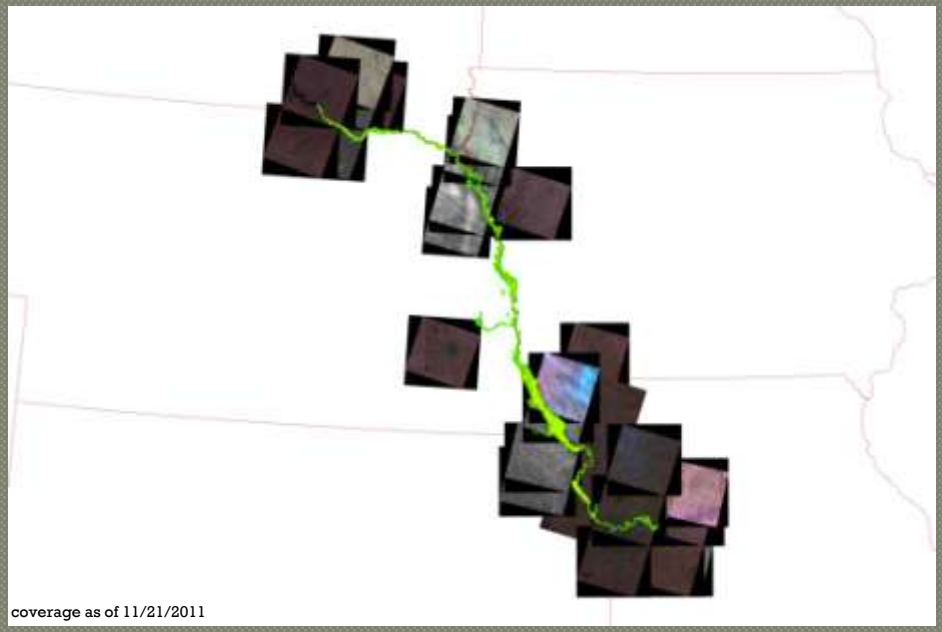
SPOT Imagery Acquisition for NE and MO FSA



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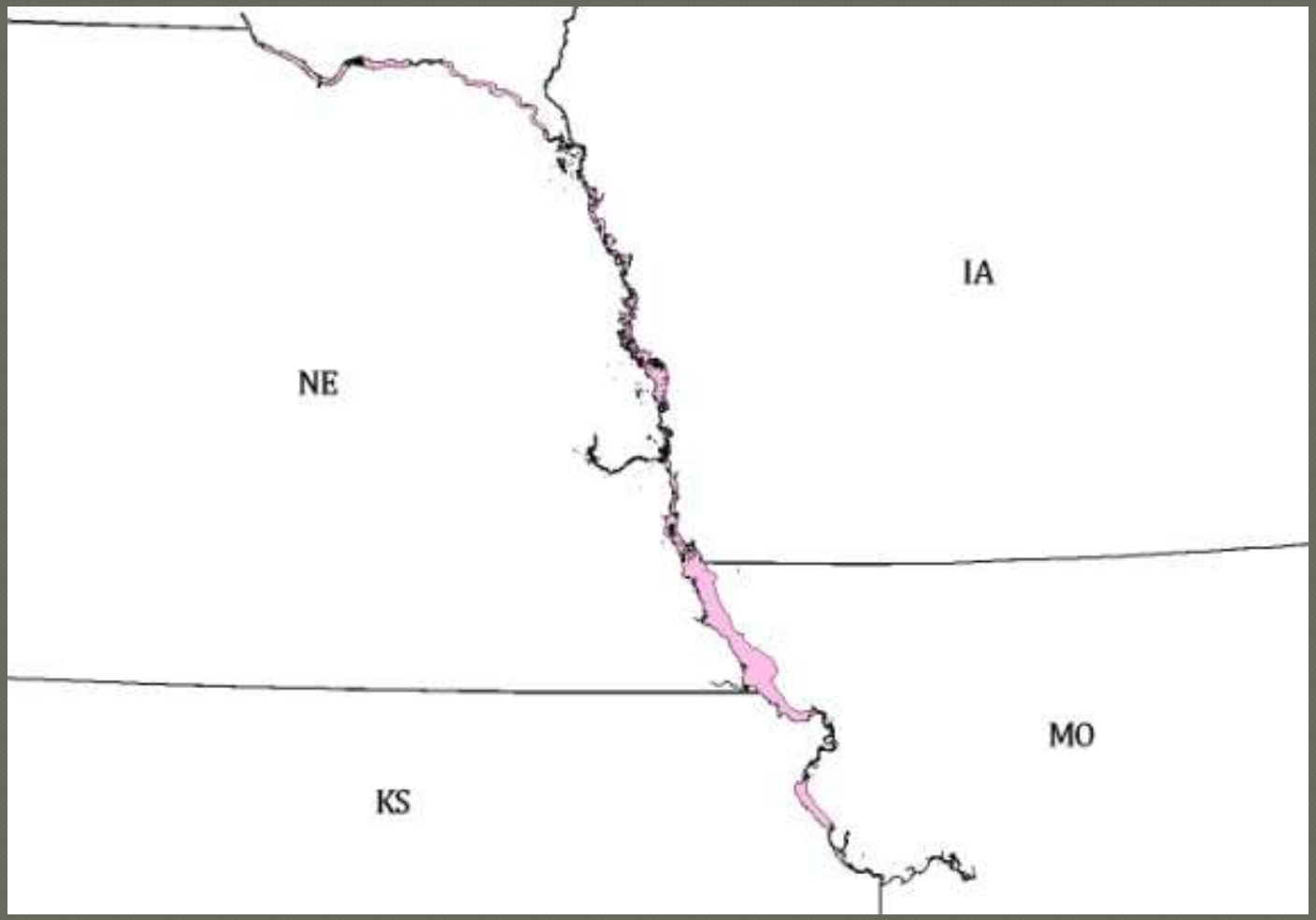
Overview

