

RAPIDEYE IMAGERY ON DEMAND FOR AGRICULTURE

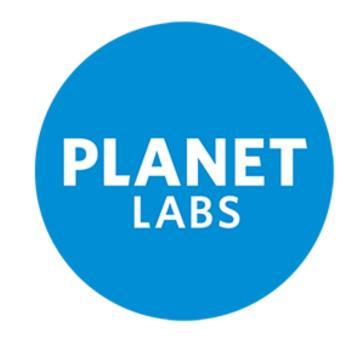
JULY 2015

Clint Graumann | Director – North America

A COUPLE OF WORDS ABOUT THE LATEST HEADLINES...



BlackBridge to be acquired by Planet Labs



A COUPLE OF WORDS ABOUT THE LATEST HEADLINES...



- The transaction expected to close in Q3 2015
- The RapidEye constellation will continue imaging the earth at full capacity
- Our customers we'll keep providing the same level of outstanding service to our partners and customers
- Way forward leverage each other's strengths to become the market leader in our resolution range
- Agile aerospace image the whole Earth every day, always with the latest space technology

A COUPLE OF WORDS ABOUT THE LATEST HEADLINES...

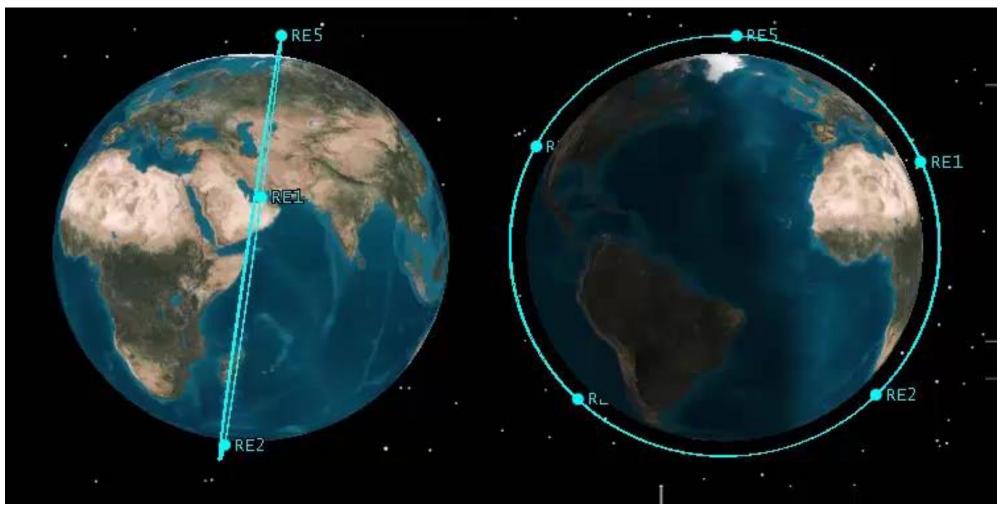


More information at www.blackbridge.com



THE CONSTELLATION





REMOTE SENSING IN AGRICULTURE



Availability

Reliability

Utility

Scalability

Affordability



Availability

Image Acquisition

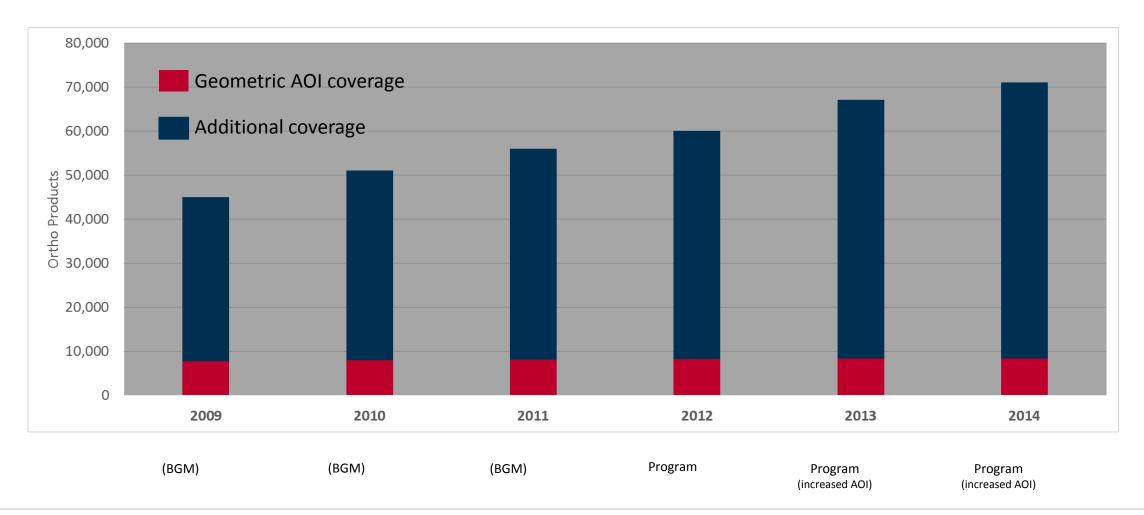


North America Agriculture 2014 May to September

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MULTI-YEAR ARCHIVE NORTH AMERICA



