



Low-Cost Method Using a Laser Level to Collect Pre/Post Storm Profiles to Estimate Sand Loss

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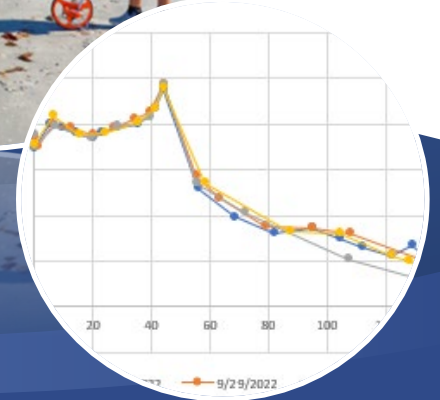
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FSBPA February 3, 2023

Outline

- **Equipment we use**
- **Methodology**
- **Site selection**
- **Results**



Equipment

1. Laser level

1. Spectra LL300N (\$844)

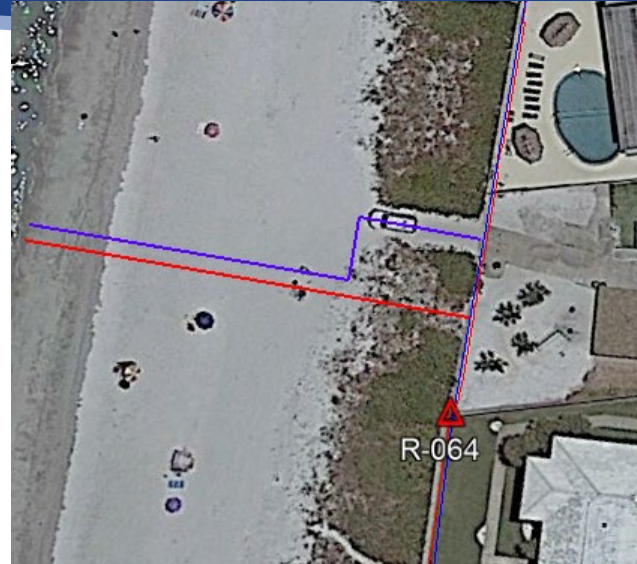
1. Used in construction
2. Range 1650 ft
3. Accuracy $\pm 3/32''/100\text{ft}$



2. Lufkin Measuring wheel

Methodology

1. Wheel is used along pathways and walkovers to avoid vegetation.
2. Wheel is visually aligned with the adjacent rod which is in the dune.
3. Readings are collected at changes in topography to create the profile
4. Once past the dune the wheel is picked up and moved over to the rod.
5. the lasers detector is moved up the rod until it indicates its level with the laser. Readings are written down
6. The receiver can get quite high and may require setting it to a specific height ex. 10 ft and adjusting the rod length inch by inch
7. Round values to tenths
8. Line of Site



After practice, the entire process takes about 15 min per profile



Site Locations

1. About 18 sites used
2. Spacing is variable but about 3000 ft
3. Not necessarily along profile lines or azimuths



Site Selection

1. Chosen based on
 1. Ease of access
 2. Proximity to project
 3. Known erosion hot spots
2. A non-movable benchmark is preferable
3. Elevation of BM does not need to be known