- The Customer Request
- Options Considered
- The Product
- The Formal Request and Tasking
- Receiving and Processing Data
- Current Status
- The Big Win

The Customer Request

- MO River Flooding in 2011 was bad
- FSA State Offices for MO and NE requested assistance in obtaining imagery of areas that had been flooded, showing the area *after* the flooding had receded. This would be used for official FSA work in the field (ECP, compliance, working with producers on conservation plans, changes to cropland due to the flooding, etc.)
- AOI is about 1000 miles x 10 miles
- FSA wanted acquisition between Mid Oct - End Nov

The Customer Request – The AOI



Options Considered

- Aerial Contract - $
- Tasking of commercial satellites - $
- See what might be available on various data portals – need luck and cumbersome
- See about tasking SPOT via the North American Data Buy

The Product

- SPOT acquires
  - 5m pan and 10m MSI
  - Can also produce 2.5m pan image from 2 5m pan images
  - Pan sharpening is not included in any standard product
- Customer was asked to verify product needed
  - 5m pan sharpened would work but not ideal
  - 2.5m pan sharpened would be ideal
- Customer was also asked to verify ideal delivery format/medium
  - Both formats below were requested
    - Image services
    - Data on external drives

The "Formal" Request

Ryan, Brenda,

This is a formal request by the USDA Farm Service Agency (FSA) Aerial Photography Field Office (APFO), on behalf of USDA-FSA Farm Programs Staff in WDC and FSA NE and MO State Offices, for SPOT imagery acquisition under the North American Data Buy, to assist in FSA disaster analysis of agriculture associated with receding MO River flood waters. Please let me know if this request needs to be directed to another party.

Request SPOT acquisition for the attached AOI with the following specifications:

1. Acquisition period – between October 25 and November 30, 2011 *Extended to Dec 11
2. Clouds - <10% preferred
3. Spatial and Spectral Resolution (standard L1Gst and L1T)
    a. 10-meter MSI required, plus
    b. 5-meter Pan required (2.5-meter Pan preferred)
4. File format – .tif or .img
5. Delivery Medium – Incremental delivery via posting the data on Earth Explorer is acceptable (please notify APFO as data is posted). Conversely, delivery on media to APFO is also acceptable.
6. Delivery Timeline – By the end of the calendar year; delivery by mid December is preferred.

This is our first request for SPOT coverage; please let me know if any of these specs are not achievable.

Thank you,

Brian Vanderbilt
Chief, Geospatial Services Branch
USDA-FSA Aerial Photography Field Office
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Salt Lake City, UT 84119
brian.vanderbilt@slc.usda.gov
801-844-2930

The "Formal" Response

Hi Brian
Please confirm that the information on the attached proposal is correct and I will have them activate the programming. As of now the feasibility shows there is a low chance of collecting all of the data by Nov 31st. It would help if you can raise the angle restriction and possibly the cloud cover restriction.

Thanks,

Brenda

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Brenda Ellis
Commercial Near Term Requirement Team
Earth Resources Technology (ERT), Inc.
Contractor to the U.S. Geological Survey (USGS)
Earth Resources Observation & Science (EROS) Center
47914 252nd Street
Sioux Falls, SD 57198-0001
Phone: 605-594-6970
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The Tasking Proposal

ASTRIUM

Spot Image Corporation d.b.a Astrium GEO-Information Services North America
14595 Avion Parkway, Suite 500
Chantilly, VA 20151 USA
1-800-275-7768
www.astrium-geo.com

Satellite Programming Proposal
October 27, 2011

Submitted to: USGS
Project / Area: Missouri River
Programming Requests #: 2475
Country: USA
Submitted by: Joy Dyer
Valid until: Oct 28, 2011

Plot coverage :

Spot Image & Infoterra are teaming up. The GEO-Information Services division of Astrium will bring a consolidated portfolio of services & products to customers worldwide.

