

# Airborne LIDAR Mapping of Big Pine Key

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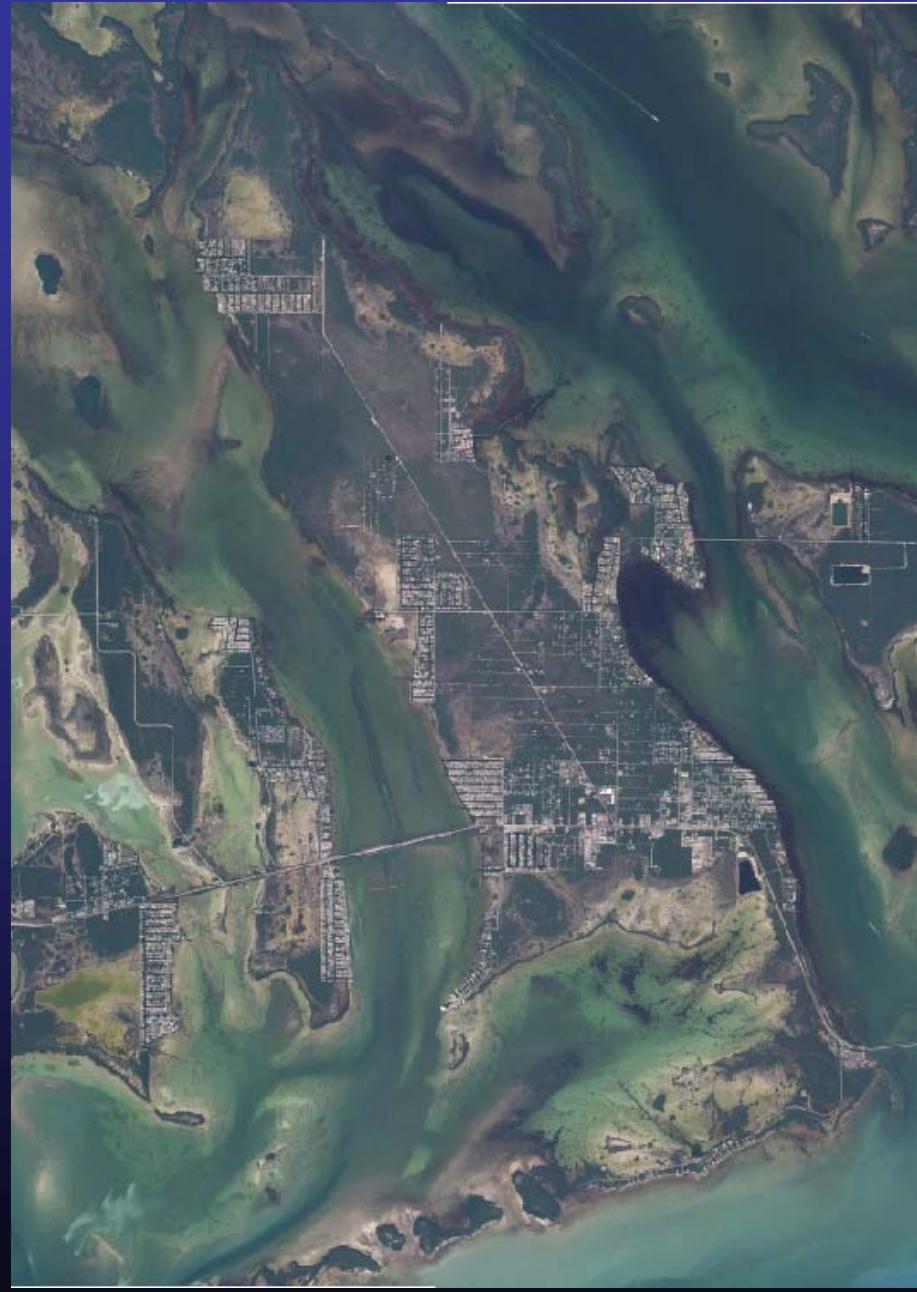
Florida International University, Miami, FL 33199

# Acknowledgement

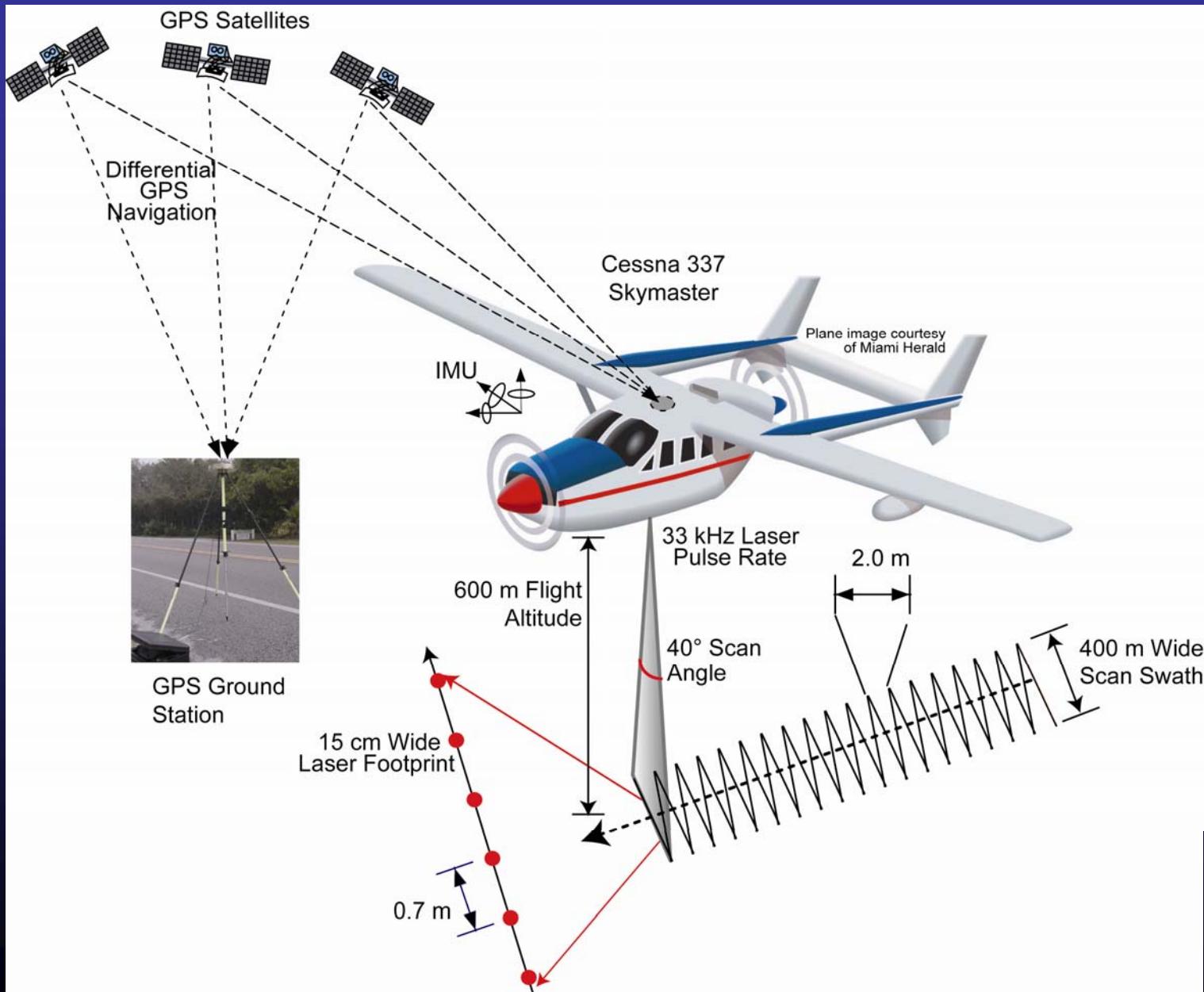
Mr. Chris Berg and The Nature Conservancy sponsor this project

Dr. Michael Ross at FIU for vegetation and topographic information for Big Pine Key

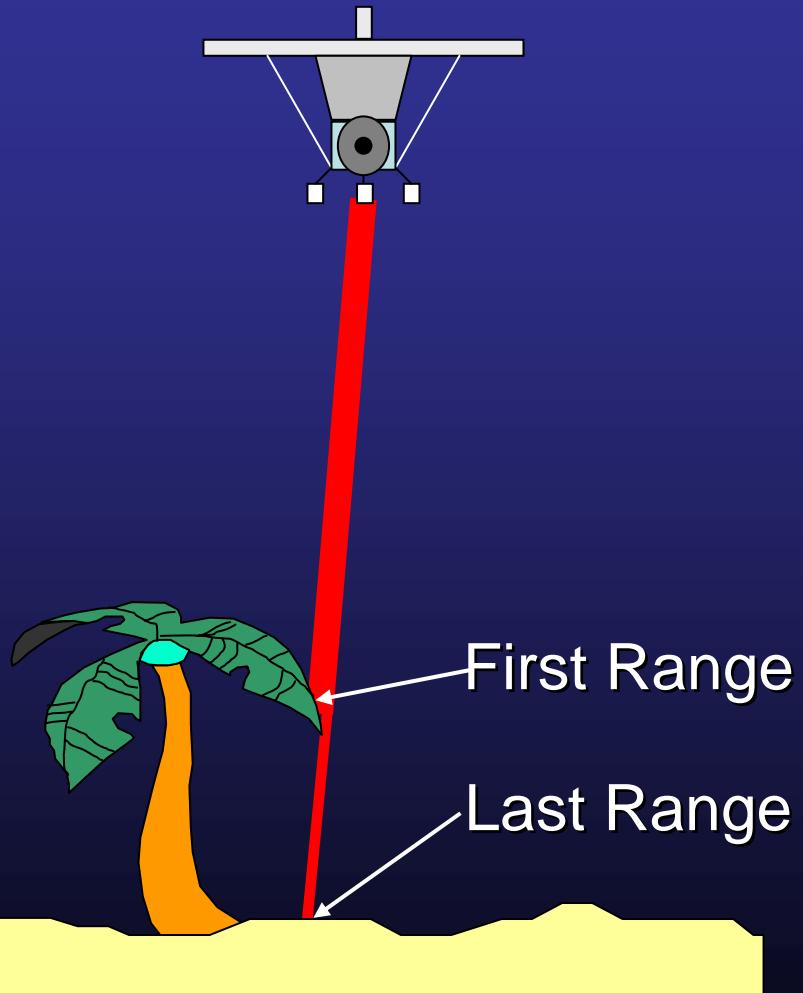
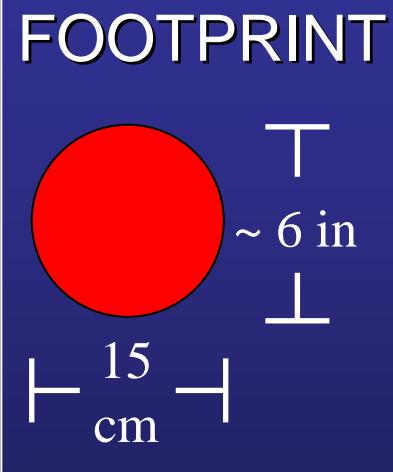
Mr. William Robertson at IHRC for operating ALTM system and processing LIDAR data



