

LIDAR – Light Detection And Ranging

LIDAR: How does it work?

IMU, GPS, Pitch, Roll, Heading, Elevation, Laser Range, Latitude, Longitude, GPS ground station

LIDAR footprint of 8000+ AOs

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LIDAR HEIGHT AND COVER DETERMINATION

POSITION OF INSTRUMENT
GPS + INS Controlled

Multiple Return Intensity of Return

1st Return, 2nd Return, 3rd Return

• 1st, 2nd, 3rd and 4th returns have different X,Y (&Z)
• Results in additional LIDAR points

RC GE

LIDAR – Light Detection And Ranging

Multiple Return

- Multiple returns
 - Provide additional LIDAR points (X,Y,Z)
 - Indicate vegetation canopy (or edge of tall feature)
 - Reveal structural detail within the canopy

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1st, 2nd, 3rd, 4th

6.5 ft

1st, 2nd, 3rd, and 4th Returns Have Different X,Y (&Z)

LIDAR – Light Detection And Ranging

Colored by Flight Line (single line)

Colored by Elevation

Colored by Return Number

Colored by Classification

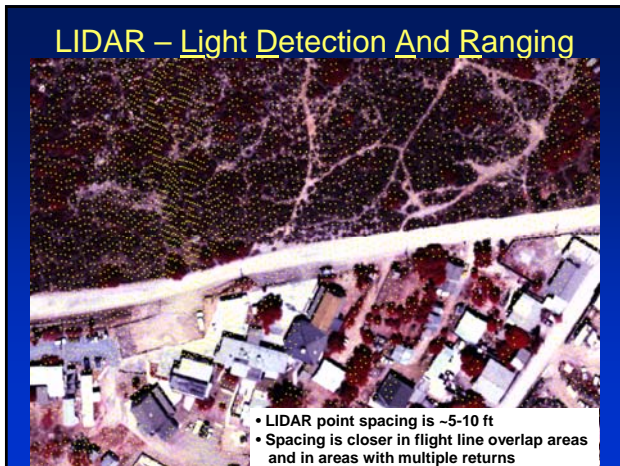
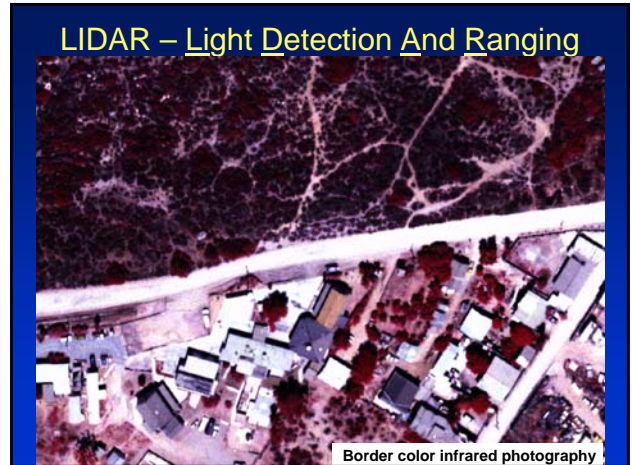
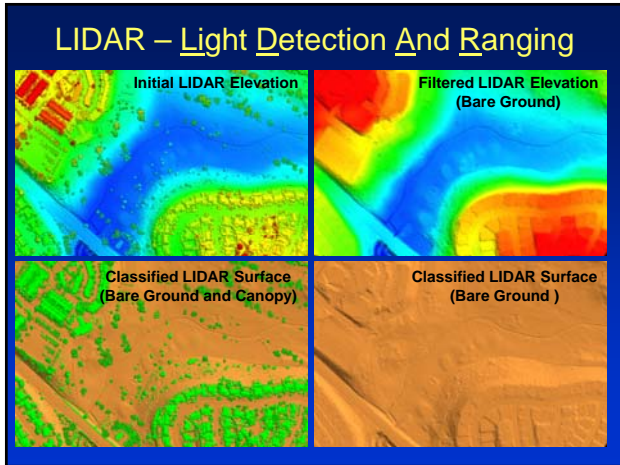
LIDAR – Light Detection And Ranging

Colored by Flight Line (single line)