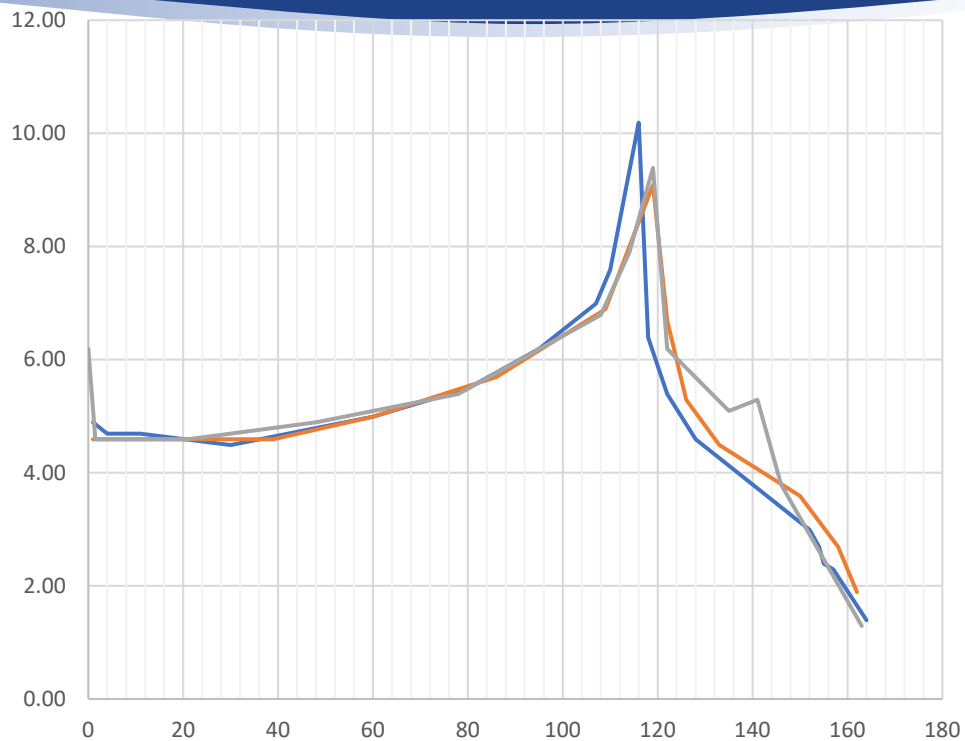


Be Careful of Wind

2 methods for Distance

1. Hypotenuse = wheeled distance
2. Horizontal = tape distance

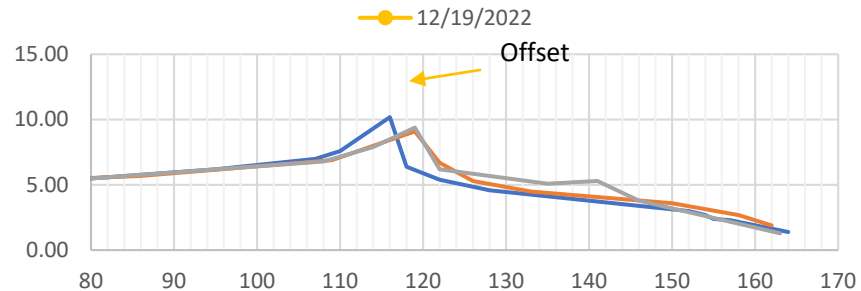
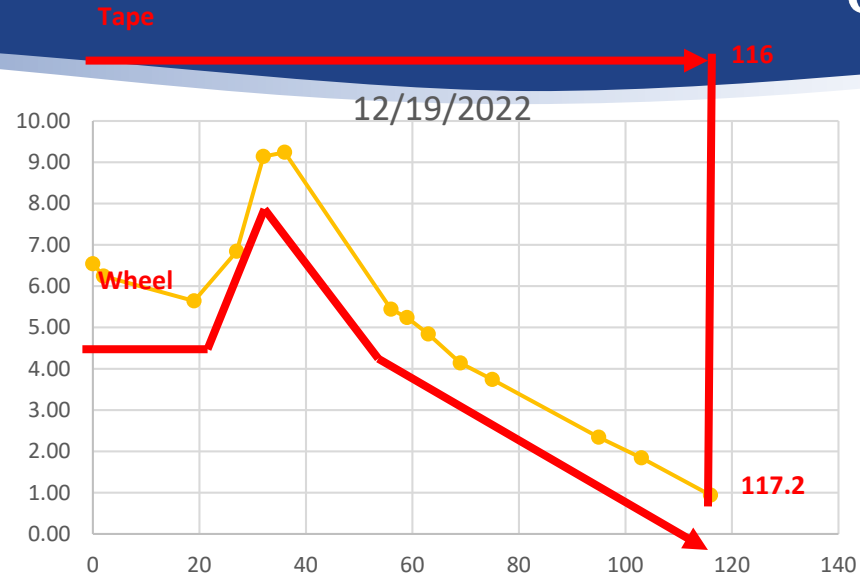
The tape pulled the stake over adding error to the measurements



