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Relationship Of The Sun And Mercury's Movement For Cyclone Formation Over Indian Subcontinent- An Astrological Approach.

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ABSTRACT
Planetary position in constellations, their motion, the Eastern and Western elongations of inner planets and velocity of each planet is different. Study of the Perihelion and Aphelion positions for each planet and particularly the inner planet Mercury play an important role in predicting cyclonic circulation. Mercury, the Earth and the Moon, transit around the Sun in a particular constellation and that gives an idea about the weather and climate change particularly wind pattern as written in Indian ancient scripture "Bhruhit Sanhita".
The study of the motion and velocities of planets along with Mercury particularly, in the month of June can give an idea about the cyclonic situation and its impact on weather and climate for the whole monsoon season over the Indian sub-continent. Similarly, the study of the motions and the velocities of planets along with Mercury in the month of December can give an idea about the climate for the next six months. Western and Eastern elongations of Mercury give an idea about the possibility of either low-pressure area or cyclonic developments over the Bay of Bengal or the Arabian sea.

Key words – *Bhruhit Sanhita, Perihelion,Aphelion, Mercury, Western and Eastern Elongation, ITCZ cyclone.*

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I. INTRODUTION

It is an acknowledged fact that rainfall occurs due to the evaporation, transpiration, condensation, and precipitation process of ocean water when the Sun is in Northen travel (Uttar Ayan) over the Pacific Ocean. In the El-Nino and LA- Nino phenomena, Pacific Ocean's water surface temperature gives an idea about whether it would be the El-Nino or La-Nino situation for rainfall in the Indian Sub- continents. Every year the Sun passes through the Pacific Ocean but still there is a difference in the temperature of water surface of Pacific Ocean. This is an amazing fact, so there might be some other factors like strong celestial bodies, planets, fixed Stars, or something which makes the change in water temperature of Pacific Ocean along with the Sun.

Through this paper I will try to elaborate and explain my findings of research on planets and its effects on atmosphere and how the planet Mercury affects the low-pressure area or cyclone over the Arabian sea or Bay of Bengal.

II. ANCIENT CONCEPT

In ***Bruhit Sanhita*** by Aacharya Varahmihir in *Adhaya* 21- 28, he has written the concept of rainfall and has mentioned the speed of planets and *graha yog* effects on the climate.
In Astrology, sagas have explained all the planets with their characteristic as follows.
Sun- Mars - Hot air or dry air.
Mercury- Wind
Moon-Venus- Rain
Jupiter- Pleasant climate and control over all seasons.
Saturn -Cold, Severe cold and humid.
Rahu- Thunderstorm and heavy rain joining with the other watery planet.
Ketu- Heavy wind and lightning and sudden change in climate.

We know that whenever there is a low pressure over Arabian Sea or Bay of Bengal or anywhere over land, the wind will flow from high pressure to low pressure area. This transit of wind from high pressure to low pressure is due to the planet Mercury in Astrology. In my observations and astrological study and the study based on the last 20 years' recorded data about cyclone and wind patterns; Mercury's retrogression, direct motion, combust, sets, and rise, its daily speed and it's Western and Eastern elongations affect more for this effect.

बुध के उदय का फल :

नोत्पातपरित्यक्तः कदाचिदपि चन्द्रजो व्रजत्पुदयम् ।
जलदहनपवनभयकृद् धान्यार्घक्षयविवृद्धी वा ।।१।।

Nootpat pariityha kadacheedapi chandrajo Vrajayudyam |
Jaldahanpawan Bhaykrud Dhandyaghar kshya vivru dhyog vah || 1||
B.S. *Adhaya* 7.

In this *shloka*, it is said that whenever Mercury rises after the combust with the Sun, there will be a possibility of havoc like situations either due to heavy rain or burning or wind /cyclone

III. OBSERVATIONS AND FINDINGS

In astrological terms, when Mercury conjoins with the sun, it makes a change in the climate by changing the stable weather to hot and dry weather and sometime windy. This is found in my research study and observations. Mercury's daily speed, its zenith position near the equator, its forward and retrograde movement while revolving around the sun, its eastern and western elongations make the frequent changes in earth's climate.

