

# D23: Hurricanes and typhoons

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## Introduction :

Global warming is a phenomenon that affects and will affect the whole planet, no area will be spared. It is the greatest challenge facing our generation. Global warming implies a rise in air and water temperatures. Natural disasters will become more and more common and one of the most dangerous phenomena on our planet are hurricanes, cyclones and typhoons. These are exactly the same phenomena except that they have different names if they occur in the Atlantic, Indian and Pacific Oceans.

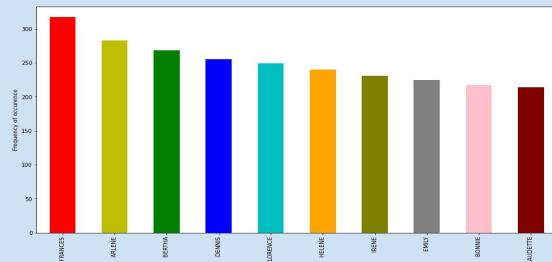
We have chosen to focus on this subject because we believe that it is a phenomenon which will become more important and that we need to understand these phenomena in order to better understand them in the future.

We have two main objectives. The first is to measure the frequency of cyclone occurrence each year in the Pacific and Atlantic Oceans since 1850, and to determine whether or not there is an increase in the number of cyclones in the Atlantic area and then in the Pacific area.

Our second main objective is to identify the evolutionary strength of hurricanes.

Finally we have a secondary objective which is to see if the El Nino phenomenon has an impact on the appearance of hurricanes.

## Top 10 Hurricanes in the Atlantic Ocean

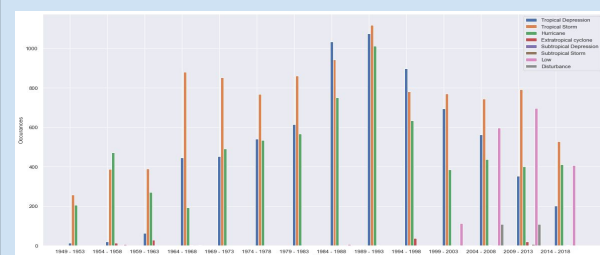


## Analysis :

The frequency of which cyclones appear in the Atlantic and Pacific oceans has increased over the past 150 years. About half of this increase is due to an increased awareness of more remote and calmer cyclones thanks to modern meteorological methods.

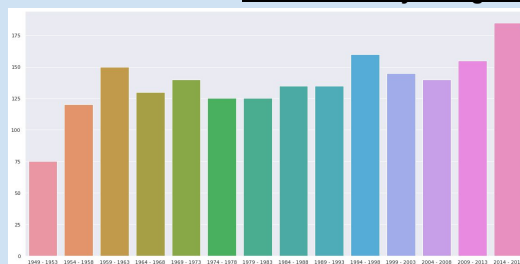
However accounting for this there is still an increase in the number of cyclones detected.

## Evolution of typhoons in the Pacific Ocean

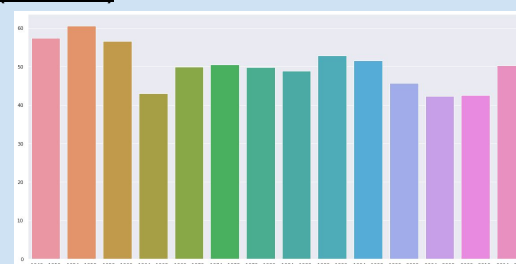


In the Pacific the average cyclone wind speed has decreased 12.4% from 57.4 knots in the early 1950s to 50.3 knots in the early 2010s. Some of this can be attributed to modern meteorology being able to calmer cyclones better, but without information about it we can only speculate. During the same timeframe the maximum hurricane speed recorded has increased 146.6% from 75 knots to 185 knots.

## The evolutionary strength of hurricanes (1949-2014)

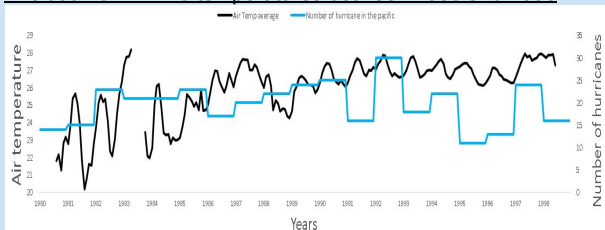


Maximum wind speed recorded for every five year span in Pacific ocean



Average wind speed recorded for every five year span in the Pacific ocean

## Evolution of El Nino temperatures between 1980 and 1998



## Analysis :

El Niño is a periodic climate phenomenon whose origin is not well known. Unlike La Niña, it does result in an increase in surface water temperature in the eastern Pacific Ocean, around the equator.

On the graph, we can see that during some events there is an increase in the number of hurricanes and that other times there is not.

## Conclusion

In conclusion, we have observed that the average number of cyclones is increasing slightly, but we cannot say that every year there will be more and more cyclones. Natural phenomena such as El Niño in the Pacific may have an impact on the strength of hurricanes, but not on their number. Finally, one parameter that we have not taken into account is the impact of man. It would be interesting to continue this analysis in the years to come to check whether global warming has indeed had an impact on the number of hurricanes.