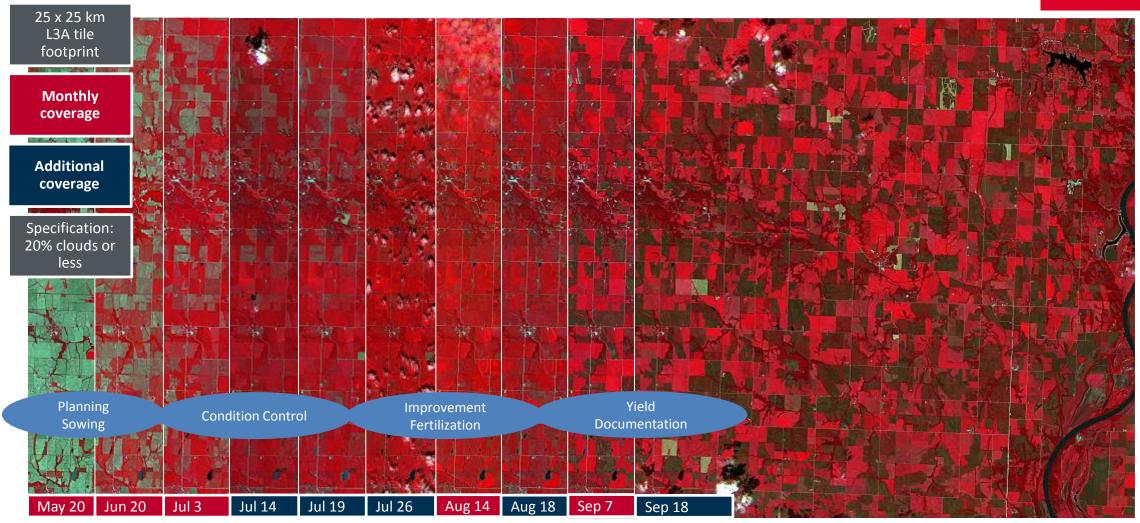




Reliability

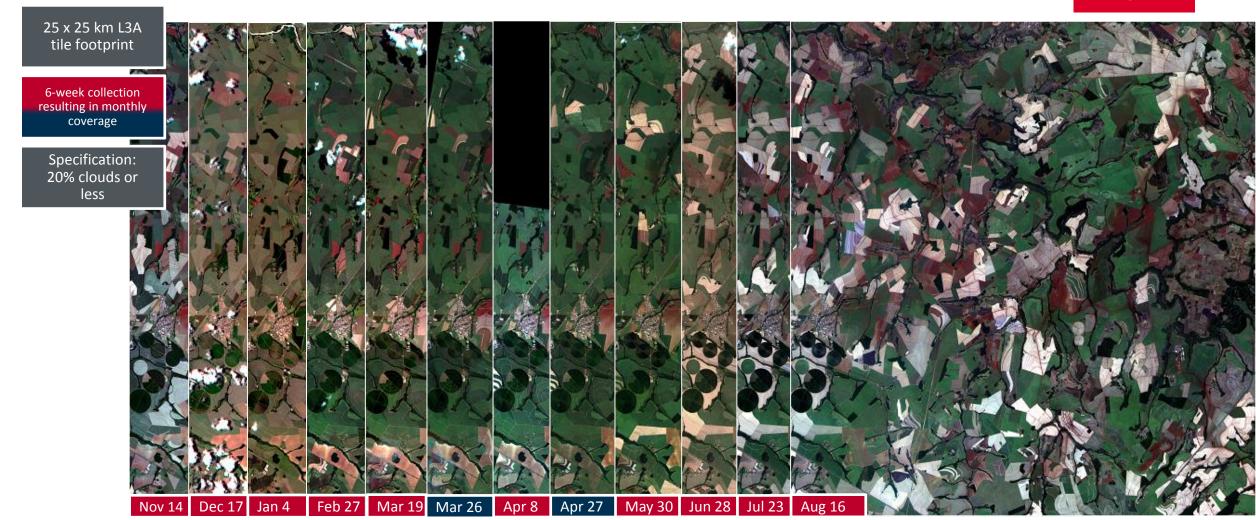
EXAMPLE: MONITORING PROGRAM NORTH AMERICA 2014





EXAMPLE: MONITORING PROGRAM BRAZIL 2014







Reliable, industry leading collection capacity beyond 2020

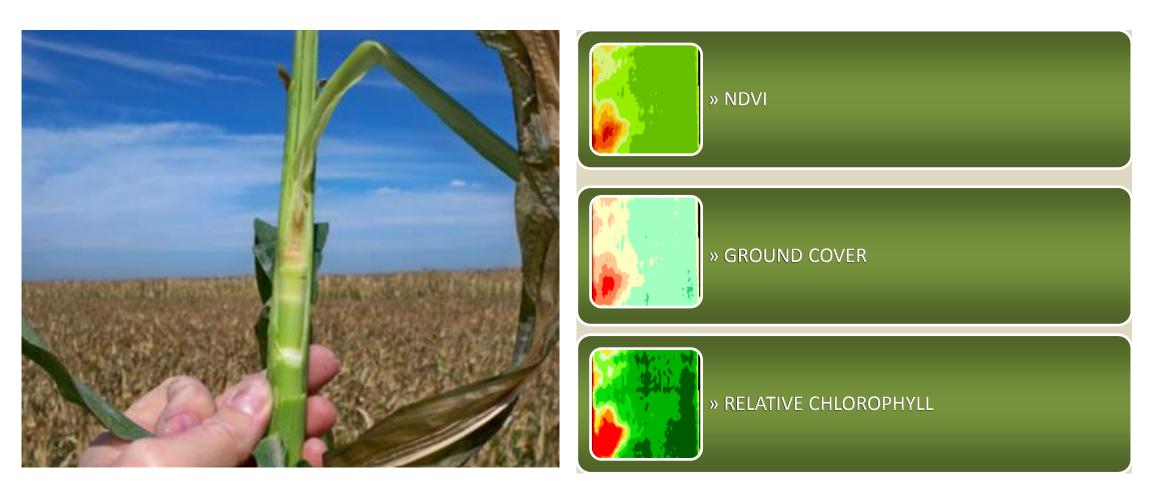




Utility

IN-FIELD STATUS AND VARIABILITY





IN-FIELD STATUS AND VARIABILITY



Used to delineate management zones and for decision support:

Variable rate fertilization application

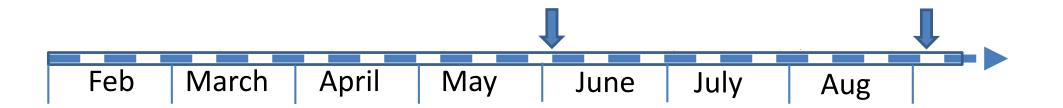
Detection of water issues and irrigation needs