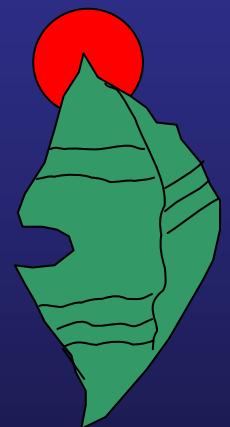
# Parameters for LIDAR Survey



# LIDAR First and Last Returns



TOP/MAP VIEW



First Range Hits Leaf, Last Range Hits Ground

# LIDAR Strips



# Airborne LIDAR

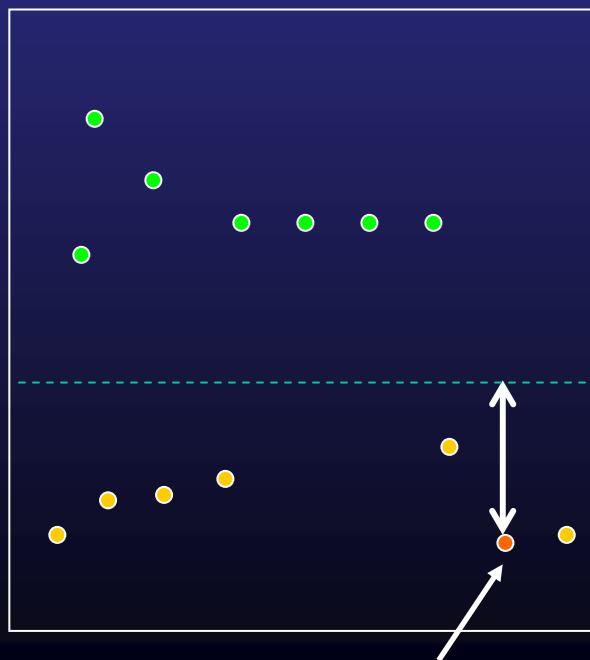


# Filtering Algorithms

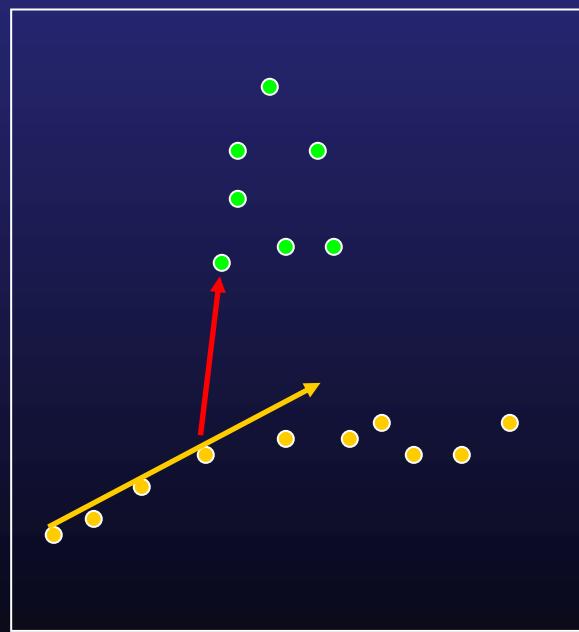
**Observation:** topographic changes occur in large scales comparing to those of the non-terrain objects such as buildings and vegetations. Elevation changes of neighboring ground measurements are distinct from those between the ground, trees and buildings in a local window.