Colored by Elevation

Colored by Return Number

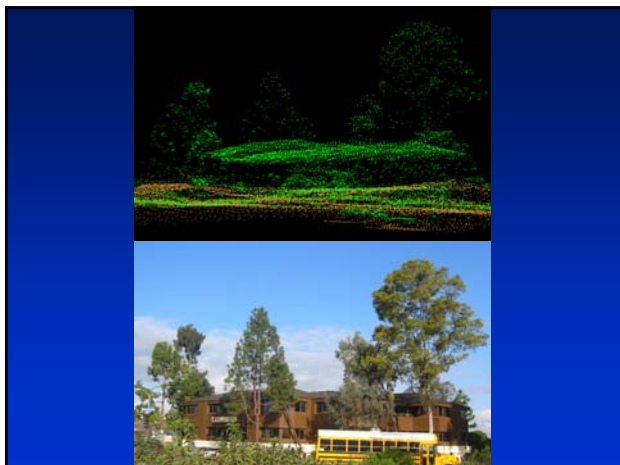
Colored by Classification



LIDAR – Light Detection And Ranging

- Vegetation Structure
 - Height vs. Width
 - Shape

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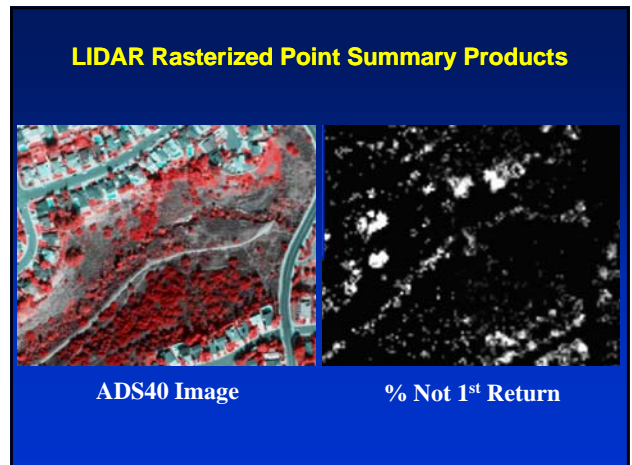
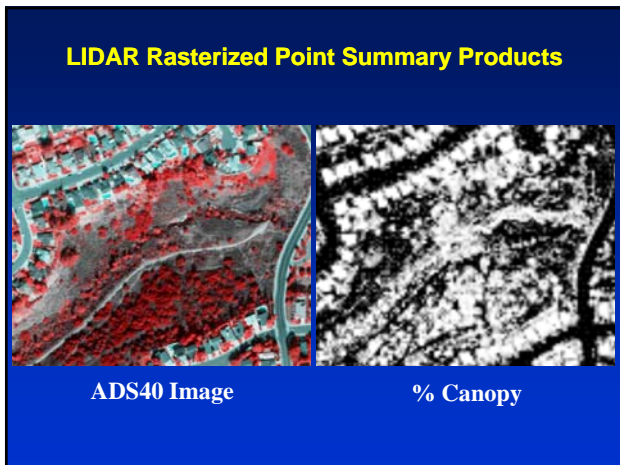
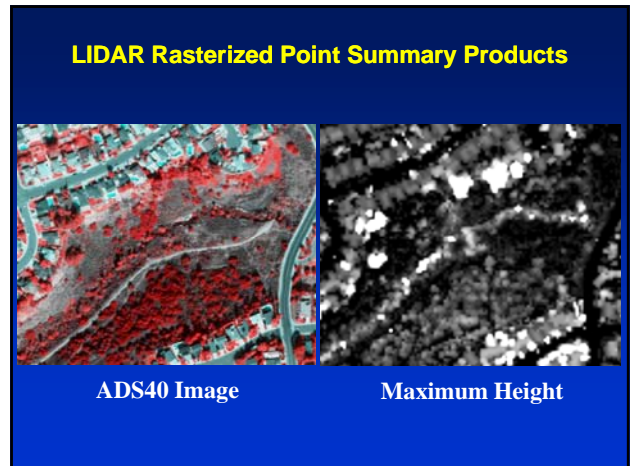
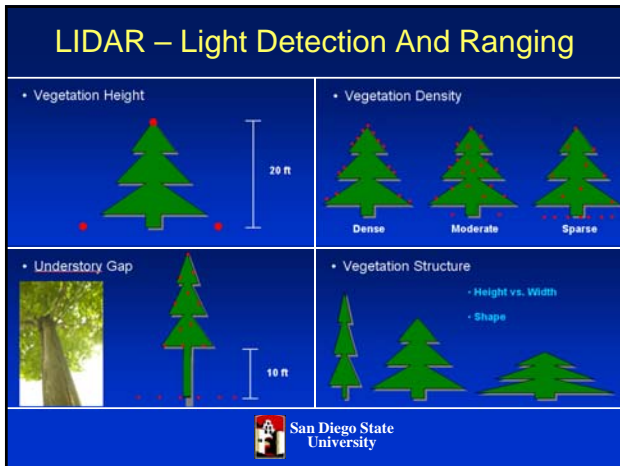
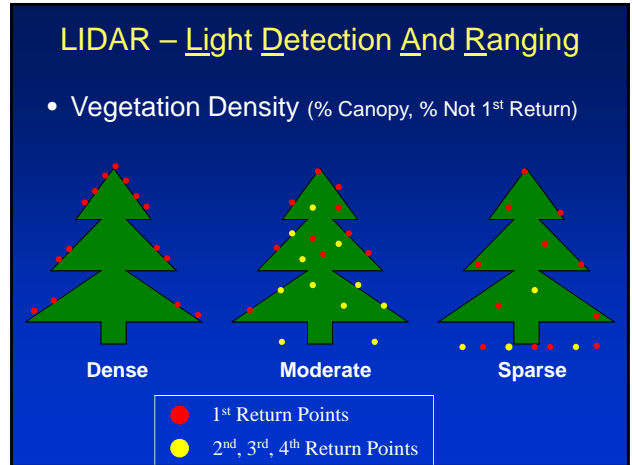
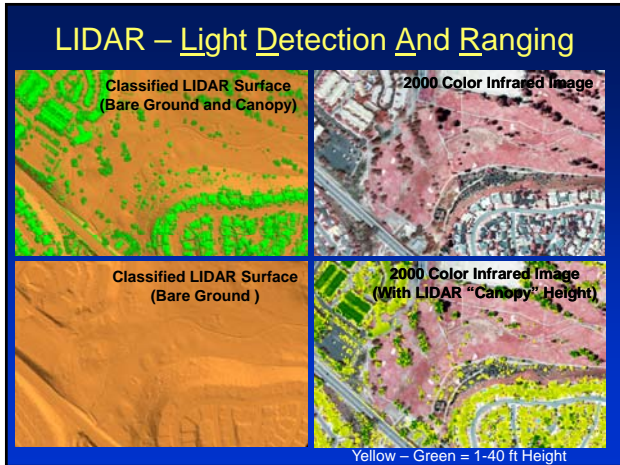