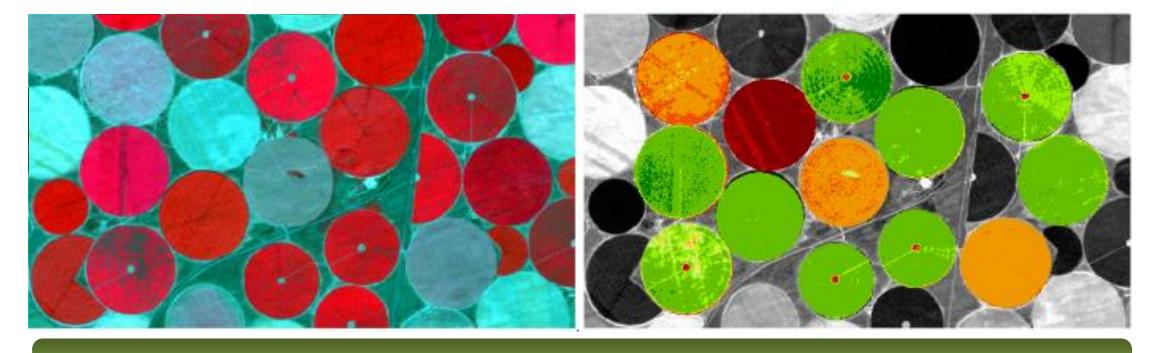
Variable rate application of pesticides

Damage assessment

NDVI TIME SERIES





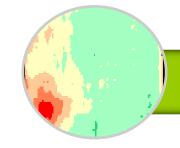


With senescence the in-field variability becomes detectable again

AGRICULTURE APPLICATION







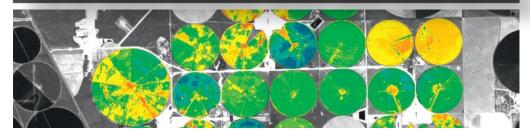
>> GROUND COVER



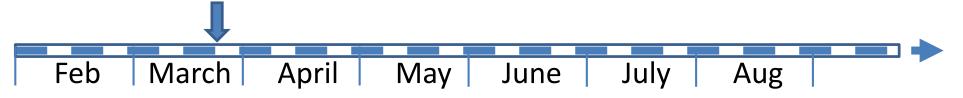
Percentage of green area related to the total area

