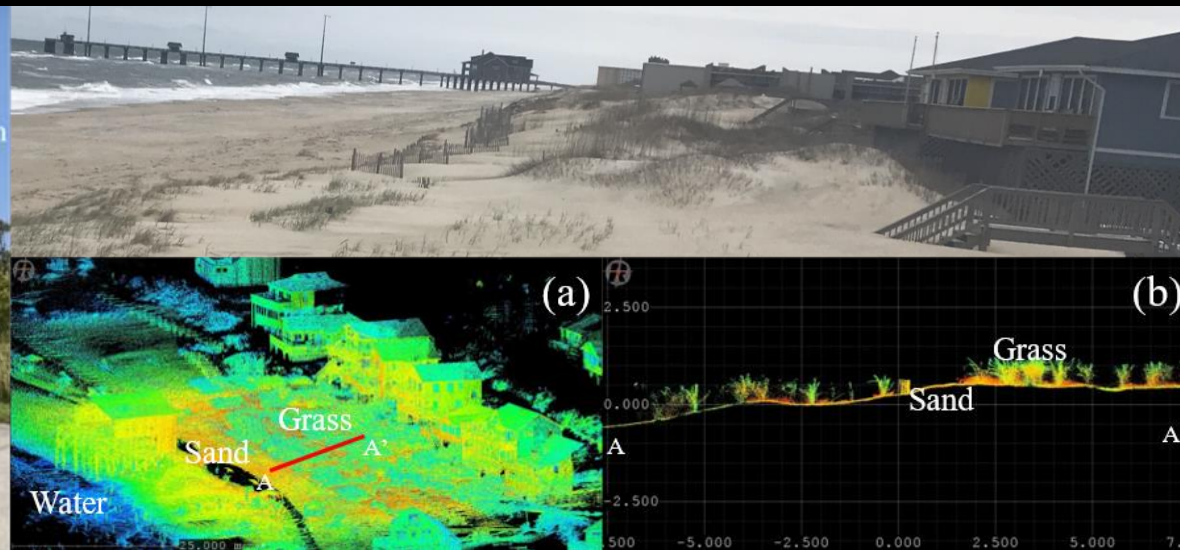# Using lidar to assess impacts of dune restoration on coastal resilience in North Carolina

Dr. Lin Xiong

Dr. David Lagomasino

Amanda Payton

Shalimar Moreno

xiongl21@ecu.edu

Coastal erosion at Nags Head

Beach on the north side of Jeanette's Pier, July 2018 (www.wnct.com)

A condemned house on Seagull Drive, Aug 2017 (www.wbur.org)

Goals and objectives

1) Quantify beach and dune dynamics at dune stabilization sites (e.g., dune grass, Christmas trees, sand fences, control)

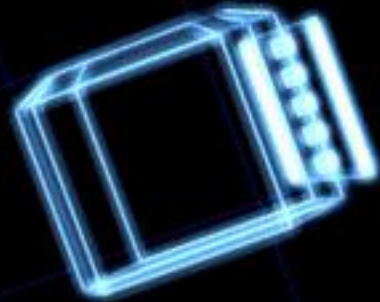2) Present findings and recommendations to BBOBX and Town of Nags Head

