Using ArcScene for 3D Visualization and Virgin Islands Public Outreach

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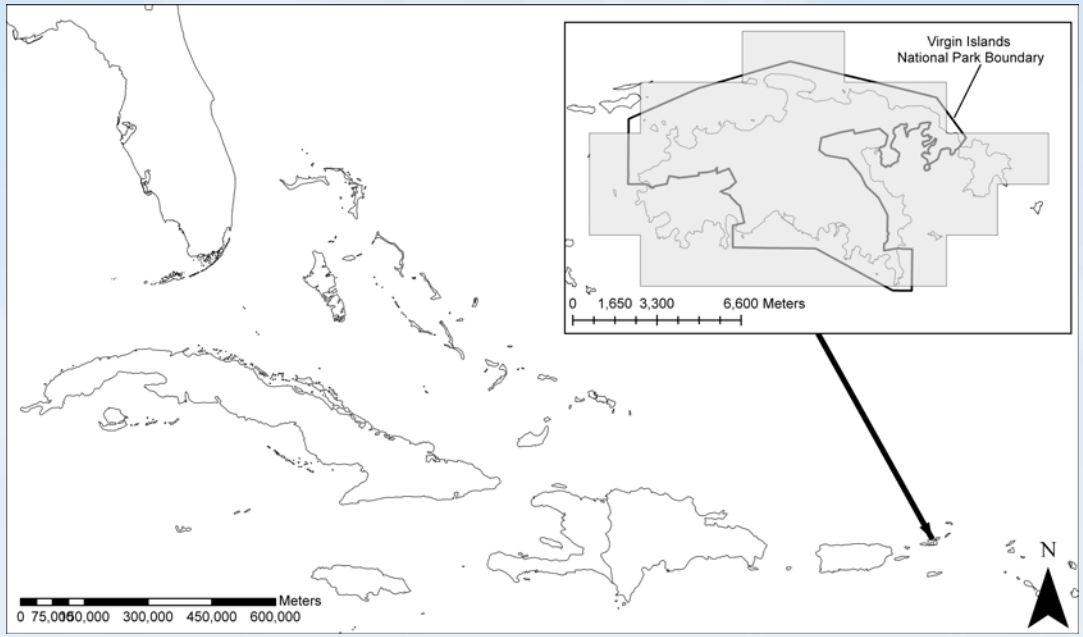
Area of Interest



- Virgin Islands National Park
- St. John, US Virgin Islands
- 1,115 miles from the coast of Florida
- 5,919 marine acres
- 8,775 terrestrial acres

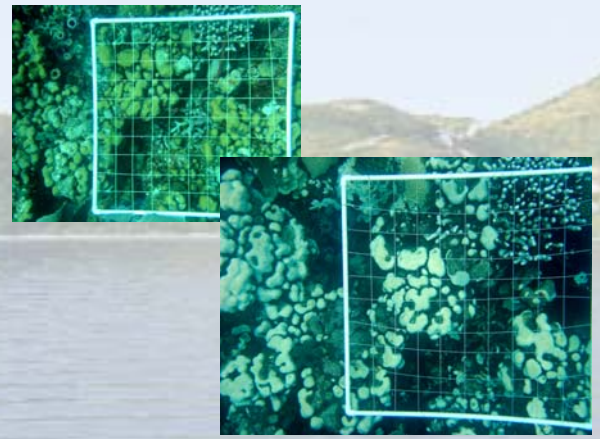
Purpose

- Use high-resolution lidar data to create realistic 3D models of National Parks and other natural areas.
- Increasing public awareness about park-related environmental issues and helping park managers communicate park-related issues.

