ANSWER KEY

HURRICANES

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Document Contents:

Table 1A.

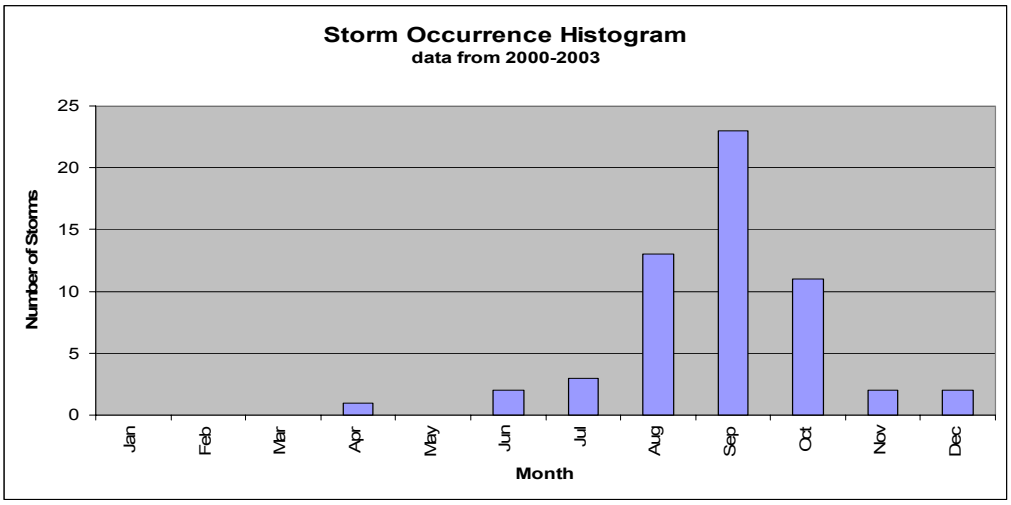
Occurrence Summary (beginning date)	
Month	# of Storms
Jan	0
Feb	0
Mar	0
Apr	1
May	0
Jun	2
Jul	3
Aug	13
Sep	23
Oct	11
Nov	2
Dec	2

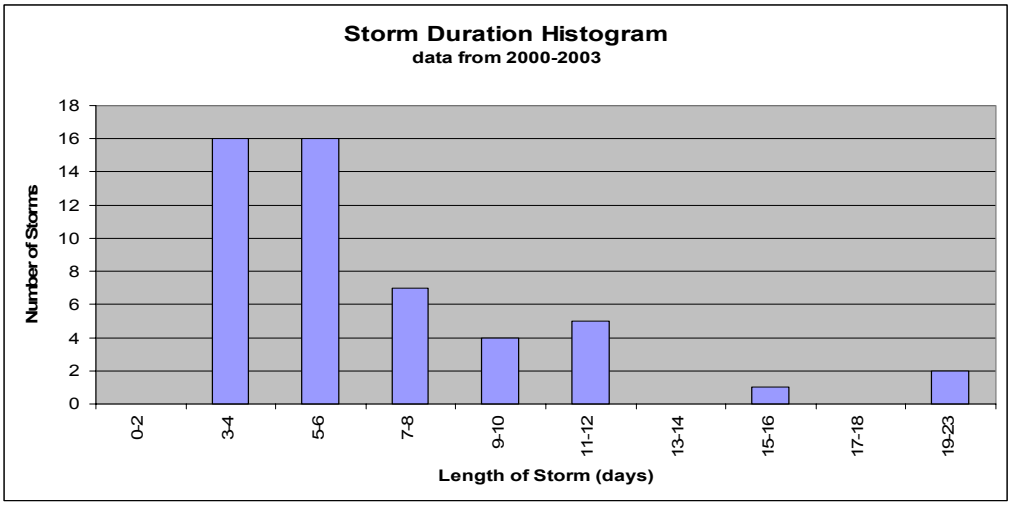
Table 1B.

