Hurricane Activity in the Caribbean – Are they becoming stronger?

Jon-Alexander Sands

Introduction
Islands of the Caribbean have long experienced hurricanes. But are they indeed getting stronger or is it all a ploy by the Government? This report seeks to confirm that hurricanes are getting stronger and stronger hurricanes are becoming more frequent.

Data acquisition
Geographical data and hurricane data were obtained from the NOAA hurricane database website found here.

Data
The data contains records of hurricanes from 1894-2015. About 49,000 rows and 22 columns of data. All of this data will not be used as some older records contains invalid data. Therefore, the data will be cleaned and records from 1970-2015 will be used for the report.

Results

	Month	Count	Mean	std	min	25%	50%	75%	Max
0	4	1.0	45.000000	NaN	45.0	45.00	45.0	45.00	45.0
1	5	1.0	70.000000	NaN	70.0	70.00	70.0	70.00	70.0
2	6	7.0	56.428571	13.451854	40.0	50.00	50.0	65.00	75.0
3	7	12.0	55.416667	27.671641	20.0	30.00	50.0	78.75	95.0
4	8	40.0	64.750000	26.383513	25.0	45.00	60.0	95.00	125.0
5	9	63.0	68.968254	27.032817	20.0	45.00	80.0	95.00	120.0
6	10	39.0	62.051282	25.254441	25.0	40.00	60.0	90.00	95.0
7	11	12.0	71.250000	17.980419	45.0	55.00	72.5	86.25	95.0
8	12	2.0	52.500000	3.535534	50.0	51.25	52.5	53.75	55.0

Figure 1: Statistical information about the data from 1970-2015, after cleaning.

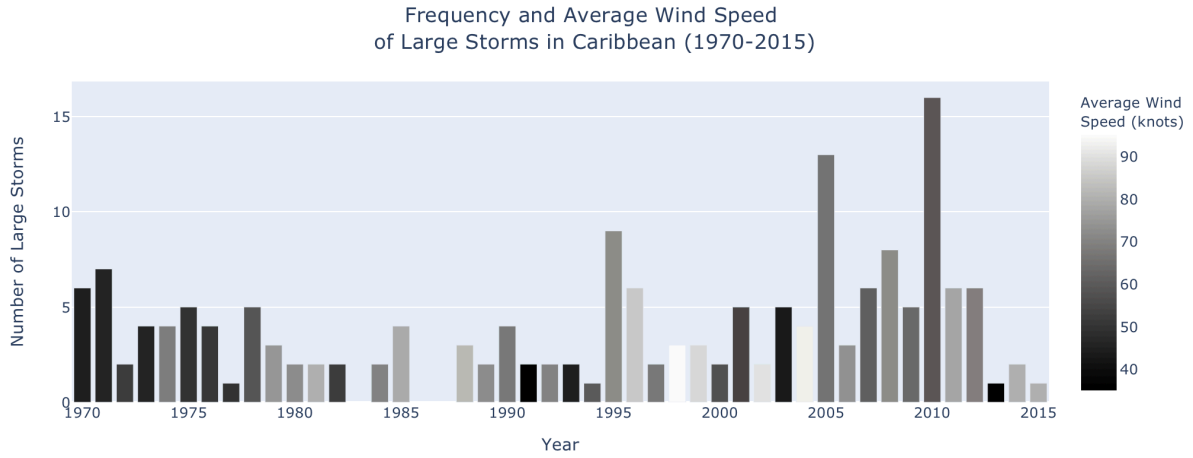

Figure 2: Frequency of hurricanes formed in the Atlantic basin and their average wind speeds.

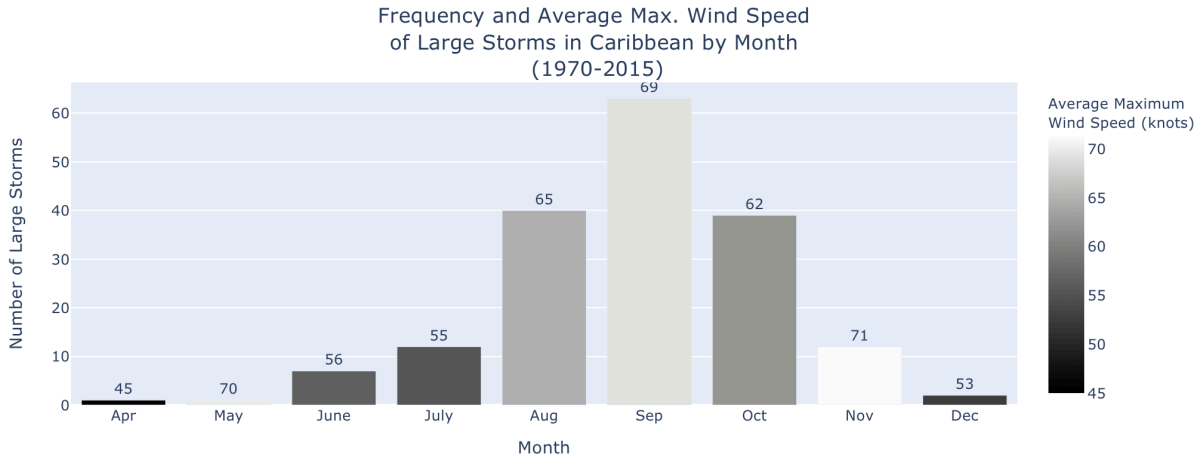

Figure 3: Frequency of hurricanes formed in the Atlantic basin by month with their average maximum wind speed.