Distance along slope vs horizontal distance

1. Sum of hypotenuses = 117.2 vs 116 measured
 1. In this 1 example Error is about +1ft/100ft

2. Accurate enough for internal reconnaissance level



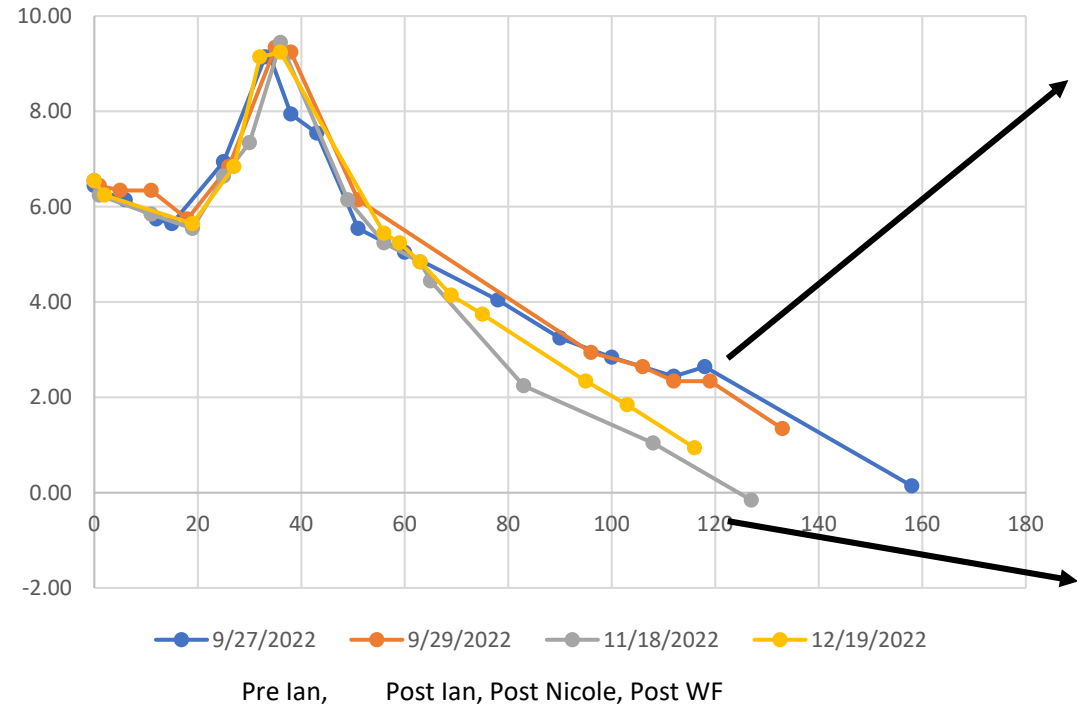
Pre Ian



R64

Post Nicole





Pre Ian

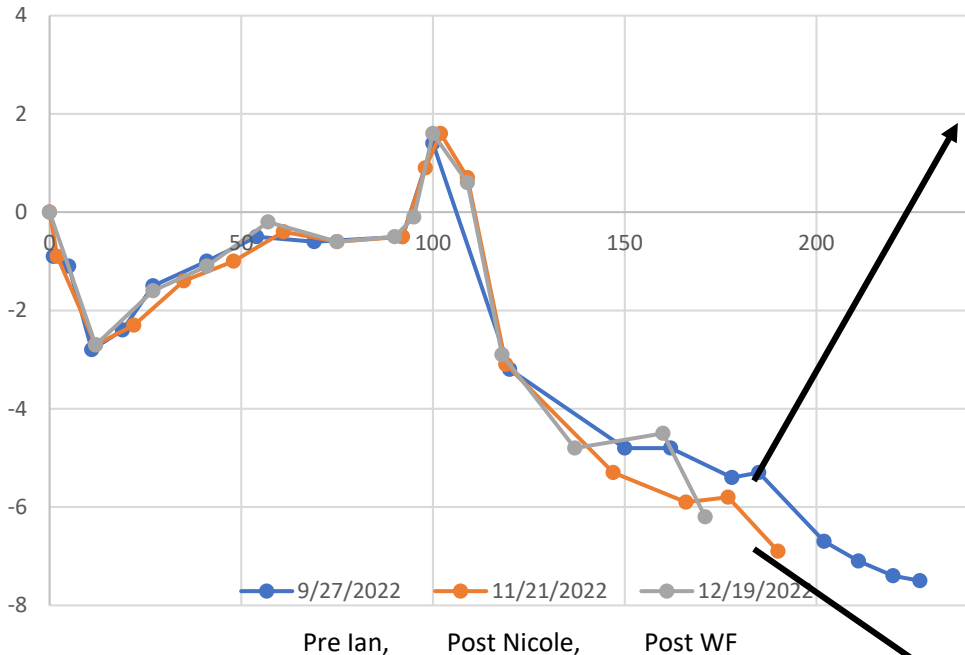


R74

Post Nicole



R74



Pre Ian

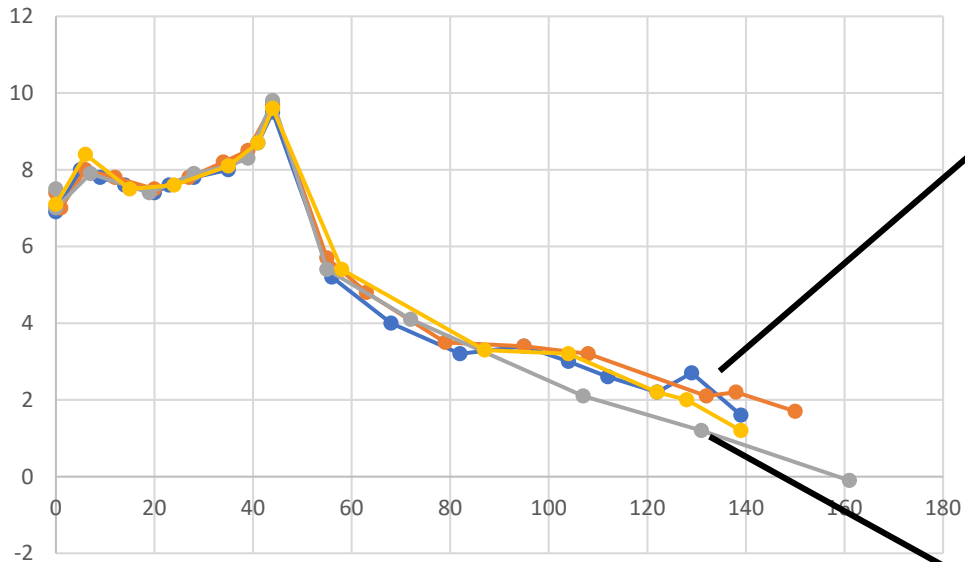


R84

Post Nicole



R84



● 9/26/2022 ● 9/29/2022 ● 11/18/2022 ● 12/19/2022
Pre Ian, Post Ian, Post Nicole, Post WF



