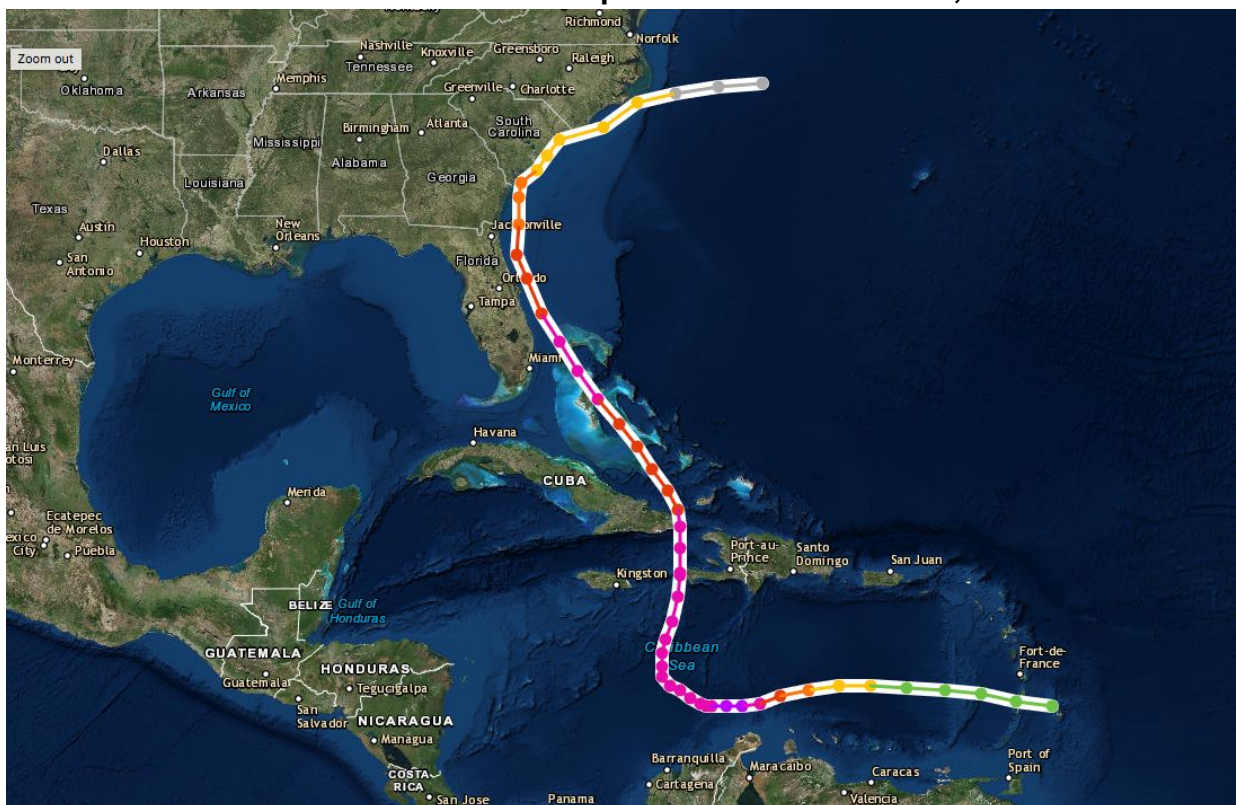


## Path of Hurricane Matthew September 28 – October 9, 2016



### Category Legend:



### Progression of Matthew

Date	Category
September 28, 2016	TS
September 29, 2016	H1
September 30, 2016	H2-H4
October 1, 2016	H5-H4
October 5, 2016	H3
October 6, 2016	H4
October 7, 2016	H3
October 8, 2016	H2-H1
October 9, 2016	ET



[Saffir-Simpson Hurricane Wind Scale](#)

**Description of Damage Associated with Categories of Hurricanes**

Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	74-95 mph 119-153 km/h	<b>Very dangerous winds will produce some damage:</b> Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110 mph 154-177 km/h	<b>Extremely dangerous winds will cause extensive damage:</b> Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 (major)	111-129 mph 178-208 km/h	<b>Devastating damage will occur:</b> Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4 (major)	130-156 mph 209-251 km/h	<b>Catastrophic damage will occur:</b> Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5 (major)	157 mph or higher 252 km/h or higher	<b>Catastrophic damage will occur:</b> A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

## Student Datasheet

Name: \_\_\_\_\_

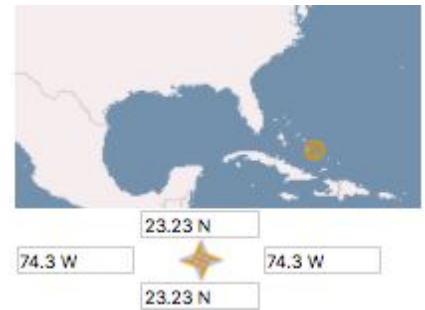
Date: \_\_\_\_\_

### Hurricanes as Heat Engines

#### Part A: Looking at the Data

Examine the three data sets of Daily Sea Surface Temperature (SST) for October 4, 2016, October 8, 2016, and October 12, 2016 and describe your observations and inferences to the questions below in your science journal.