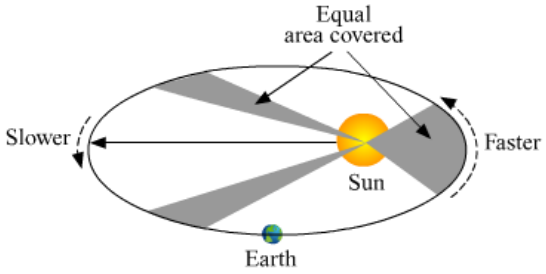
The other planet is the Moon (In astrological terms, the moon is a planet.) which revolves around the earth with daily 12°-15°, also makes changes in weather due to its waxing and waning phases. The third planet is Venus and next immediate outer planet is Mars. These four planets make the changes in climate frequently along with other planets. Through this script I will only give my observation and findings from planet Mercury and its effect on wind pattern.

Mercury's Details; -

Aphelion (Away from Sun)-	69 x 10^6 Kms
Perihelion (Closest to Sun)-	46 x 10^6 Kms
Eccentricity –	Nearly 0.2
Orbital inclination to Ecliptic -	7°
Average Orbital Velocity –	47.36Km/sec
Average Angular Displacement-	1°1'per day
Min. travel Speed around the Sun–	0°-11'/day
Max. travels Speed around the Sun-	2°12'/day
Revolves around the Sun-	88days

As per Kepler's second law, whenever any planet is closer to the sun its speed increases and whenever it is far away from the sun the speed will decrease because it must sweep equal area in equal intervals of time.

Diagram No.1



Mercury completes its one revolution around the Sun in 88 days, whereas the Earth requires 365 days. So, Mercury completes its sets and rises regularly and nearly 6-7 times in 365 earth days (1year). The per day angular displacement, perihelion, aphelion, and orbital inclination of Mercury creates major changes in day-to-day wind patterns.

It is known to all that our earth revolves around the sun in 365 days which is nearly one degree per day but in geocentric and astrological terms, we say that the Sun revolves around the earth through 27 constellations nearly 13 to 14 days to travel for each constellation, so one constellation length is 13°20'. Mercury also rotates through these 27 constellations, while rotation whenever the Mercury is one sign (*i.e., Rashi or nearly13°20' to 28°*) behind of the Sun it is called as Western Elongation and at that time it is visible in morning Sky. Whenever Mercury is ahead of one sign (*i.e., Rashi or nearly 13°20'to 28°*) of the Sun it is called Eastern Elongation and it will be visible in the evening sky i.e., after the Sun set. Due to this Western and Eastern elongation of mercury, low pressure area of winds starts forming.

Bay of Bengal Cyclone Formation: -

When Mercury is ahead of Sun at its Eastern elongation, low pressure area starts forming over Bay of Bengal and when Sidereal/Tropical angle difference between the Sun-Mercury is maximum i.e., upto 26° to 24°, low pressure will be formed and the low pressure will change into deep depression when the eastern elongation difference is 24°-21°. This deep depression changes into cyclonic storms when difference between the Sun-Mercury 21°-18°. When this difference between the Sun-Mercury is 18°-13°20' or from 13°20 - 0°0' very near combust position cyclone structs. When cyclone occurs, low pressure area is a must. This low pressure area starts after the combust of Mercury, when it is moving ahead of the Sun.

For landfall of cyclone anywhere over the coast of Bay of Bengal, with the above conditions Mercury's daily speed must be decreasing i.e. near to 0°06'. If the speed is above 0°06', cyclone will go ahead and move further through land and that will make havoc conditions there till it has attained its minimum average speed 1°1' or 0°0'.

In simple terms when the Mercury has attained Maximum Eastern elongation of its rotation around the sun the cyclone will form over Bay of Bengal. The cyclone intensity varies with the Sidereal/Tropical angle gap between the Sun-Mercury and Mercury's daily speed. The daily speed must be decreasing and must attain its normal daily speed, sometimes 0°or combust position for the cyclone to stop. Both these situations should match for normalcy in climatic situations.