Programming Request Parameters

Application: - Analyze damage to Agriculture caused by MO River Flooding
Programming Service - Standard
Programming Window - Oct 29 2011 to Nov 30, 2011
Spectral Mode & Resolution – 2.5m Pan/ 10m MSI
Incidence Angle - +/-15
Total Scenes – 38 (19 2.5m and 19 10m)

Validation Criteria: They are based on the area of interest meeting the specifications below.
Cloud Cover - ≤10%
Haze - No Haze
Snow/Ice – No Snow

Special instructions:
Full scene needs to be <10% clouds. We will propose any scene that is more than 10% clouds but has the area of interest cloud free.

Likelihood of success & recommendations

The chance of acquiring all of this data is low due to conflicts and short window. We recommend opening the angles to allow for more attempts and possibly raising the cloud cover restriction.

Authorization

Joy K Dyer
Satellite Programmer / Spot Image Corporation
GEO-Information Services

CLIENT Date

Spot Image & Infoterra are teaming up. The GEO-Information Services division of Astrium will bring a consolidated portfolio of services & products to customers worldwide.

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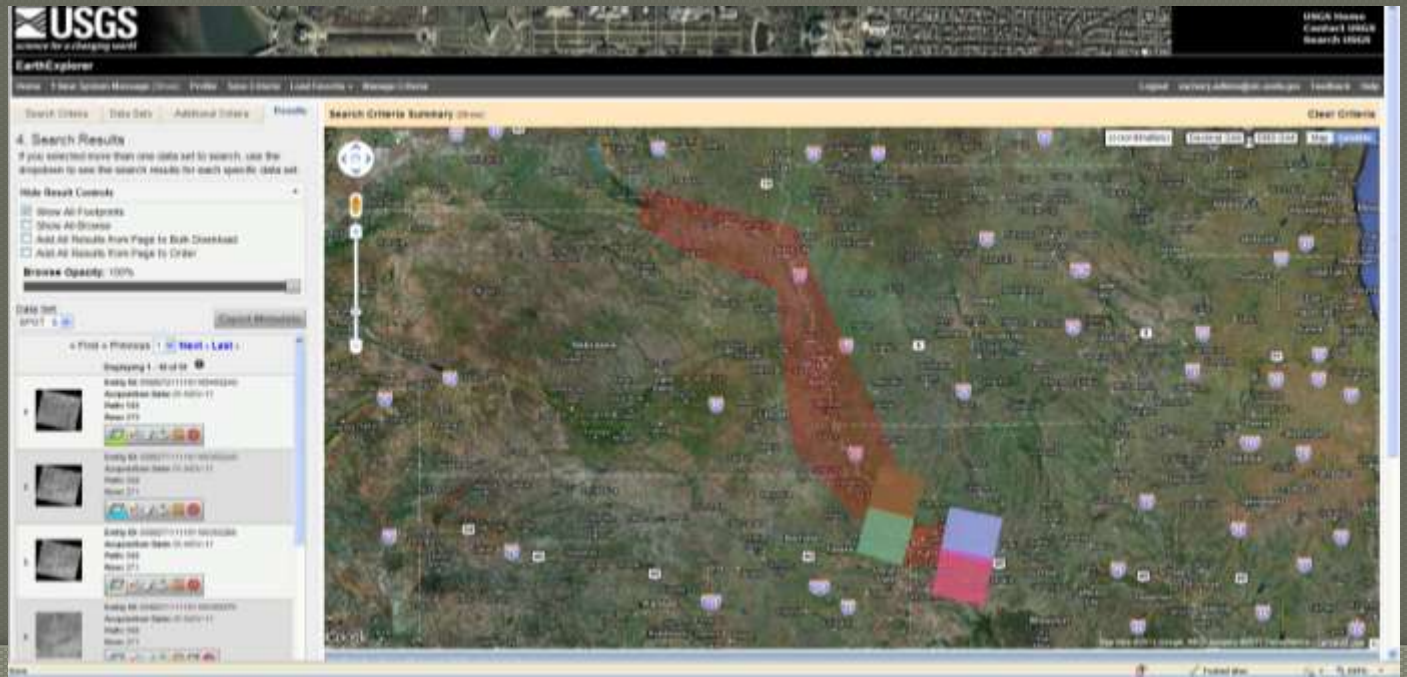
Receiving and Processing Data

- Downloading from Earth Explorer
  - "In terms of the SPOT availability, we create a SPOT L1A (L1R comparative) product using SPOT's TS-5 processing system. We then take that and into ENVI and create a L1Gst which is a systematic correct product with DEM correction applied. The third product is the L1T product which takes the L1Gst and does image to image correction against the same reference image as Landsat" – Ryan Longhenry (USGS)