**Possible measures:**

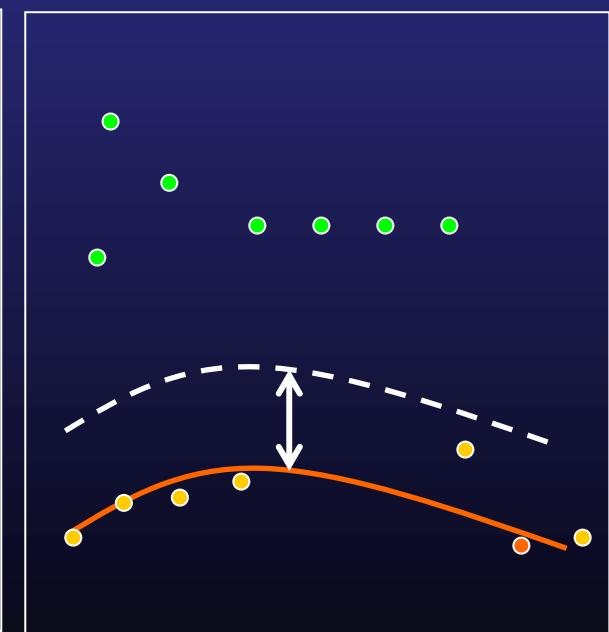
Height difference



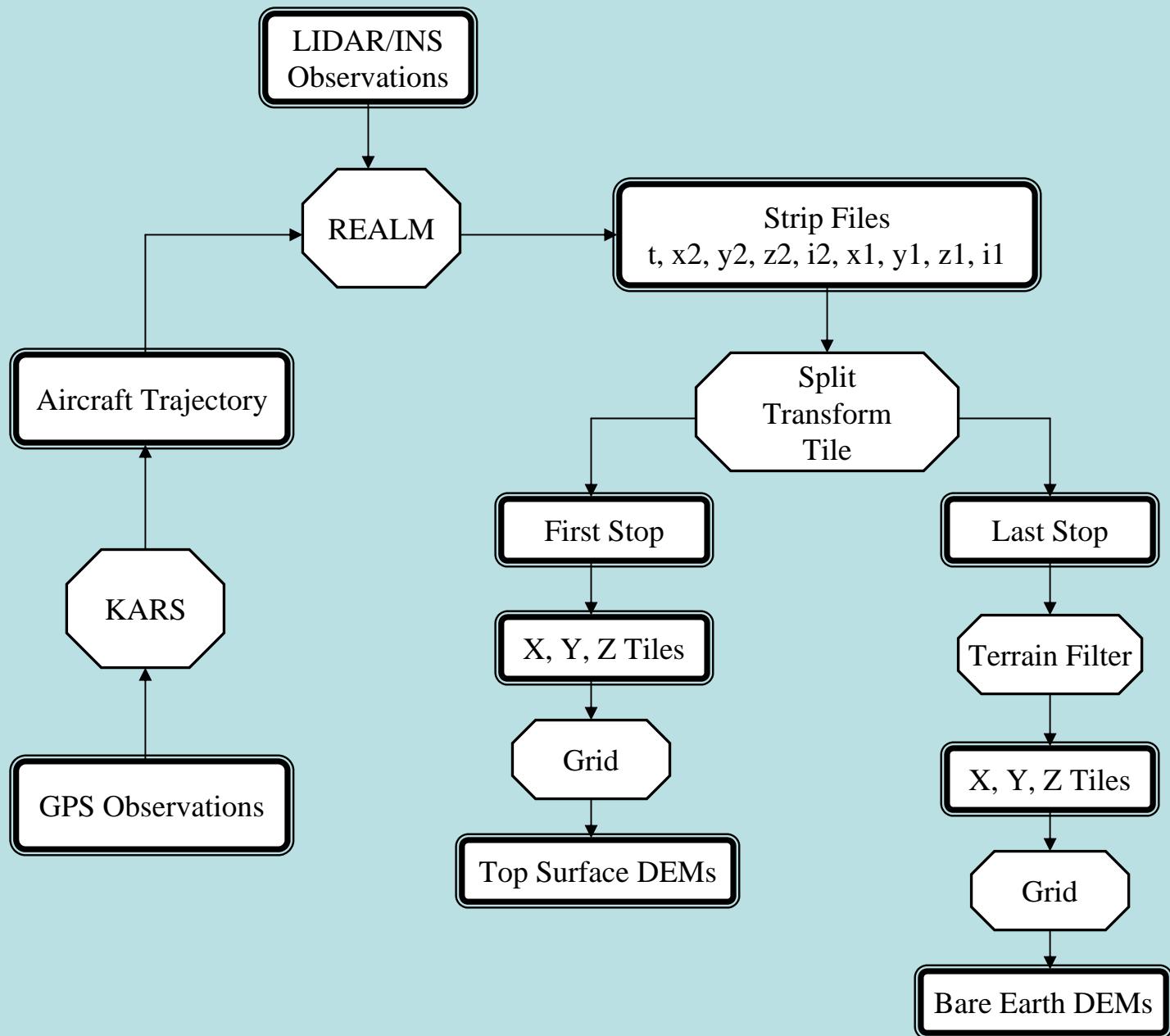
Slope



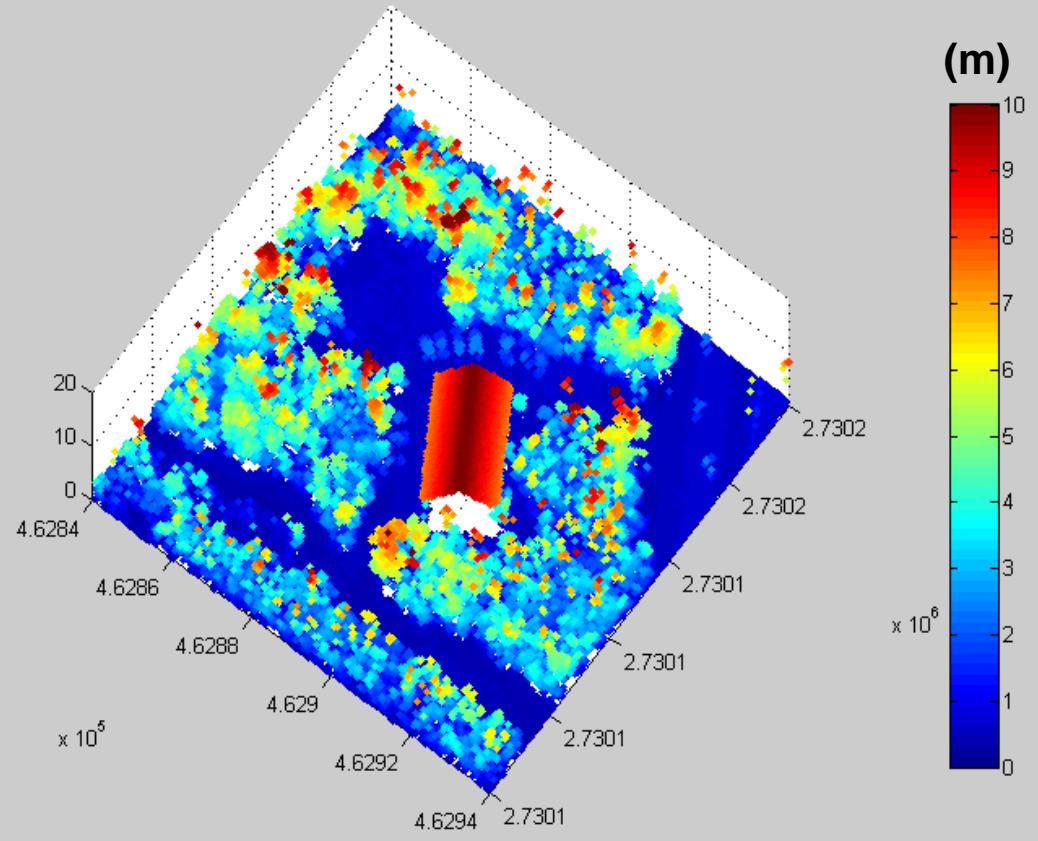
Distance to surface



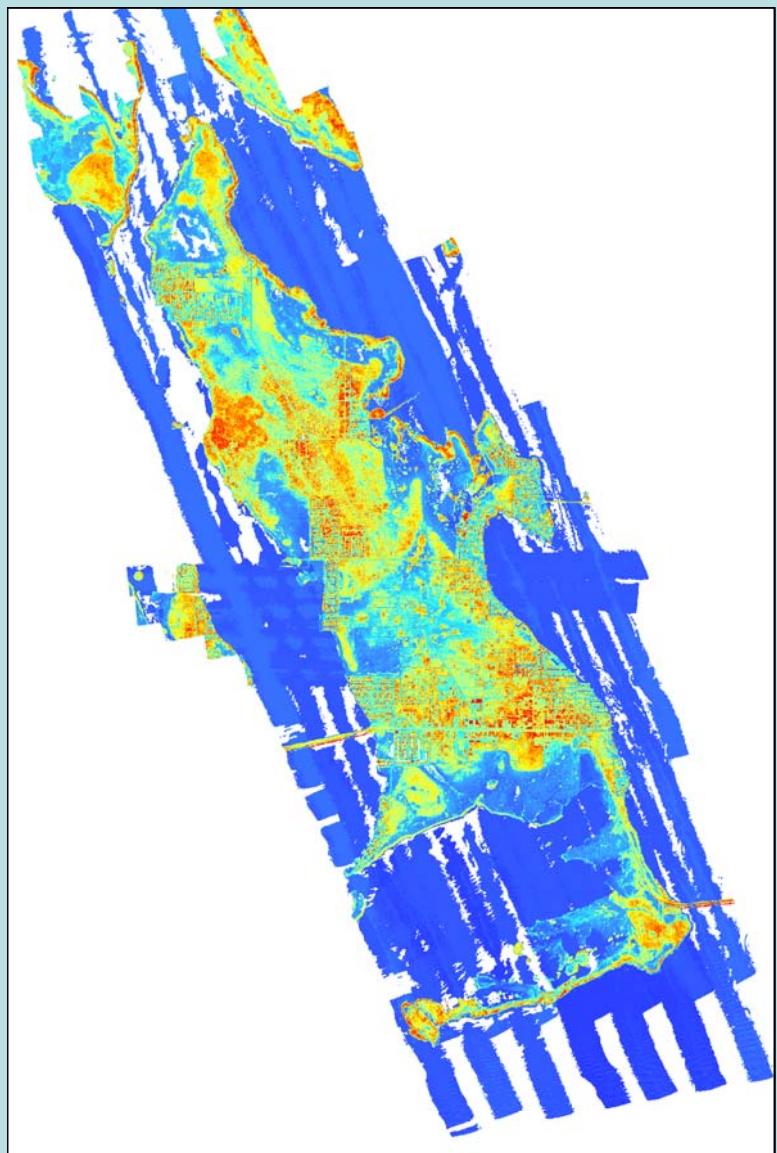
# Data Processing



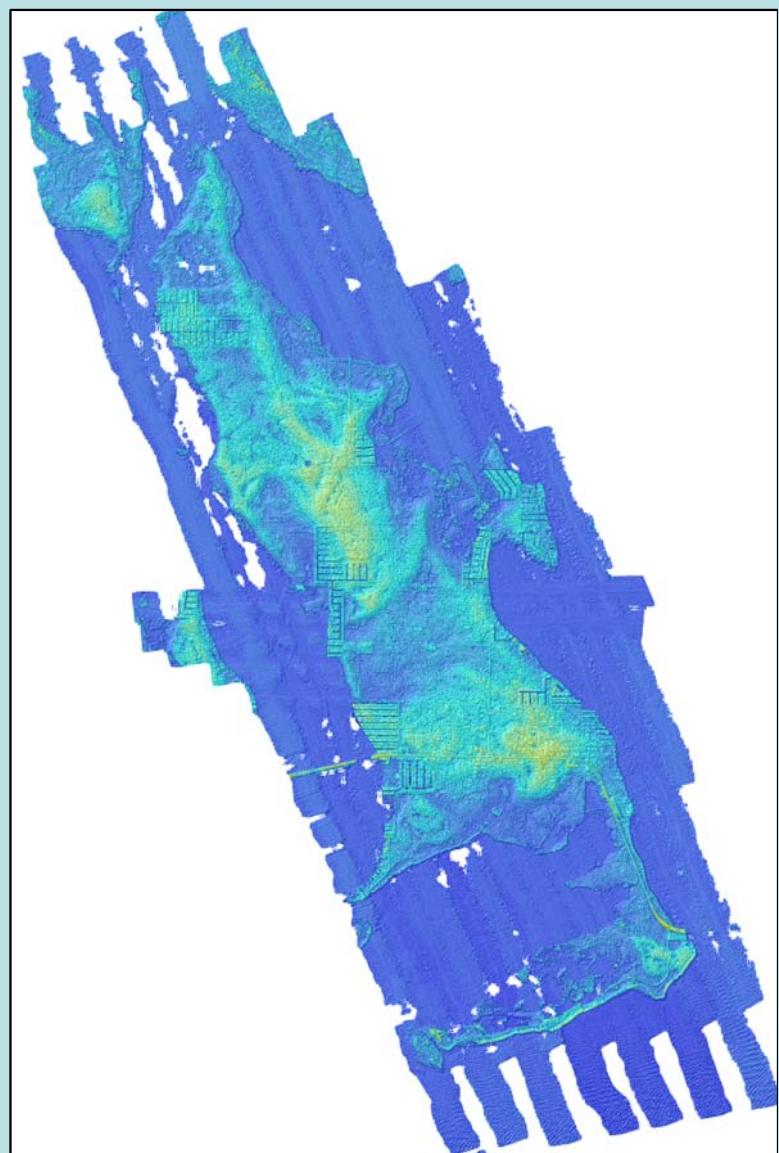
# Points & Images



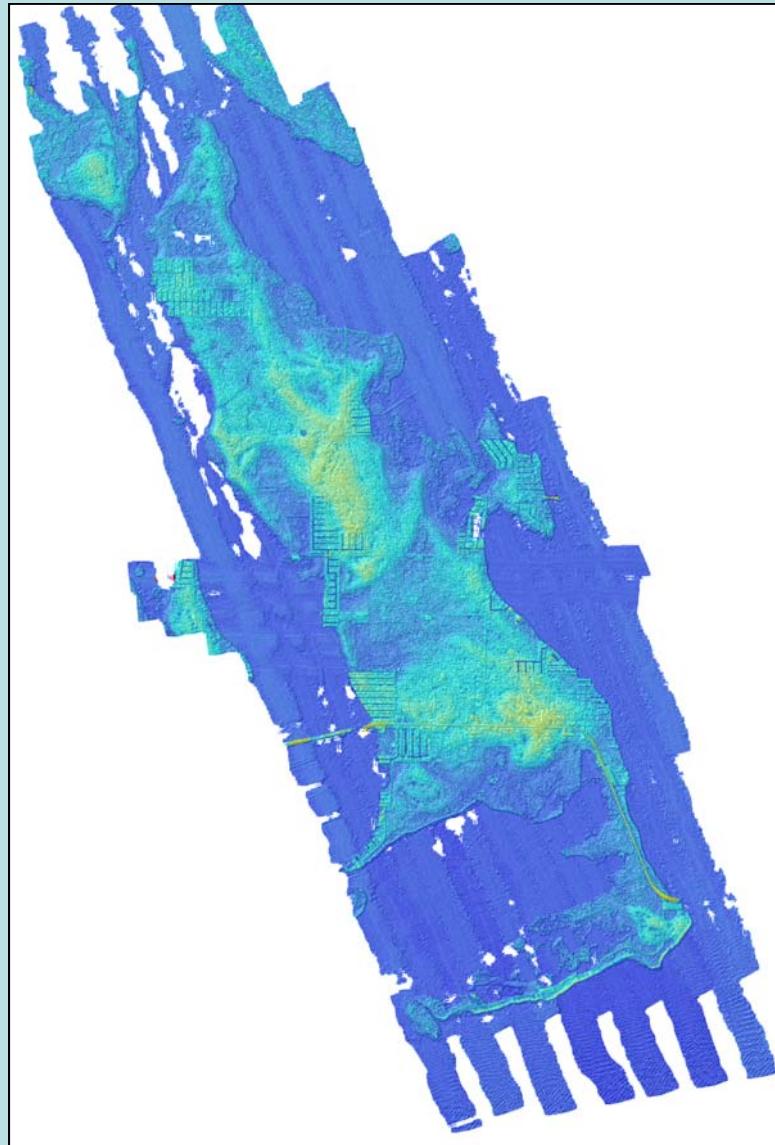
# DSM



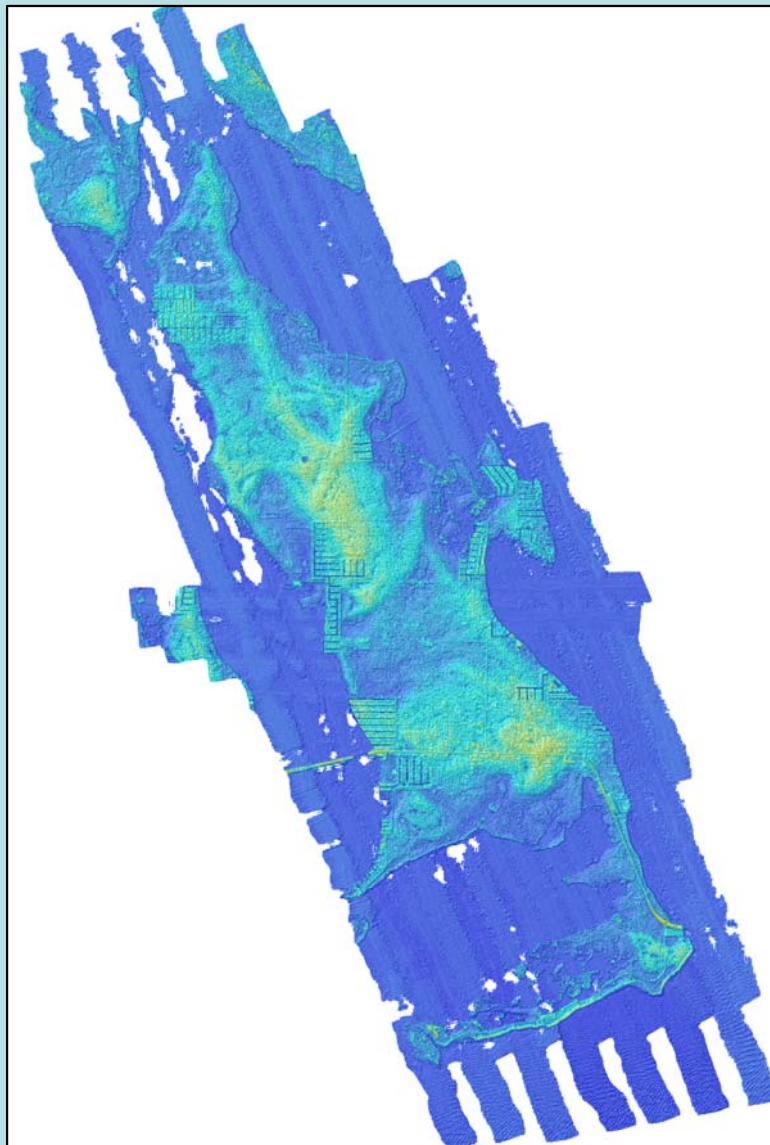
# DTM



# ATIN DTM



# PM DTM

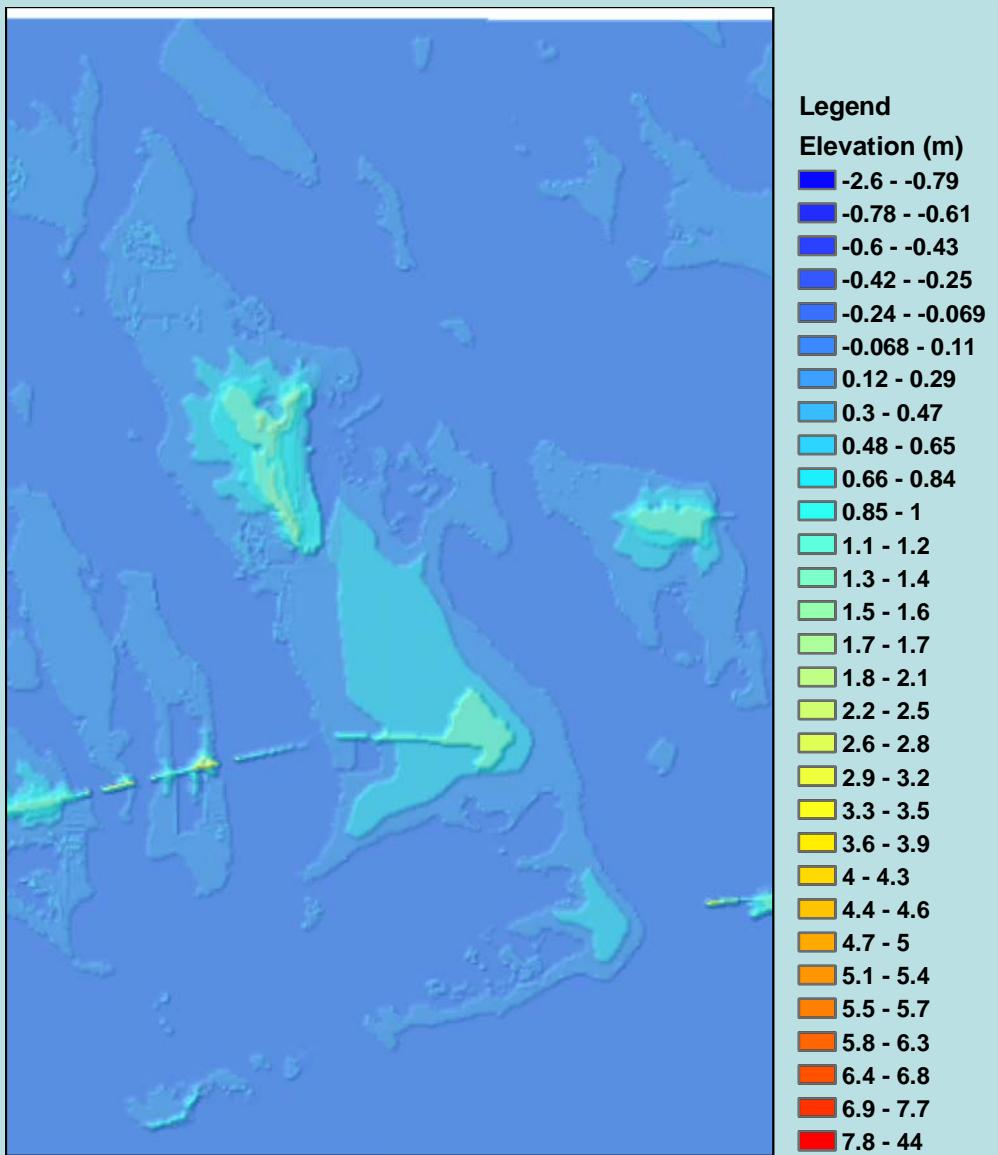


