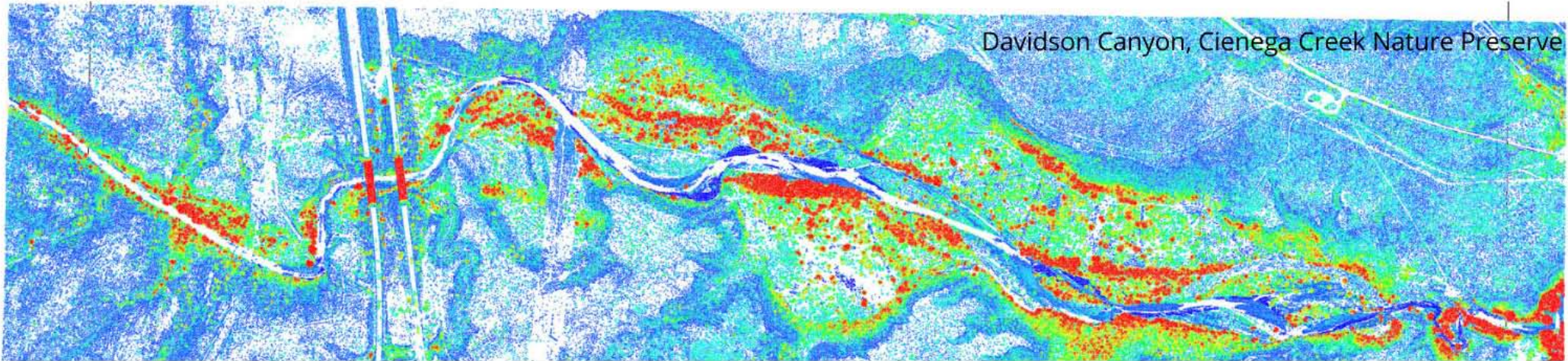




Airborne laser swath mapping of vegetation and channel characteristics

Tyson L. Swetnam

Project detail

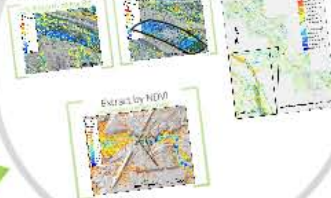
Characterize vegetation along the Lower Santa Cruz River (LSCR) with Airborne Light Detection and Range (LiDAR).

Deliverables:

1. Vegetation metrics from the 2005, 2008, 2011 LiDAR data.
2. A standard operating procedure for future repeat measures.
3. Recommendation for future LiDAR collections.
4. Hosting of all the data products online.

Results

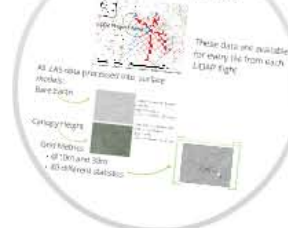
Scour and Regrowth



Deliverables

- TVM classification along LSCR through validation of observed sites in/outside LSCR to GridMetrics (e.g. Mean Canopy Height).
- 2007 NDVI-clip of 2008 2ft-Canopy Model over the extent of the orthophoto/LiDAR
- Data: 2ft BE & CHM, 40 GridMetric stats
- Project completed by September 2013
- Report published through PCRFC
- Data hosted online TBD (UA/Pima County)

The Data!



Future LiDAR

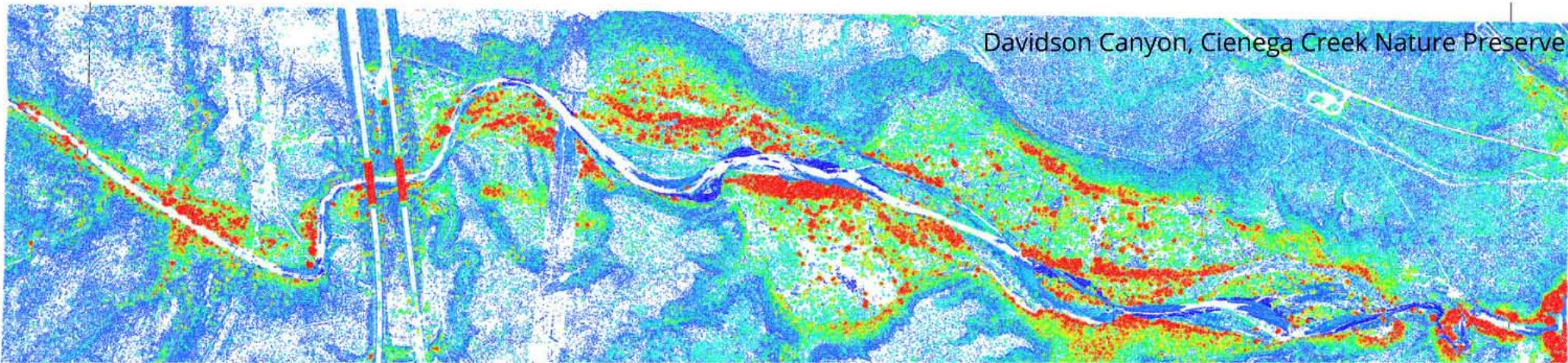
What are your needs?

- High resolution (~12 p/m²) \$\$\$
- Moderate resolution (4-8 p/m²) \$\$
- Low resolution (~1 - 4 p/m²) #
- Bare Earth
- Large & continuous vegetation features
- Plants > 10 cm canopy diameter
- Full canopy metrics
- Plants > 50 cm diameter
- Paired with a 4-band (or more) ortho-photograph
- Discover and engage all stake holders
- Prioritize low-vs-high density collection
- Determine min-max return interval

Questions and Comments

contact me:
tswetnam@email.arizona.edu
(520)247-2293





Airborne laser swath mapping of vegetation and channel characteristics

Tyson L. Swetnam

Project detail

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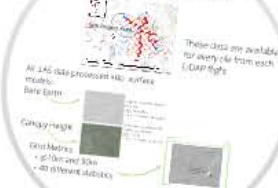
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The Data!



Future LiDAR

What are your needs?

- plants > 10cm canopy diameter
- full canopy metrics
- High resolution (~1.2 p/m²) \$\$\$
- Moderate resolution (8-16 p/m²) \$\$
- Low resolution (<1 - 3 p/m²) \$
- Bare Earth
- Large & continuous vegetation features
- Plants > 50cm diameter
- Paired with a 4-band (or more) ortho-photograph
- Discover and engage all stakeholders
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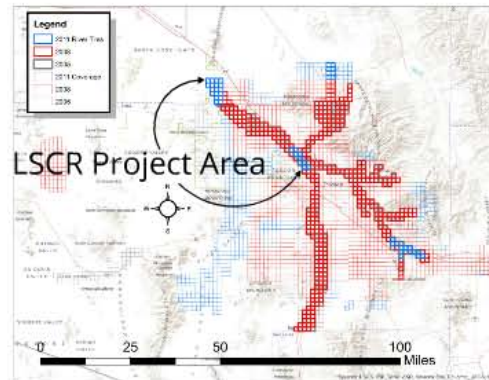
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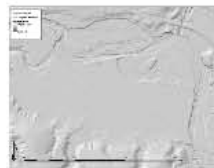
The Data!