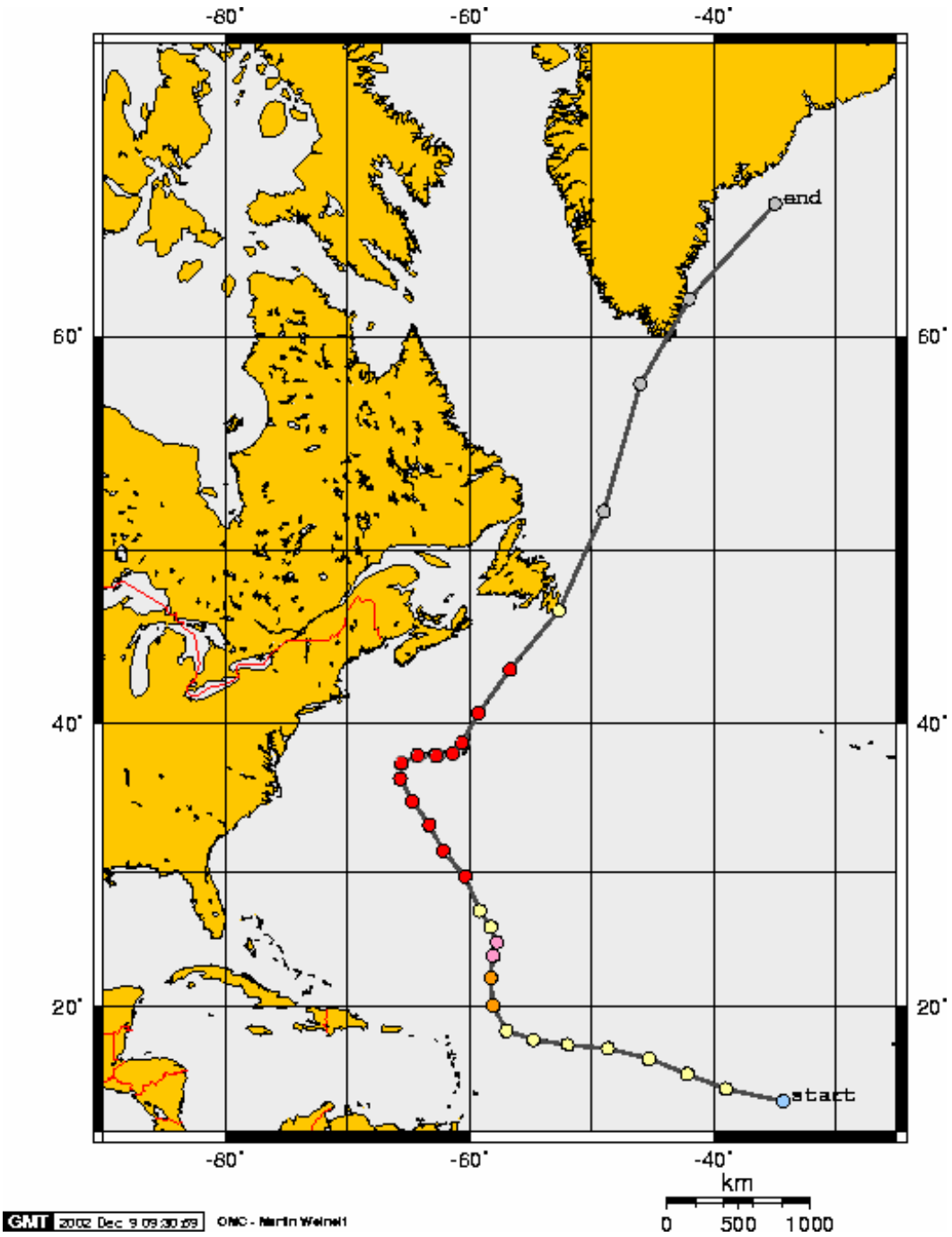
Duration Summary	
Length (days)	# of Storms
0-2	0
3-4	16
5-6	16
7-8	7
9-10	4
11-12	5
13-14	0
15-16	1
17-18	0
19-21	2

Table 1C.