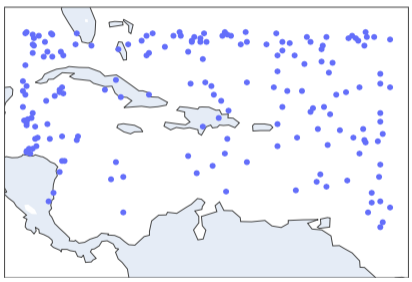

Figure 4: A map plot of the starting point of hurricanes formed in the Atlantic basin from 1970-2015.

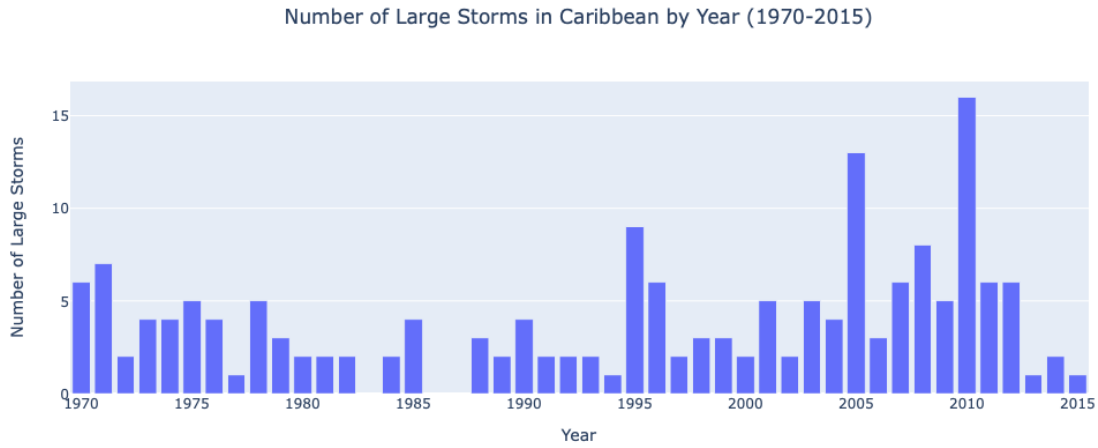

Figure 5: Frequency of operationally defined large storms in the Atlantic basin from 1970-2015.

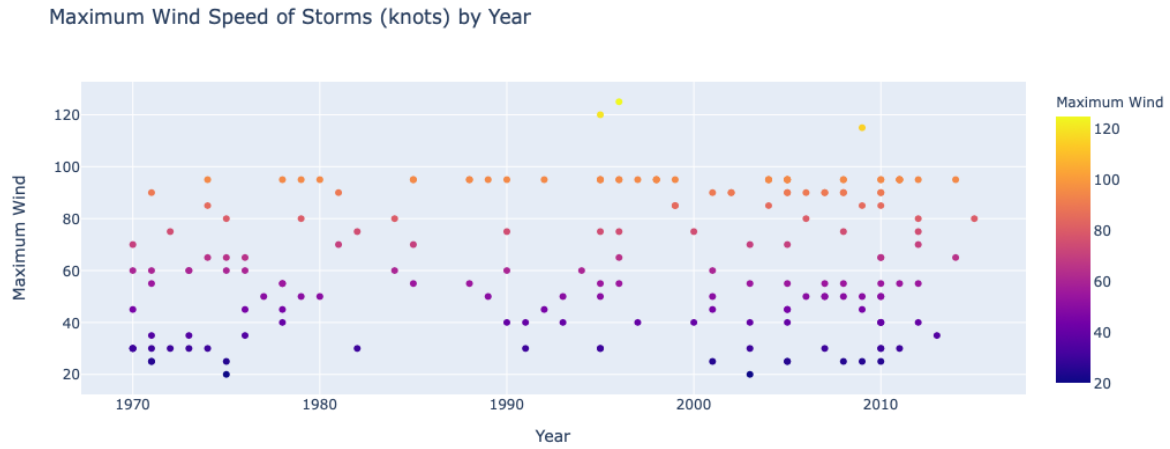

Figure 6: Scatterplot of the maximum wind speeds of hurricanes formed in the Atlantic basin by year.

Discussion

"Hurricanes have become stronger worldwide during the past four decades, an analysis of observational data shows, supporting what theory and computer models have long suggested: climate change is making these storms more intense and destructive.

The analysis, of satellite images dating to 1979, shows that warming has increased the likelihood of a hurricane developing into a major one of Category 3 or higher, with sustained winds greater than 110 miles an hour, by about 8 percent a decade. "The trend is there and it is real," said James P. Kossin, a researcher with the National Oceanic and Atmospheric Administration and lead author of the study, published Monday in Proceedings of the National Academy of Sciences. "There's this remarkable building of this body of evidence that we're making these storms more deleterious.""