## Legend

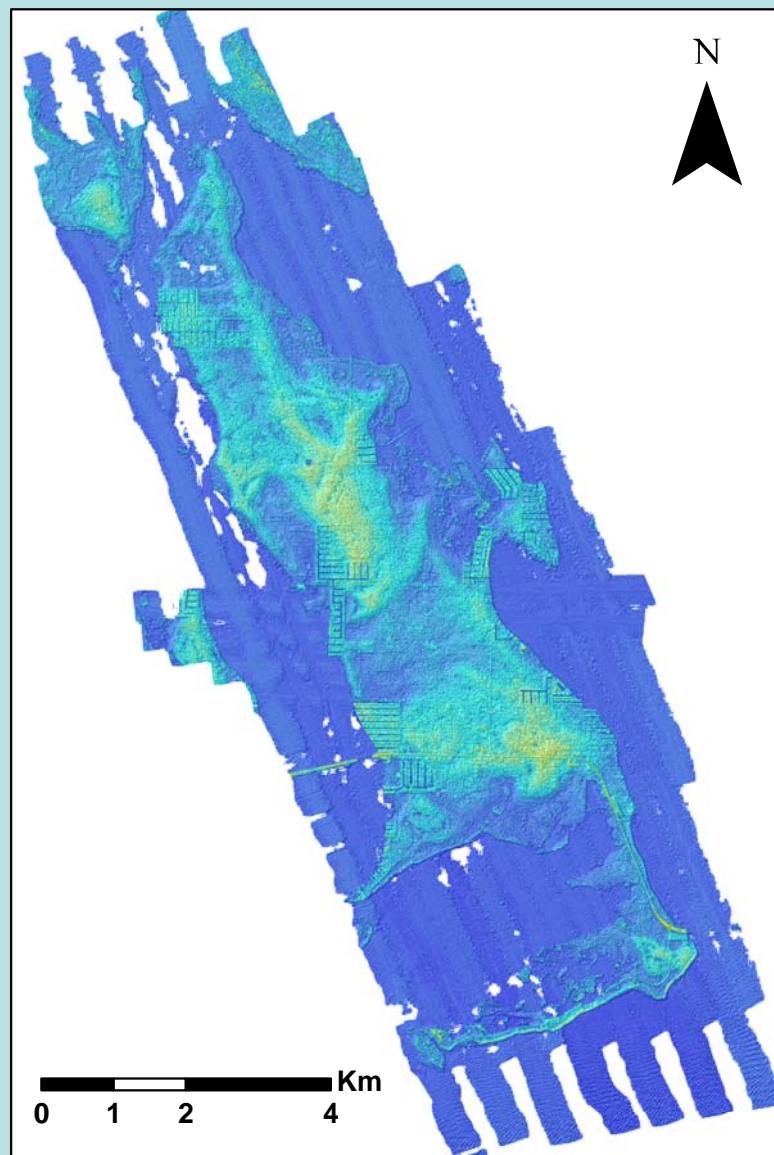
Elevation (m)

- 2.6 - -0.79
- 0.78 - -0.61
- 0.6 - -0.43
- 0.42 - -0.25
- 0.24 - -0.069
- 0.068 - 0.11
- 0.12 - 0.29
- 0.3 - 0.47
- 0.48 - 0.65
- 0.66 - 0.84
- 0.85 - 1
- 1.1 - 1.2
- 1.3 - 1.4
- 1.5 - 1.6
- 1.7 - 1.7
- 1.8 - 2.1
- 2.2 - 2.5
- 2.6 - 2.8
- 2.9 - 3.2
- 3.3 - 3.5
- 3.6 - 3.9
- 4 - 4.3
- 4.4 - 4.6
- 4.7 - 5
- 5.1 - 5.4
- 5.5 - 5.7
- 5.8 - 6.3
- 6.4 - 6.8
- 6.9 - 7.7
- 7.8 - 44