Pre Ian

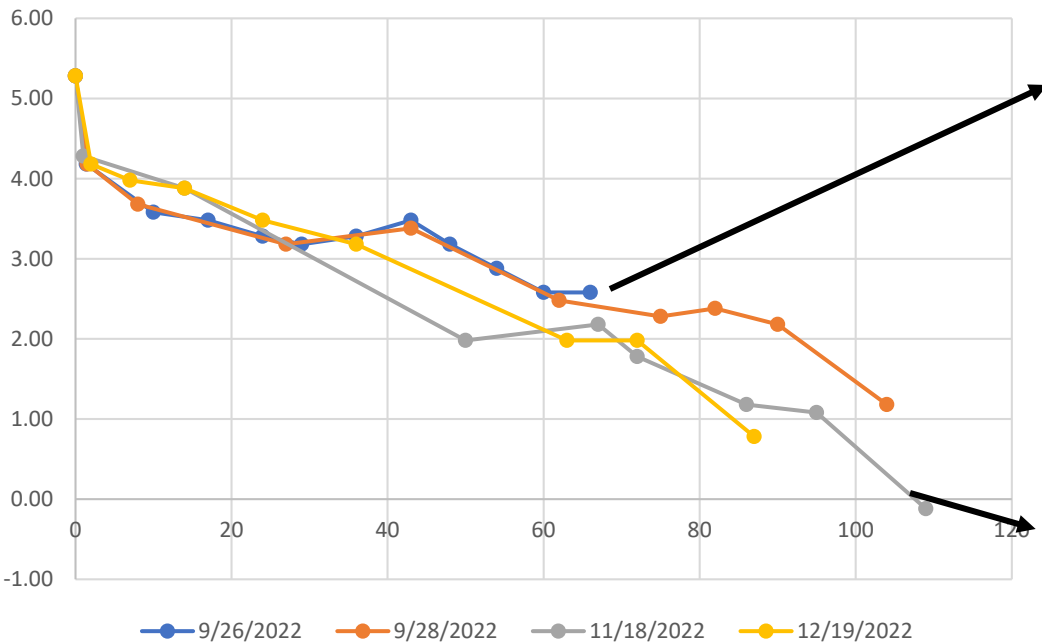


R107

Post Nicole



R107



Pre Ian, Post Ian, Post Nicole, Post WF



Pre Ian

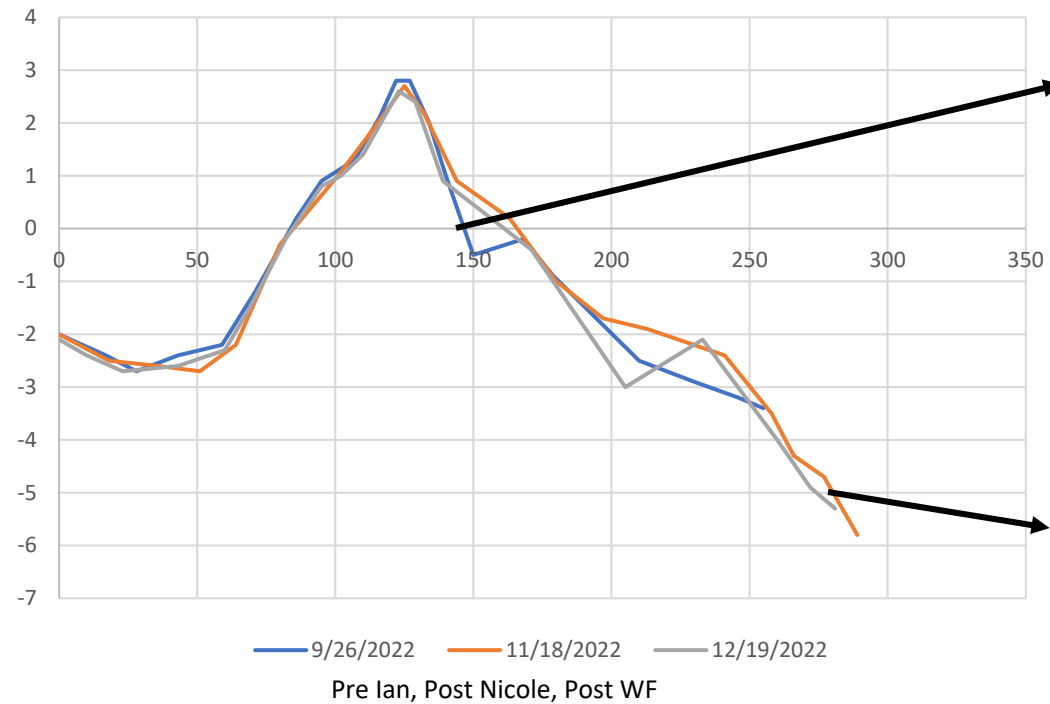