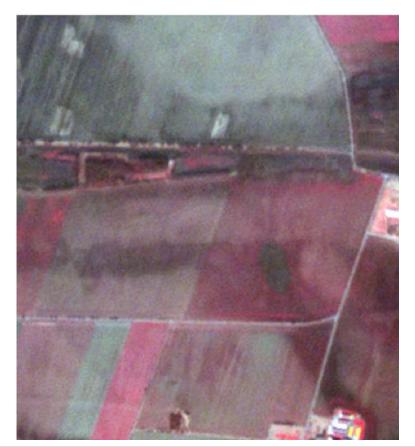
≈ 30%

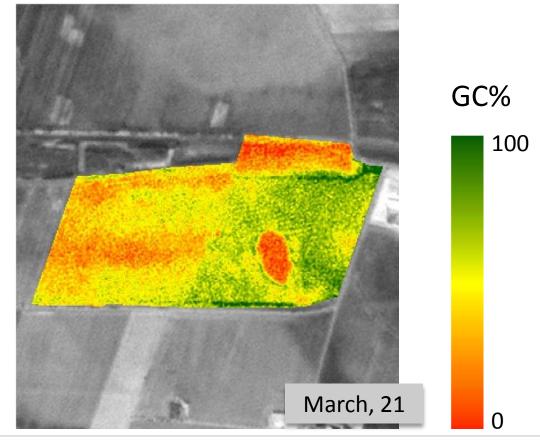
% OF GREEN BIOMASS WHEN SEEN FROM ABOVE



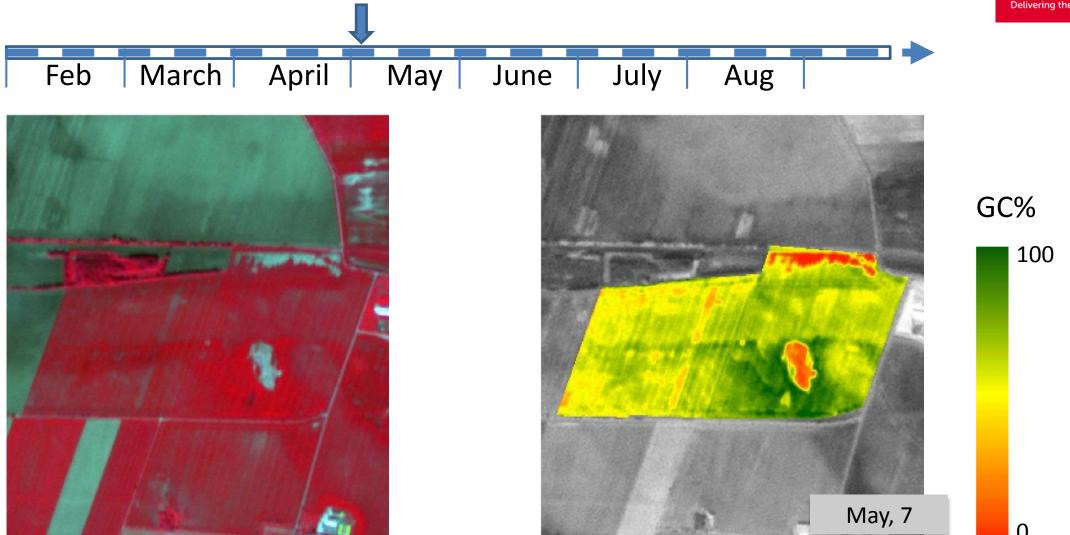




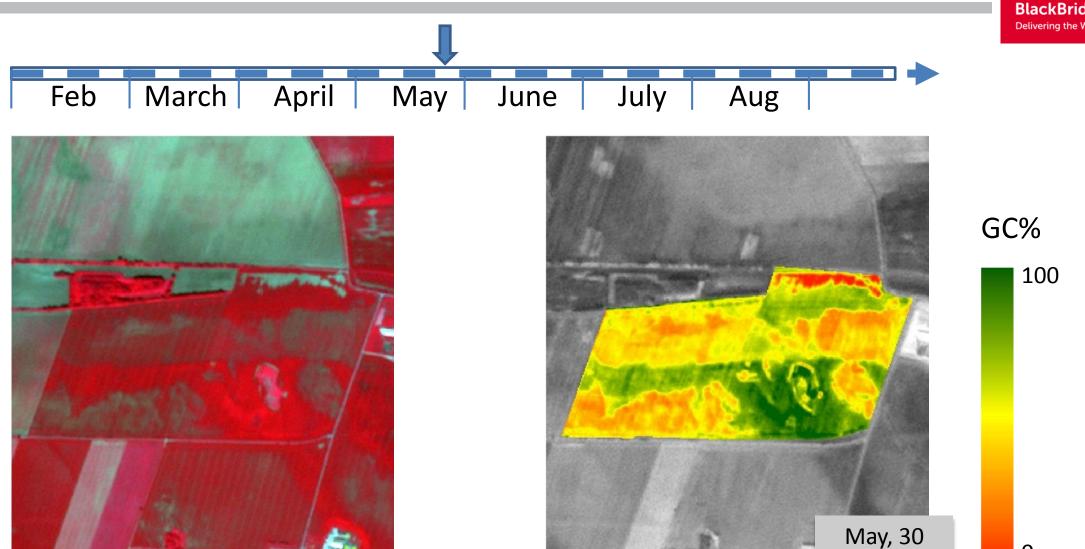




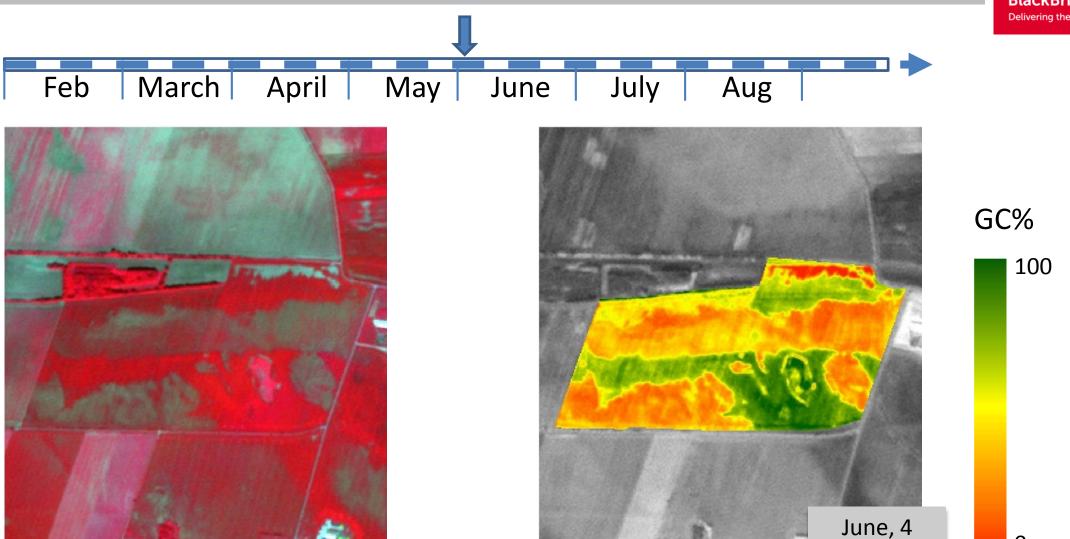




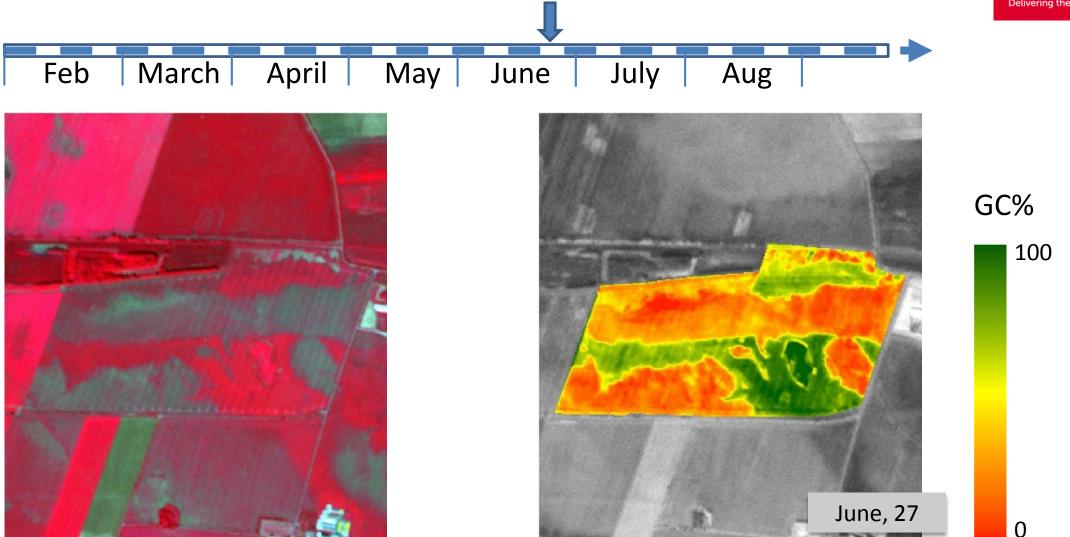














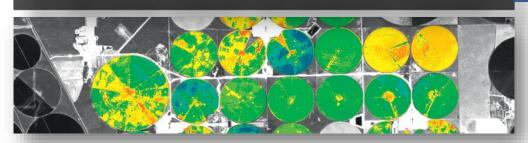
- Estimates are very close to their true values
- Allows time series monitoring programs
- Accurate information on crop growth status
- Supports management decisions