# USGS DTM

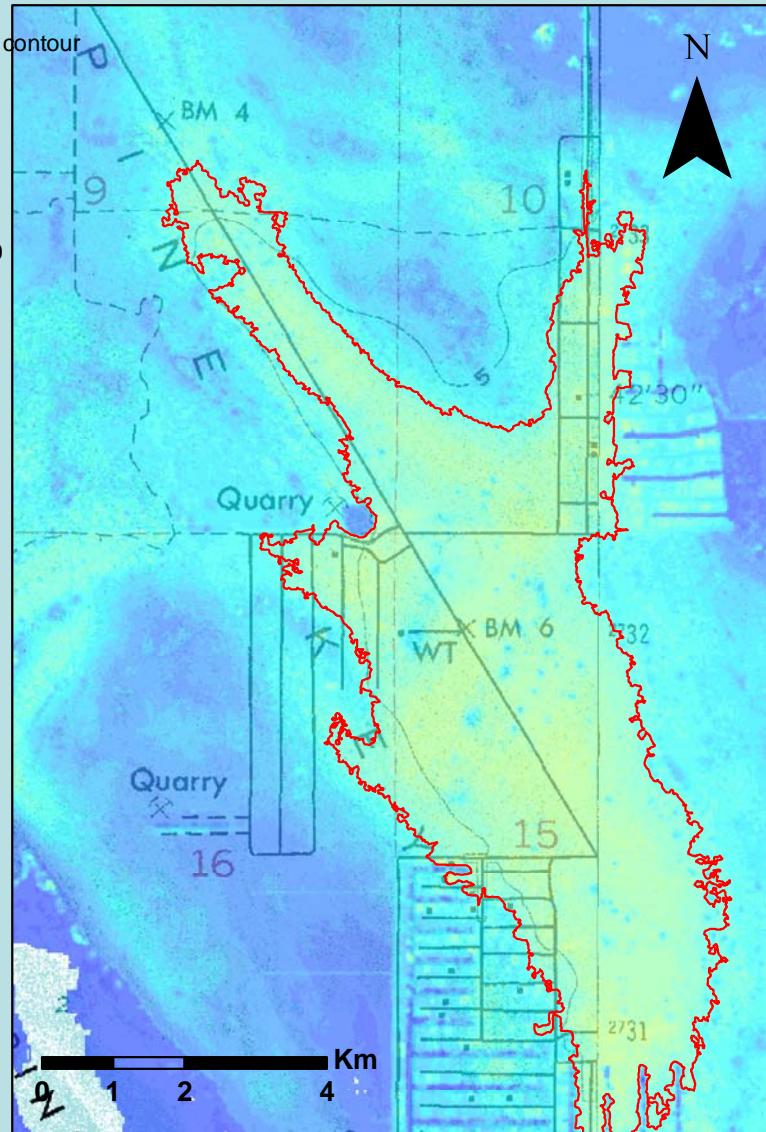
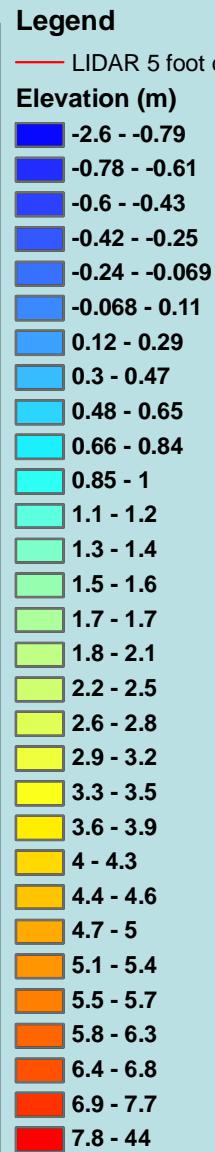
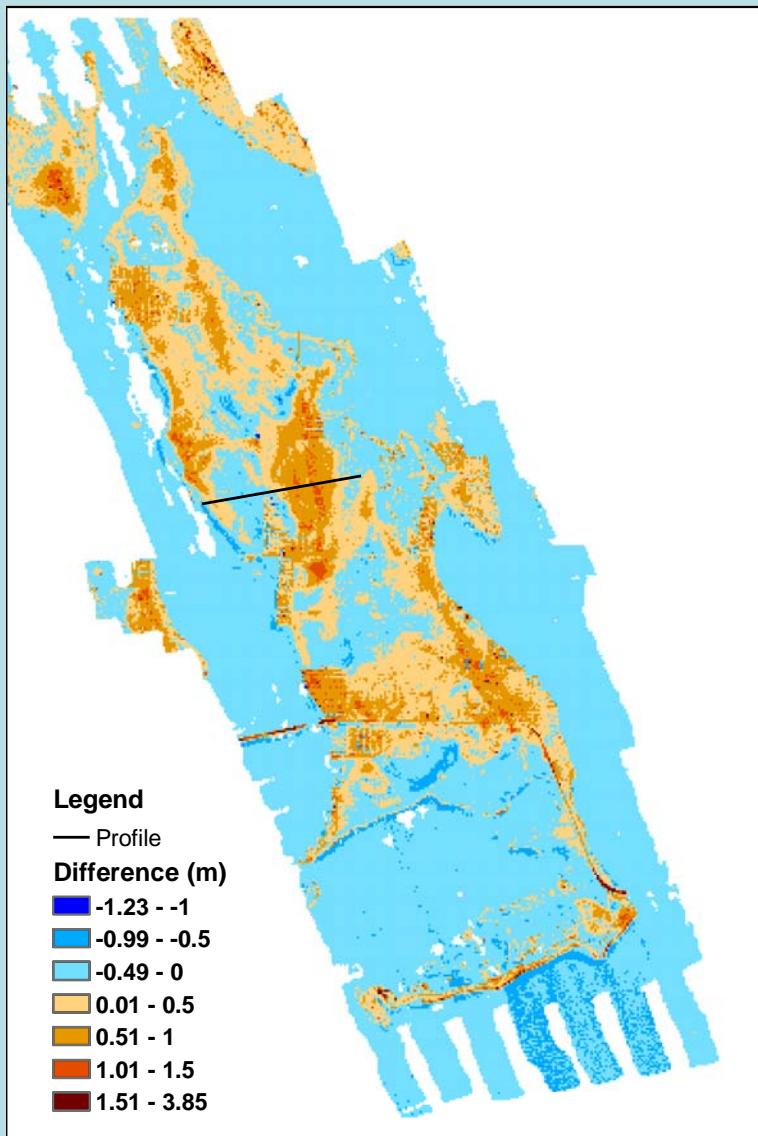