These data are available for every tile from each LiDAR flight

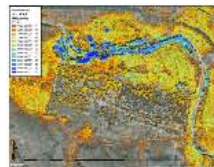
All .LAS data processed into surface models:

Bare Earth



LIDAR pulse return density supports:
High: 1ft Surface
Low to Moderate: 2ft Surface

Canopy Height



Horizontal uncertainty: 1m
Vertical uncertainty:
High: 7-8cm
Low to Moderate: 10-30 cm

Grid Metrics

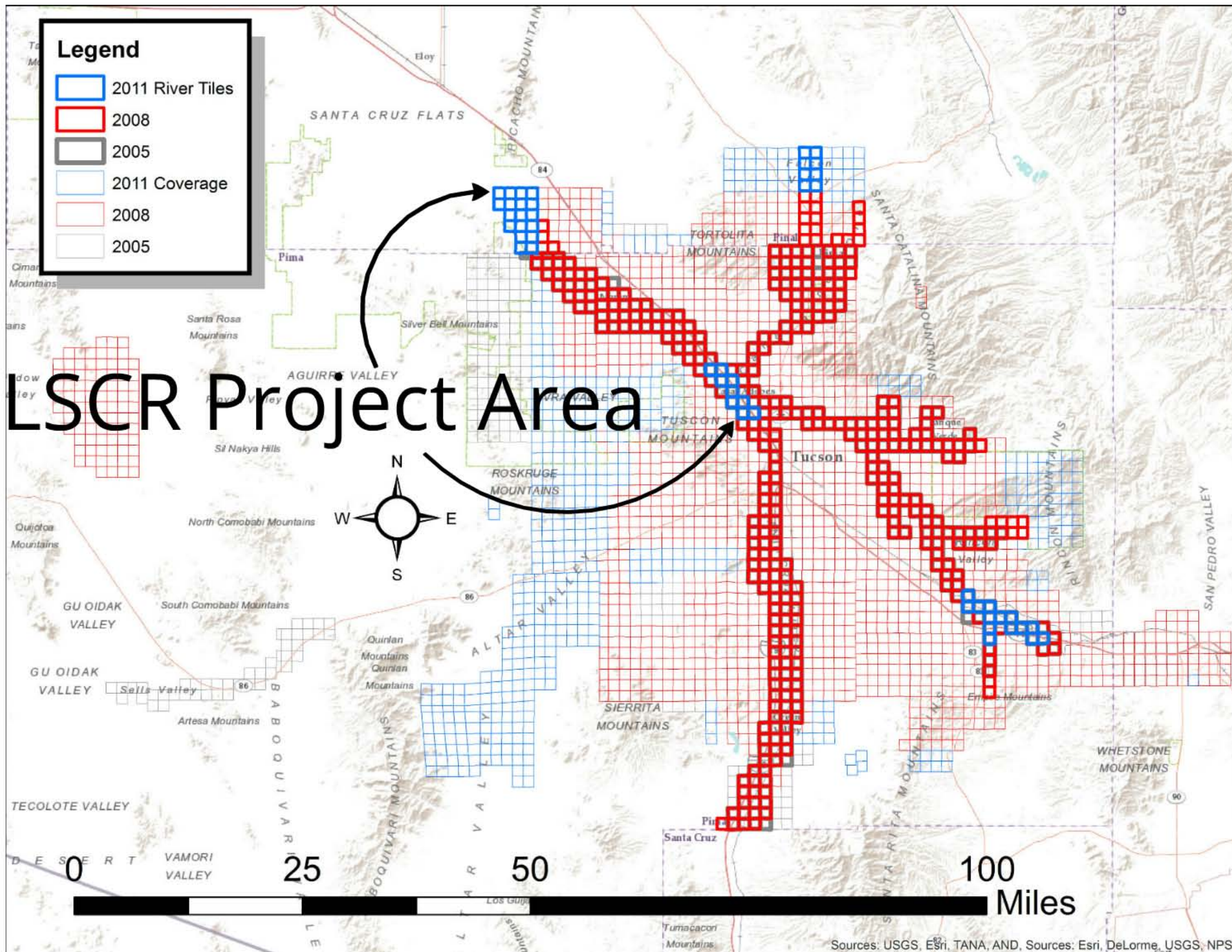
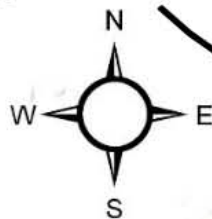
- @10m and 30m
- 40 different statistics



Legend

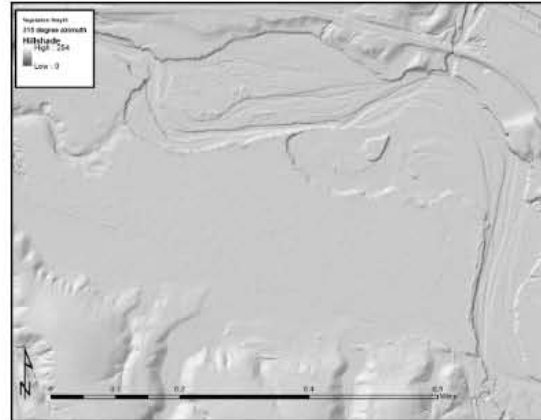
- 2011 River Tiles
- 2008
- 2005
- 2011 Coverage
- 2008
- 2005

LSCR Project Area



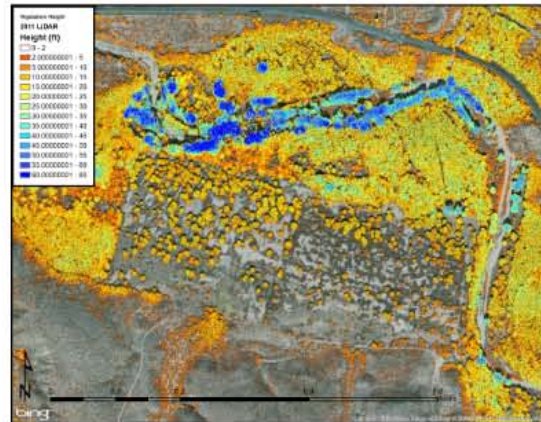
All .LAS data processed into surface models:

Bare Earth



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High: 1 ft Surface
Low to Moderate: 2ft Surface