Arabian Sea Cyclone Formation: -

In Astrological terms, Whenever Mercury is behind 28°-26° sidereal/tropical angle than the Sun (i.e., Western Elongation), low-pressure area starts forming in the western part of India i.e., over Arabian Sea. At that time Sun-Mercury sidereal/tropical angle gap is maximum in Mercury's revolution around the Sun. In this Western elongation if the difference is in between 24°-21° low pressure area changes into cyclonic storms and from 21°-18° it changes into severe cyclone and when difference between the Sun-Mercury is 18°-13°20' or from 13°20 - 0°0' very near combust position cyclone structs the coast of Arabian Sea. When cyclone occurs, low pressure area is a must. This low pressure area starts after the combust of Mercury, when it is moving behind the Sun. At the time of cyclone formation, Mercury's daily speed is increasing and this makes havoc situations on land. If Mercury's daily speed is increasing further after landfall and upto maximum per day speed 2°11', it stops making havoc and tends to normalcy. Thus, in Astrological terms it is called retrograde-combust- direct motion of Mercury.

In simple terms when the Mercury has attained maximum western elongation of its revolution around the sun, the cyclone will form over Arabian Sea. The cyclone intensity varies with the Sidereal/Tropical angle difference between the Sun-Mercury and Mercury's daily increasing speed and attains its normal daily speed or combust position. Both this situation must match for normalcy in climatic situations. .

In Astrological terms when Mercury is moving ahead of Sun (Eastern Elongation) it creates cyclonic storms over Bay-of Bengal and when Mercury is behind the Sun (Western Elongations) cyclone will form over Arabian Sea. These are my findings of research-based data of cyclones of past 20 years.

Diagram 2.
Eastern and Western Elongation.

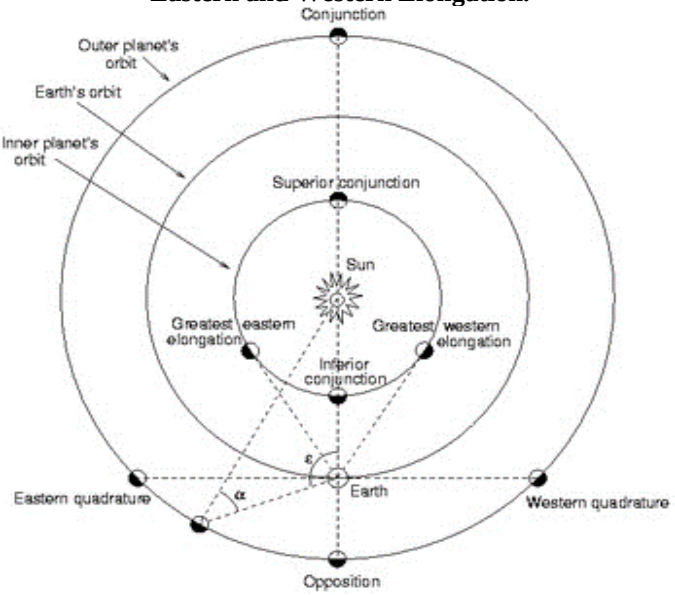
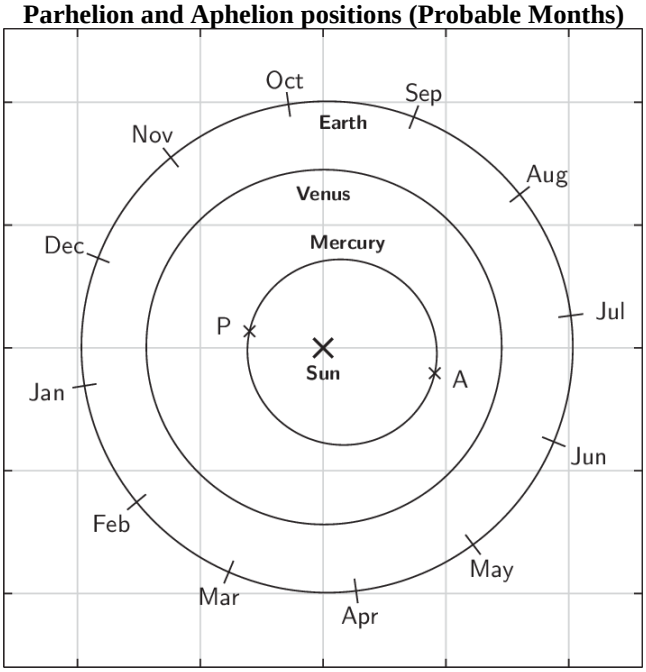