# LIDAR DTM

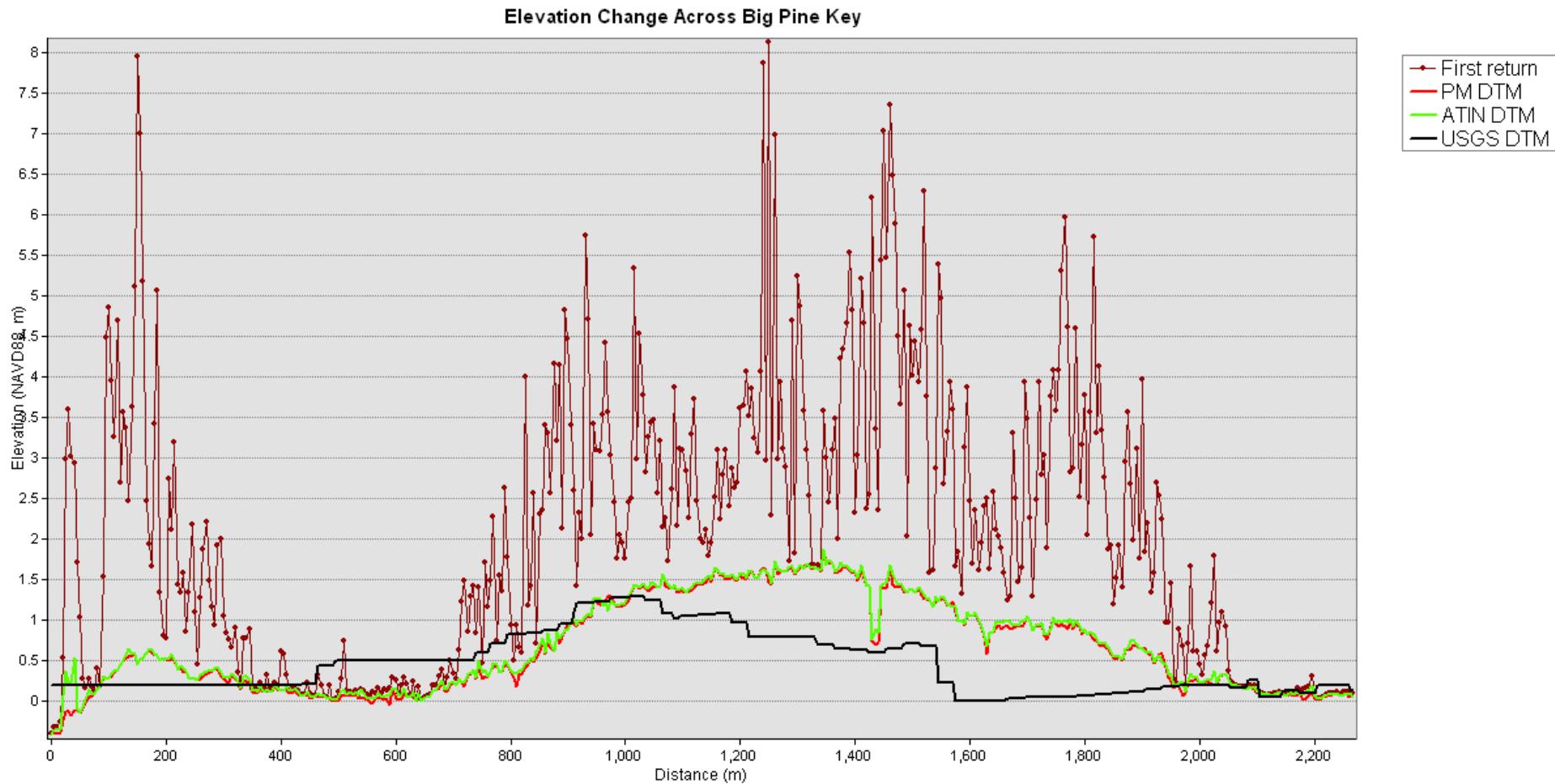


# LIDAR DTM—USGS DTM

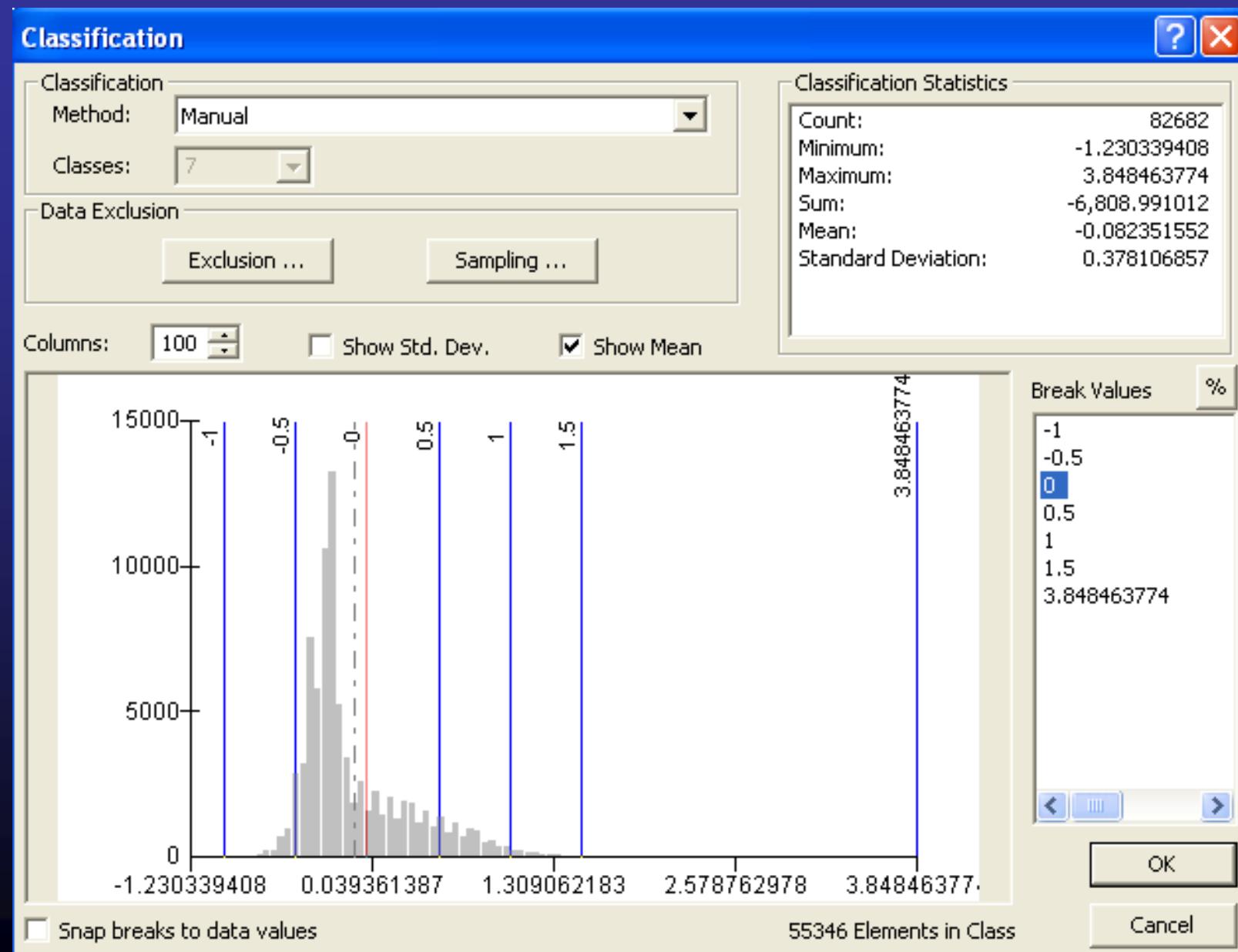
# LIDAR DTM Draped over USGS Topo Sheet



# Comparison of LIDAR and USGS DTMs along a W-E profile

