



# The Effect of Sea Surface Temperature on the Strength of Major Hurricanes, Ivan and Katrina



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## Introduction

Hurricanes Ivan and Katrina were two hurricane that hit the Florida Keys, Gulf of Mexico and Louisiana area one year after the other. Ivan occurred in 2004 and Katrina became a hurricane in 2005. There are many factors that affect the strengths of these hurricanes. We obtained remotely sensed sea surface temperature and wind data of the Atlantic Ocean during hurricane Katrina and Ivan. By analyzing this data on Katrina and Ivan, we were able to compare the two storms. We believed that a hurricane's wind speed was dependant upon the sea surface temperature along its track.

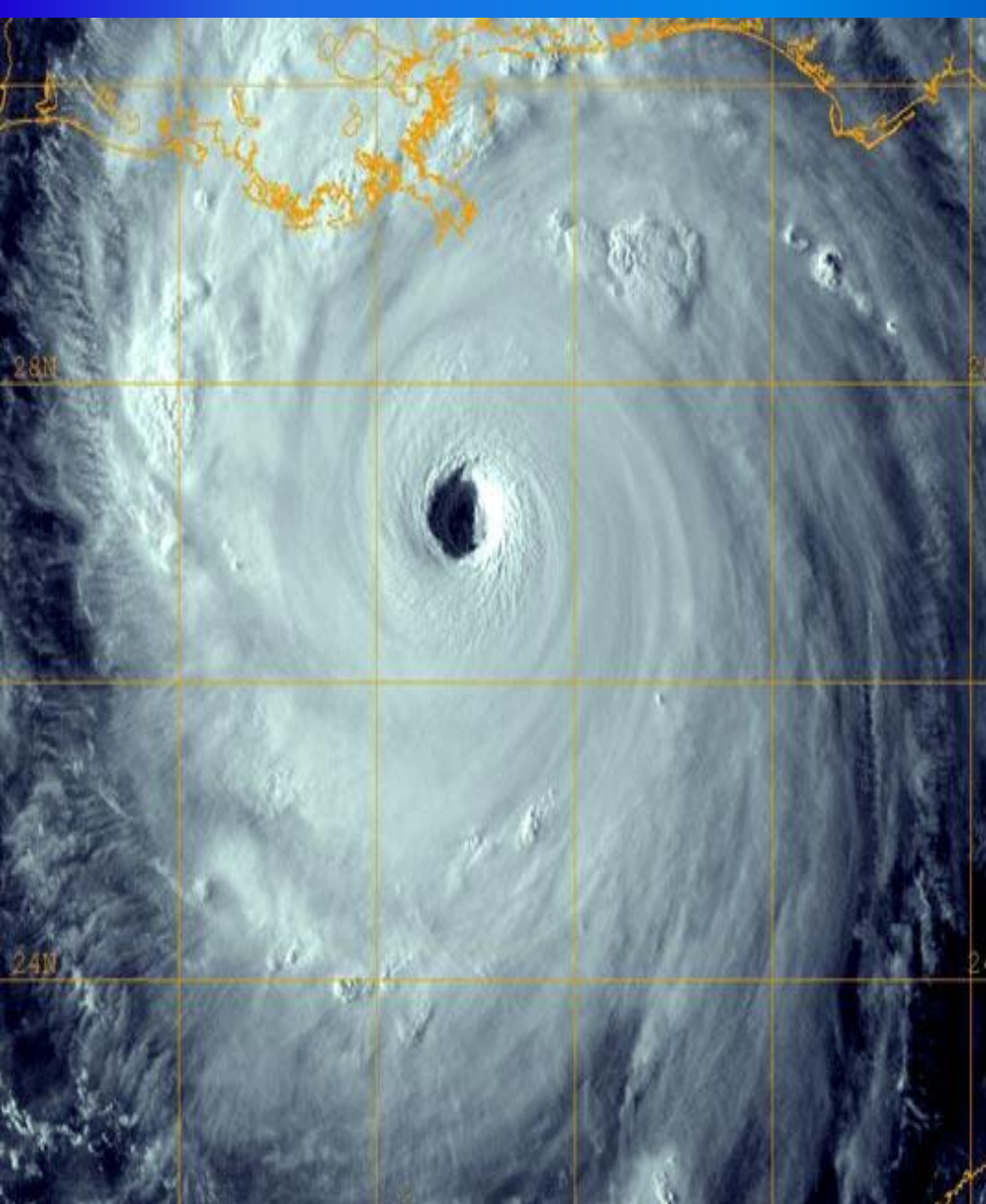
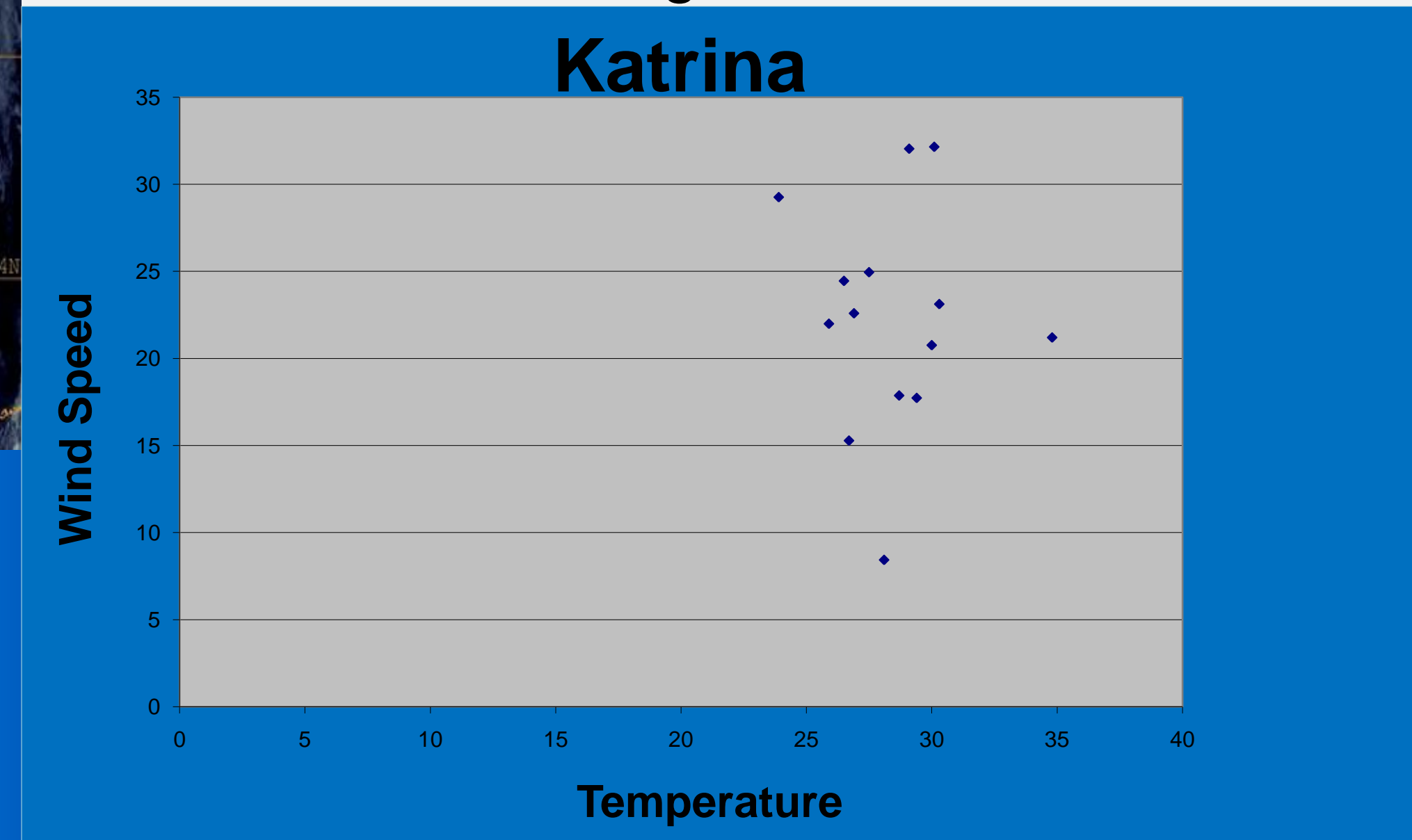


Figure 1



## Hypothesis

The higher the sea surface temperature along the track in which a hurricane passes, the higher the wind speed will be for that hurricane.