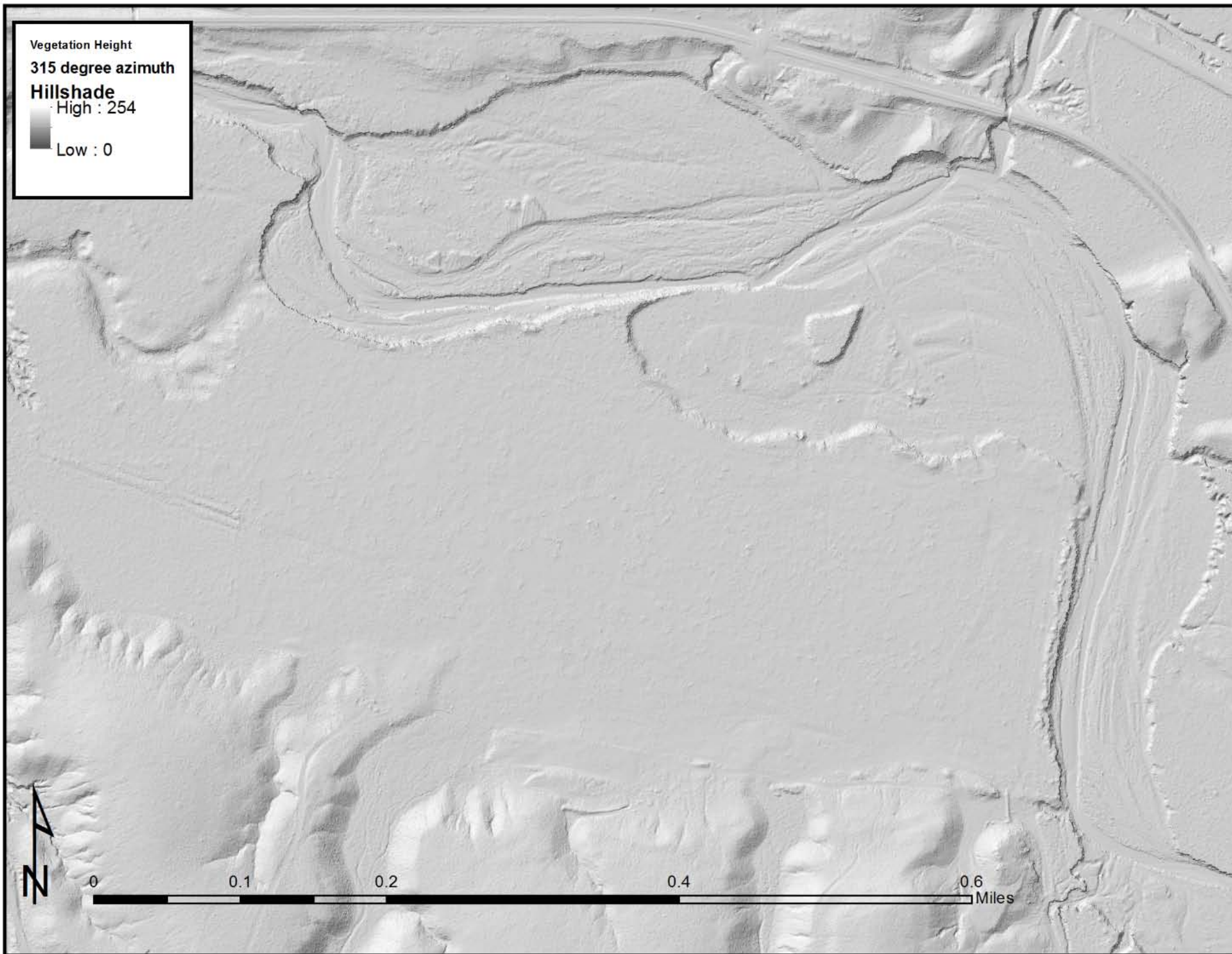
Canopy Height



Horizontal uncertainty: 1m
Vertical uncertainty:
High: 7-8cm
Low to Moderate: 10-30 cm

Grid Metrics

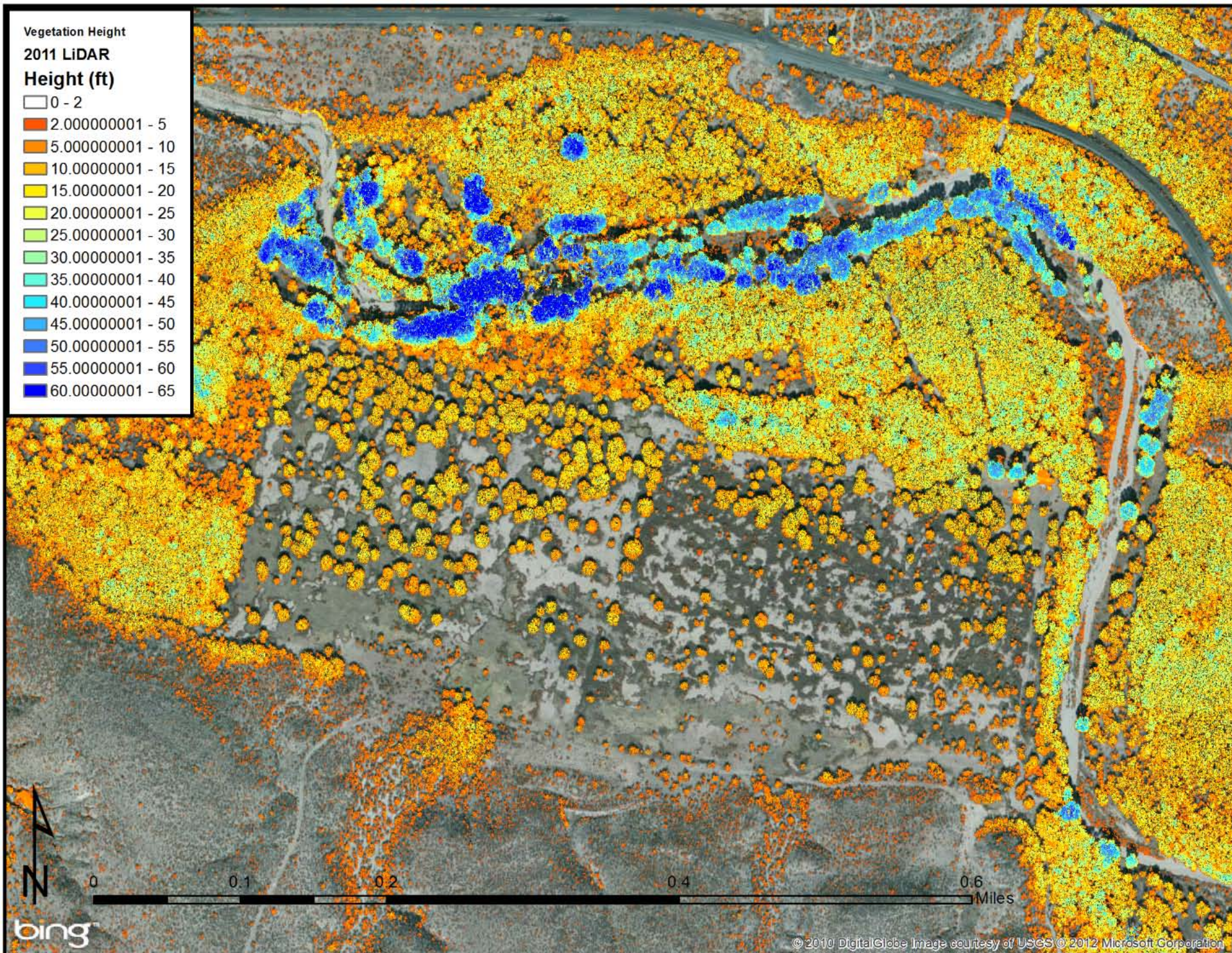
- @10m and 30m
- 40 different statistics