Storm Statistics (2000-2003)		
Longest (days)	Average Length (days)	Average Number per year
23	8	13

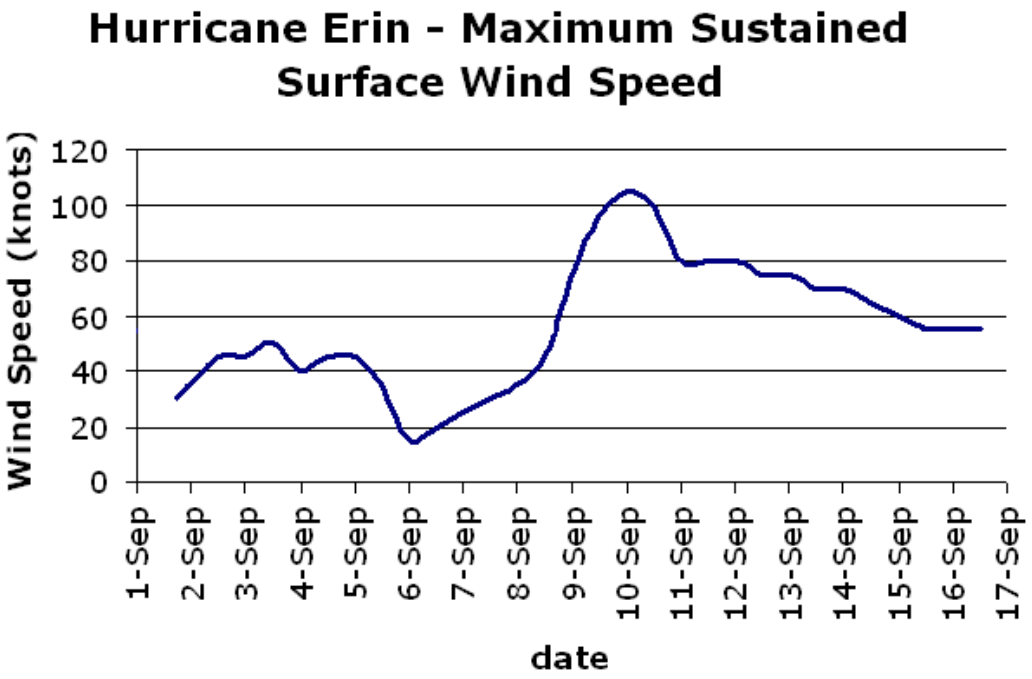


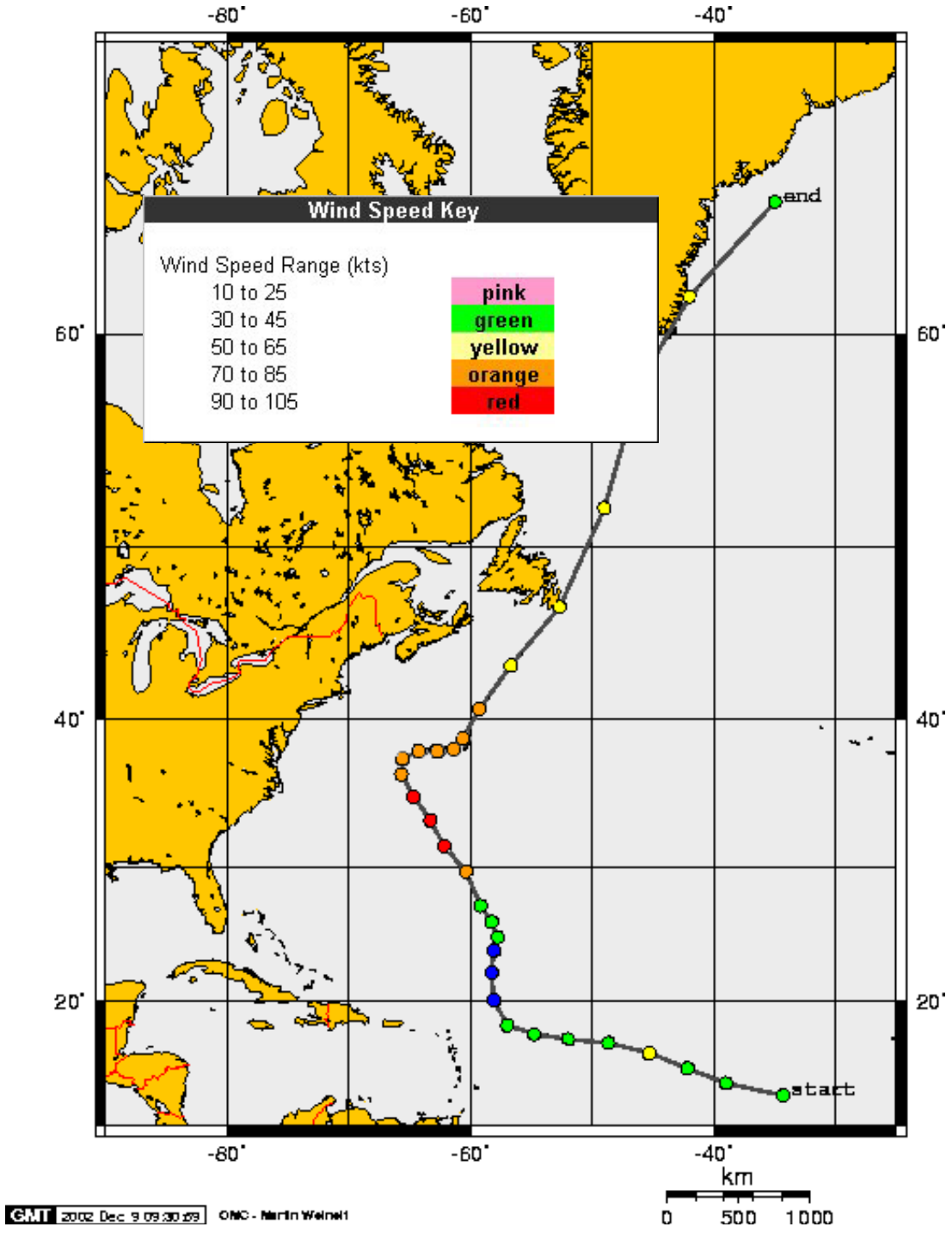

Storm Duration Histogram
data from 2000-2003
Number of Storms
18
16
14
12
10
8
6
4
2
0
0-2
3-4
5-6
7-8
9-10
11-12
13-14
15-16
17-18
19-23
Length of Storm (days)