## Objectives

Our objectives were to obtain the sea surface temperature and wind speed of the Gulf of Mexico and North Atlantic Ocean during the hurricane Katrina and Ivan. By calculating the average sea surface temperature of these areas we were able to find a correlation between the surface temperature and average wind speed near the eye of these hurricanes. We also wanted to find out what causes some hurricanes to fluctuate in intensity while others remain stable in the same waters.

## Methods

We obtained remote sensing data of GOES-11 and 12 sensors. These include sea surface temperature of the Gulf of Mexico and the North Atlantic Ocean during the paths of Katrina and Ivan. We also obtained remote sensing data of Quick SCAT sensor. The Quick SCAT provided the wind speed of those same areas during the time of hurricane Katrina and Ivan. We used Microsoft Excel to calculate the averages and plot a wind speed versus sea surface temperature graph to show a relationship between them.

## Results

After studying the average wind speeds and sea surface temperatures of the areas around the eyes of the hurricanes, we discovered that the wind speed increases when the hurricanes pass through sea surfaces with high temperature. Figure 1-A shows the path of Hurricane Ivan and Figure 2-A shows that of Hurricane Katrina. Figure 1 displays a line-plot graph showing no correlation between wind speed and sea surface temperature. There is no certainty that the winds get stronger when the water gets warmer. Therefore, it cannot be proved that warm sea surface temperature could increase or decrease the wind speed of a hurricane.

## Abstract

The comparison study of hurricanes Katrina and Ivan was conducted using remote sensing data. Remote sensors GOES and QuickSCAT were used to analyze the relation between the strength of hurricanes and sea surface temperature. We used NASA data, satellite imagery, and various scientific articles. Although our hypothesis could not be proven, we know that there has to be a reason why hurricanes strengthen in the water.