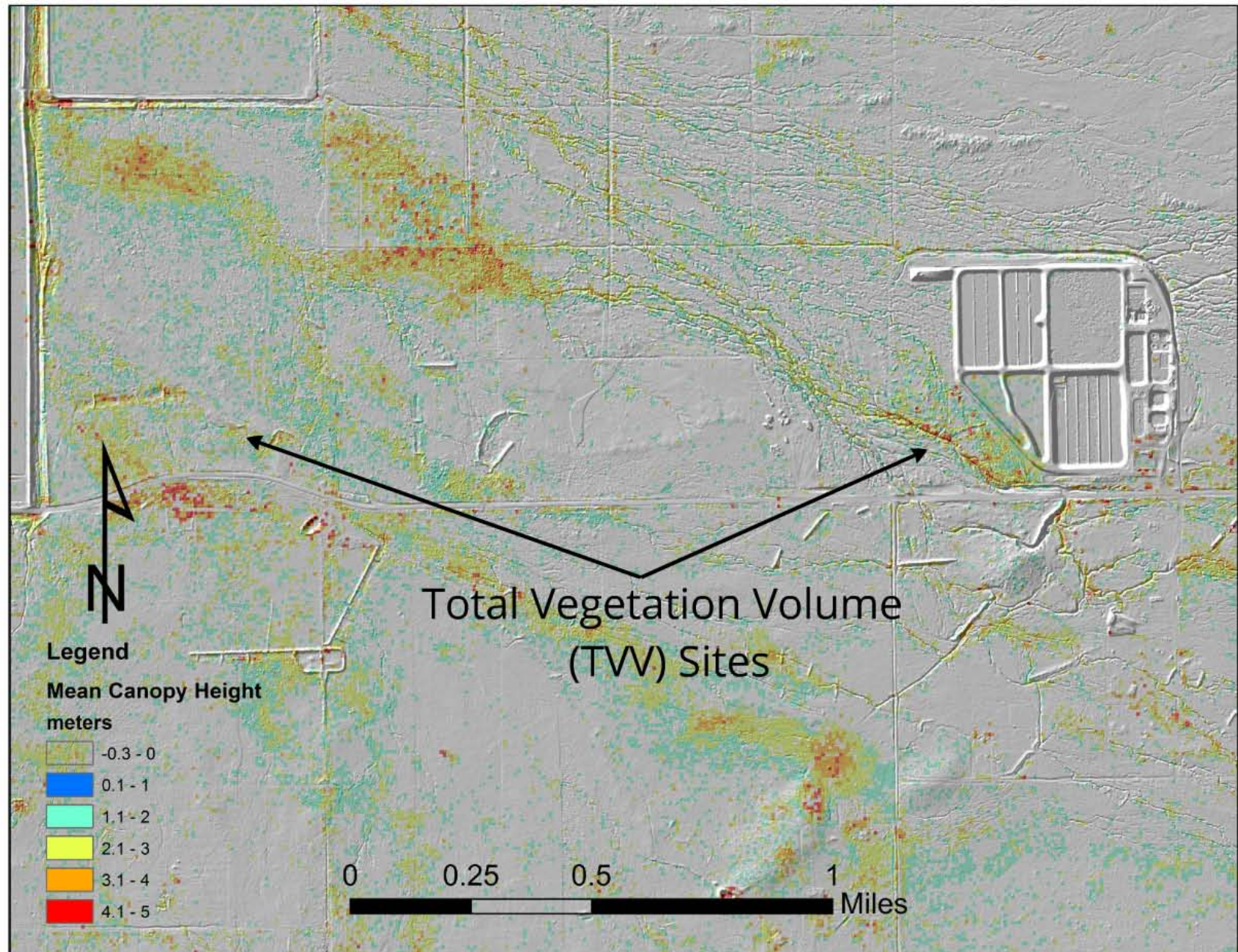
Vegetation Height

2011 LiDAR

Height (ft)

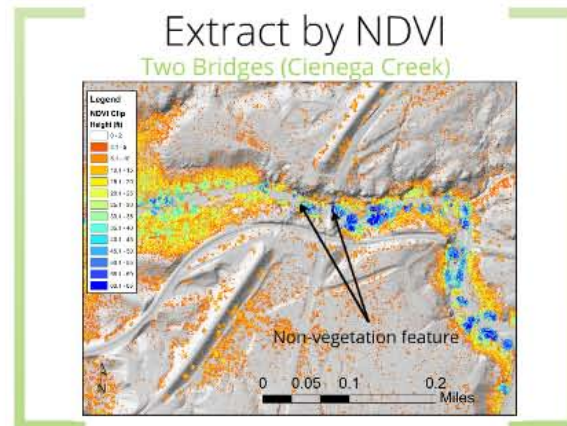
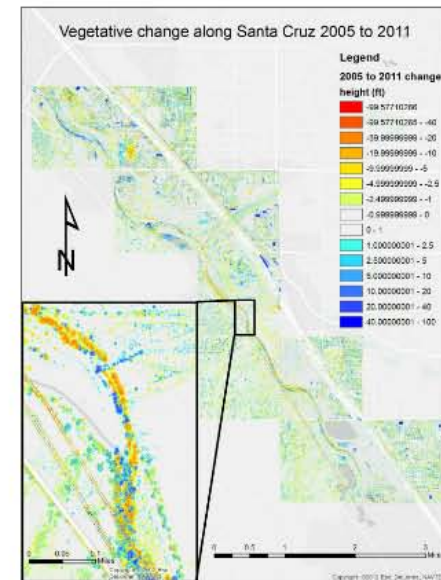
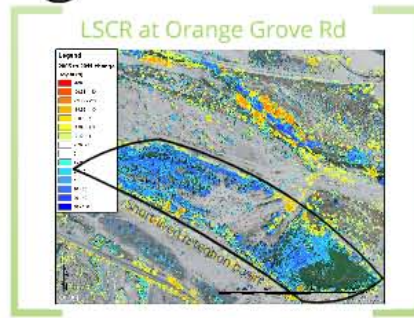
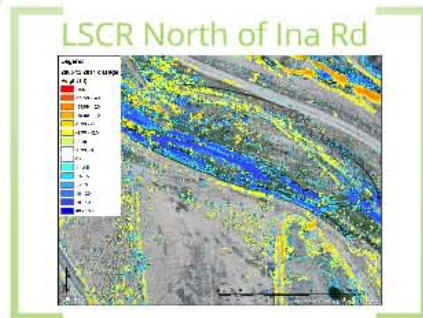


Black Wash Administrative Floodway (Avra Valley)