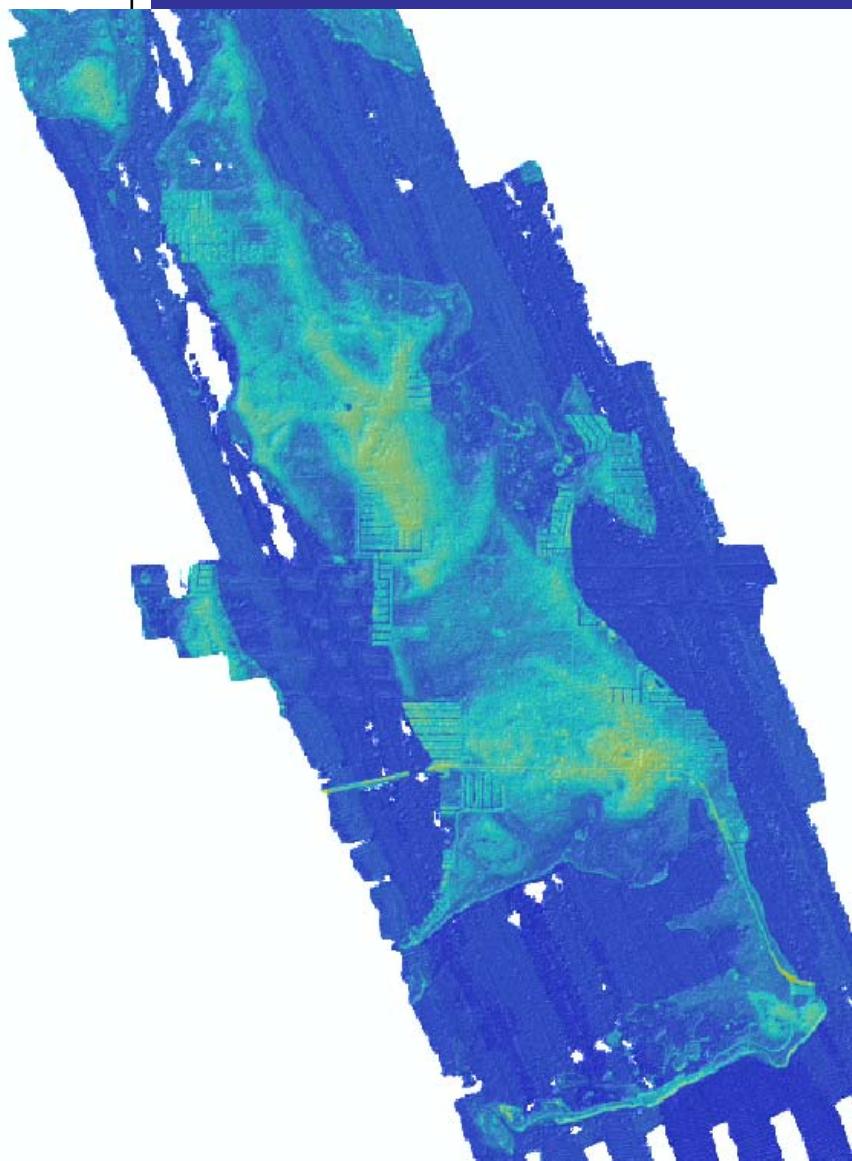
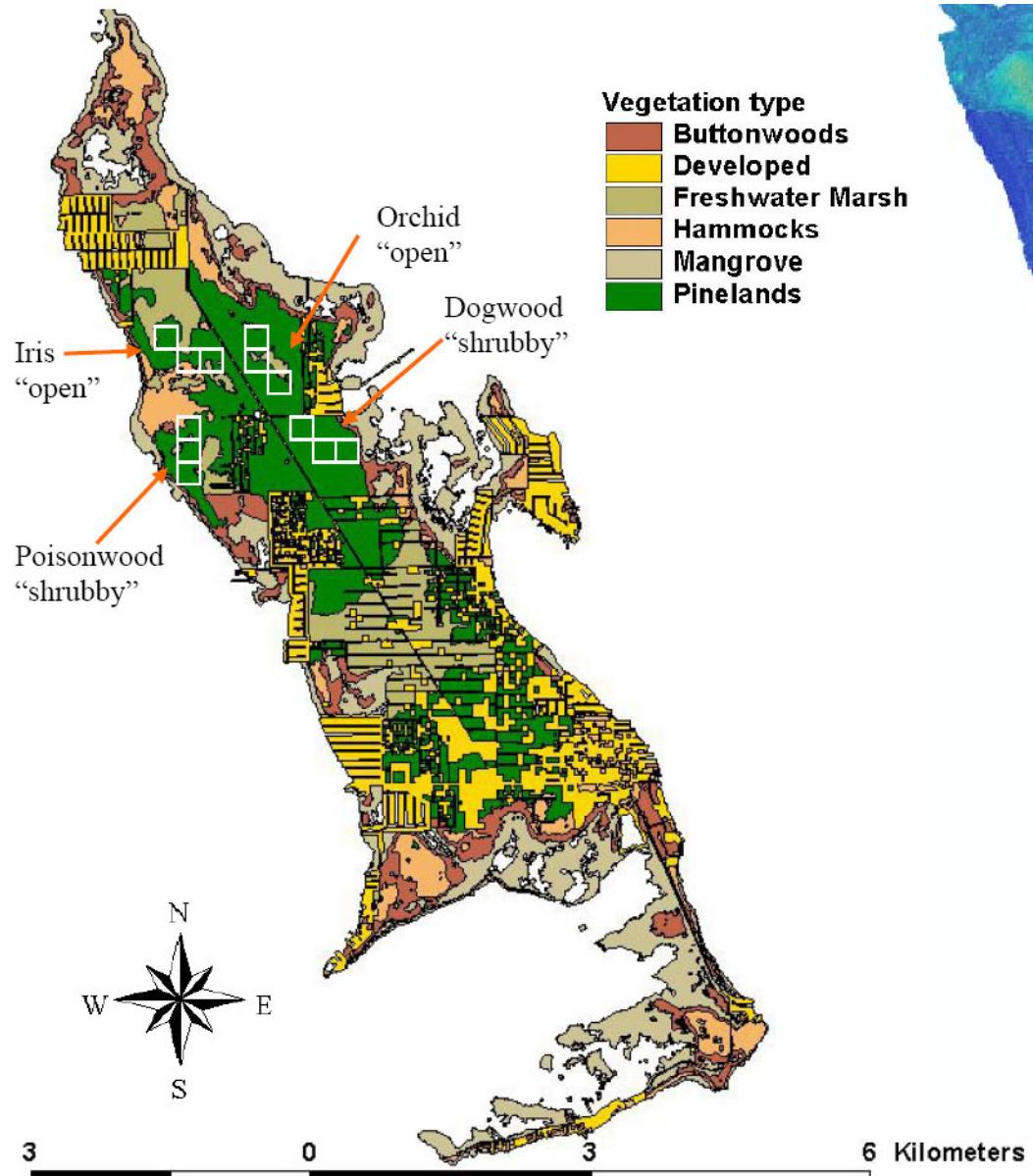


# Differences between LIDAR and USGS DTMs



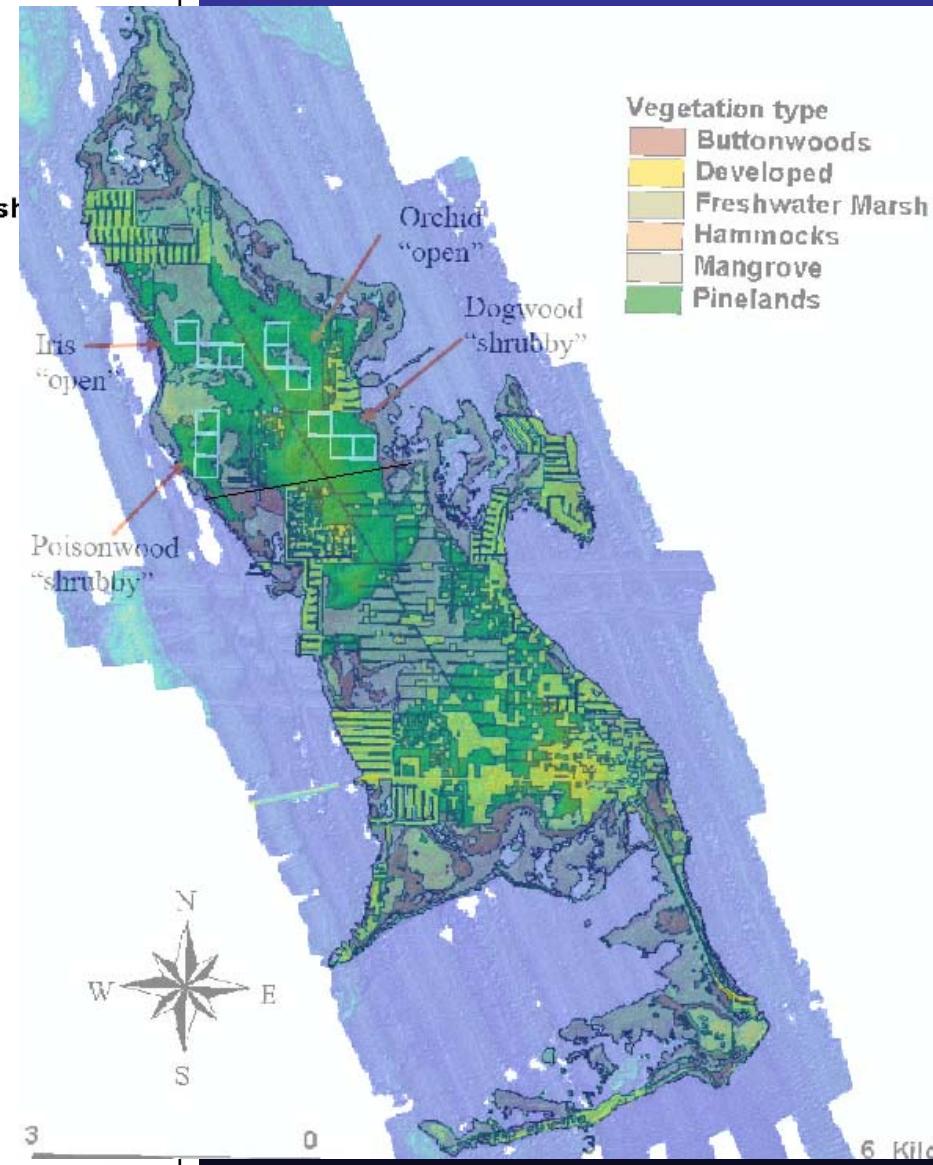
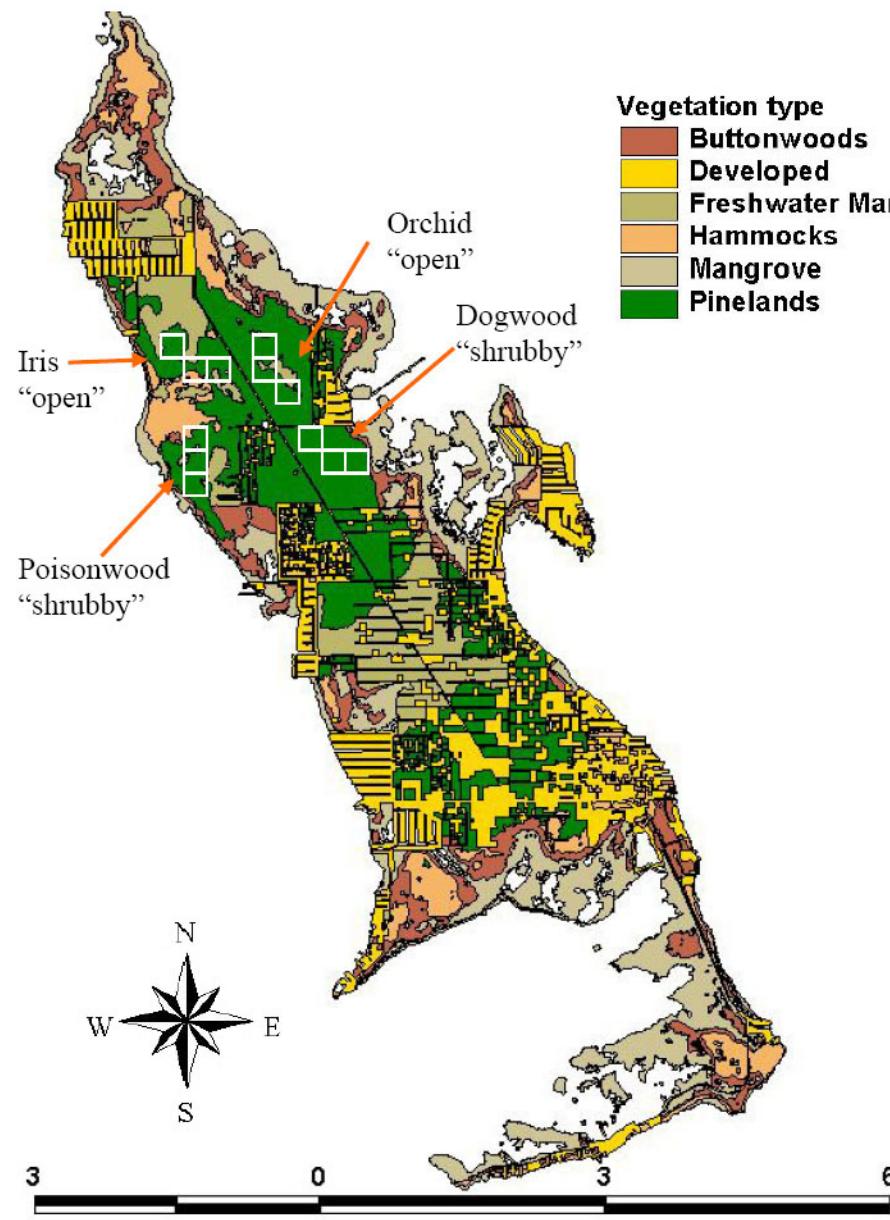
# DTM

