Global Variables Typhoons

**season\_range** = Range of years in typhoon events

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**knots\_range** = Range of wind speeds over the data

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**storms** = all typhoon data from IBTracs

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**graph\_base** = Map style 1

**graph\_base2** = Map style 2

**graph\_base3** = Map style 3

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**storms\_split** = Storm events with a suffix ‘a’ of part with Longitude below 0

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**storms\_inbasin** = Storms in the NW Pacific Basin

**storms\_inbasin\_split** = Storms in the NW Pacific Basin with a suffix ‘a’ of part with Longitude below 0

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**storms\_per\_yr** = dataframe of each year, number of storms, average month of occurrence

#################################################################################################################**events\_per\_month** = Events per month (ALL), Events per month for each ENSO signal divided by number of times that ENSO signal has appeared.

1. Nino - all typhoons recorded in that month since 1950 that have a Nino signal = ENSO >= 0.5

2. Nina - all typhoons recorded in that month since 1950 that have a Nina signal = ENSO <= -0.5

3. Neither - all typhoons recorded in that month since 1950 that have neither a La Nina or an El Nino signal = ENSO <= 0.5 && = ENSO >= -0.5

With each of the subsets divided by the number of times that month has been at that signal. e.g.

(1) - September Total Number of Events from an EL Nino signal since 1950​ - 115 typhoons

(2) - Number of times September has had an El Nino signal since 1950 - 19 times

(3) - Y axis value (1)/(2) = 6 ish

#################################################################################################################**yearly\_birth\_locations** = Data-frame - Storm Id, Year, Genesis Longitude, Genesis Lattitude

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**monthly\_birth\_locations** = DataFrame - Storm Id, Month, Genesis Longitude, Genesis Lattitude, ENSO Signal

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**converted\_to\_polar** = same as storms\_inbasin but with polar co-ordinates taken from (randomly chosen) origin point Longitude = 95, Lattitude = 0

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**normalised** = 1 storms\_dissag\_per\_month is divided by the total number of storms in a year. 0: not divided.

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**storms\_dissag\_per\_month** = contains the year and the number of storms in that year split over the 12 months. With the number of typhoons recorded in each month divided by the total number of storms in that year. Used to create a historical profile of storms distribution over months.

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**storms\_dissag\_per\_month1** = contains the year and the number of storms in that year split over the 12 months. (used for a plot)

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**created\_events** = randomly generated number of events in a year (Poisson Distribution) split over the months by using a randomly selected historical profile of typhoon distribution. This is then repeated in a large dataframe of c. 10,000 generated years.

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**monthly\_birth\_locations\_adjusted** = helpful to create a grid that covers more the area past +180/-180 longitude. Longitudes of historical monthly birth locations adjusted by an origin point – origin2

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**generated\_kernel** = the kernel distribution as a list. List 1 is the grid, list 2 contains probability information. Each of those lists are split into 12 respective months so 12 kernels in total.

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**gen\_typhoons** = created typhoon events from created\_events with a latitude and longitude assigned from the generated\_kernel dependent on month of typhoon occurrence. Later includes other data for the regression models and predicted data for each storm so entire paths including wind speed and intensity. Each storm is given a month and ID to identify it. Storms can be generated on a year by year basis as well.

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**origin** = The starting bottom left coordinate of the grid for the regression model

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**granularity** = the width and height of the regression model grid – at the moment a 5x5 cell

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**regression model** – A Large list - the idea is that for each cell in the list represents a certain longitude. In each cell of the list there is another list inside that cell, the latitude list and in each cell of the latitude list there is a regression model (4 of them). So if you want to find the regression model for a particular location you choose that longitude cell followed by that latitude cell to find the models.