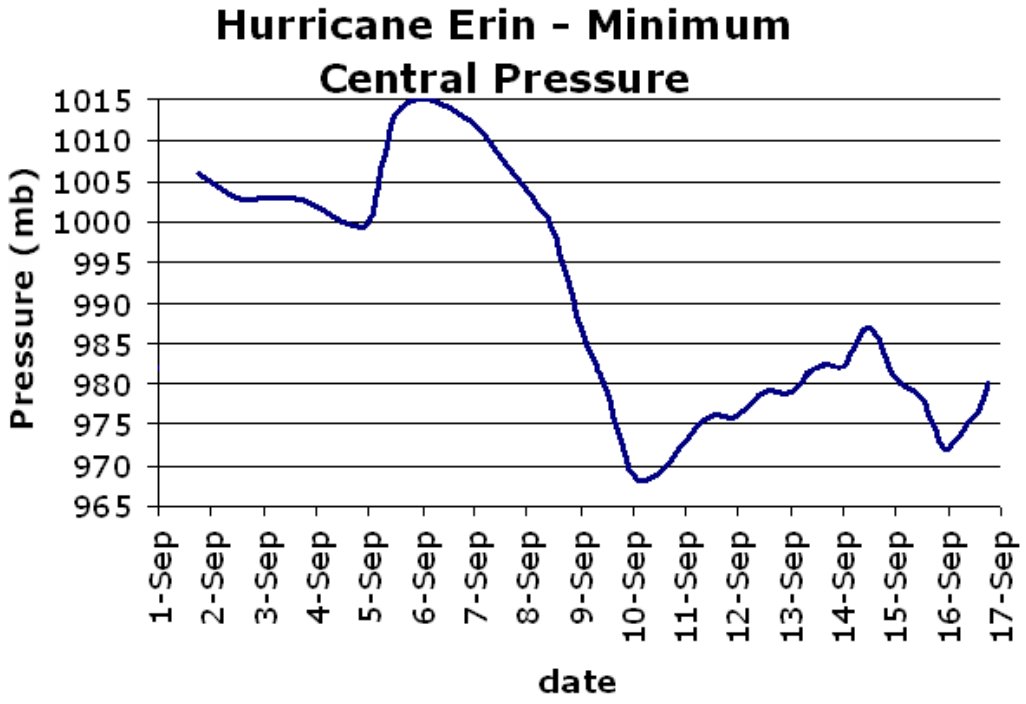


System Strength Key

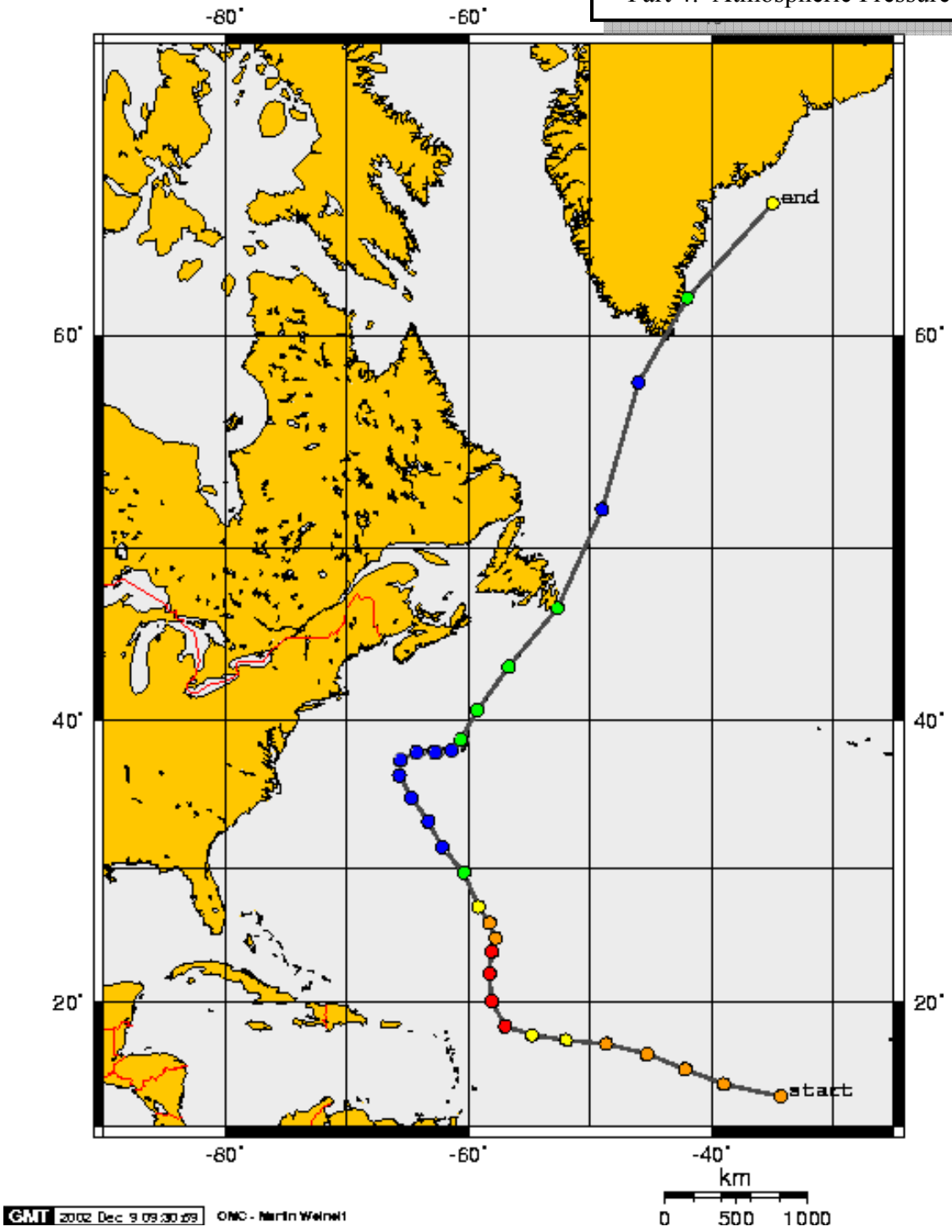
- tropical depression
- tropical storm
- low pressure area
- re-formed tropical storm
- hurricane
- extratropical