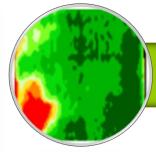
RELATIVE CHLOROPHYLL MAPPING





RELATIVE CANOPY CHLOROPHYLL CONTENT





>> RELATIVE CHLOROPHYLL



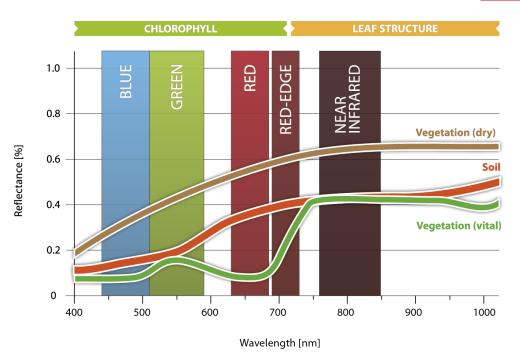
Relative content of chlorophyll

RELATIVE CHLOROPHYLL MAPPING



Red-Edge band uses:

- Monitor health
- Improve species separation
- Indicate chlorophyll, protein and nitrogen content



RELATIVE CHLOROPHYLL MAPPING



- Applicability: shows spatial variability of
 - N status
 - Other nutrients
 - Management zones

- Benefit: decision support for
 - Top dress N application
 - Availability of nutrients
 - Areas affected by disease and/or pests

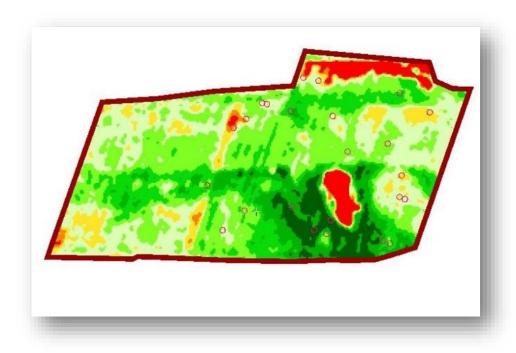
PRECISION AGRICULTURE PRODUCT VALIDATION

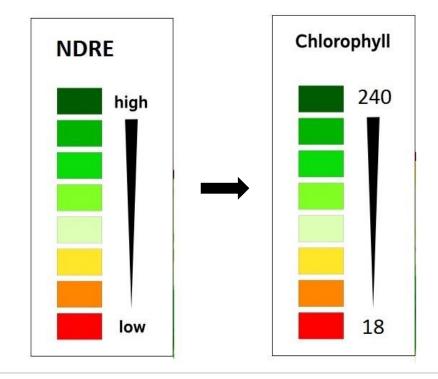


Show values relative to max and min NDRE within a field



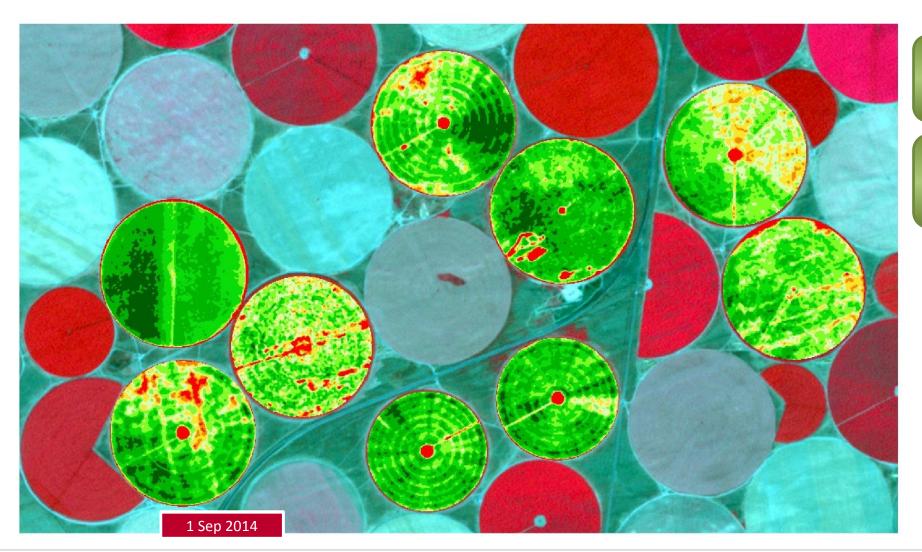
Transformation of relative values into absolute Chlorophyll values





