

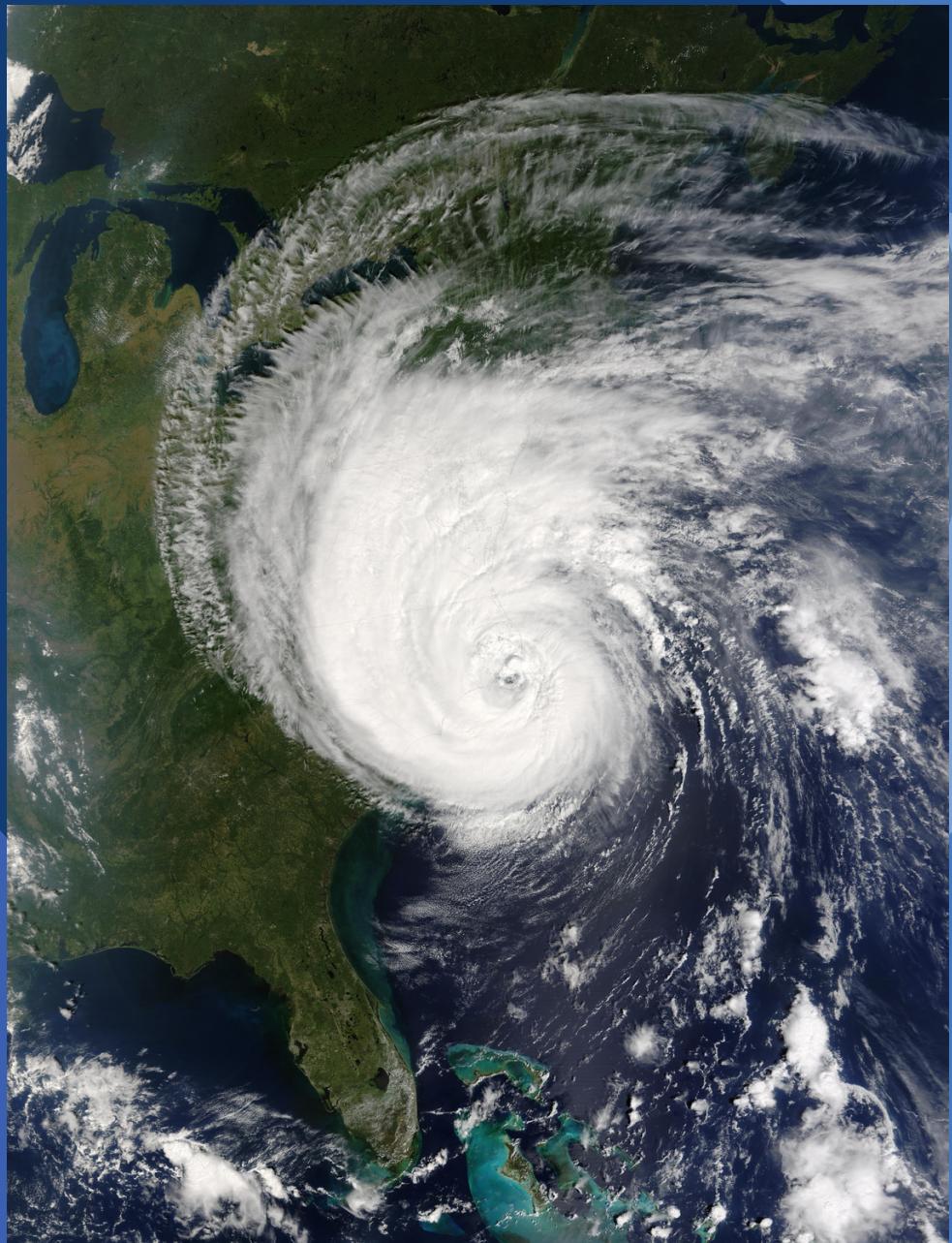


"MICHAUNG Cyclone: SQL Journey through Data Analysis"

- Using real data set

By
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Objectives



This project centers around an in-depth exploration of Tropical Cyclone MICHAUNG using SQL as the primary analytical tool. The goal is to embark on a data-driven journey, unraveling key insights and patterns hidden within the cyclone's dataset. By leveraging SQL's powerful querying capabilities, the project aims to conduct a thorough analysis of MICHAUNG's timestamps, speeds, and geographical locations.

