

**2008 NAIP LESSONS LEARNED
SOUTH DAKOTA COLOR 1M
TEXAS 4-BAND 1M**

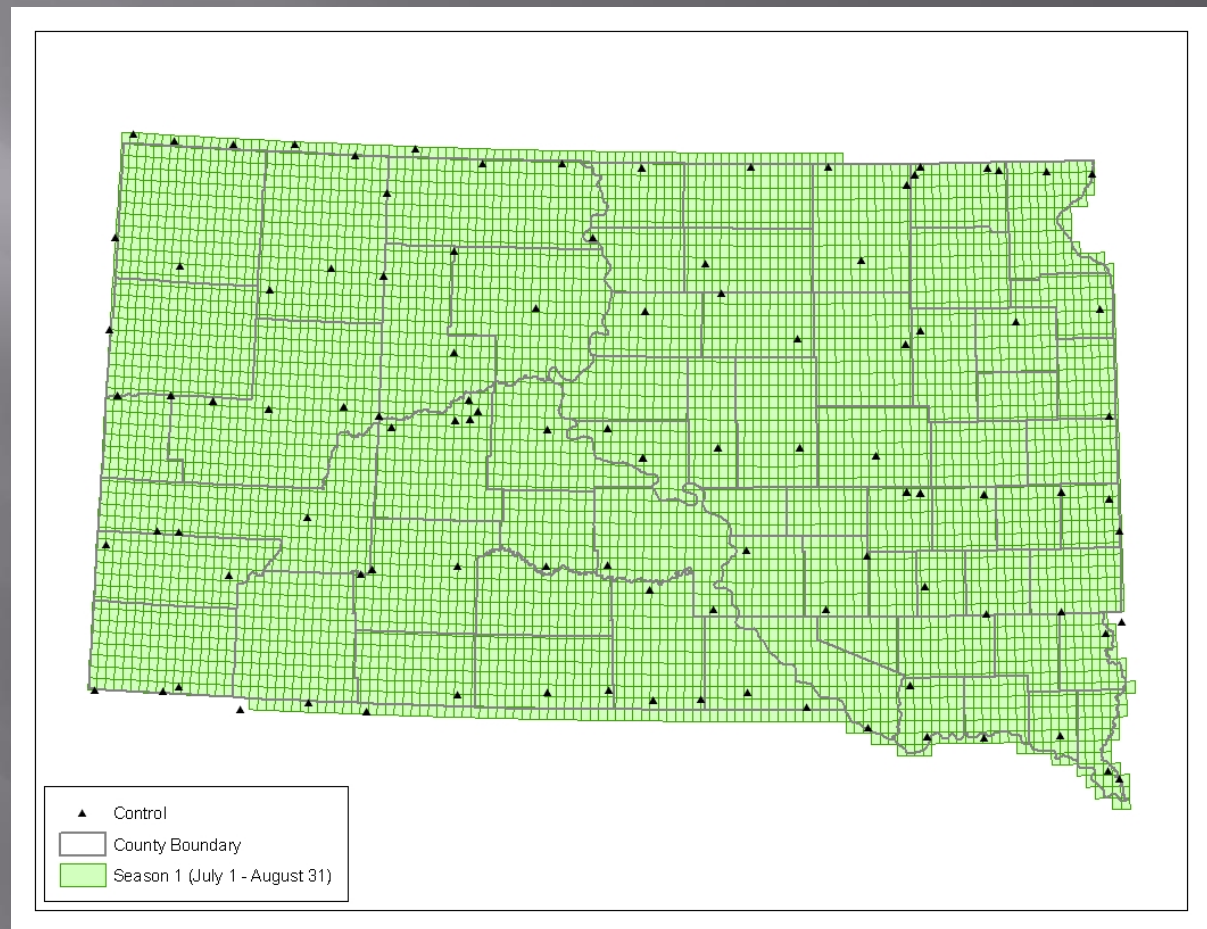
North West Group

Resources:

- ▣ Team resources:
 - 7 Cessna Conquest's
 - 9 ADS40-II SH52 sensors
- ▣ Used 2008 season (Peak):
 - 7 Conquests
 - 7 ADS40's
- ▣ EarthData and Horizons assisted on data acquisition

South Dakota: Acquisition

- Complete state coverage, 1m, color
 - 5992 DOQQ's
 - 66 CCMS's
- Official season dates:
 - July 4 - August 1
 - First flight: July 5th
 - Last flight: August 1st
- 48 aircraft days on site
- 27 acquisition flights
- 56.25% of days on site were production days
- Up to 4 aircraft on site at start of project