Beach restoration project, July 2022
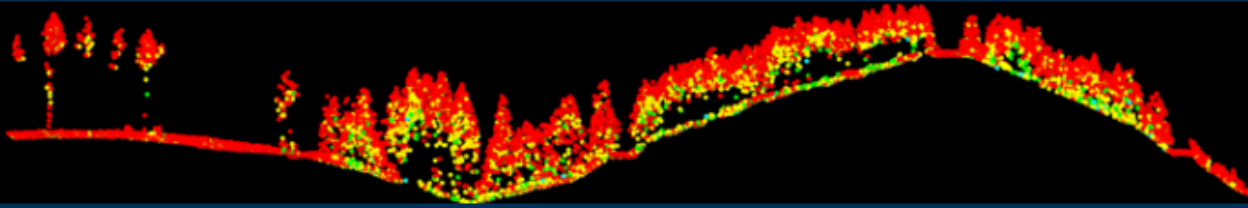

Grass planting by BBOBX, March 2022
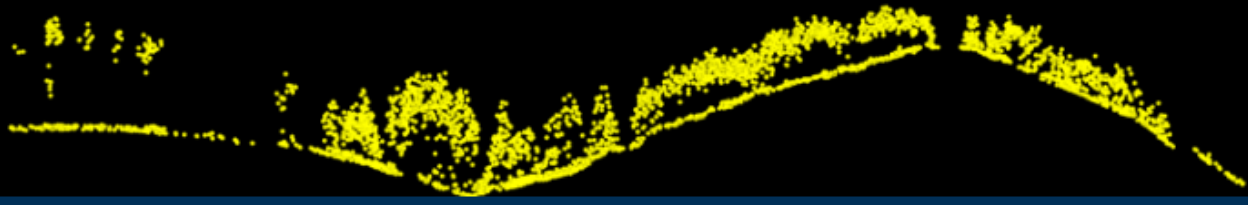
How do lidar work?

Multiple returns from a vegetated terrain

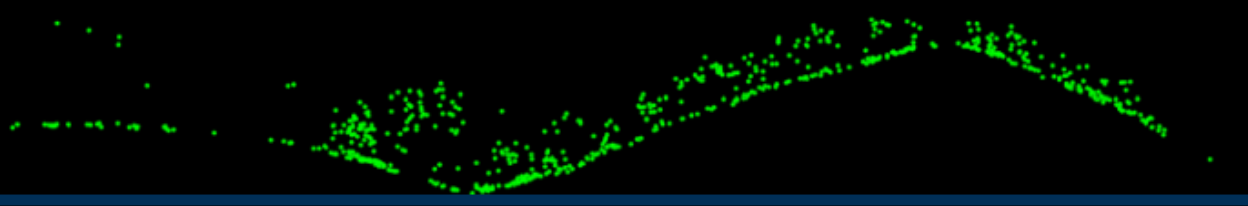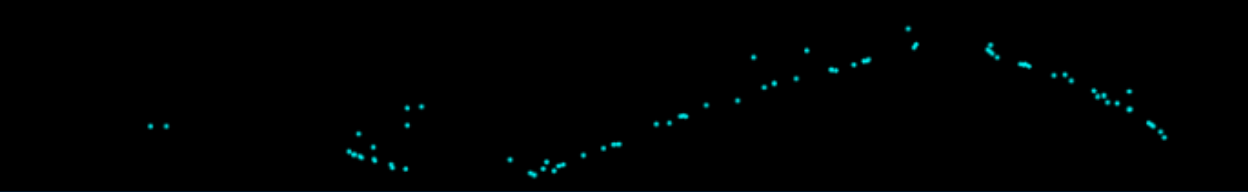All returns (16,664 pulses)

1st returns (11,469 pulses, 69%)

2nd returns (4,385 pulses, 26%)

3rd returns (736 pulses, 4%)

4th returns (83 pulses, <1%)