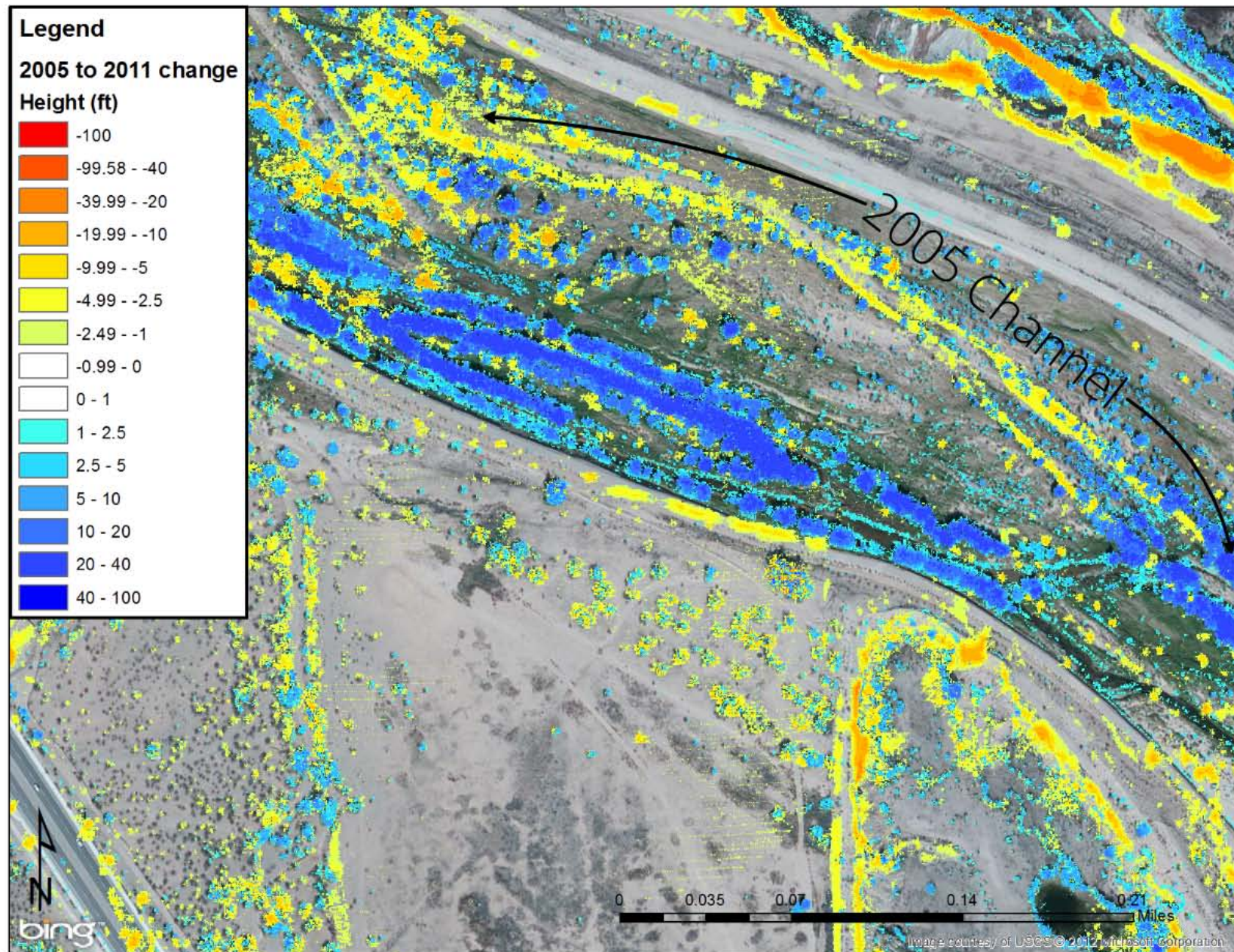


Results

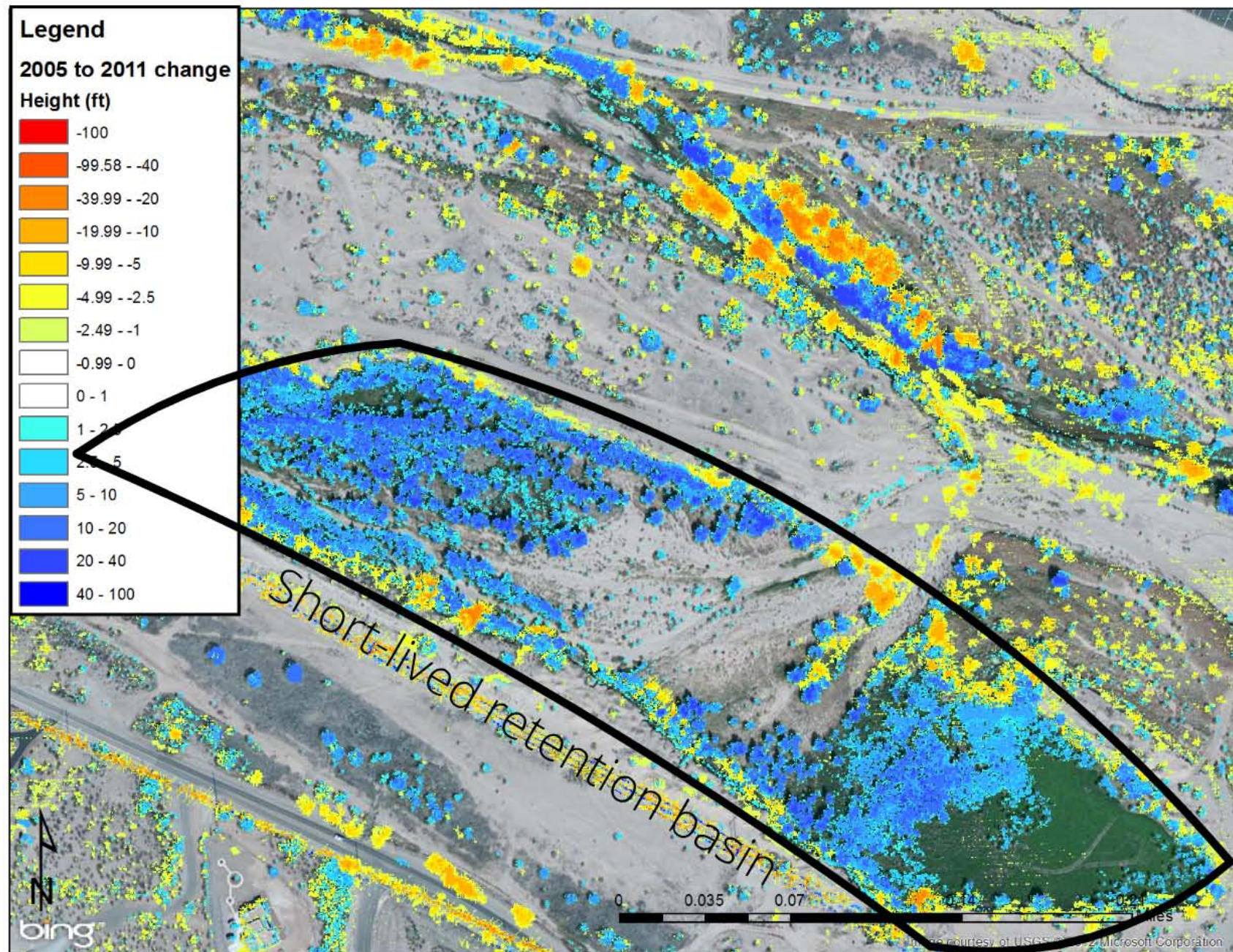
Scour and Regrowth



LSCR North of Ina Rd