1. What evidence of lowered sea surface temperature (SST) do you observe in the map visualizations?
2. Examine the Line Graph: What effect do you observe regarding the temperature in the line plot after the hurricane passed?
3. How long did it take for the SST to return to the previous temperature?
4. What conclusion can you make about the the relationship of hurricanes and the ocean?
5. What other spheres besides the Atmosphere and Hydrosphere are affected?



**Part B: Going Further** Using the same procedure, examine the SST data during and after Hurricane Harvey 2017, Hurricane Irma or any of the historical hurricanes from an area near where you live.

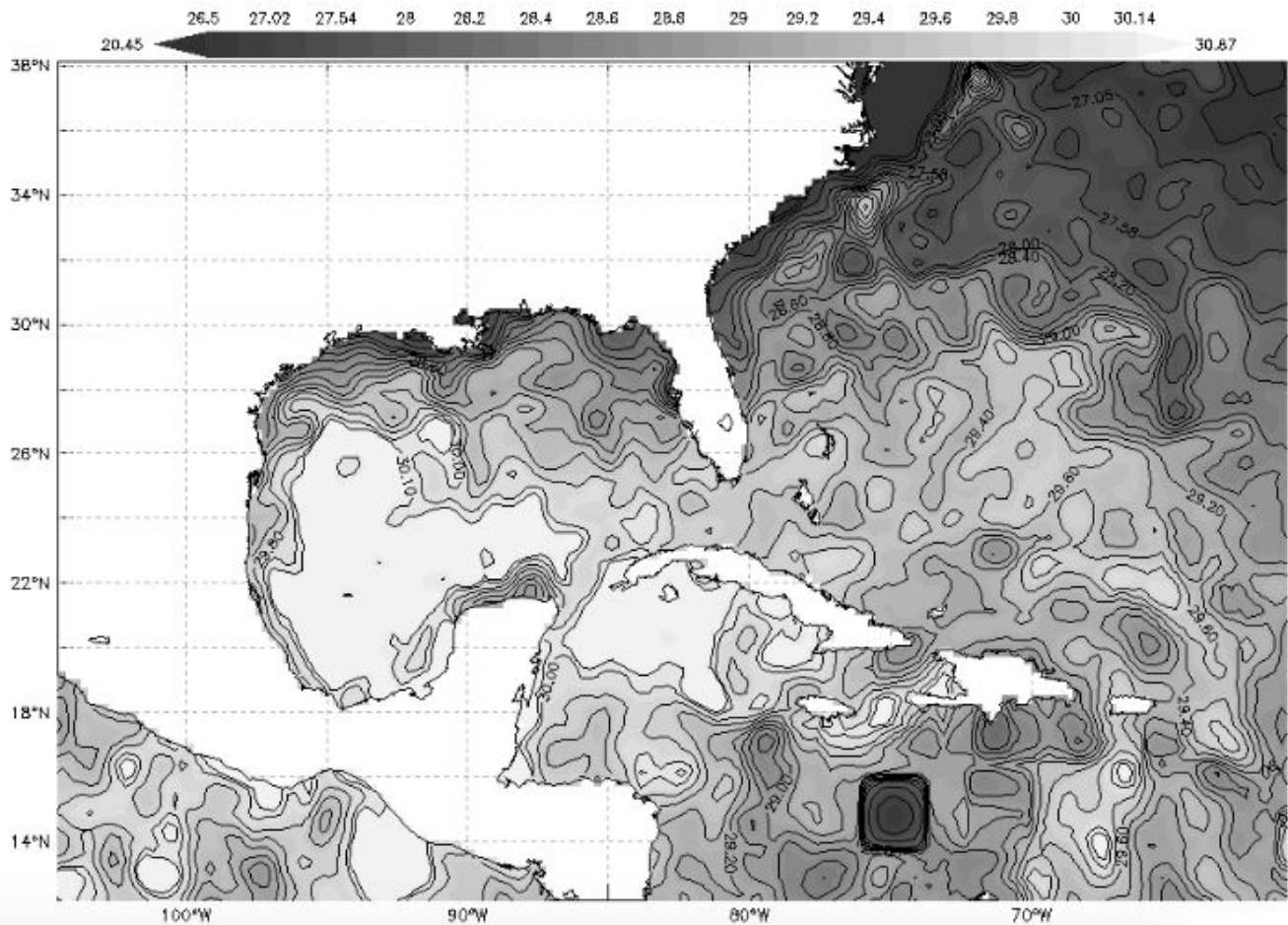
**Data Sources:**  
My NASA Data:  
<https://mynasadata.larc.nasa.gov/>  
CYGNSS Mission:  
<https://www.nasa.gov/cygnss>

