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## Storm Tracker Activity

In this activity, students will monitor the path a storm takes, as well as, keep daily records of its progress for one week. Students will also monitor the tower cameras from LUMCON's DeFelice Marine Center located in Cocodrie, Louisiana to see the impacts of the storm surge, winds, and flooding on the coast as they happen. Students can then choose to enter data will into a collective file containing results submitted by other students that is publicly available.

### How to get started:

1. Locate a current storm that has been identified as an Invest, Tropical Depression, Tropical Storm, or a Hurricane anywhere in the Gulf of Mexico, Caribbean Sea, or Atlantic Ocean.
2. Visit the [National Hurricane Center's Hurricane Monitoring \(NHC\)](#) webpage to view the current location of the storm. This page will also display other information about the storm such as: Name, category, coordinate location, movement direction and speed towards land, minimum central pressure, and maximum sustained wind speeds.
3. For Part 1, use the map provided to keep daily records of the storm's location as it advances towards land (no need to be precise, a general location is fine). Then use the table for daily records of the storm's progress (here is where you can keep precise records of the location of the system using information from the NHC).
4. For Part 2, use [LUMCON's Weather Cameras](#) to monitor daily changes of the area from each direction at LUMCON's DeFelice Marine Center as the system approaches. Describe in the spaces provided any significant observations such as flooding, wind damage, debris, or human activity around the building before, during, and after the storm. Feel free to use drawings can also be done to report changes.

### Introduction:

Tropical depressions, tropical storms, and hurricanes are extreme weather events that form annually in the warm tropical waters of the Gulf of Mexico, Caribbean Sea, and Atlantic Ocean. As they move towards land, these organized meteorological events bring storm surges, large waves, heavy rains, and fast winds that pose a great threat to life and property in coastal areas. The official hurricane season lasts from June 1 to November 30 each year, however in the year 2020 there had already been 3 named storms by June 2. To help track of the potential destructive forces of large storms the Saffir-Simpson Hurricane Wind Scale was created. This scale allows storms to be categorized from a of Category 1 to Category 5 (the higher the number the more severe a storm event is). Major hurricanes are a Category 3 or higher.

Storm events have marked major points in human history. So much so that there is folklore, or stories, describing conditions that provide storm warnings in hopes of guiding the sailors to safety. Common warnings included: seagulls lingering on the land meant bad weather was imminent; sparrows hiding under hedges or roof ledges meant a hurricane was forming; and if a cow carried its tail upright then there may be a hurricane already on the way. No doubt there could be some basis for these claims. Thankfully, 21<sup>st</sup> century technology helps to monitor storms more accurately and precisely from dry land.

Storms come in all shapes and sizes. Each storm can have different levels of impact depending on those traits. A fast-moving storm could lose energy quickly once it makes landfall and weakens relatively fast. Alternatively, slow-moving storms could have the potential for massive flooding and sustained wind damages because they linger for a long period of time in the same location. LUMCON's DeFelice Marine Center in Cocodrie, Louisiana has gone through all kinds of storms and experienced a wide range of these impacts. A few of the storms to note that have hit the marine center include:

**Lili:** Category 1 (at landfall). September 23-October 3, 2002. Hurricane Lili made landfall on October 3, 2002 near Intercoastal City to the west of the DeFelice Marine Center. Lili became the second strongest storm of that season causing the deaths of 15 people and significant damage through the Caribbean and the United States. At the Marine Center, high winds resulted in a large storm surge that resulted in extensive flooding to the downstairs lobby and property. Click [this link](#) to watch a video that was taken near the time of landfall at the Marine Center.

**Katrina:** Category 5 hurricane. August 25-31, 2005. Lowest pressure of 902mbar. Highest sustained winds of 175mph. Made landfall near Buras, Louisiana, about 140 miles East of the marine center. This storm produced heavy winds and rain at the marine center, but surprisingly little flooding. Although there was not much downstairs flooding, wind damages were considerable to LUMCON's roof and was followed by interior water damage to dormitories, apartments, cafeteria, finance, and library areas. This storm also destroyed the LSU/LUMCON hypoxia observing system located offshore of Terrebonne Bay. Estimated damages to the marine center totaled over \$1 million. [Click here](#) to see images of the impacts at the Marine Center.

**Rita:** Category 5 hurricane. September 18-26, 2005. Lowest pressure of 895mbar. Highest sustained winds of 177mph. Made landfall near Johnson's Bayou, Louisiana, about 180 miles West of the marine center. Rita hit South Louisiana less than one month after being devastated by Hurricane Katrina. With a tidal surge of over 20 feet, Rita put floodwaters of three feet above the LUMCON Marine Center slab and into the ground floor along with mounds of marsh grass debris. Several observing systems were damaged and the downstairs fisheries laboratory of Dr. Ed Chesney was damaged from flooding and lack of electricity. LUMCON's environmental monitoring system continued to record at Tambour Bay, Audubon Park, and the LUMCON Marine Center with the exception of wind speed in Cocodrie. The other stations at Southwest Pass and Lake Pontchartrain were either damaged, lost communications, or both. [Click here](#) to see images of the impacts seen at the Marine Center.