Public Outreach Tool

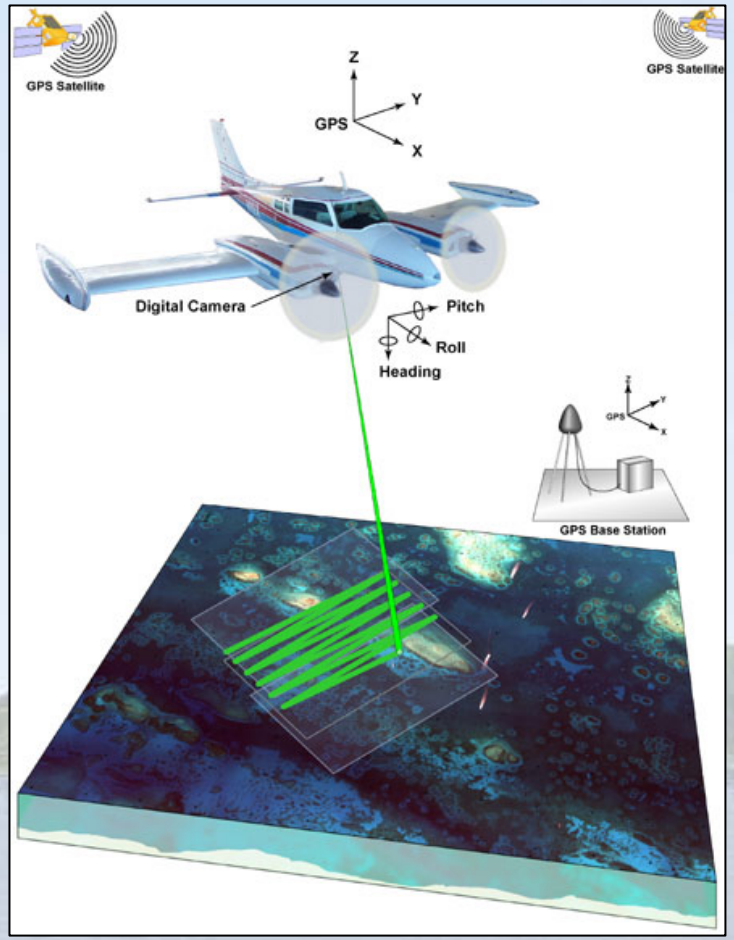
Out-of-site, Out-of-mind

- Enhance public familiarity with a remote resource
- Familiarity leads to increased interest
- US Virgin Islands are far-removed
- Marine resources even further removed
- Coral Reef health needs particular attention at this time due to unprecedented levels of degradation