Diagram No.3
Parhelion and Aphelion positions (Probable Months)



Whenever the Mercury is at a point 'P' at Perihelion and its velocity is maximum up to 132' per day and at point 'A' at Aphelion its velocity is very slow that is only 0.11'. The average velocity of Mercury is 1°.1' per day.

In Indian Sub-continent, most of the time in the month of May-June, Mercury is at greatest Eastern elongation (Diagram No.3) that creates low pressure area over the Bay of Bengal. This helps in forming a cyclone and this cyclone is helpful for the southwest monsoon (Yass Cyclone -May- 2021). At the same time, the daily speed of Mercury is maximum to minimum (2°2' to 0°11'). If Western elongation happens in the month of May-June, cyclone will be formed in Arabian sea and will disturb the monsoon. Biperjoy Cyclone 2023 is example of the same. At that time, the daily Speed of Mercury increased from 1°6' to 2°2' for whole period.

In the month of May-June or October -November, Mercury attains mostly Eastern or Western elongation due to its perihelion and aphelion movement. Thus, low pressure areas and cyclones will be formed. So, most of the cyclones are formed in the month of May-June and October- November. This is my finding of research and my observations. This is due to the eastern and western elongations of Mercury in those months.

#Western Elongation (Black Ink)
*Eastern Elongation (Red ink)

Planets	Name of Cyclone and Starting Date	Sidereal and Tropical(0°.0') Angle	Cyclone landfall Date	Sidereal and Tropical Angle	Diff. Tropical Angle Sun - Mer. Starting and Attacking Date
Mer. Sun April And May cyclone	#Bandu/ 19th May 2010	10Ar.38/34.38 4Ta.05/58.04	23rd May2010 17th May 2013 21St May 2016	13Ar.17/37.17 07Ta55/61.55	23.26 - 24.38
	#Viyaru / 10th May2013	23Ar32/47.35 25Ar37/49.39		8Ta45/62.48 2Ta45/56.24	+2 – (- 6) Speed of Mercury is too Fast
	#Roanu 19th May 2016	20Ar41/44.47 4Ta31/58.35		20Ar20/44.25 6Ta27/60.31	14 - 16
	*Marrutha 15th April 2017	9Ar25/33.31 1Ar 16/25.21	17th April 2017	8Ar 04/32.25 3Ar14/27.19	-08 to -05
	#Sagar 17th May2018	11Ar41/35.53 2Ta06/56.26	19th May 2018	15Ar05/32.50 4Ta02/58.21	21 - 19