## References

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Figure 2

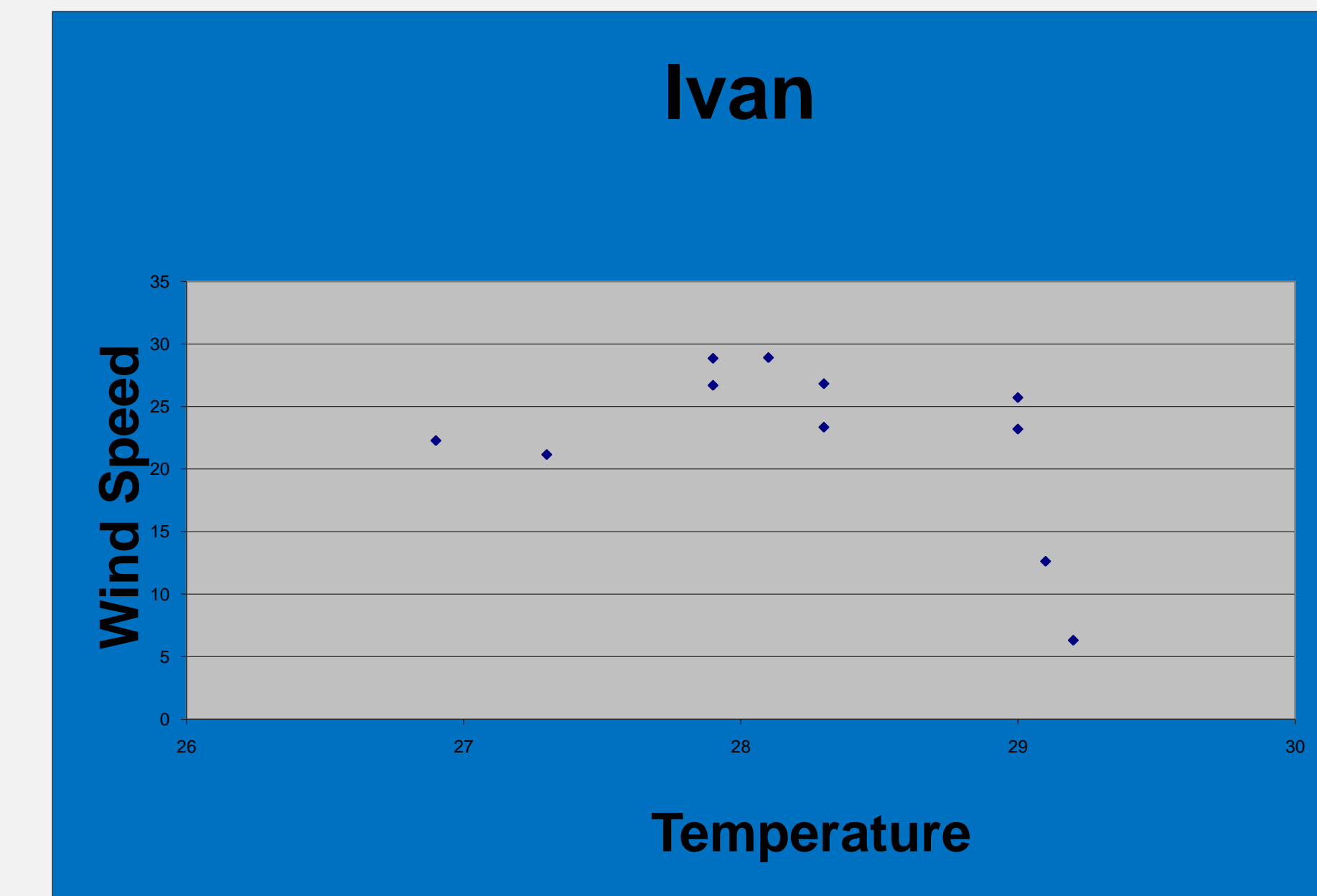
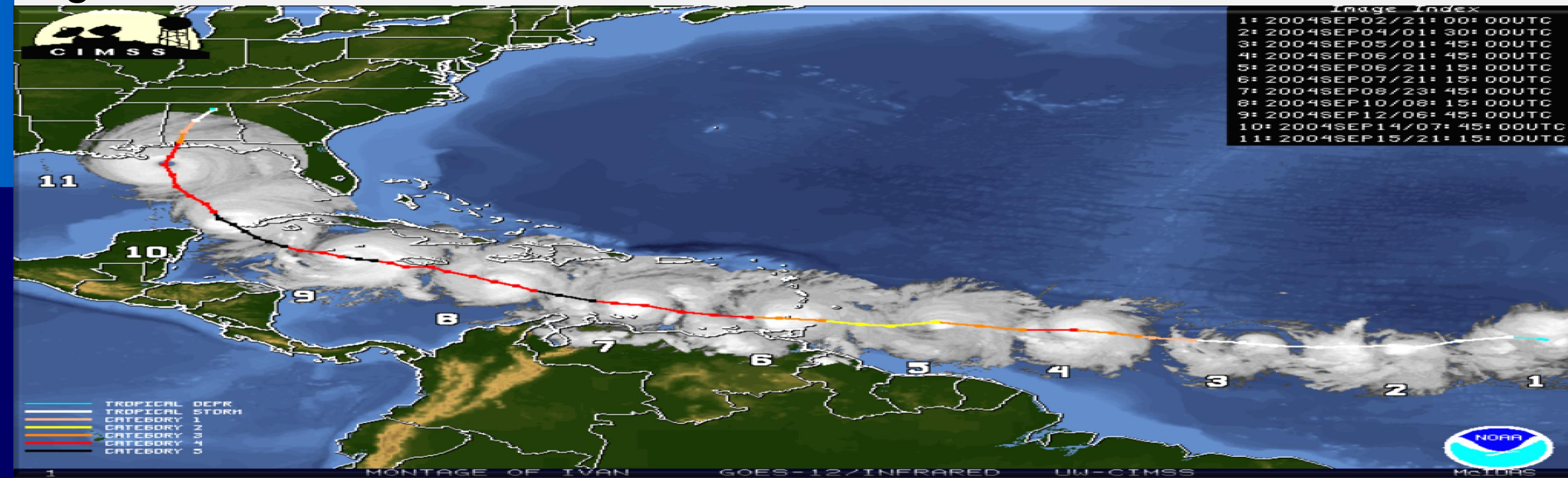


Figure 1-A



V.S

Figure 2-A