1. Name of Hurricane:
2. Date of landfall:
3. How is SST affected by the hurricane that you selected?
4. What effect do you think these differences in the Hydrosphere might have on other spheres of the Earth system?
5. Pose three questions that you might have for further research, in the table below. Identify the types of data that would needed to explore these questions.

New Research Question	New Datasets Needed to Explore this Question
1.	
2.	
3.	

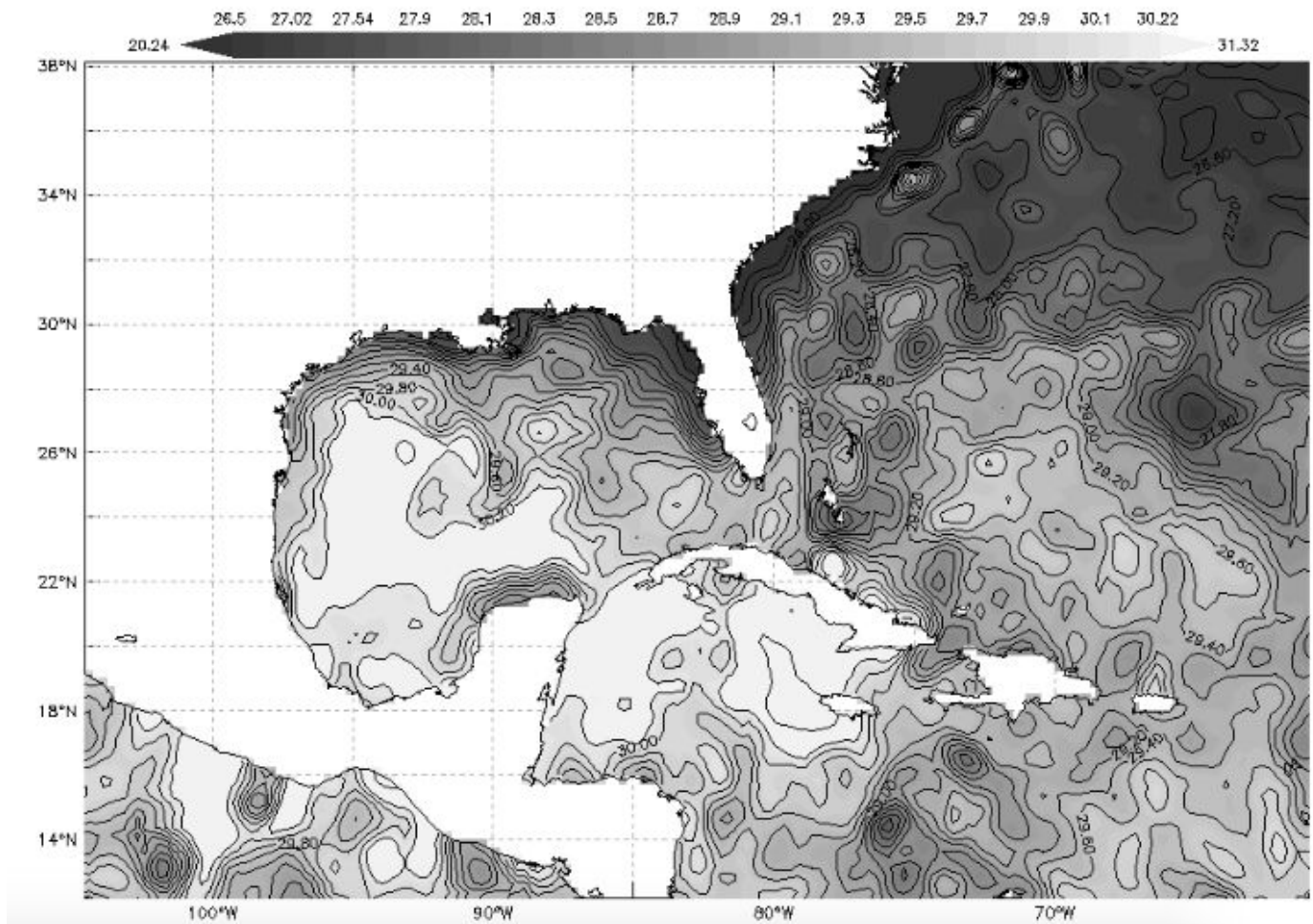
## Daily Sea Surface Temperature, Oct. 4, 2016 (Celsius)