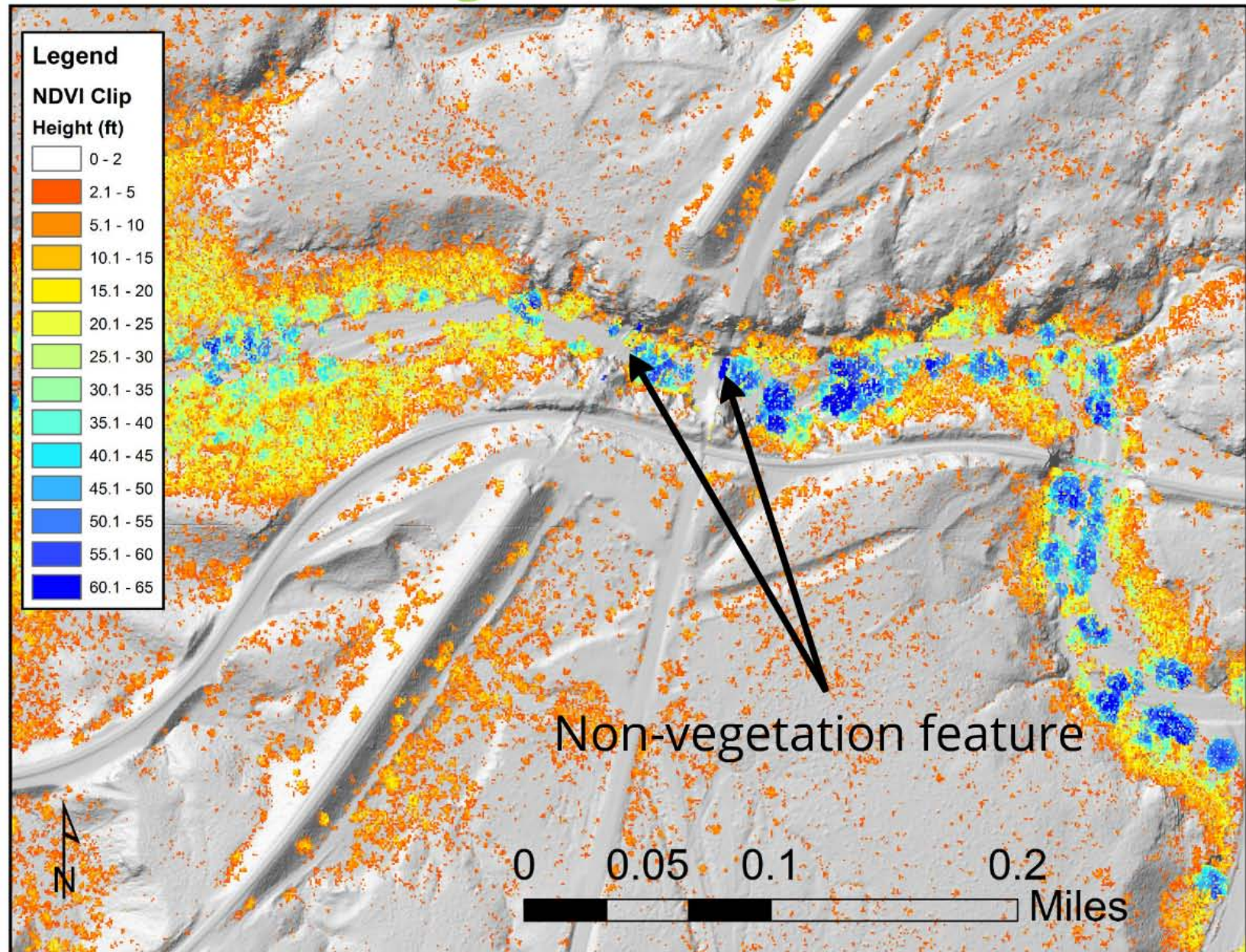


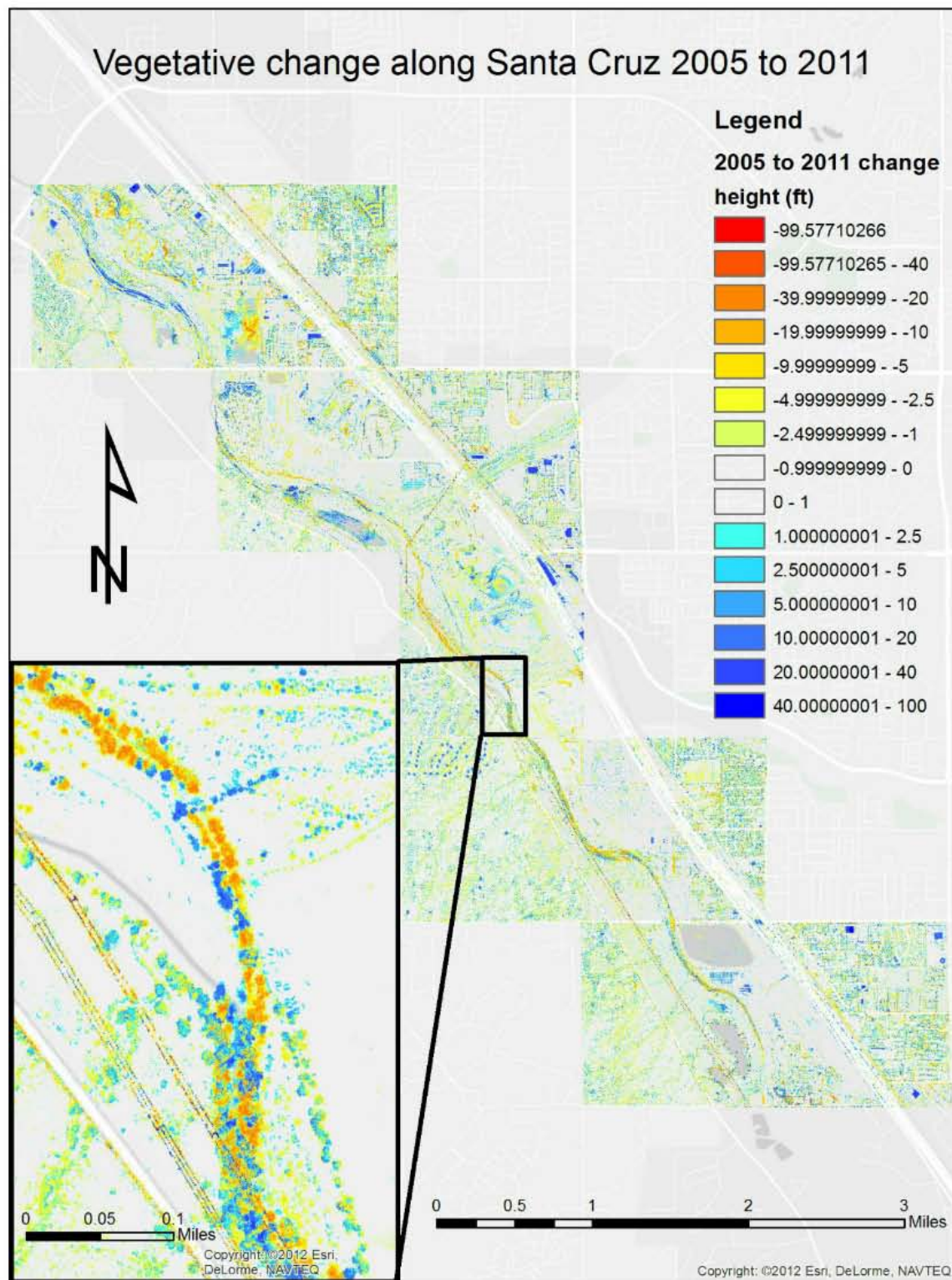
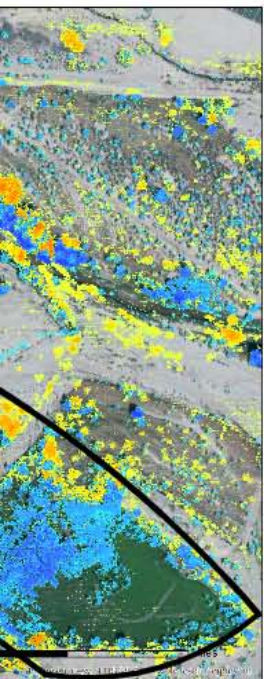
LSCR at Orange Grove Rd