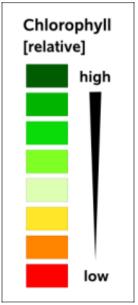
EXAMPLE CHLOROPHYLL MAP





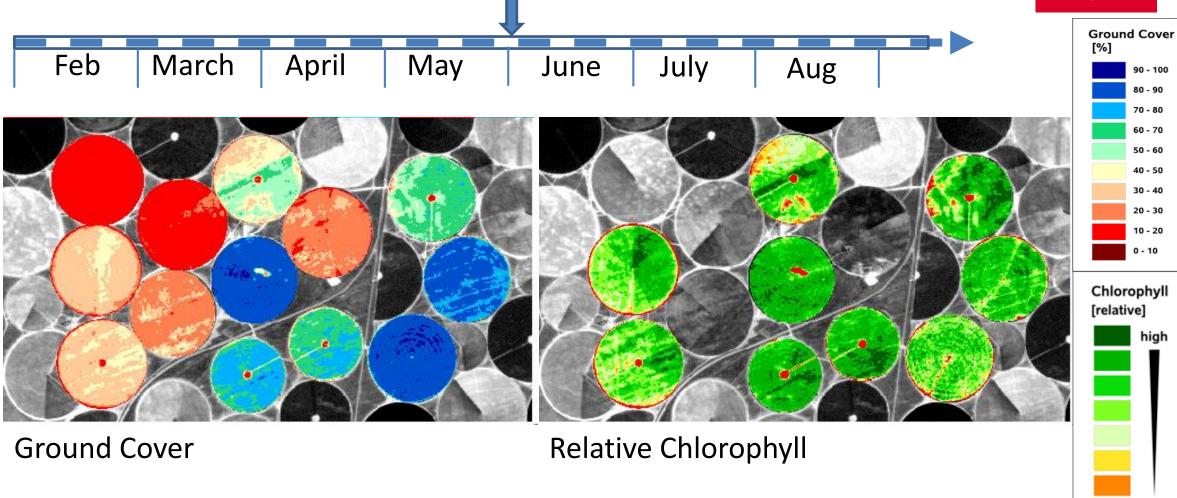
CIR Imagery

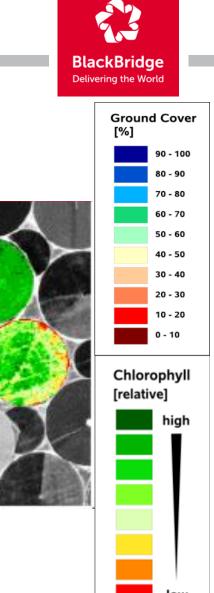
Relative Chlorophyll Index

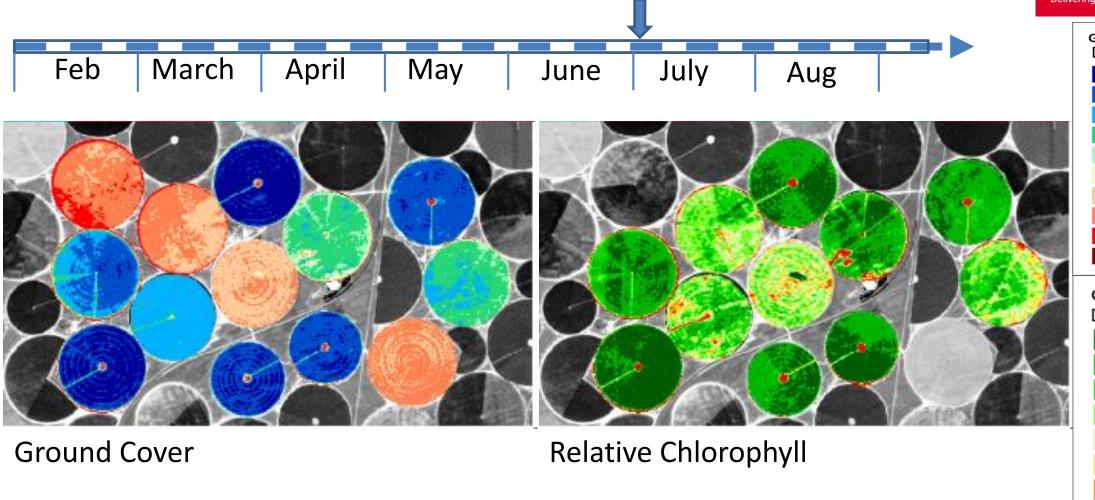


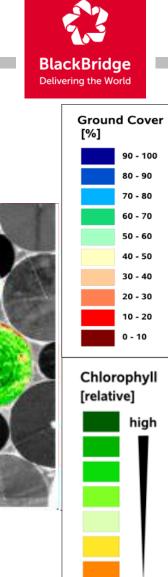