c) Big Pine Key

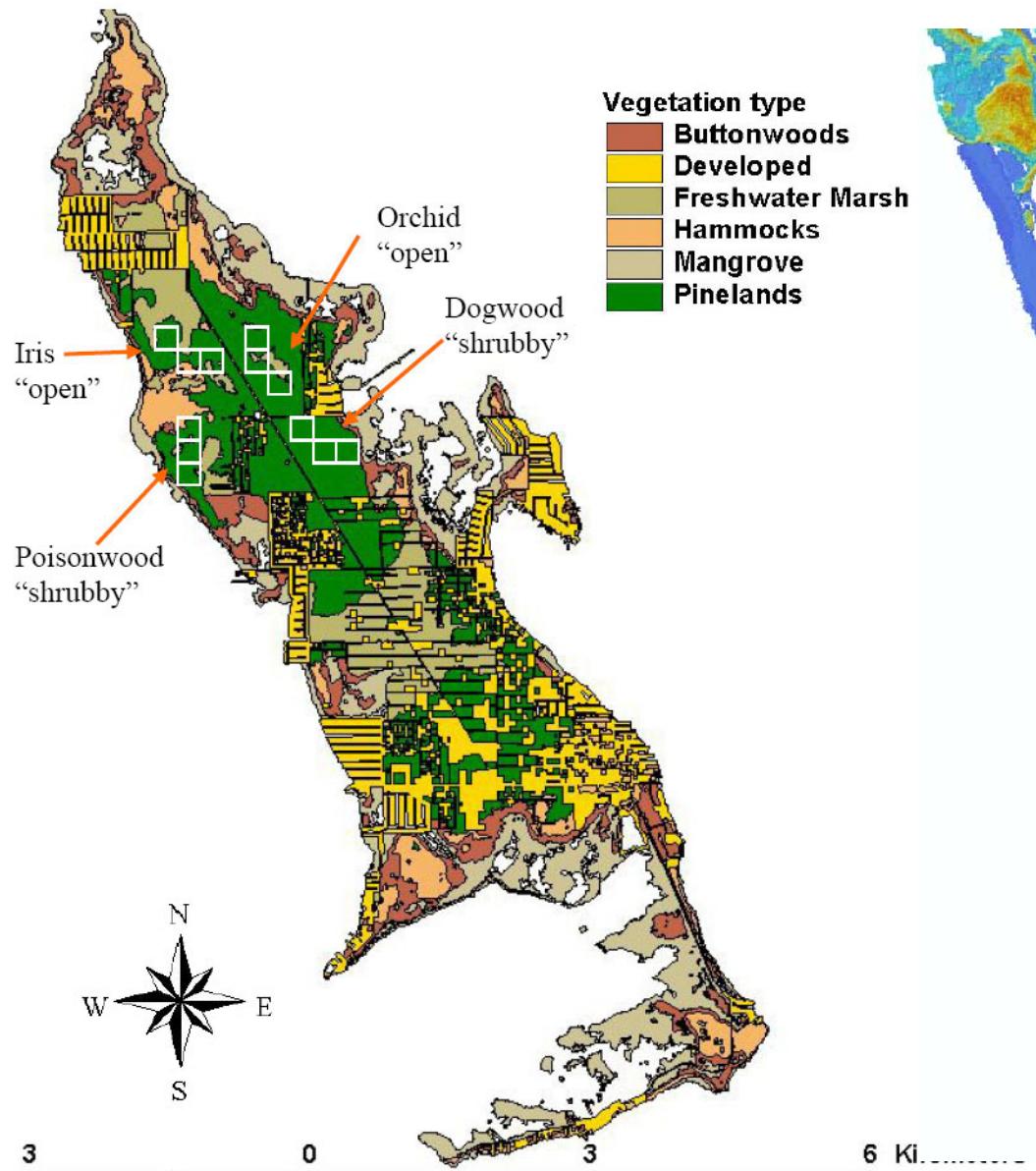


# Draped Map

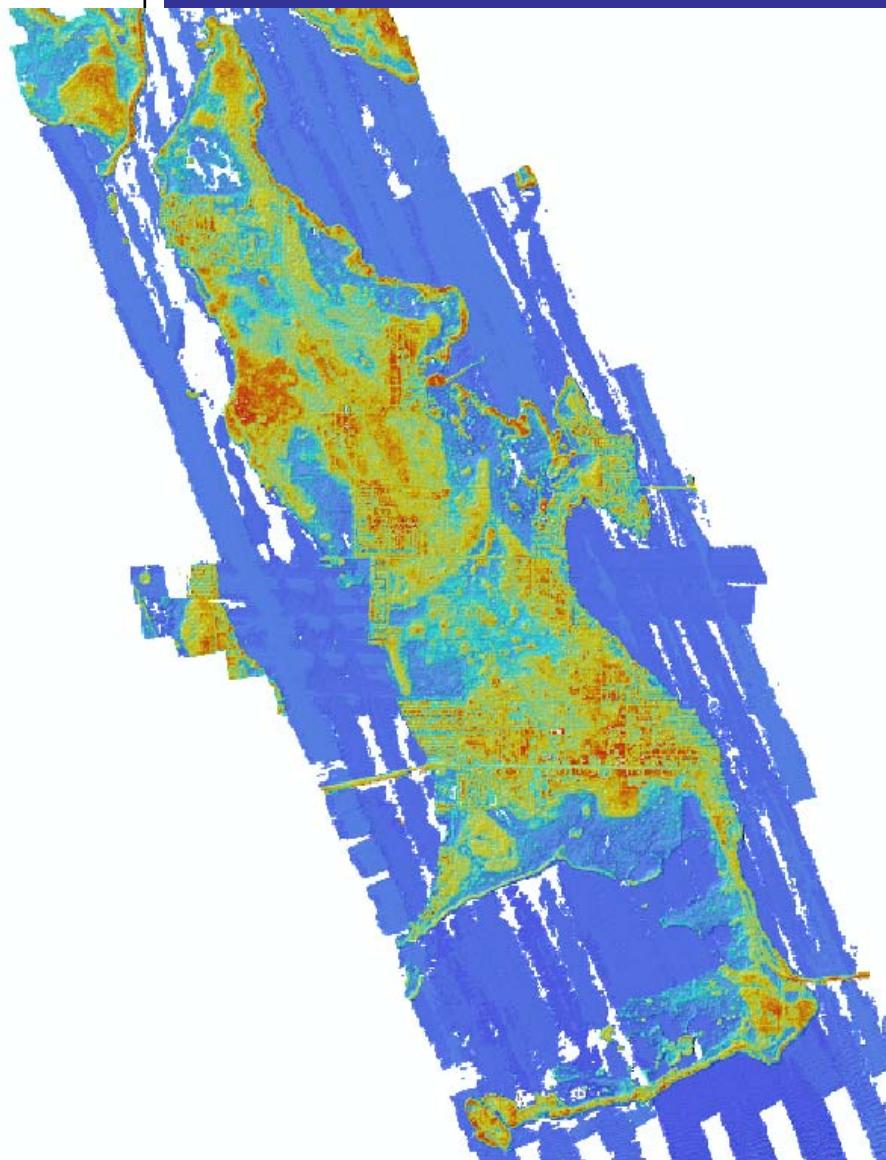
c) Big Pine Key



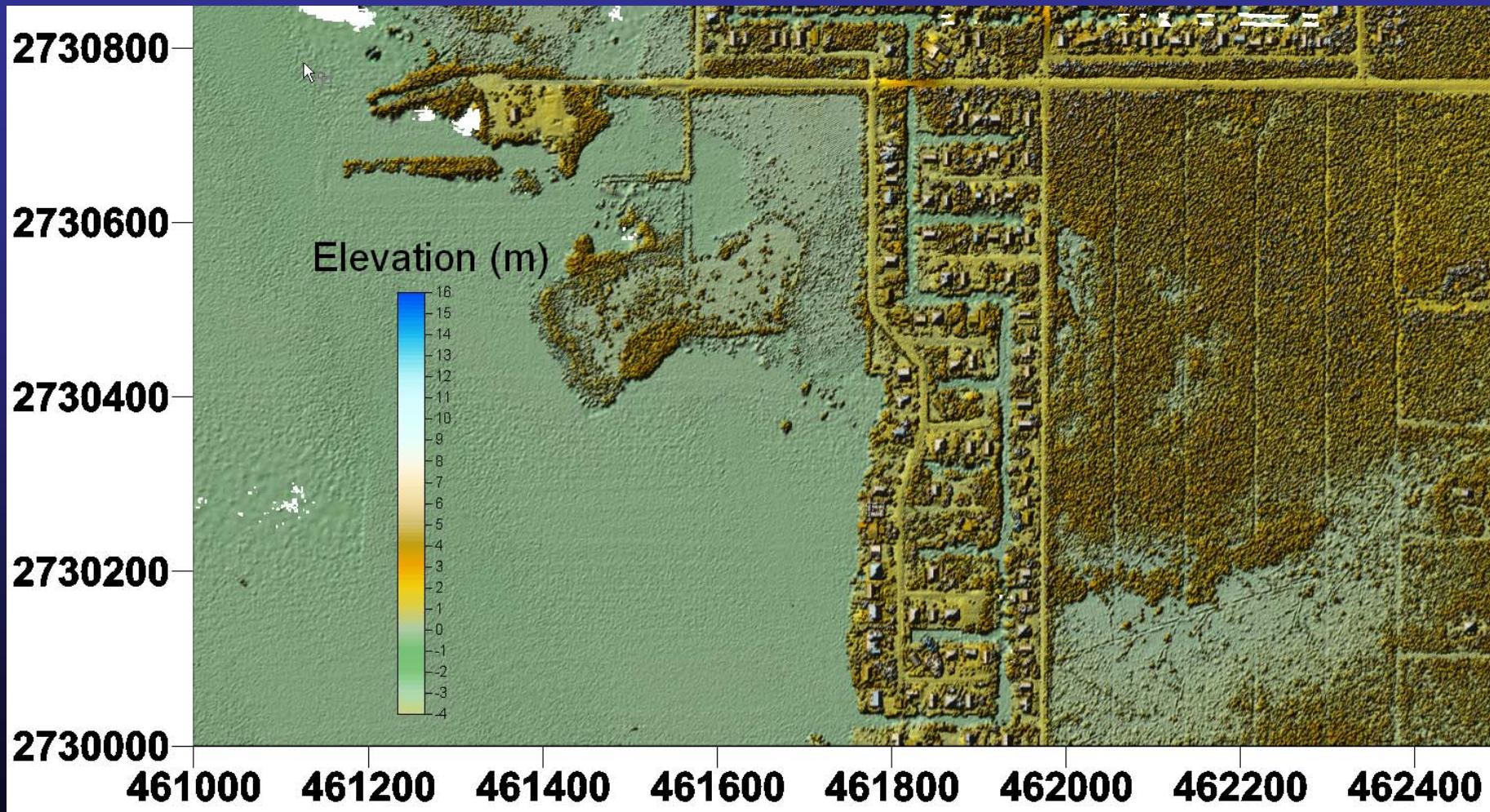
c) Big Pine Key



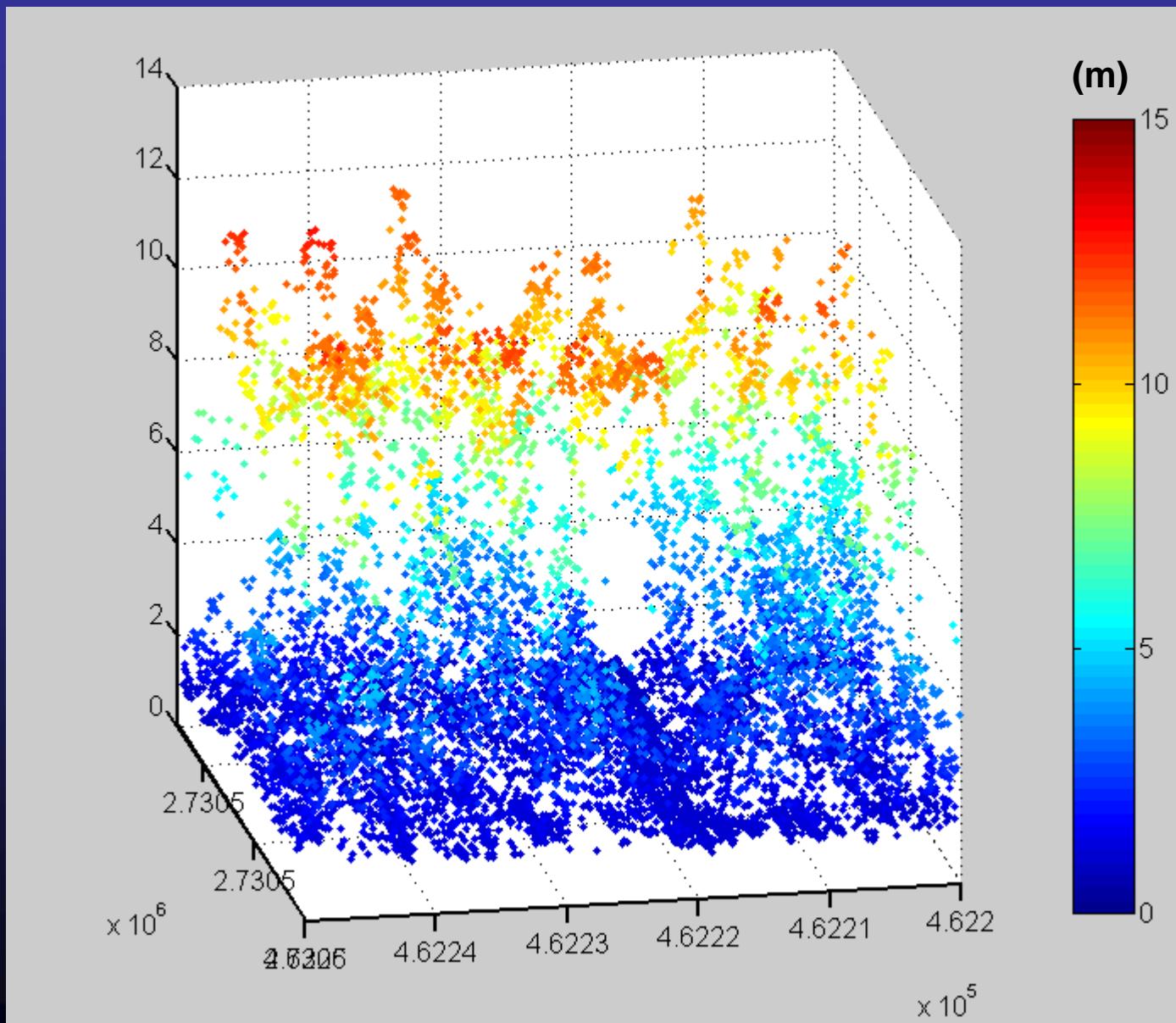
DSM



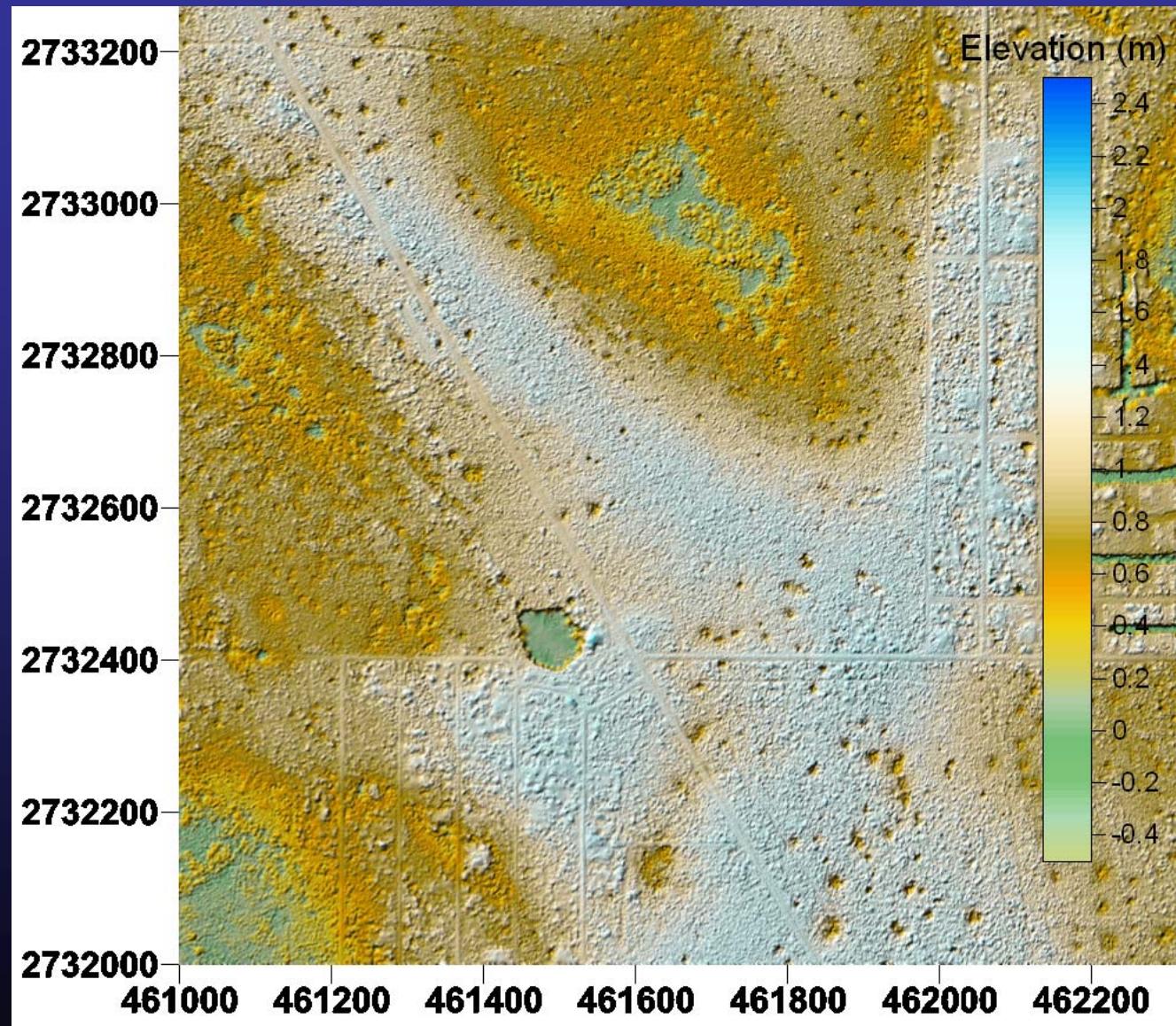
# Pine Forest



# Pine Forest



# Sink Holes



# Questions?