



## Education and Research: Testing Hypotheses

### Lesson Plan—Shifting Sands

*Laura Bischoff - EARTH Satellite 2016 - Beaufort*

#### Summary

After having reviewed information on past and present beach erosion along our certain areas of our Crystal Coast, you can see that our beaches and shorelines face an ongoing threat from natural and manmade sources. Human impact combined with global warming can speed up an otherwise natural process. Sand naturally shifts, but your help is needed in slowing and redirecting our shifting sands. Through real-time data we can project how are sands will shift and affect various stakeholders.

#### Key Concepts - [NGSS](#)

- **Study and analyze** real data and primary documents of past and present erosion of areas along the Crystal Coast.
- **Problem solve** a current issue through collaborative efforts.
- **Communicate** findings: presentation, graphing, artwork

#### Objectives

Students will be able to:

- **Observe** and **identify** shifting sands, erosion, of: Bird Shoal, Bulkhead Shoal, Ft. Macon over time
- **Record** real-time data over the course of the year using Drone technology
- **Demonstrate** the design process to solve real-world problem at a local community levels
- **Communicate** results through a collaborative presentation to “stakeholders,” graphs, and artwork.

#### North Carolina Essential Standards for Science:

- 6.E.2.4 Conclude that the good health of humans requires: monitoring the lithosphere, maintaining soil quality and stewardship.
- 6.RP.2 Understand the concept of a unit rate  $a/b$  associated with a ratio  $a:b$
- 6.RP.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
- 6SL.6.4 Present claims and findings
- 6SL.6.5 Include multimedia components to clarify information
- 6.V.3 Create art using a variety of 2-D and 3-D media, including digital
- 6.V2.3 Understand that original imagery is a means of self-expression used to communicate ideas and feelings

- 6.TT.1 Use technology and other resources for the purpose of assessing and organizing, and sharing information
- 6.RP.1 Apply a research process for collaborative or individual research
- 

#### Materials

- Google Earth
- Data from Drones - over the course of the year as able to assimilate
- Historical Documents and Records:
  - [Times-News article](#) - *Beaufort Remains Concerned About Erosion*
  - [Shift Our Sands](#) - Engineering Design Lesson Plan

#### Procedure

1. (to be completed)

#### Assessment

- **Performance—**
  - Understanding of being a stakeholder in the community
  - Understanding of global changes from both man and nature
  - Collaboration between students in problem solving
- **Product—**
  - Presentation to “local stakeholders” with erosion slowing designs
  - Artwork depicting change in Bird Shoals over time (What’s the Bigger Picture Combining Science and Art)
  - Graphing (line graph) of data
  - Culminating for unit/rate
- *Assessment rubrics that you would use in the classroom are also helpful*
  - [Shifting Sands Feasibility Report](#)

#### Additional Resources

Please list any Websites, books, publications, or other resources that would be helpful for teachers or students preparing for this lesson.