LIDAR Background

PI: Wayne Wright, NASA

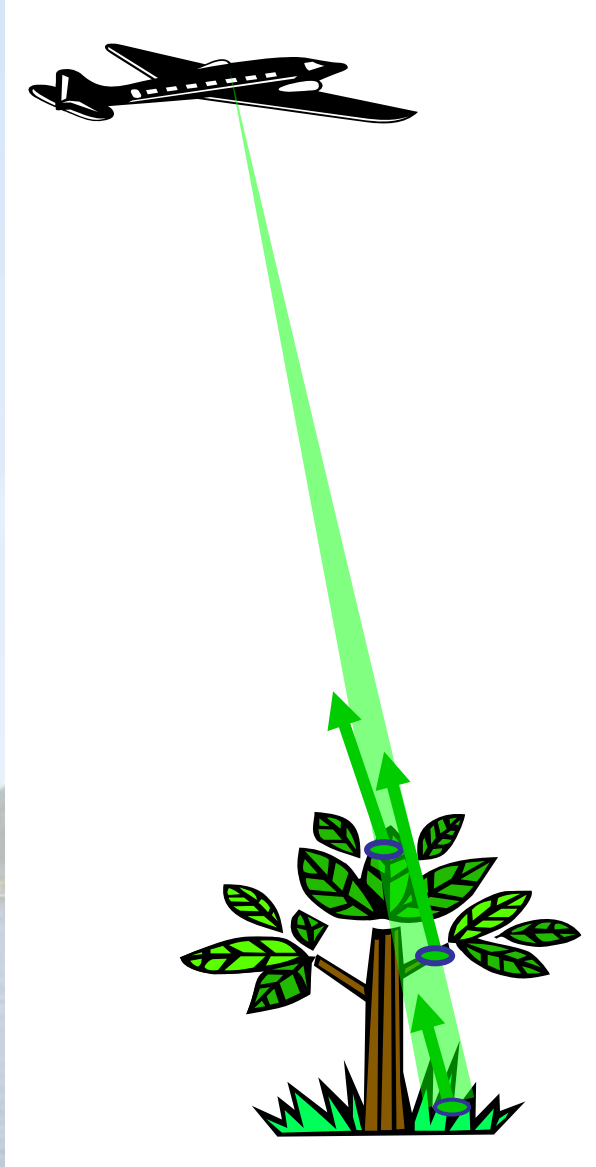


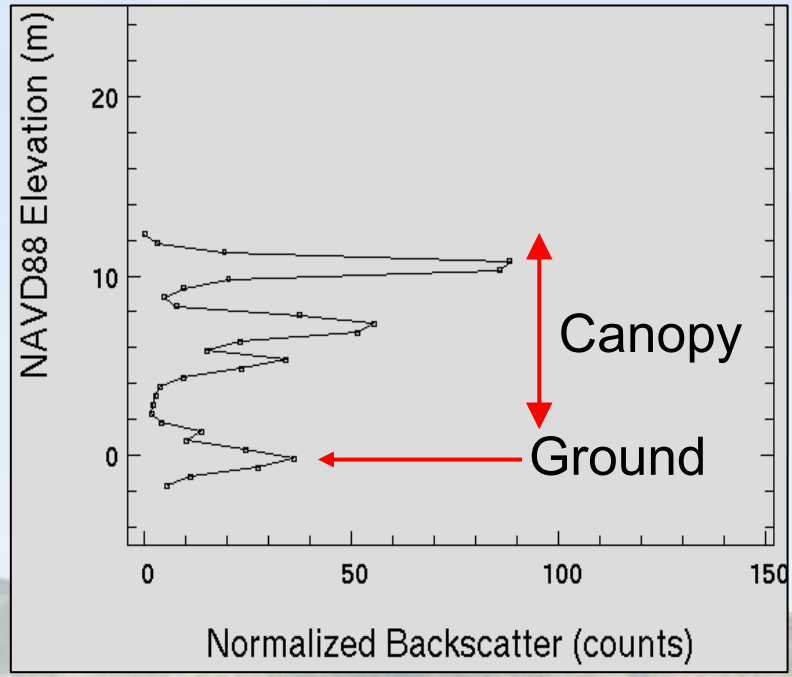
- LIDAR = **Li**ght **D**etection **a**nd **R**anging
  - Laser pulse sent from airplane towards surface
  - Light reflects and returns to receiver
  - Elevation is determined by considering position of aircraft and time between pulse and return

- NASA EAARL = Experimental Advanced Airborne Research LIDAR
  - Able to map both terrestrial and submerged resources (~25m below water surface)

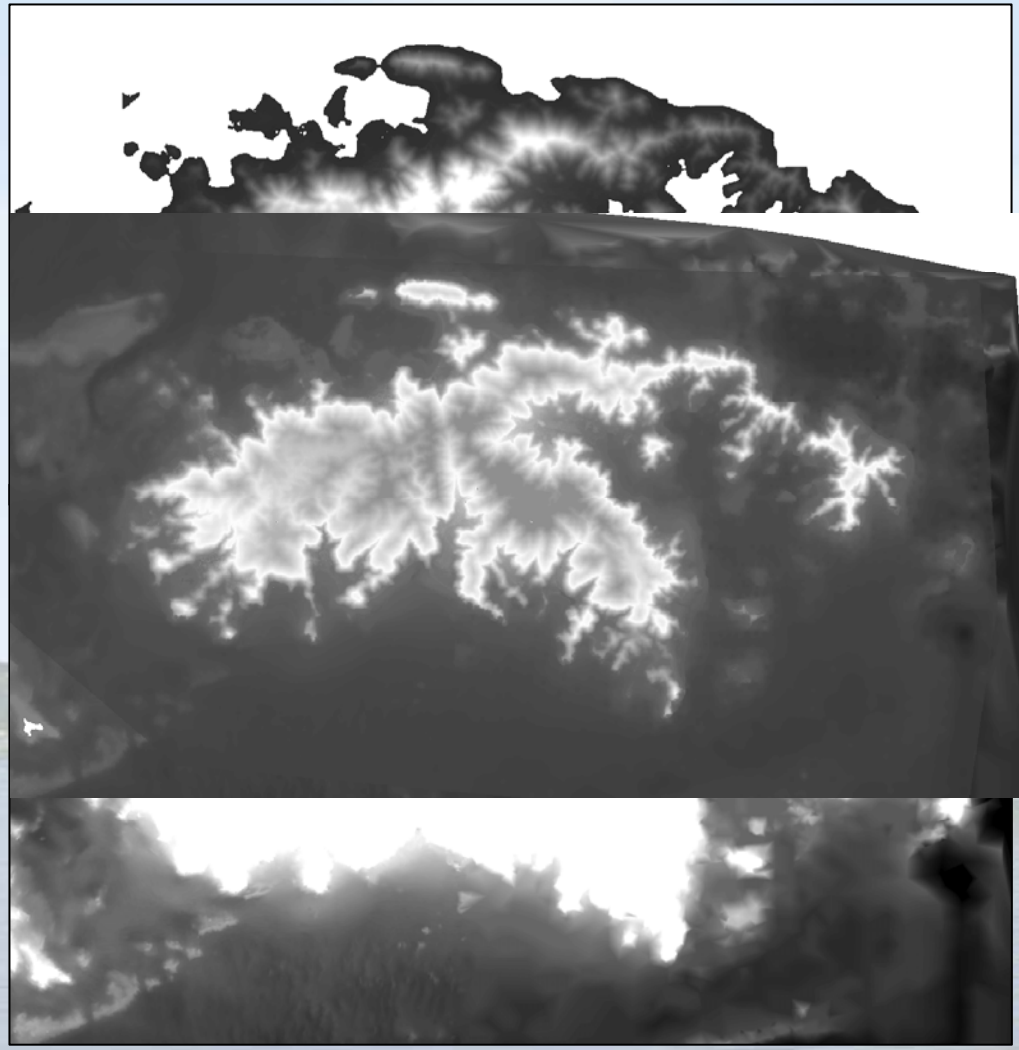
- Virgin Islands National Park was flown in 2003

