is imaged at near NADIR (2 Degrees) , RGB is imaged at 16 Degrees. The 14 Degrees offset created significant "Ghosting" problems* .
- ▶ Processing time on original equipment for ADS40 was 270 hours for every hour of flight time* . Clustering Technology has changed processing time to 12 hours processing per hour of flight time.
- ▶ Lack of Federal Standards on Digital Sensors. This impacts National Mapping Programs such as NRCS-Soil Survey/SSURGO and FSA-CLU.

ADS40 Future Improvements

New Sensor Due in 2004.

- ▶ New 5-way prism assembly with perfect alignment and Stereo Coverage in Panchromatic, Natural Color and False Color.
- ▶ 18,000 Pixel CCD array.
 - Complete DOQ (Full Quad) to be flown at 1 Meter resolution.
 - Complete DOQQ (Quarter Quad) to be flown at .5 Meter resolution.
- ▶ Computer hardware and software advances will allow next day delivery of ortho rectified imagery.