Extract by NDVI

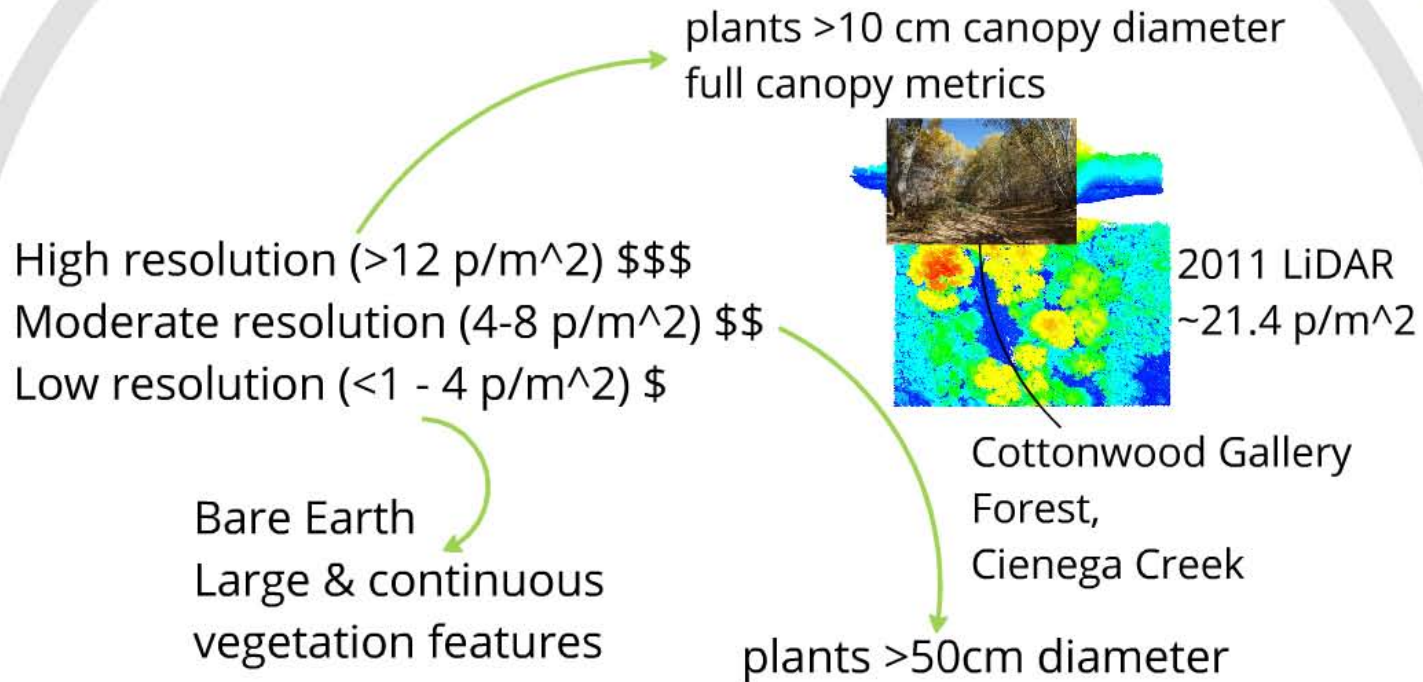
Two Bridges (Cienega Creek)





Future LiDAR

What are your needs?

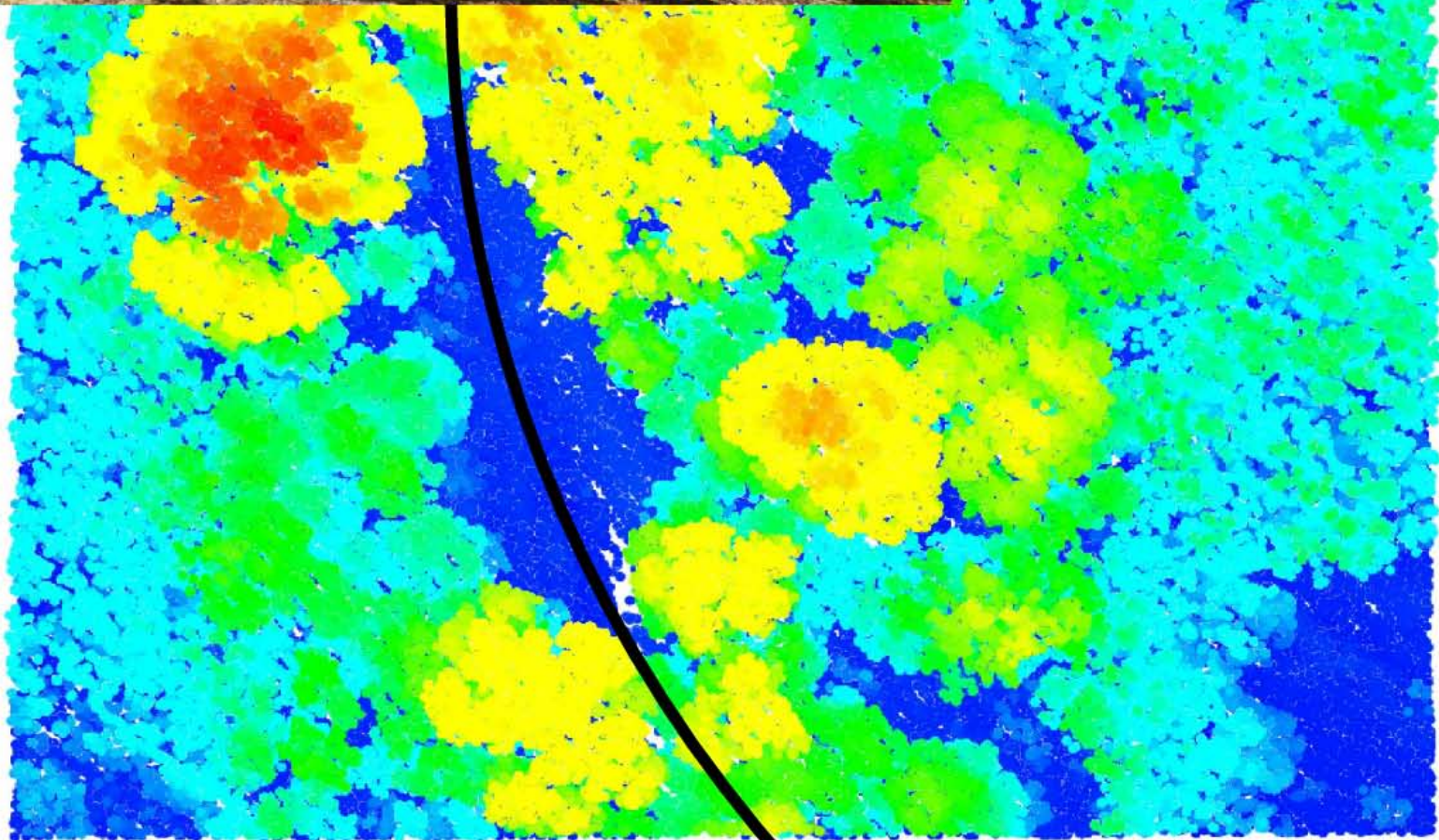
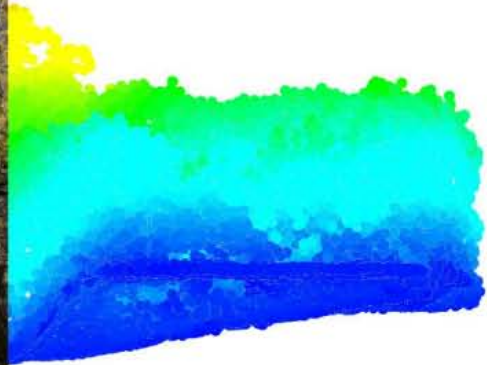


