Home, Home on the Beach

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Objectives

1. To investigate the effects of storm wave action on man made structure on a beach or island.
2. To determine the best place to build an ocean front structure on an island.

Materials

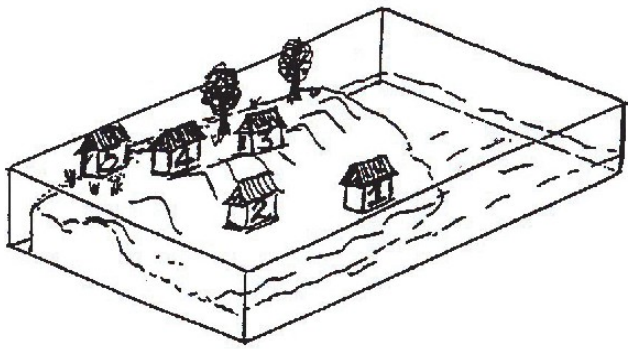
- 1 plastic container (large enough to build a barrier island in)
- 1 container (to add water)
- Sand
- Water
- A variety of materials to build structures with (shells, sticks, rocks, leaves, grass, straws, cardboard, etc.)
- A fan or hair dryer (to generate wind energy)

Background Information

See the Waves Fact Sheet (on the SECOORA website).

Procedure

1. Divide the class into five groups
2. In the plastic container, build a barrier island. Be sure to include a beach, dunes, and an area behind the dunes.
3. Using the materials provided:
   - Group 1: Build a structure on the beach
   - Group 2: Build a structure directly in front of the dunes



- Group 3: Build a structure on top of the dunes
- Group 4: Build a structure behind the dunes
- Group 5: Build a structure in the middle of the island

4. Fill the container with enough water to simulate the ocean.
5. With the fan/hair dryer, generate waves. Start with gentle waves and gradually increase the wave strength until they break on the dune line.
6. Record your observations of the effect of the waves on the sand, dunes and structures in the data table. *Note: if all five groups build structures in a single container, this step is unnecessary.*
7. Interview a member of each group and obtain information on what happened to their structure. Record this information in the data table.

Observations

Group	Location of structure or house on the beach/island	What happened to the structure during the storm?
Group 1		
Group 2		
Group 3		
Group 4		
Group 5		

Analysis

Use the information in your data chart and what you have learned to answer the following questions.

1. On what part of the island did you build your structure?

2. What types of materials did you use to build your structure?

3. Describe any damage that your structure received as a result of the storm.

4. How did your structure hold up compared to the other four?

5. On what part of the island was the structure located that received the least damage?

6. On what part of the island was the structure that received the most damage?

7. What factors probably resulted in the most damage to the structures?

8. What factors probably resulted in the least damage to the structures?

Conclusions

Describe what can happen to man-made structures built on or close to a beach on an island during a storm. Also, explain how the type of materials a man-made structure is made from and its location on an island affect the probability it will survive the force of waves during a storm.

Extension

Find news reports of damage to barrier islands from hurricanes. What caused the damage, wind, waves or storm surge? What structures survived the storm?