	*Asani 7th May 2022	10Ta13/64.23 22Ar25/46.35	12th May2022	10Ta35®/64.45 27Ar15/51.25	-18 to - 13
	*Tauktac 14th May 2021	20Ta59/75.07 29Ar26/53.34	19thMay 2021	26Ta02/80.11 4Ta15/58.23	-21 to -22
	*Yass/22nd May2021	28Ta12/82.21 7Ta08/61.17	28th May 2021	0Ge27/84.36 12Ta27/67.02	-21 to -18
	*Mocha 9th May 2023	13Ar01®/37.12 24Ar05/48.16	15th May 2023	11Ar41®/35.51 29Ar53/54.03	11.04 – 18.12 Not land fall in India Territory but
Mer. Sun June to Sept. cyclone	*Nanauk 10th June 2014	8Ge52®/92.55 25Ta07/79.72	14th June2014	7Ge36®/91.38 28Ta56/83.01	-13 to -9
	#Ashobaa 7th June 2015	11Ta19®/65.23 22Ta00/76.06	12th June 2015	10Ta30®/64.35 26Ta47/80.53	11 - 16
	#Biparjoy 6th June 2023	27Ar56/52.10 21Ta00/75.12	19th June 2023	19Ta02/73.41 03Ge26/87.37	24 – 13.
	*Komen 26th July2015	11Cn25/125.34 8Cn46/122.52	2nd Aug2015	25Cn27/139.36 15Cn27/129.33	-3 to -10
	*Gulab 24th Sept.2021	0Li49/204.59 7Vi08/181.19	28th Sept.2021	1Li17/205.26 11Vi03/185.14	-23 to -23
Mer. Sun Oct. to Dec. Cyclone	*Keila 29th Oct.2011	29Li35/233.40 11Li19/215.22	4th Nov.2011	7Sc53/241.57 17Li19/221.22	-18 to -20
	*Nilam 28th Oct 2012	4Sc56/239.0 11Li03/215.07	1St Nov.2012	8Sc09//242.13 15Li03/219.07	-23 to -23
	#Kyant 25th Oct 2016	6Li20/210.29 8Li02/212.09	28th Oct 2016	11Li19/215.28 11Li02/215.08	2 to 0
	#Sitrang 22nd Oct 2022	22Vi52/197.06 4Li31/208.43	25th Oct 2022	27Vi56/202.09 7Vi30/211.42	12 to 10
	*Narada 30th Nov2016 #Nivar 22nd Nov 2020	2Sg02/266.11 14Sc14/248.21 20Li58/225.07 6Sc10/240.19	1st Dec.2016 27th Nov 2020	3Sg27/267.36 15Sc15/249.12 28Li38/232.47 11Sc14/245.22	-17 to -18 15.14 to 12.38
	#Burevi 1st Dec.2020	4Sc45/238.57 15Sc13/249.24	3rd Dec 2020	7sc52/242.04 17Sc15/251.25	11 to 10
	*Jawad 2nd Dec2021	17Sc 36/251.49 15Sc 58/250.10	6th Dec.2021	23Sc53/258.06 20Sc02/254.39	-2 to -3

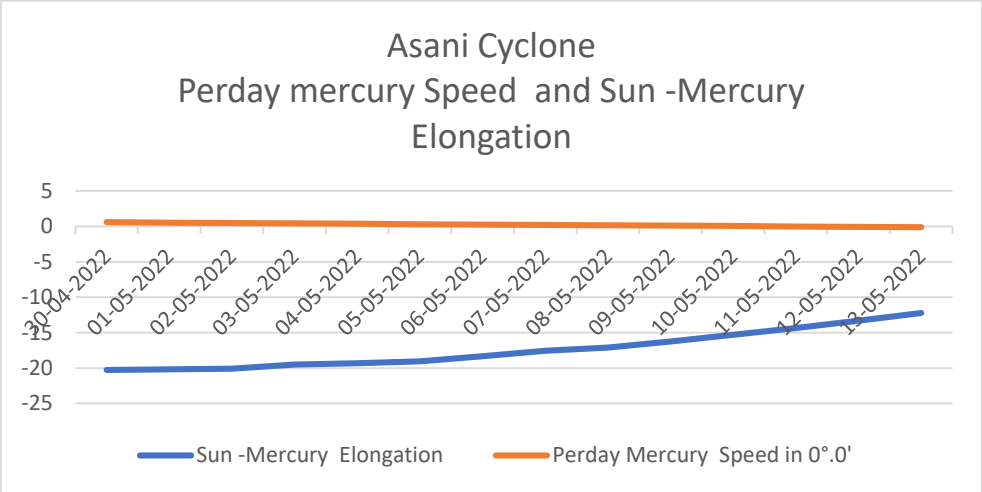
Note:-Google Wikipedia data.

We can judge and easily predict the low-pressure areas or cyclones or severe cyclone formation over Bay of Bengal or Arabian sea by the motion and position of Mercury and its speed around the sun. Cyclone landfall time can be predicted with the motion and position of the Moon in a particular constellation of that day.