Paired with a 4-band (or more) ortho-photograph

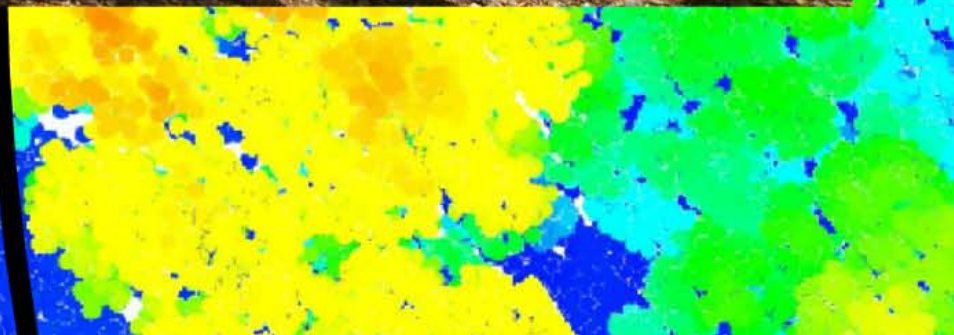
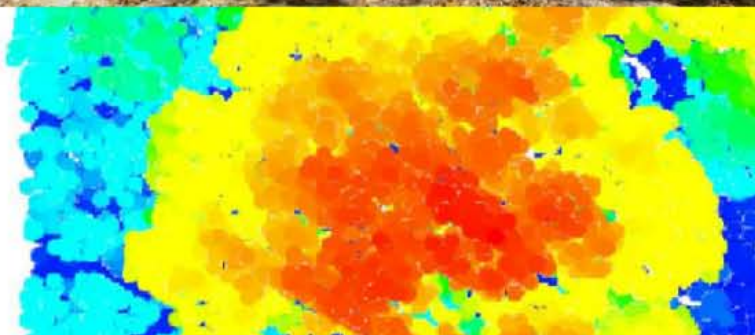
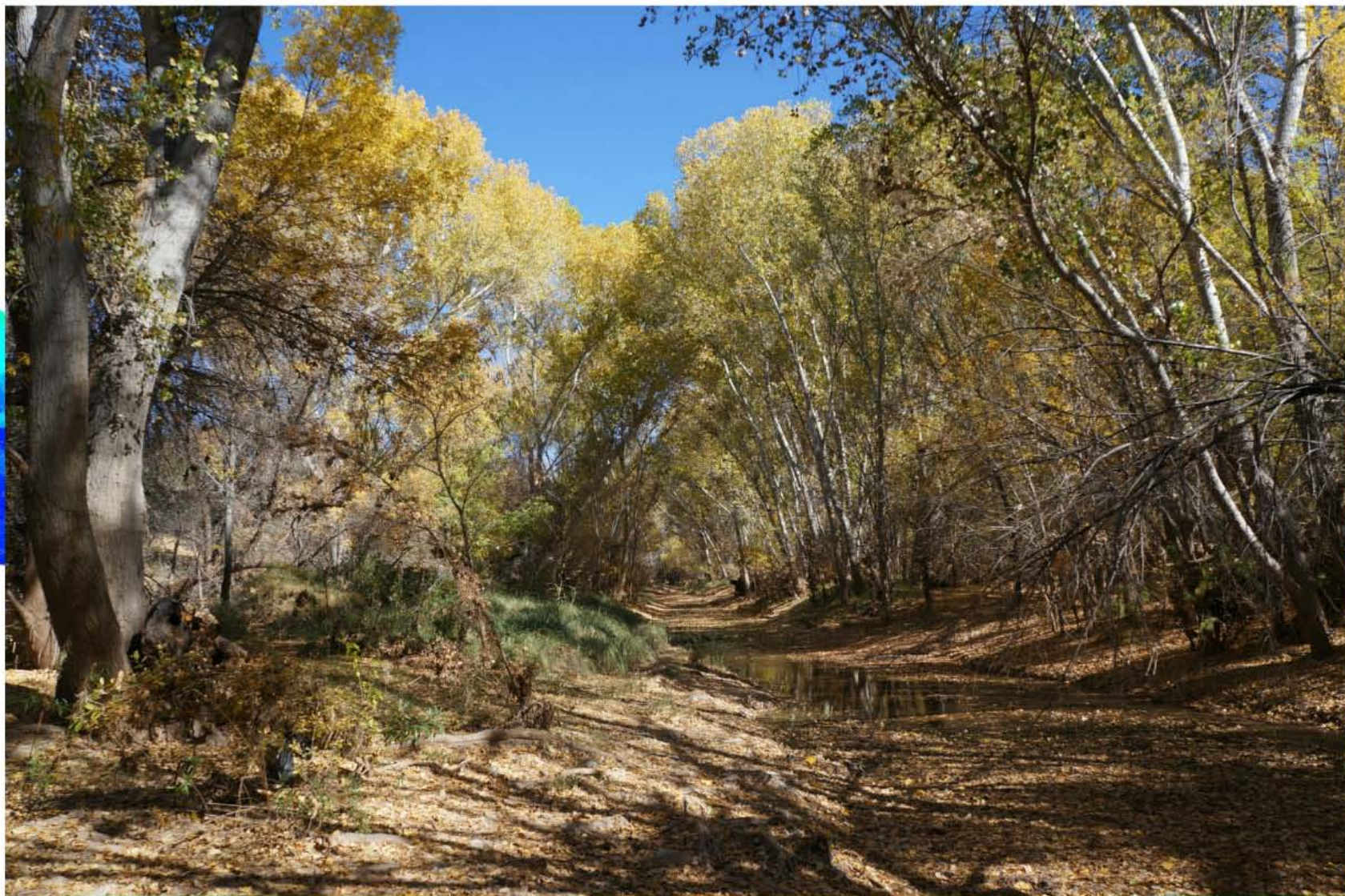
Discover and engage all stake holders

Prioritize low-vs-high density collection

Determine min-max return interval

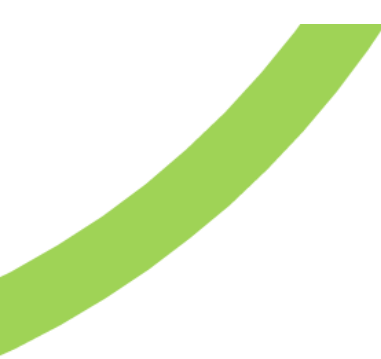


20
~



Deliverables

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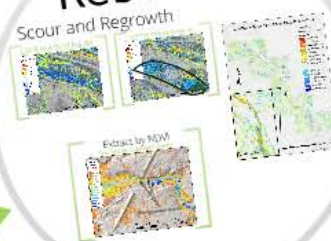
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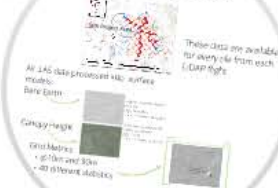
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