

TIDE-1220

New Orleans & Hurricanes

Tulane University

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Hurricane Exercises

Fall 2011

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Answers to the questions in this exercise should be typewritten using at least a 12 point font.

1. Click [HERE](#) to download and print a hurricane tracking map to be used for this exercise. In order to view and print this file you will first need to obtain the Adobe Acrobat reader. Be sure to set your printer to print this file in Landscape mode.
 - a. Once you have the tracking map, plot the following hurricane coordinates for Hurricane Mala on the map. Note that the coordinates refer to the position of the center of the eye of the hurricane. At each latitude and longitude also write the wind velocity in red and the storm center velocity in blue. Make sure you write them as small as you can and still read them. **(3 points)**

Track of Hurricane Mala					
Date	Time	Latitude (N)	Longitude (W)	Max Wind Velocity (miles/hr)	Storm Center Velocity (miles/hr)
Sept. 3	12:00 PM	10.3	26.9	41	8
Sept. 4	12:00 PM	11.0	33.1	43	8
Sept. 5	12:00 PM	12.2	39.4	52	8
Sept. 6	12:00 PM	13.6	45.8	66	8
Sept. 7	12:00 PM	15.2	52.9	74	6
Sept. 8	12:00 PM	16.8	59.5	76	10
Sept. 9	12:00 PM	19.1	64.7	77	12
Sept. 10	12:00 PM	21.2	68.1	88	10
Sept. 11	06:00 AM	21.2	70.0	110	15
Sept. 11	06:00 PM	21.2	74.0	128	15
Sept. 12	06:00 AM	22.0	78.0	135	18
Sept. 12	06:00 PM	23.0	80.0	144	18
Sept. 13	06:00 AM	24.0	84.0	155	18
Sept. 13	06:00 PM	25.0	86.0	160	15
Sept 13	09:00 PM	26.0	87.0	166	20
Sept.14	03:00AM	28.0	89.0	166	20
Sept. 14	06:00 AM	28.5	88.0	167	18
Sept 14	12:00 PM	28.5	84.0	165	20
Sept. 14	06:00 PM	28.5	83.0	155	15
Sept. 15	01:00 AM	28.5	81.5	135	15
Sept 15	06:00 AM	30.0	80.0	135	15
Sept. 15	12:00 PM	33.0	79.0	135	20
Sept 15	06:00 PM	34.0	78.0	133	25
Sept. 16	00:00 AM	35.0	77.0	135	30
Sept. 16	06:00 AM	37.0	76.0	110	35
Sept. 16	12:00 PM	38.0	75.0	105	38
Sept. 16	6:00 PM	39.0	73.0	65	35

- b. After you have plotted all of the points on the map, connect the points with lines using the following color codes: **(2 point)**

Wind Velocity (miles/hr)	Safir-Simpson Scale Category	Minimum Storm Surge Height near Landfall (feet)	Line Color
39-73	Tropical Storm		Black
74-110	1 - 2	4 - 8	Green
111-130	3	9 - 12	Blue
131-155	4	13 - 18	Orange
>155	5	>18	Red

Note that information to help answer these questions that follow is contained in your lecture notes. **Make sure you turn the map in with your homework.**

- c. What was the likely minimum height of the storm surge at Tampa Florida on the afternoon of Sept 14? **(1 point)**
- d. What were the maximum sustained winds at Tampa Florida during the evening of Sept 14? (Be sure to take into account both wind velocity and storm center velocity) **1 point)**
- e. What were the maximum sustained winds on the Florida Gulf Coast at 29.0 North latitude during the evening of Sept 14? **(1 point)**
- f. As the Hurricane crossed Florida between Tampa and Orlando it lost intensity. Explain why this is occurred. **(1 point)**
- g. Describe what the weather would have been like in Disney World (Orlando, Florida, 28.5°N, 81.5°W) at **exactly** 1:00 AM on Sept. 15. **(1 point)**
- h. What would have been the maximum sustained wind speed at Charleston, South Carolina as the Hurricane passed by there on Sept. 15? **(1 point)**
- i. Hurricane tracks can be described as coast-normal and coast-parallel. What kind of track did the storm take with respect to the west coast of Florida during most of the day on Sept. 14? What kind of track did the storm during the afternoon of Sept. 15? **(1 point)**
- j. What would have been the minimum storm surge at Wilmington, North Carolina just before the storm hit there? **(1 point)**
- k. New Orleans is located at 30° North Latitude, 90° West Longitude. What would the National Hurricane Center have been saying about New Orleans after the report of the hurricane's location and storm center velocity on Sept. 14 at 03:00 hours? **(1 point)** What would have been the wisest thing you could have possibly done if you were living in New Orleans at this time? Why? **(1 point)**

1. In the year Hurricane Mala occurred, how many named tropical storms/hurricanes had occurred in the Atlantic prior to this storm? **(1 point)**
2. Visit the National Hurricane Center web site at: <http://www.nhc.noaa.gov/>, Find the answers to the following questions (hint - many, but not all, answers can be found in the Frequent Questions section):
 - a. List the 10 Hurricanes that have caused the most deaths in the **United States** since 1900. Give the estimated death toll for each. **Make sure you only include hurricanes since 1900 (1 point)**
 - b. List the top ten hurricanes that have been the most costly in the U.S. between 1900 and 2010. Give the name of the storm, states affected, year of the storm, and dollar amounts **in 2010 dollars** (2010 deflator) for each **(1 point)**
 - c. During a hurricane are you supposed to have the windows and doors on the storm side closed and the windows and doors on the lee side open? Explain your answer. **(1 point)**
 - d. In the southern Atlantic Ocean, hurricanes are almost non-existent. What reasons can you find for this? **(1 point)**
 - e. Why do hurricanes hit the East coast of the U.S., but not the West coast? **(1 point)**
 - f. Has a hurricane ever hit the west coast of the United States? If so, where, and when what are the implications of this considering the earth appears to be undergoing a warming cycle? **(1 point)**
 - g. What are the chances (probability) that New Orleans will receive a direct hit from a hurricane or tropical storm in any given year? **(1 point).**
 - h. Which location in the United States has the highest probability of direct hit from a hurricane or tropical storm in any given year? **(1 point)**
 - i. What parts of a tropical cyclone are most favorable to the formation of tornadoes? **(1 point)**
3. Hurricane Irene recently impacted the east coast of the United States. Although not all information on damages and deaths is yet available, use the internet to find the latest information and answer the following questions.
 - a. What is the estimated cost of this event and how does it compare to other hurricanes that have struck the U.S.? **(1 point)**
 - b. What is the latest death toll for this storm? **(1 point)**
 - c. How accurate was the forecast path and forecast intensity for this storm? **(1 point)**
 - d. What was the major cause of damage as a result of Hurricane Irene? Did people expect this? **(2 points)**

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