Eastern Elongation of Mercury and cyclone:

Case No.1
Asani Cyclone
Duration: 07/05/2022 to 12/05/2022 (As per data)
Duration: 30/04/2022 to 13/05/2022 (As per findings)

Date	Sun -Mercury Elongation in 0°.0'	Per day Mercury Speed in 0°.0'
30-04-2022	20.25	0.6
01-05-2022	20.19	0.52
02-05-2022	20.08	0.47
03-05-2022	19.51	0.42
04-05-2022	19.3	0.37
05-05-2022	19.03	0.31
06-05-2022	18.31	0.26
07-05-2022	17.54	0.21
08-05-2022	17.12	0.16
09-05-2022	16.24	0.1
10-05-2022	15.31	0.05
11-05-2022	14.33	0
12-05-2022	13.3	-0.05
13-05-2022	12.22	-0.1

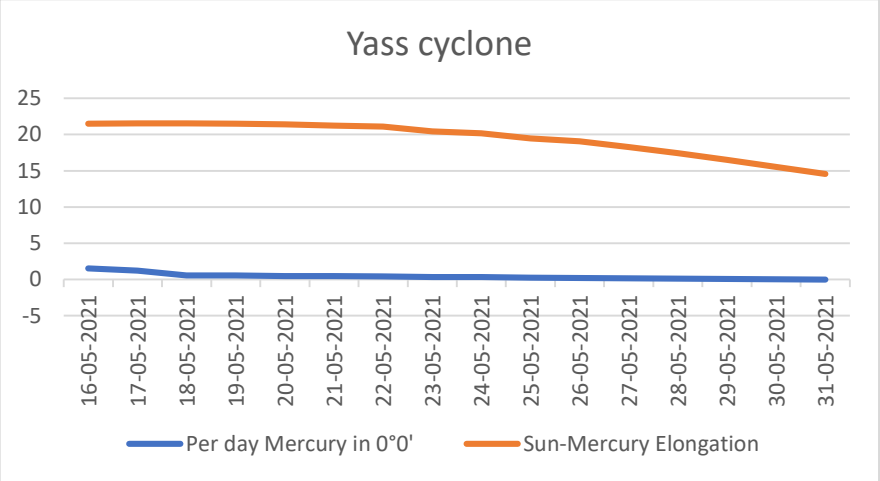


The cyclone struck the Bay of Bengal coast on 11th midnight/12th May 2022. The per day Mercury Speed was at 0°on that day. The Sun-Mercury Sidereal/ Tropical angle difference was between 18°-13°20'.

Case No.2
Yaas Cyclone
Duration: 22/05/2021 to 31/05/2021(As per data)
Duration: 1/05/2022 to 13/05/2022(As per findings)

Date	Per day Change in Speed of Mercury 0°0'perday	Sun-Mercury Difference 0°0'
16-05-2021	1.5	21.57
17-07-2021	1.2	21.55
18-05-2021	0.57	21.54
19-05-2021	0.53	21.49
20-05-2021	0.48	21.39

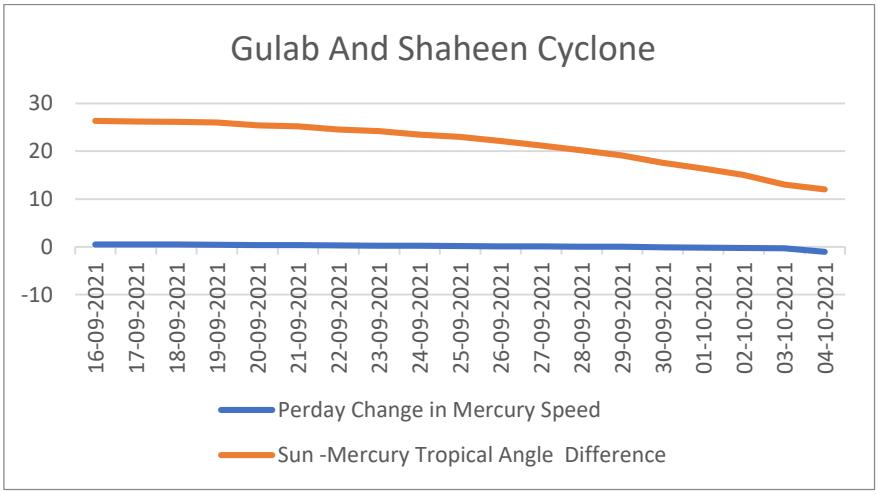
21-05-2021	0.44	21.25
22-05-2021	0.40	21.08
23-05-2021	0.34	20.44
24-05-2021	0.31	20.17
25-05-2021	0.25	19.45
26-05-2021	0.21	19.08
27-05-2021	0.16	18.27
28-05-2021	0.12	17.41
29-05-2021	0.06	16.49
30-05-2021	0.03	15.55
31-05-2021	-0.03	14.54