R127

Post Nicole



R127



Pre Ian

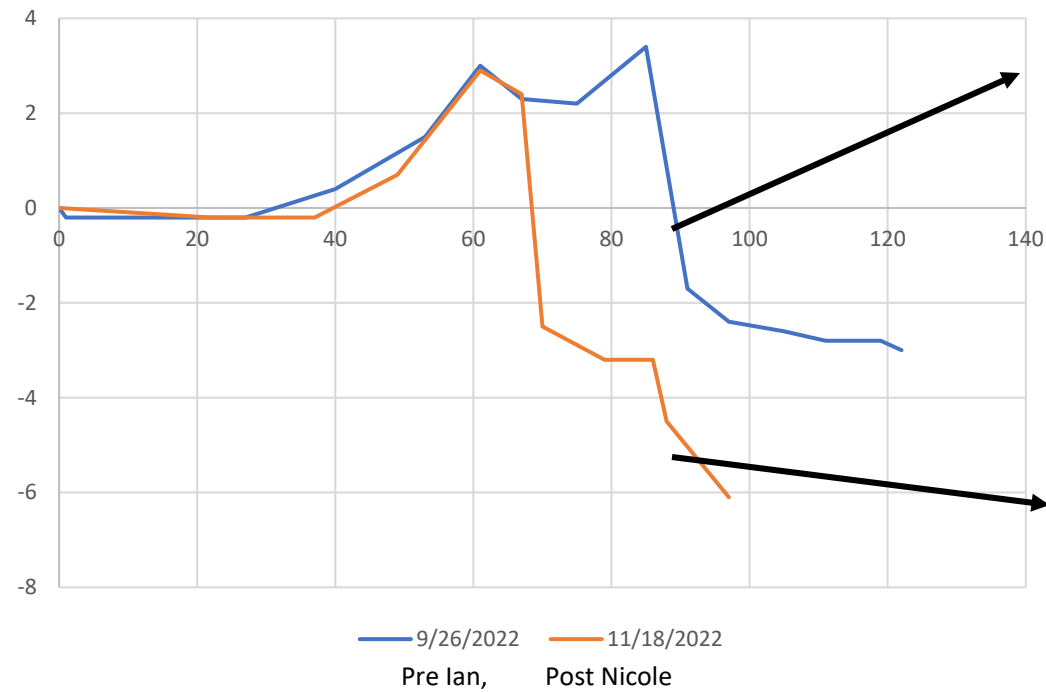


R140

Post Nicole



R140



Questions?

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