South Dakota: Processing

- ▣ Relative accuracy state
- ▣ Processing went well except for one issue:
 - Delay waiting on camera calibration by Leica
 - Delayed a few counties by ~3 weeks
 - Caused by a late upgrade to SH52 and a bad initial calibration
- ▣ CCM's progressively delivered
 - Goal was weekly shipments
 - Delivery July 16 - September 6
- ▣ DOQQ's delivered in 2 shipments
 - All delivered by September 12

South Dakota: Problems

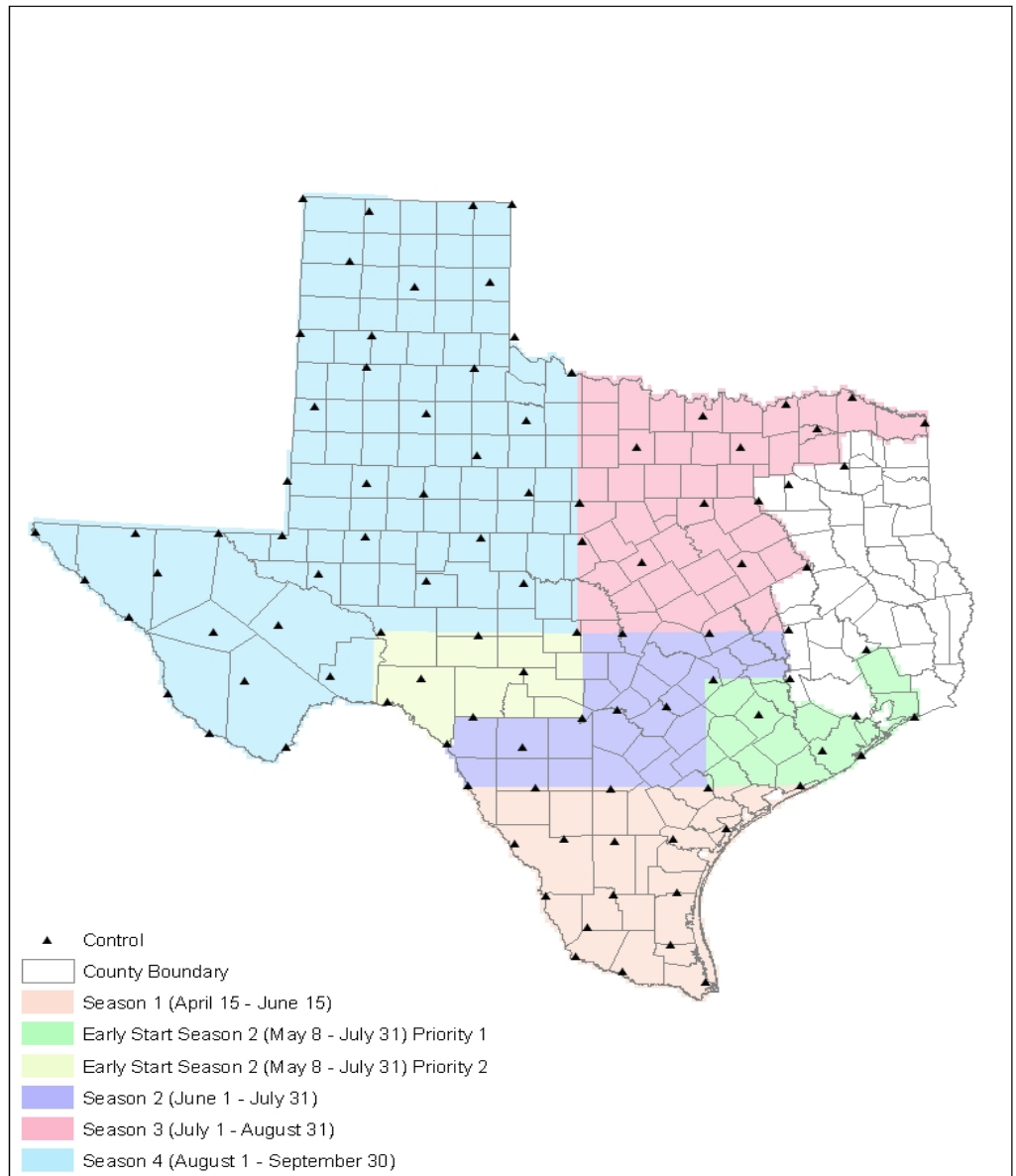
- ▣ Some issues with the NAIP radiometric specs:
 - If we follow the specs on a DOQQ basis we end up with a patchwork quilt
 - If we apply spec to entire counties, clusters of counties, or state we get more even product from DOQQ to DOQQ but can't hit the specs on every DOQQ
- ▣ Our approach:
 - Computed the median contrast and luminance peak of the DOQQ's in the state
 - Computed the difference between these median values and the NAIP mid-value of the contrast and luminance specs
 - Applied this correction to the DOQQ's
- ▣ Seemed like a good compromise to the problem