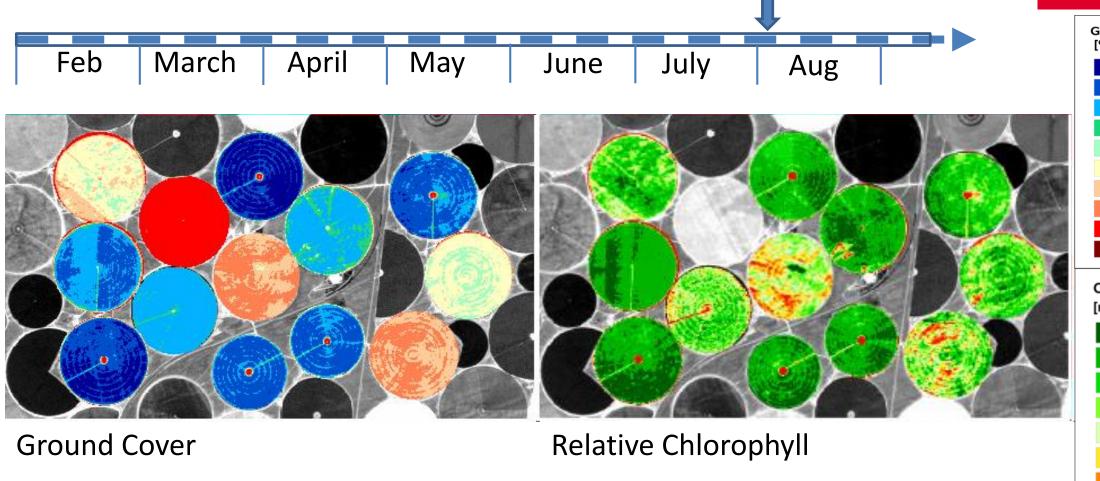
high

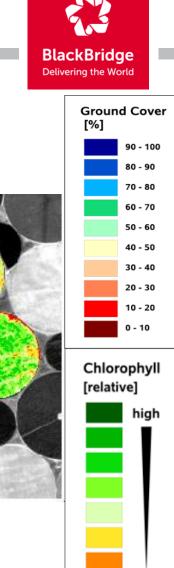


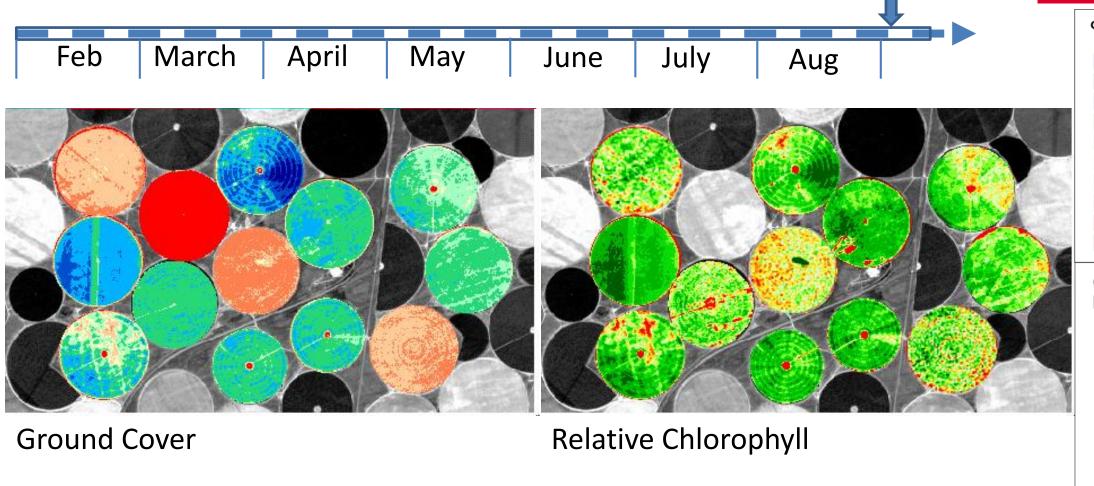














Scalability

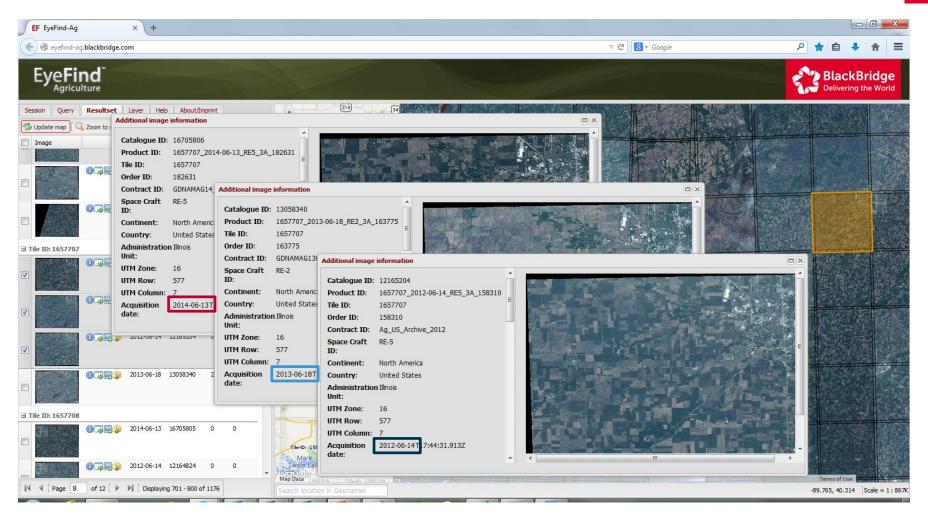
MULTI-YEAR ARCHIVE AS AN OPTION



In-season

Last season (upon request)

Historical data (upon request)