Yass Cyclone Struck the land on 28th May 2021 midnight when the Mercury's speed was less than 0°1'. And Sun-Mercury sidereal/Tropical Angle was nearly 18°-13°.20'.

Case No.3
Gulab and Shaeen Cyclone
Duration from 24/09/2021 to 28/09/2021(As per data)
Duration 16/09/2022 to 04/10/2021(As per findings)

Date	Per day Change in Sun- Mer Mercury speed	Tropical Angle
16-09-2021	0.54	26.33
17-09-2021	0.51	26.25
18-09-2021	0.48	26.15
19-09-2021	0.45	26.01
20-09-2021	0.4	25.43
21-09-2021	0.37	25.21
22-09-2021	0.32	24.54
23-09-2021	0.27	24.23
24-09-2021	0.22	23.46
25-09-2021	0.17	23.04
26-09-2021	0.11	22.16
27-09-2021	0.11	21.23
28-09-2021	0.05	20.22
29-09-2021	0.02	19.14
30-09-2021	-0.09	17.59
01-10-2021	-0.16	16.36
02-10-2021	-0.24	15.05
03-10-2021	-0.32	13.05
04-10-2021	-1.01	12.06

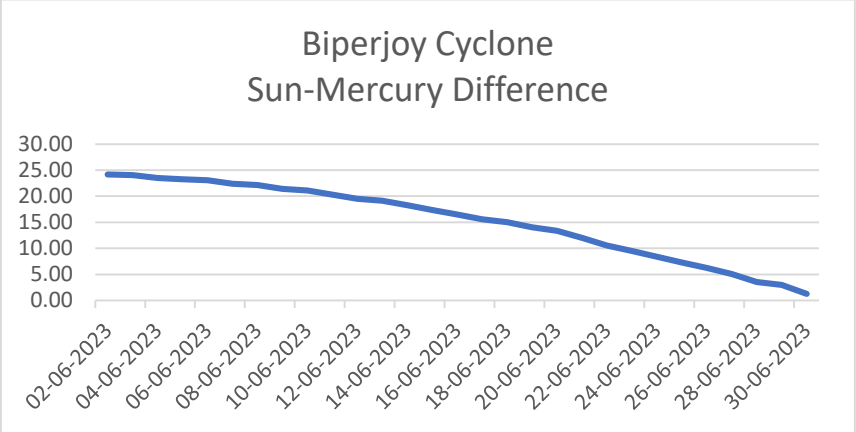


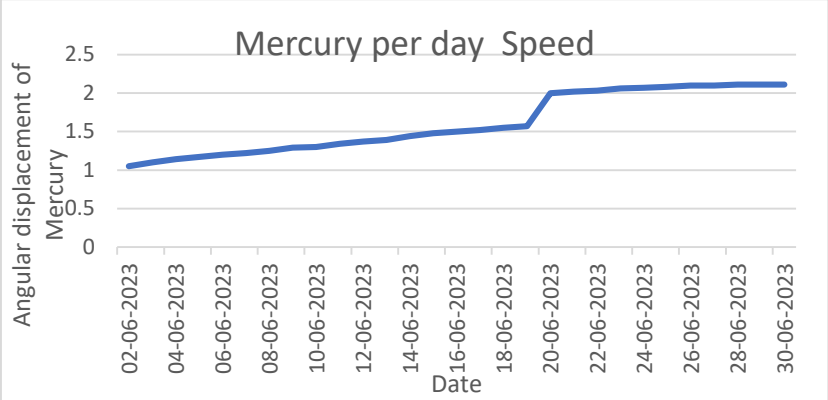
Gulab Cyclone struck the Odissa coast on 28th Sept. as Mercury's Speed was below 0°.05' but its Eastern elongation was more than 18°, hence this cyclone moved towards the west coast of Rajasthan through land. It's name was changed to Shaeen and then on 3rd Oct it struck the coast when its elongation was near 13°20'.