Example LIDAR Return





Processing- Creating the Seamless DEM



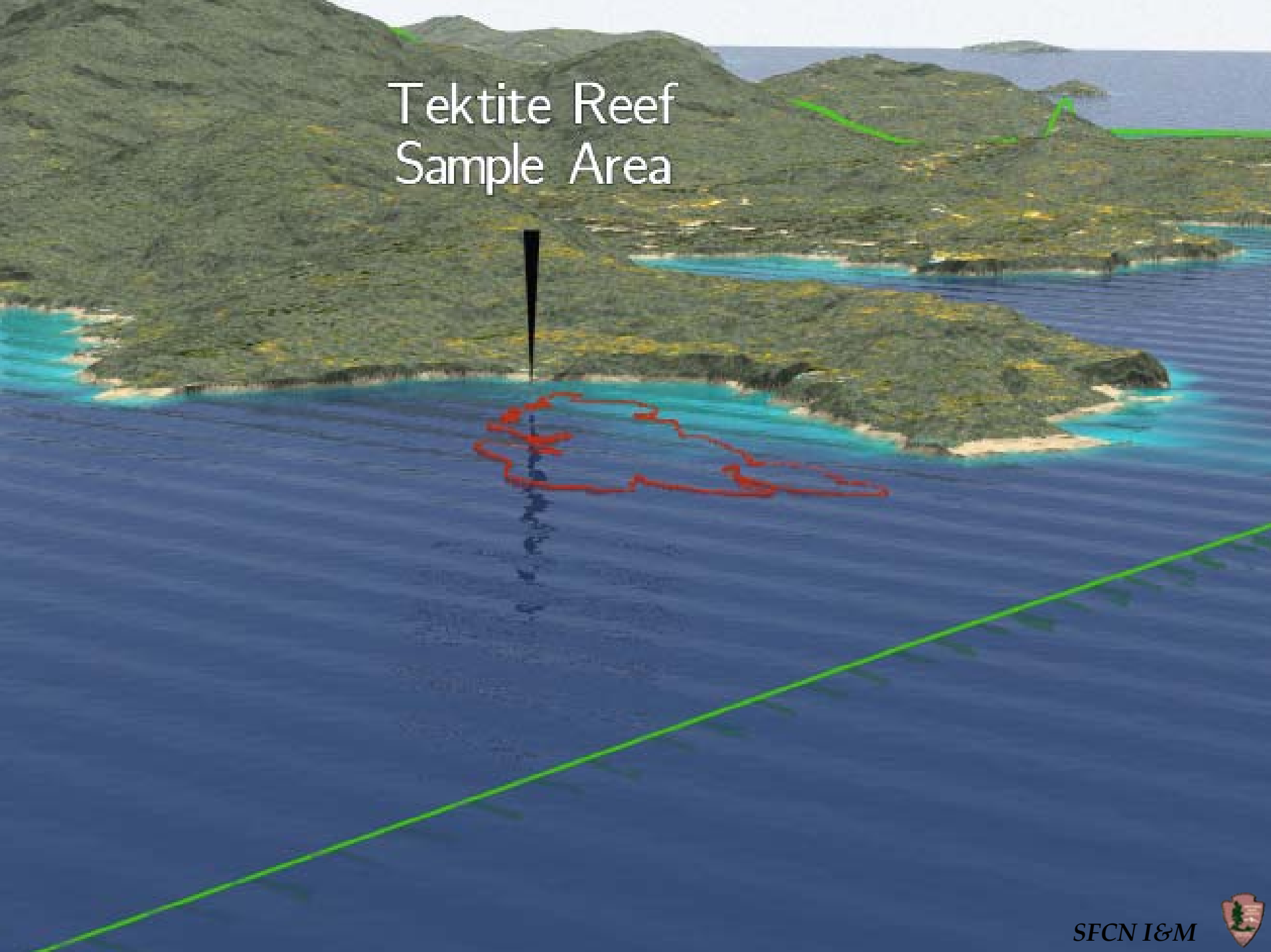
3D Products

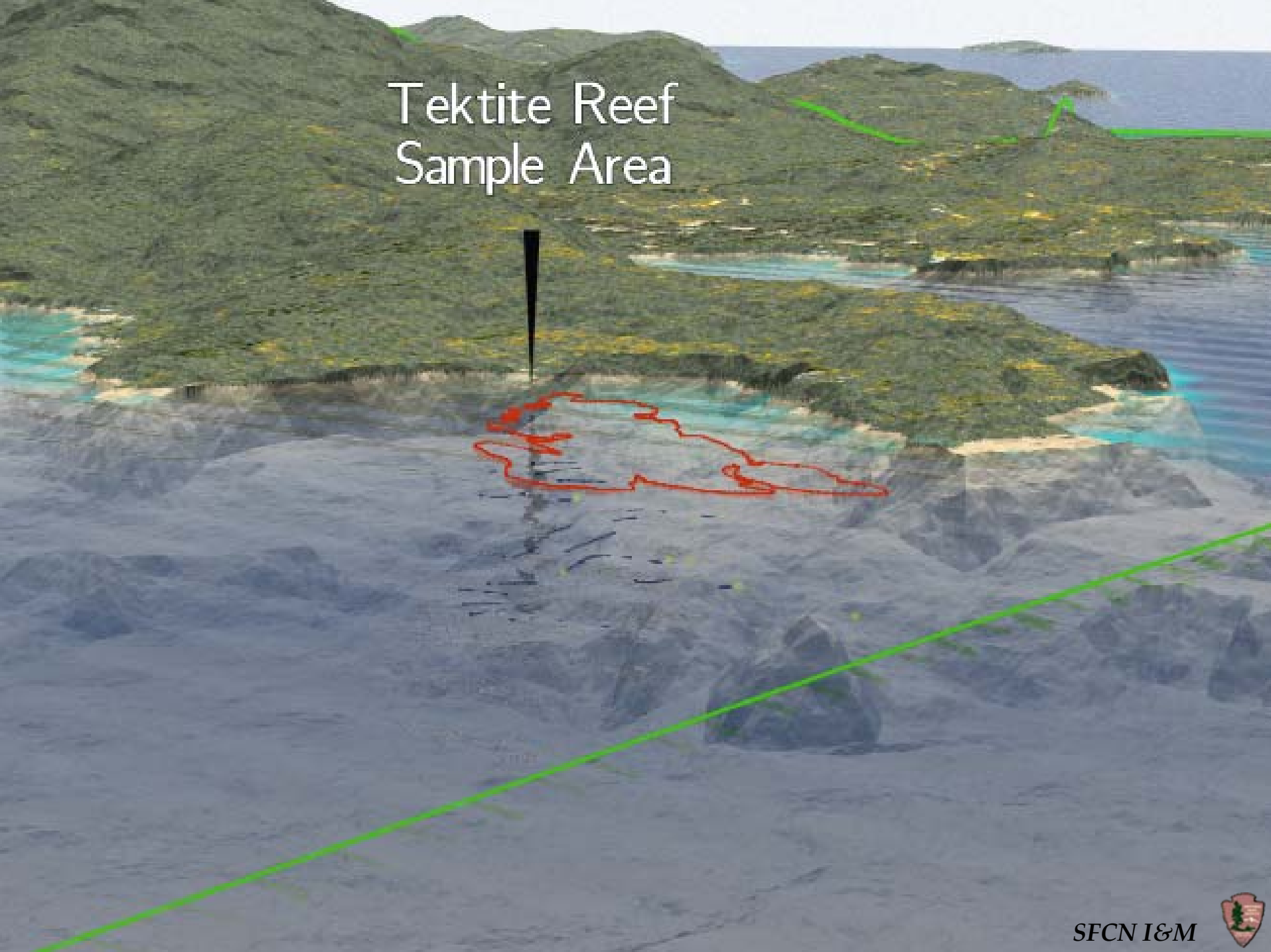
Data Preparation

- Incorporation of new software:
  - Processing and preparation of all GIS data in ArcGIS desktop
  - Modeling and visualizations in 3D Nature's Visual Nature Studio 2
  - More realistic visualizations
  - More detailed development of underwater landscapes


Tektite Reef
Yawzi Reef
Haulover Reef
Mennebeck Reef
Newfound Reef

SFCN I&M


Tektite Reef
Sample Area


Tektite Reef
Sample Area

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Questions???

- Vertical Accuracy= 10-15 cm
- Horizontal resolution= 1 m