



Making Waves at the Beach

Background

Boston is home to many beautiful beaches, where you can swim, surf, play, or just lay in the sun! Wind and waves are constantly changing our beaches.

Climate change is causing more powerful and more frequent storms. What will this mean for Boston's beaches? How can we adapt to these new changes on our coast?

Supplies

- Plastic or waterproof bin, at least 6" deep
- Play sand, enough to create a beach in 1/4 of the bin
- Fresh water
- Miscellaneous building materials, including: pebbles or stones, sponges, pine cones, sticks, clay, etc. Be sure to include both hard and soft materials.
- Small model homes, trees, and/or animals.
- Spatula, paddle, or other flat tool.
- Towels for cleaning up any spills!

Guiding Questions

- What happens when there are slow waves?
- What happens when there are fast waves?
- What materials work best to protect the beach?
- What lessons can we learn from using this model?



Making Waves at the Beach

Instructions

- Make a model beach in your waterproof bin by adding sand to one side. Shape it however you'd like!
- Add water to the bin, just enough so that half of the beach is underwater.
- Create your seaside community by adding model homes, trees, animals, etc.
- Use your spatula or other flat tool to create small, slow waves in the water. Observe any changes to the beach. Does the sand move? How high does the water reach? Was your community affected?
- Now create stronger waves. Observe again: does the sand move? Was your community affected?
- Move the sand back to re-create your beach and community.
- Use your different building materials to create protection for your beach community. Once you've landed on a design, test it by creating waves.
- Keep trying new designs to try and create the best protection for your beach.
- Share with friends or family what you discovered. What kinds of materials worked best? How could we apply these lessons to the real world?

Resources

- Explore over 150 years of sea level in your region from NOAA. Search for "NOAA Tides and Currents" to find public databases.
- Read about Boston's plans for adapting to sea level rise by searching for "Climate Ready Boston" online.



Making Waves

Frequently Asked Questions

What are nature-based approaches??

- One of the many ways that we can protect our coastlines is by using nature-based solutions. Nature-based approaches use both human and natural strategies to protect, enhance, or restore communities to benefit all.

What are some examples of nature-based approaches??

- Nature-based solutions focus on using nature to restore social-ecological systems. One great example of this is the restoration of salt marshes. Salt marshes are the grassy flood lands of the ocean - and they are great at holding sediment together, while also absorbing water.

Do each of the materials in this activity represent a nature based approach?

- Each of our materials represent a real-world approach, some nature-based and others not. As you go through the activity you'll notice that some approaches work better than others - just like the real world! Here's a breakdown of some of our inspiration:
 - Rocks represent solid infrastructure like cement, or well... rocks!
 - Burlap and coconut fiber are used to control erosion.
 - Sponges represent salt marshes, for their ability to absorb water.
 - Try out other things like corks, pinecones, and more - use your imagination to experiment with new materials!

How can I learn more about nature-based approaches to coastal resilience and restoration?

Scan the QR code to visit our website, and subscribe to our newsletter to stay updated on ways to get involved with our research and programs.



Measuring Change at the Beach

Boston is home to many beautiful beaches, where you can swim, surf, play, or just lay in the sun! Wind and waves are constantly changing our beaches.

Climate change is causing more powerful and more frequent storms. What will this mean for Boston's beaches? How can we adapt to these new

changes on our coast?



Use this model to show how waves affect the beach!

What happens when there are slow waves?

What happens when there are fast waves?

What can we use to try to protect the beach?



Stone
Living Lab