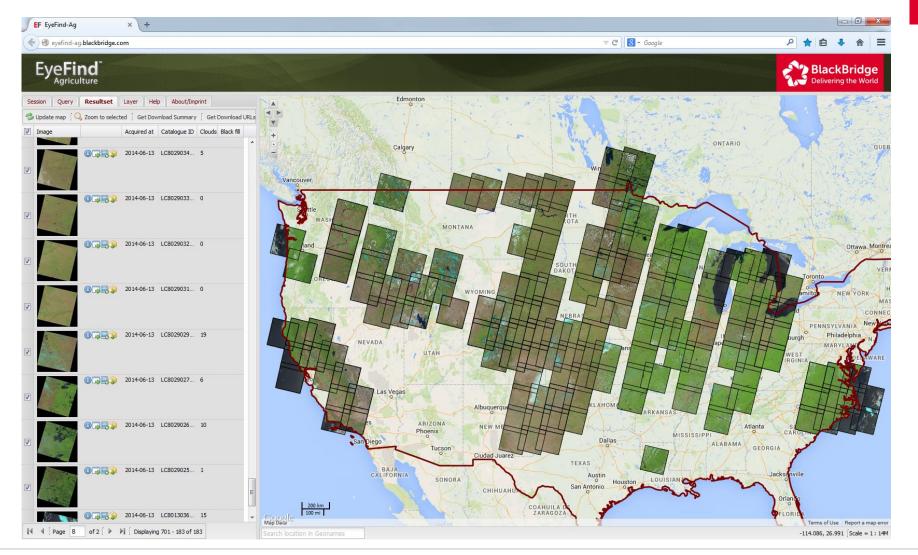


LANDSAT-8 INTEGRATION



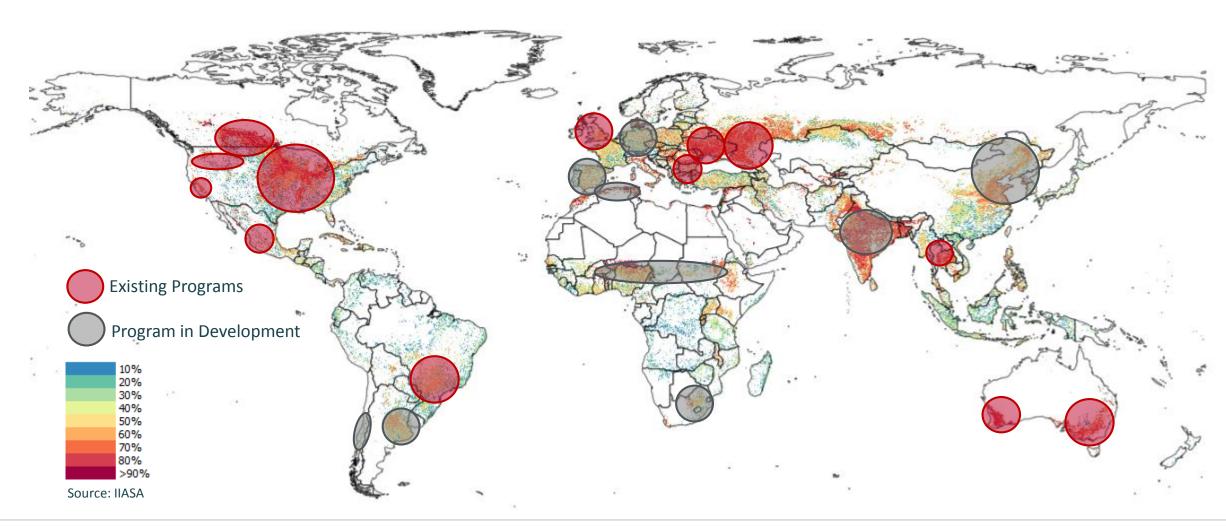
In-season

Increased reliability



PROGRAMS WORLDWIDE



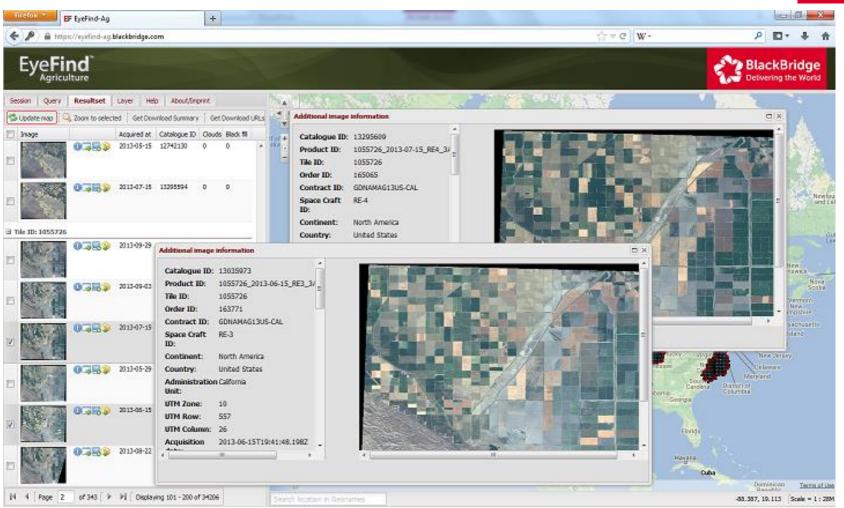


DELIVERY & ACCESS



EyeFind-Ag

Intuitive search and download



DELIVERY & ACCESS



Search API

To automate query and retrieval of new imagery

To download a zipped image product directly:

```
>>> import requests
>>> import cgi
>>> s = requests.Session()
>>> s.auth = ('eyefindag.demo', 'BBdemo14')
>>> r =
s.get('https://geocloud.blackbridge.com/gcapi/getProduct?
streaming=True')
>>> if r.status code == 200:
        if r.headers.get('content-type') == 'application/
            ,params = cgi.parse header(r.headers.get('co
            filename = params.get('filename')
            with open(filename, 'wb') as f:
                f.write(r.content)
        else:
            print r.text
        print r.text
```

Query:

https://eyefind-ag.blackbridge.com/rest/v1?

toiStart=2012-07-01&

toiEnd=2012-08-01&

aoiType=pol&

country=United States&

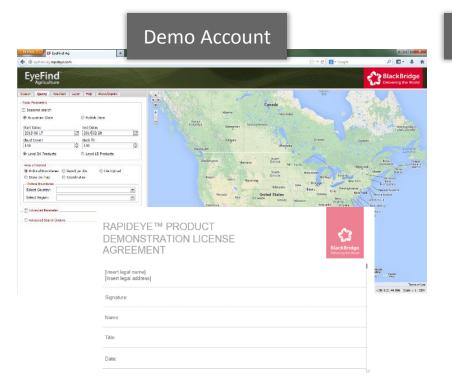
admin=South Dakota&

cc=5&

imgType=itt

DELIVERY & ACCESS



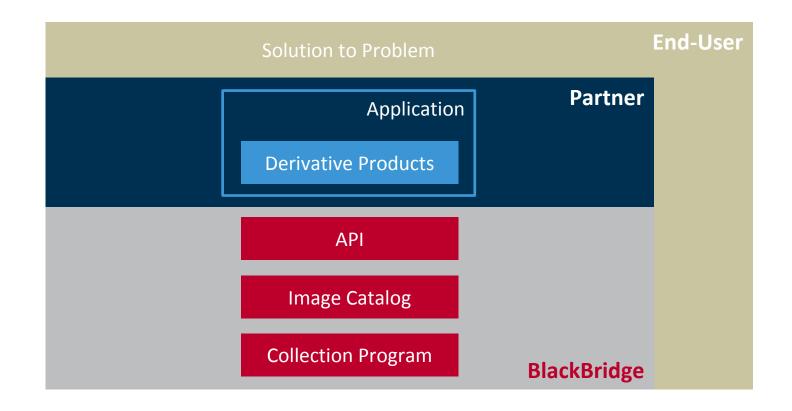






SUPPLY CHAIN







Affordability



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