## Data Visualization



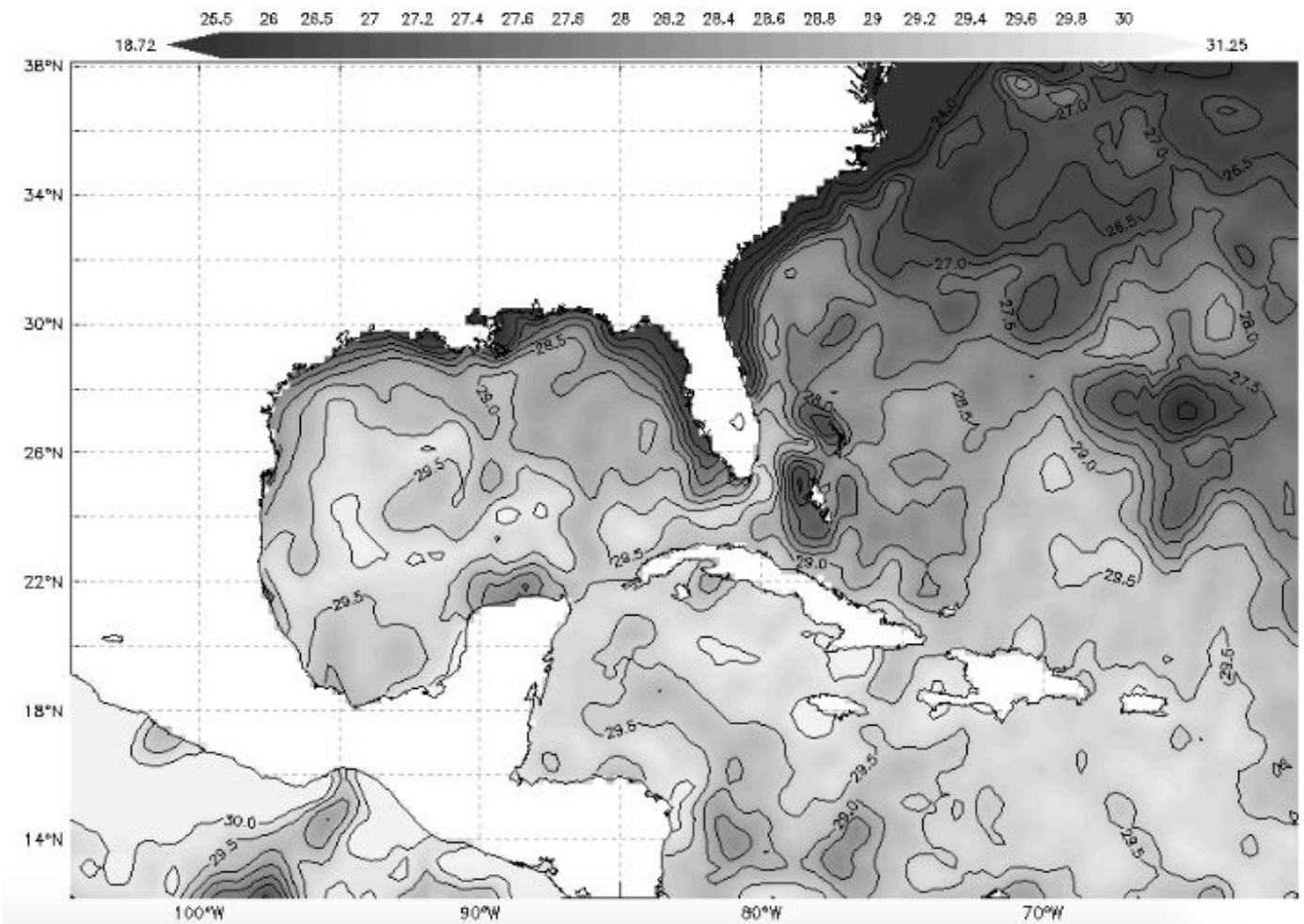
## Daily Sea Surface Temperature, Oct. 8, 2016 (Celsius)

## Data Visualization



## Daily Sea Surface Temperature, Oct. 12, 2016 (Celsius)

## Data Visualization





## Sea Surface Temperature October 1-16, 2016 (Celsius)

## Line Graph of Data