Texas

- ▣ Complete state coverage
 - 15310 DOQQ's
 - 237 CCM's
- ▣ State divided into 5 seasons:
 - Last season opens ~Jan 1, 2009
- ▣ 1M, 4 Band products
- ▣ Absolute control
- ▣ Seam line shape files
- ▣ TNRIS buy-up to 0.5M products
 - Also "raw" ortho strips for remote sensing
 - Stereo products, DSM generation
- ▣ Data collected at 0.75M multispectral, 0.375M panchromatic
- ▣ NAIP deliveries first, then TNRIS

Texas: Control

- 115 photo-ID points required
- Because of TNRIS 0.5M up-sale and the desire for a more accurate product all new survey was done
- TNRIS/TX-DOT provided the control required:
 - They did a great job!
 - Very little impact to delivery process – small impact to season 1 delivery and then they were ahead of the weather and data acquisition
- Initial accuracy checks show in the 2M range



Texas: Acquisition

- ▣ 4 seasons completed
- ▣ Good weather for season 1 but our luck ran out!
- ▣ First flight: April 29, 2008
- ▣ Last flight: October 18, 2008
- ▣ 573 aircraft days on site
- ▣ 148 acquisition flights
- ▣ 25.8% days on site were production days
- ▣ Up to 7 aircraft on site

Texas: Processing (NAIP)

- ▣ Processing went well but lots of delays waiting on reflights:
 - Often had 1000's of DOQQ's waiting on reflights to complete several counties
- ▣ CCM's progressively delivered:
 - Goal was weekly shipments
 - June 5th – November 5th delivery
- ▣ All DOQQ's delivered by next week
 - Tape drives are churning....
- ▣ Seam line shape file creation was streamlined over last year but can still be challenging

Texas: Processing Problems (1)

- ▣ Issues with the 4 band product:
 - We used the LizardTech GeoExpress (7.0) compressor to create the JPEG2000 files:
 - ▣ Lots of testing/tweaking/cursing/hair-pulling to get it to actually work in production
 - NAIP color specs based off luminance which doesn't account for the NIR band
 - ▣ We adjusted red/green/blue to fit specs and left NIR band alone
 - 4 band mosaics are still an issue:
 - ▣ A good seam line for color product isn't always the right seam line for a good FCIR product
- ▣ JPEG2000 mosaic size limitations:
 - Often mosaics larger than 2.5GB can't be loaded at USDA
 - Not a problem with MG3 format in the past
 - We reduced our max JPEG2000 CCM size to ~2GB
 - Caused the need for several CCM's to be re-submitted

Resale's to reduce USDA prices

- ▣ A few interesting data resale's:
 - California 2005 data reprocessed to 1m FCIR ortho and panchromatic and color stereo products
- ▣ Our online sales division (Valtus Imagery Services) is purchasing NAIP data flown by other vendors to full-fill customer demands:
 - ▣ PA, LA so far
 - ▣ Order for 11 more states just placed
 - ▣ The sales opportunity is the service of seamless delivery of data into the clients applications
- ▣ We go after the states where we have active resale opportunities by offsetting our NAIP pricing
- ▣ More lead-time on knowing what states means more time to anchor opportunities and bring USDA price down
 - ▣ NAIP is the “anchor sale”

Suggestions for next year?

- ▣ Consider same states to a vendor for multi-year contracts:
 - We don't want Texas again but.....
 - Some efficiencies gained as control and DEM doesn't need to be re-prepped
 - Better able to negotiate fuel and hotel rates for multi-years
 - Better able to negotiate resale opportunities early enough to impact NAIP pricing
- ▣ Anything to enlarge the season is a win for everyone!
- ▣ Clarify radiometric specs in 4-band context and DOQQ, county, or state wide averaging
- ▣ Would like to see another media option for DOQQ deliveries:
 - SDLT-160 drives are getting hard to find
 - On states like TX DOQQ tape creation is a significant cost
 - Even a newer tape drive spec would be helpful (SDLT600, LTO4, etc)
 - Faster, more data on a tape, more reliable
 - Fire wire/USB drives would be preferable

Questions?

- ▣ We appreciate the opportunity to participate in the NAIP program and to present today
- ▣ For more info please contact:

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