TABLE USED : StormData

DataID	Time	Speed	Latitude	Longitude	Status
1	2023-12-03 11:30:00	35	11.8	82.7	
2	2023-12-03 23:30:00	45	12.6	82.0	
3	2023-12-04 11:30:00	55	13.5	81.4	
4	2023-12-04 23:30:00	60	14.5	81.1	
5	2023-12-05 11:30:00	50	15.4	80.8	
6	2023-12-06 11:30:00	35	17.0	81.0	dissipating
7	2023-12-07 11:30:00	20	18.7	82.8	dissipated

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1.Retrieve all storm data?



```
SELECT * FROM StormData;
```

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OUTPUT

Query #1 Execution time: 0ms

DataID	Time	Speed	Latitude	Longitude	Status
1	2023-12-03 11:30:00	35	11.800000	82.700000	null
2	2023-12-03 23:30:00	45	12.600000	82.000000	null
3	2023-12-04 11:30:00	55	13.500000	81.400000	null
4	2023-12-04 23:30:00	60	14.500000	81.100000	null
5	2023-12-05 11:30:00	50	15.400000	80.800000	null
6	2023-12-06 11:30:00	35	17.000000	81.000000	dissipating
7	2023-12-07 11:30:00	20	18.700000	82.800000	dissipated

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2.Retrieve storm data for a specific date range ?



```
SELECT * FROM StormData  
WHERE Time BETWEEN '2023-12-03' AND '2023-12-06';
```

OUTPUT

Query #2 Execution time: 2ms

DataID	Time	Speed	Latitude	Longitude	Status
1	2023-12-03 11:30:00	35	11.800000	82.700000	null
2	2023-12-03 23:30:00	45	12.600000	82.000000	null
3	2023-12-04 11:30:00	55	13.500000	81.400000	null
4	2023-12-04 23:30:00	60	14.500000	81.100000	null
5	2023-12-05 11:30:00	50	15.400000	80.800000	null

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3.Retrieve storm data with speeds greater than 50 knots?



```
SELECT * FROM StormData  
WHERE Speed > 50;
```

OUTPUT

Query #3 Execution time: 0ms

DataID	Time	Speed	Latitude	Longitude	Status
3	2023-12-04 11:30:00	55	13.500000	81.400000	null
4	2023-12-04 23:30:00	60	14.500000	81.100000	null

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4.Retrieve storm data for dissipating storms?



```
SELECT * FROM StormData  
WHERE Status = "dissipating";
```

OUTPUT

Query #4 Execution time: 14ms

DataID	Time	Speed	Latitude	Longitude	Status
6	2023-12-06 11:30:00	35	17.000000	81.000000	dissipating

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5.Calculate the average speed of storms ?



```
SELECT AVG(Speed) AS AVERAGE_SPEED  
FROM StormData;
```

OUTPUT

Query #5	Execution time: 0ms
AVERAGE_SPEED	
42.8571	

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6.Find the storm with the highest speed ?



```
SELECT * FROM StormData  
ORDER BY Speed DESC  
LIMIT 1;
```

OUTPUT

Query #6 Execution time: 0ms

DataID	Time	Speed	Latitude	Longitude	Status
4	2023-12-04 23:30:00	60	14.500000	81.100000	null

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7.Retrieve the earliest and latest storm data entry?



```
SELECT MIN(Time) AS EarliestTime, MAX(Time) AS LatestTime  
FROM StormData;
```

OUTPUT

Query #7 Execution time: 1ms	
EarliestTime	LatestTime
2023-12-03 11:30:00	2023-12-07 11:30:00

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8.Retrieve the storm data points with speeds above the average speed ?



```
SELECT *
FROM StormData
WHERE Speed > ( SELECT AVG(Speed) FROM StormData);
```

OUTPUT

Query #8 Execution time: 0ms

DataID	Time	Speed	Latitude	Longitude	Status
2	2023-12-03 23:30:00	45	12.600000	82.000000	null
3	2023-12-04 11:30:00	55	13.500000	81.400000	null
4	2023-12-04 23:30:00	60	14.500000	81.100000	null
5	2023-12-05 11:30:00	50	15.400000	80.800000	null

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9. Find storms that experienced an increase in speed for three consecutive data points?

```
SELECT *  
FROM (  
    SELECT *,  
        LAG(Speed) OVER (ORDER BY Time) AS PrevSpeed,  
        LEAD(Speed) OVER (ORDER BY Time) AS NextSpeed  
    FROM StormData  
) AS SpeedComparison  
WHERE Speed > PrevSpeed AND NextSpeed > Speed;
```

OUTPUT

Query #9 Execution time: 1ms

DataID	Time	Speed	Latitude	Longitude	Status	PrevSpeed	NextSpeed
2	2023-12-03 23:30:00	45	12.600000	82.000000	null	35	55
3	2023-12-04 11:30:00	55	13.500000	81.400000	null	45	60

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10. Retrieve the timestamp, speed, and a categorized speed label ('Low Speed', 'Moderate Speed', 'High Speed', or 'Unknown') for each storm data point?

```
SELECT Time, Speed,  
CASE  
    WHEN Speed < 40 THEN 'Low Speed'  
    WHEN Speed < 60 THEN 'Moderate Speed'  
    ELSE 'High Speed'  
END AS SpeedCategory  
FROM StormData;
```

OUTPUT

Query #10 Execution time: 0ms

Time	Speed	SpeedCategory
2023-12-03 11:30:00	35	Low Speed
2023-12-03 23:30:00	45	Moderate Speed
2023-12-04 11:30:00	55	Moderate Speed
2023-12-04 23:30:00	60	High Speed
2023-12-05 11:30:00	50	Moderate Speed
2023-12-06 11:30:00	35	Low Speed
2023-12-07 11:30:00	20	Low Speed

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THANK YOU!

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