Coastal laser scanning system
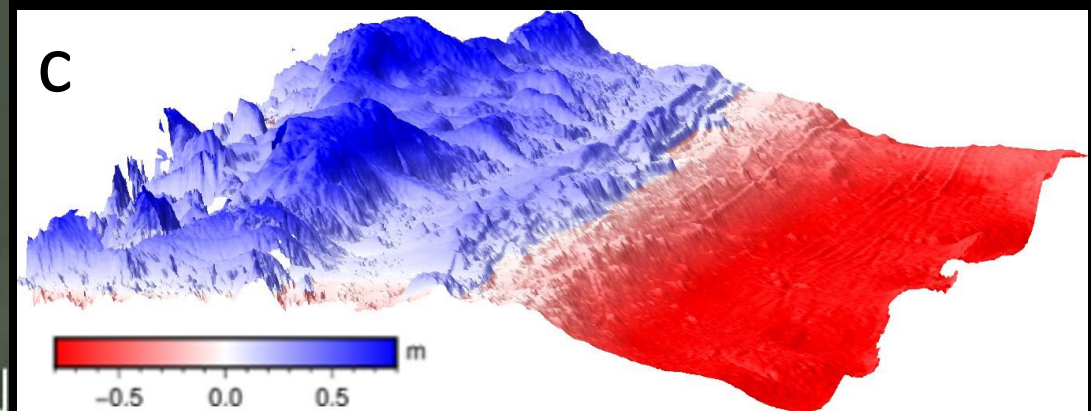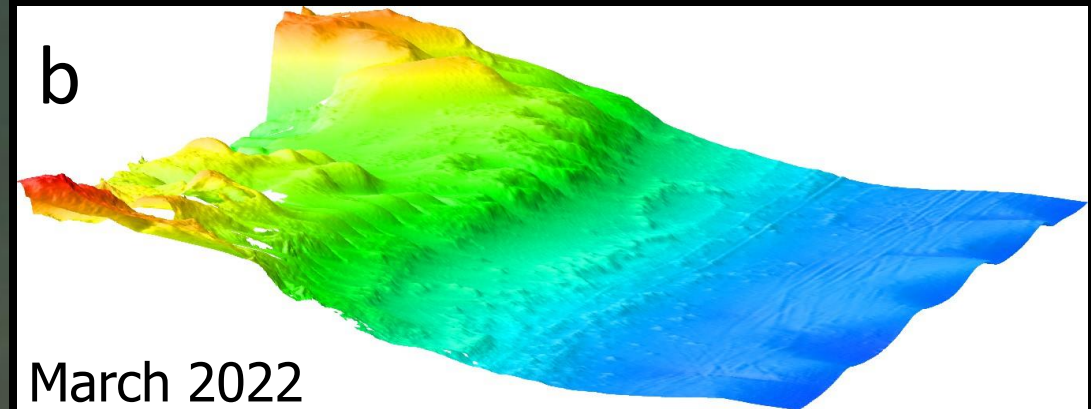
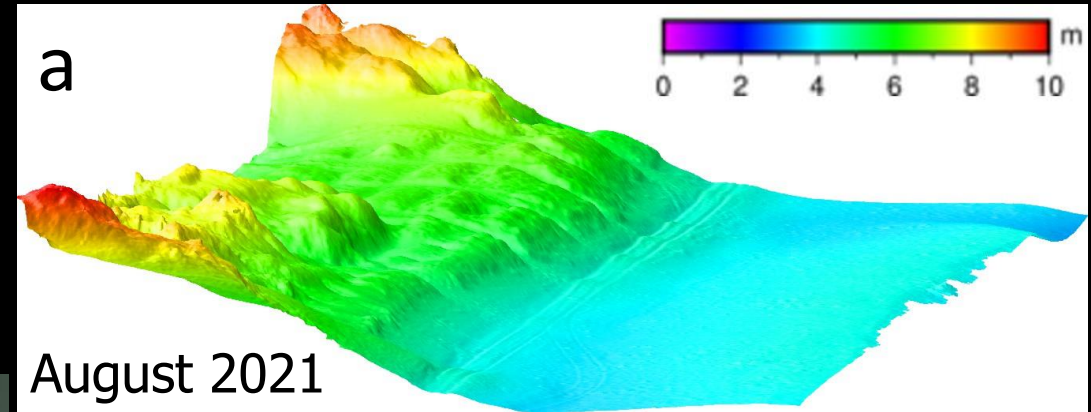# TLS

GNSS Receiver

RIEGL VZ400i

Scan & Go lift

ATV

DEMs and DoDs

- Location: Grouse Street, Nags Head
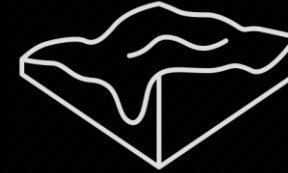- Time: August 2021 and March 2022

Expected results

(1) Lidar point cloud
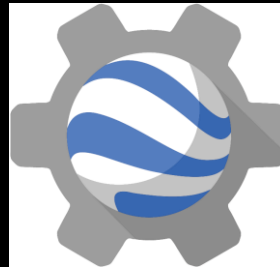
(2) Codes in GitHub

(3) Digital Elevation Models (DEMs)

(4) Data analysis

(5) GEE Apps

(6) Recommendations

Acknowledgements