Hurricane Erin - Maximum Sustained Surface Wind Speed
Wind Speed (knots)
120
100
80
60
40
20
0
1-Sep
2-Sep
3-Sep
4-Sep
5-Sep
6-Sep
7-Sep
8-Sep
9-Sep
10-Sep
11-Sep
12-Sep
13-Sep
14-Sep
15-Sep
16-Sep
17-Sep
date


-80°
-60°
-40°
60°
40°
20°
Wind Speed Key
Wind Speed Range (kts)
10 to 25
30 to 45
50 to 65
70 to 85
90 to 105
pink
green
yellow
orange
red
end
start
km
0
500
1000
GMT 2002 Dec 9 09:30:09
ONC - Martin Weinelt


Hurricane Erin - Minimum Central Pressure
Pressure (mb)
1015
1010
1005
1000
995
990
985
980
975
970
965
1-Sep
2-Sep
3-Sep
4-Sep
5-Sep
6-Sep
7-Sep
8-Sep
9-Sep
10-Sep
11-Sep
12-Sep
13-Sep
14-Sep
15-Sep
16-Sep
17-Sep
date

Part 4: Atmospheric Pressure Tracking



Barometric Pressure Key

Pressure Range (mb)	
961 - 970	blue
971 - 980	pink
981 - 990	green
991 - 1000	yellow
1001 - 1010	orange
1011 - 1020	red

Answers to Questions

1. During what month of the year between 2000 and 2003 did the greatest number of hurricanes occur? *September*

2. How long did the average hurricane between 2000 and 2003 last? *8 days*

3. How many tropical cyclones have turned into hurricanes this year? *varies by year* (Students can do research to see how many occurred during the year in which they are trying to answer this question.)

4. What was the average number of hurricanes per year between 2000 and 2004? *13 hurricanes*

5. What was unusual about Tropical Storm Ana in 2003? *it formed in April, which is very early in the year for tropical cyclones to form.*

6. Do tropical cyclones keep the same wind speed and barometric pressure throughout their lifetimes? If not, how do these characteristics change? *No. The pressure and wind speed increase and decrease as the storm changes character, especially when the storm moves over land.*

7. What is the main cause of hurricanes? *transfer of heat energy from the tropics to higher latitudes*

8. What major world event was taking place at the same time Hurricane Erin was moving northward along the Atlantic seaboard of the United States? *9-11*

Learning Experience 2: Answers to Questions

1. How fast will it take a laser pulse to reach the ground if the plane is flying at an altitude of 500 meters? Note: speed of light is equal to 186,000 mi/sec. Note: First need to put all variables in a consistent set of measurement units. **See Speed_of_Light.doc** for supplementary information. *8.3×10^{-7} sec*

2. Deselect all themes in ArcExplorer project except for the image (teguz.tif). Zoom into the digital elevation model at the confluence of two rivers adjacent to large hill located near southeastern edge of city. What is the spikelike spot in the riverbed (Note: the airborne laser used in the UT lidar system will bounce off of objects in the air instead of penetrating them). *laser hit a bird or some other obstacle in the air and bounced back as a short range value, which when gridded with all surrounding points, makes an artifact in the map.*

3. Determine a way to measure the landslide scar area (either using ArcExplorer or graphing).

4. If you were in downtown Tegucigalpa directly across the river from the landslide and decided to jump into you car to avoid the rising floodwaters, in which direction would you want to drive? *East or Northeast*

5. Describe the potential effects of a hurricane if one were to hit your hometown. *Examples: Homes along the edge of Lake Austin would be flooded; no electricity; no drinking water; wind damage to vehicles; flooding of local streets, etc.*