**Gustav:** Category 4 hurricane. August 25-September 7, 2008. Lowest pressure of 941mbar. Highest sustained winds of 155mph. Made landfall just Southwest of New Orleans, Louisiana, about 70 miles Northeast of the marine center. The eye wall of Gustav crossed the Cocodrie Marine Center with 157 mph wind gusts. The effects of the two storms, Gustav and Ike, were similar to a single Hurricane Andrew in 1992 in terms of wind and water damage. As a result, many research projects suffered setbacks and required time to recuperate and rebuild. The importance of Barrier Islands for protection against flooding and storms was dramatically demonstrated during the 2005 hurricane season with Katrina and Rita, and were further demonstrated with Hurricanes Gustav and Ike in 2008.

**Ike:** Category 4 hurricane. September 1-15, 2008. Lowest pressure of 935mbar. Highest sustained winds of 145mph. Made landfall near Galveston Bay, Texas, about 280 miles West of the marine center. At the time, Ike brought the highest flooding, about 4.8 feet above the buildings floor, and worst inundation of mud since the completion of the marine center in 1986. Ike made worst the damages done to the center by hurricanes Katrina and Rita in 2005. Damages caused the marine center to shut down due to lack of water and electricity from August 30-September 24, 2008. As a result, many research projects suffered setbacks.

**Barry:** Category 1 hurricane. July 11-16, 2019. Lowest pressure of 993mbar. Highest sustained winds of 75mph. Made landfall near Intracoastal City, Louisiana, less than 100 miles West of the marine center. Winds from Barry were not strong enough to do significant damage to the marine center, however the storm surge pushed roughly 6 feet of water into the marine center. Once the flooding subsided, it left behind several inches of mud across the entire property which took several days to clean. Barry also caused the LUMCON Field Marine Science 2019 camp to be cancelled for the summer. [Click here](#) to see images of the impacts seen at the Marine Center.

**Zeta:** Category 3 hurricane. October 24-29, 2020. Lowest pressure of 970mbar. Highest sustained winds of 115mph. Made landfall near Ciudad Chemuyil, Mexico and later near Cocodrie, Louisiana where the DeFelice Marine Center is located. Winds from Zeta only resulted in minor damage around the Marine Center property, however the storm surge damaged boardwalks and docks, dislodged elevated structures, and left behind huge quantities of dead vegetation that took several days to clear away. [Click here](#) to see a video of the Marine Center when Hurricane Zeta made landfall.

#### *Resources:*

If you are interested in learning more about topical systems including hurricanes you can visit these websites.

- NASA Space Place website at <https://spaceplace.nasa.gov/hurricanes/en/>
- National Oceanic and Atmospheric Administration at <https://www.noaa.gov/education/resource-collections/weather-atmosphere/hurricanes>
- National Geographic at <https://video.nationalgeographic.com/video/101-videos/00000165-c429-de15-afef-c73da3c90000>

# Hurricane Storm Tracker-Part 1

Using the map below, label the location and category of a storm daily for one week (or more). Begin tracking as it forms, then continue as it progresses toward land, and after it makes landfall. Be sure to include the date/time and category of storm at each location on the map. A table is included to keep record of various attributes related to the storms daily progress. The storm's progress can be found on the [National Hurricane Center's Hurricane Monitoring](http://www.nhc.noaa.gov) webpage.



<b>STORM NAME</b>							
<b>DATE</b>							
<b>STORM CATEGORY</b> (Invest, TD, TS, H1-5)							
<b>LOCATION</b>							
<b>MOVEMENT</b> (N, S, E, W @ mph)							
<b>MINIMUM PRESSURE</b> (mb)							
<b>MAX SUSTAINED WINDS</b> (mph)							

# Hurricane Storm Tracker-Part 2

Using the [LUMCON Weather Cams](#), draw and describe in the blank boxes any significant observations relating to the storms impact. Screenshots can also be taken of the camera views in place of illustrations. Observations could include the calm before the storm as well as flooding, storm surges, wind gusts, and other destructive forces as the storm approaches, hits, and passes LUMCON's DeFelice Marine Center in Cocodrie, Louisiana. Be sure to include the date and time as well as which camera is being monitored (North, South, East, or West).

**Date/Time:**  
**Camera:**  
**Observations:**

**Date/Time:**  
**Camera:**  
**Observations:**

**Date/Time:**  
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**Date/Time:**  
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**Additional Notes or Observations:**

**Date/Time:**  
**Camera:**  
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**Additional Notes or Observations:**