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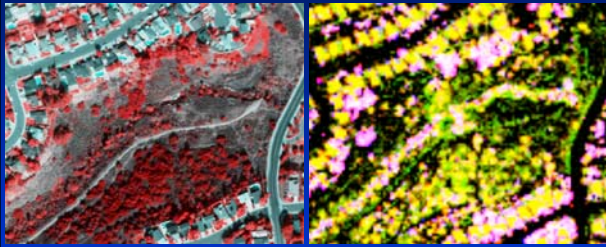
- Vegetation Height

20 ft

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LIDAR Rasterized Point Summary Products



ADS40 Image

Red: Maximum Height
Green: % Canopy
Blue: % Not 1st Return

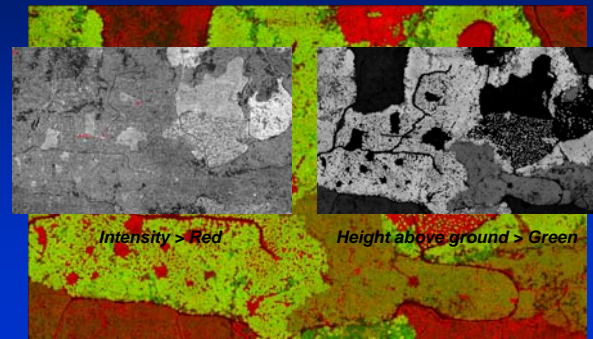
LIDAR – Intensity Image



LIDAR Intensity - Applications

- GIS systems
 - Backdrop imagery
 - Verify planimetric accuracy of existing images and GIS data
 - Updating GIS layers
- Natural resource management
 - Presence/absence of vegetation
 - Vegetation condition
 - Recent soil disturbance

False-color imagery



LIDAR – Light Detection And Ranging

- Specialized Software (edit, surface, terrain analysis, visualization)
 - MARS (Merrick & Company)
 - QT Modeler (Applied Imagery)
 - TerraScan (Terrasolid)
- LIDAR Analyst (Visual Learning Systems)
 - Feature and change extraction (raster)
 - No editing or surface interpolation