Western Elongation of Mercury and Cyclone:

Case Study No.1
Biparjoy Cyclone.
Date 02/06/2023 to 19/06/2023.
Duration Date 02/06/2023 to 30/06/2023

Date	Change in Per day Speed Per Mercury	Sun-Mercury Tropical Elongation Difference.
02-06-2023	1.05	24.17
03-06-2023	1.1	24.04
04-06-2023	1.14	23.47
05-06-2023	1.17	23.28
06-06-2023	1.2	23.05
07-06-2023	1.22	22.41
08-06-2023	1.25	22.13
09-06-2023	1.29	21.41
10-06-2023	1.3	21.09
11-06-2023	1.34	20.32
12-06-2023	1.37	19.52
13-06-2023	1.39	19.11
14-06-2023	1.44	18.26
15-06-2023	1.48	17.39
16-06-2023	1.5	16.49
17-06-2023	1.52	15.56
18-06-2023	1.55	15.01
19-06-2023	1.57	14.04
20-06-2023	2	13.40
21-06-2023	2.02	12.01
22-06-2023	2.03	10.57
23-06-2023	2.06	9.51
24-06-2023	2.07	8.42
25-06-2023	2.08	7.32
26-06-2023	2.1	6.22
27-06-2023	2.1	5.10
28-06-2023	2.11	3.56
29-06-2023	2.11	3.00
30-06-2023	2.11	1.28





In this case, per day Mercury speed was increasing very fast and at the same time the Sun-Mercury difference is decreasing. On 19th its gap was below 18° and thus Biperjoy cyclone struck the Gujrat coast. The speed of Mercury was very fast and it increased up to 2°12' till 30th June. The cyclone made havoc situations in Northern India till it attained its normal speed.

IV. ITCZ cyclone formation and Mercury's Transit relation:

The *Intertropical Convergence Zone (ITCZ)* known by sailors as the *doldrums* or the *calms* because of its monotonous windless weather, is the area where the northeast and the southeast *trade winds* converge. The ITCZ appears as a band of clouds, usually thunderstorms, that encircle the globe near the Equator. In the Northern Hemisphere, the *trade winds* move in a south-westward direction from the northeast, while in the Southern Hemisphere, they move north-westward from the southeast. When the ITCZ is positioned north or south of the Equator, these directions change according to the *Coriolis effect* imparted by *Earth's Rotation*.

In Astrological terms, The ITCZ is commonly defined as an equatorial zone where the trade winds converge. ITCZ cyclone formation is due to the swing of earth rotation from southern hemisphere to Northern Hemisphere that is just before the Sun transits from *Dakshinayan* to *Uttarayan* phase, when the Sun passes through *Anuradha - Jyestha* constellations i.e. in the month of November last week to December first week. In this transit phase of the Sun, Mercury should be ahead of the Sun's transit constellation (Eastern Elongation of Mercury) and Mercury's daily speed must be normal or less for no cyclone near the Indian sub-continent for normal low-pressure formation and rainy phase near the equator.

Otherwise, if Mercury is in a western elongation, then low-pressure, deep depression or cyclone will be formed like Nirav and Burevi in November and December 2020. Mercury should be behind of the Sun at the time of transit of *Uttarayan to Dakshinayan or Dakshinayan to Uttaryan* of the Sun for cyclonic conditions.

V. CONCLUSION

Thus, it is found that the Mercury's daily speed, Sidereal/tropical angle and its Eastern elongation creates low pressure area and cyclone over the Bay of Bengal. The daily speed of Mercury, it's sidereal/tropical angle and Western Elongation creates low pressure area and cyclone over the Arabian Sea. Mercury's daily speed, Perihelion and Aphelion situations can give an idea about the wind intensity of low-pressure area or cyclone and after land fall of cyclone wind speed.