Receiving and Processing Data

- Processing the Data
  - We are using L1T because it is most accurate to ground and most accurate between the MSI and Pan images, which is critical for pan sharpening
  - We are then pan sharpening the data (2.5m if available)
  - We will then likely mosaic the data, write to media, and ship
    - Will provide both pan and pan sharpened images
  - We will also create image services for the AOI

Receiving and Processing Data – Pan Sharpening

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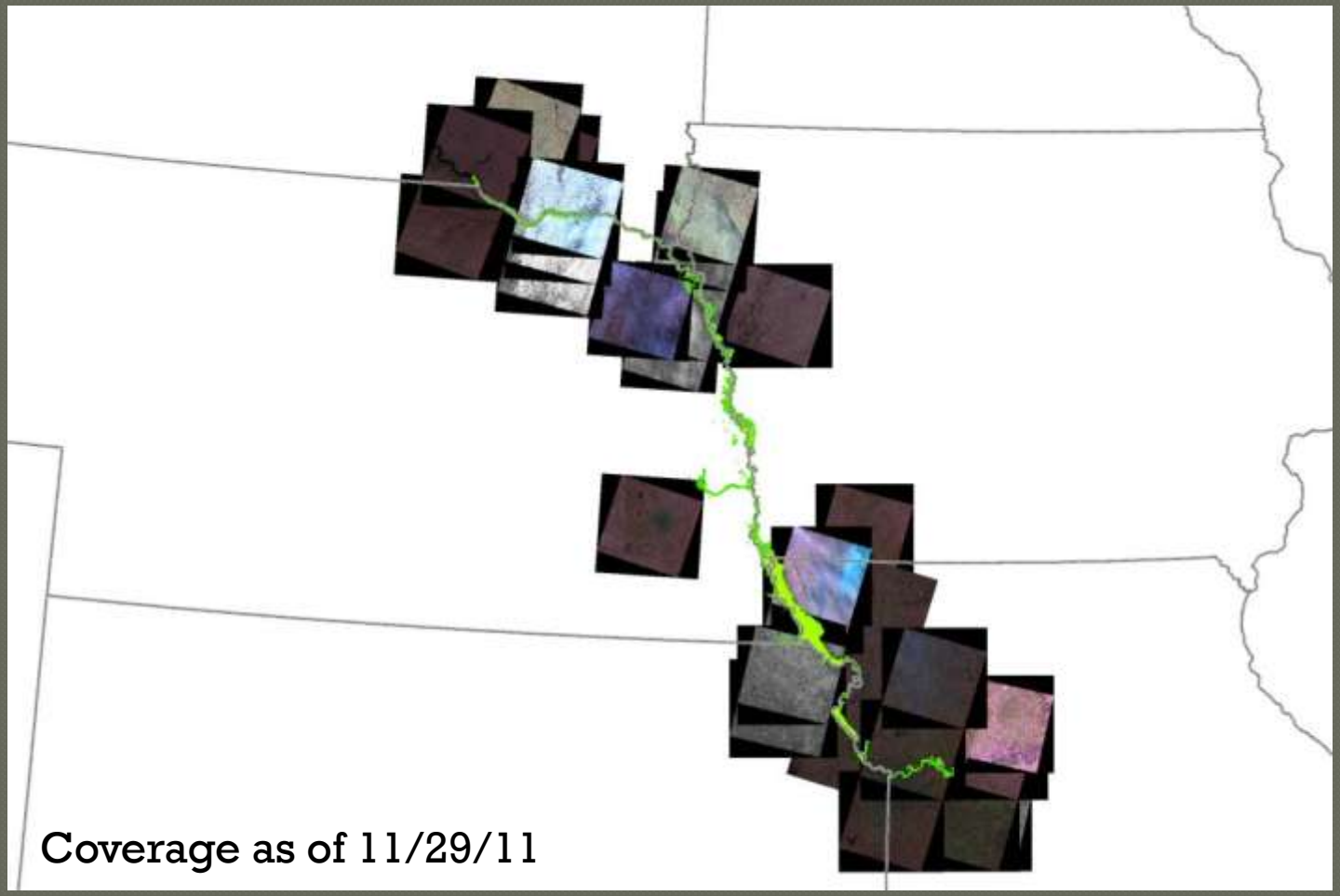
Current Status



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The Big Win

- Outside of our own processing/data preparation time, it was free (for us) to obtain via the North American Data Buy
- Of course this is only a big win if the product is useful to the customer, which remains to be seen and documented

Questions

- Zack Adkins – zachary.adkins@slc.usda.gov
- Brian Vanderbilt – brian.vanderbilt@slc.usda.gov