

# RISING WATERS

## Pre-Visit Answer Sheet

### Pre-Visit Activity 1

#### Storm Surge

1. Which hurricane have you lived through had the largest impact on your community?
2. What were the short-term impacts of the storm on your community?
3. Are there any lingering impacts from the storm?
4. Has storm surge impacted your home? If not, have you seen it impact your community? How?
5. Imagine a hurricane is two days away, and you want to predict how high the water will be at your home. What information do you need for your prediction?

#### Storm Surge Factors

6. Which factors are most important for storm surge? Are there other factors not mentioned here that could also impact storm surge?
7. Based on these factors, which parts of the North Carolina coast are most vulnerable to storm surge?

### Pre-Visit Activity 2

#### Computer Models

1. What does SLOSH stand for? What does ADCIRC?
2. What are the strengths and weaknesses of SLOSH and ADCIRC?
3. If a hurricane was approaching your home, then which model would you trust?

#### North Carolina Factors

4. Where did the storm make landfall? Find a NOAA nautical chart for this location, and use it to determine an average depth and shelf width.

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5. What was the storm's category at landfall? Use the hurricane wind scale to determine a wind speed for your storm.
6. What are the possible errors in the values you obtained?

## Pre-Visit Activity 3

### Mathematical Model for Storm Surge

1. For the example during Hurricane Florence, the simple model was too high by about 0.5 m. Is this a good prediction? Why or why not?
2. For the example during Hurricane Florence, how can we improve our input factors to get a better prediction? If we use a different value for the average depth, then will the prediction be better or worse?
3. For the storm you selected in the previous section, and using the input factors you found for that storm, predict the storm surge at the coast. Do you believe your answer?
4. Would you trust this simple model for a storm approaching your home?
5. If you could add one more input factor to this simple model, what would it be and why?

## Pre-Visit Activity 4

### Model Home Adaptations

1. How did your house do in the initial wave test when the waves were smallest and the winds light?
2. When the waves and winds increased how did your housing model do?
3. Seeing the success of your model, what would you do to increase its ability to survive storm surge and high winds?
4. Based on your experience, what can be done to homes currently in flooding prone areas? What kind of adaptations can be used on existing homes?