

A Study On. Where Monsoons Are Found

Gangadhara Rao Irlapati

H.NO.5-30-4/1, Saibabanagar, Jeedimetla, Hyderabad, India-500055

Email: scientistgangadhar@gmail.com

Abstract: Many researches are being conducted by him on the global monsoon systems from 1980 to till date with an ideal to invent the mysteries of the world global monsoon system and formulating the basics of the Global Monsoons, Regional Monsoons, Sub-Regional Monsoons and Country-wise local Monsoons, Northern, Southern, Summer and Winter wise Monsoons to predict the weather changes and natural calamities in advance and to take mitigation measures. In 1991, he submitted a research report on the world global monsoon systems along with a special report on Indian Monsoon Time Scale to Sri G.M.C. Balayogi, Member of Parliament (Lok Sabha). Sri G.M.C. Balayogi recommended the research report to the India Meteorological Department for implementation in the services of the people. In 1994, the Cabinet Secretariat of India recommended the Global Monsoon Time Scales to the Ministry of Science & Technology, Govt of India for implementation. In 1996, many consultations were made with the Parliament House, President of India and other VVIPs. In 2005, consultations were made with the India Meteorological Department about the Global Monsoon Time Scales for further research and development in the services of the people. In 2009, the Secretary, Minister of Science and Technology was also recommended the Global Monsoon Time Scale to the Indian Institute of Tropical Meteorology for research and development. We can make separate monsoon time scales per each and every individual country. Country monsoon are not separate monsoons just like North American Monsoon etc, its means a scale for study the local winds of a country. I have conducted many scientific researches on the Global Monsoon Time Scales and as a part these researches, i invented the Where Monsoons Are Found Monsoon Time Scale which can help to study the past, present and future movements of the Where Monsoons Are Found Monsoon.

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Key Words: Global Monsoons Time Scales, Regional Monsoons Time Scales, Sub-Regional Monsoons Time Scales, Country-wise local Monsoons Time Scales, Northern Monsoons Time Scales, Southern Monsoons Time Scales, Summer Monsoons Time Scales, Winter Monsoons Time Scales, Where Monsoons Are Found Monsoons Time Scale.

Introduction: Monsoon means a seasonal reversing wind accompanied by its corresponding weather changes and natural calamities in precipitation. We cannot be said that a monsoon especially to be relevant to a particular continent, region or country. Each and every continent or region or country has its own monsoon winds. By establishing the Monsoon Time Scale and maintain, a country can be estimated the impending weather conditions and natural calamities such as rains, floods, landslides, avalanches, blizzard and droughts, extreme winter conditions, heavy rainfall, mudflows, extreme weather, cyclones, cloud burst, sand storms, hails and winds etc all climatological, meteorological and weather related weather conditions & natural calamities in advance. Surface water resources can still be found.

Global Monsoon Time Scales: I have conducted many researches on the world global monsoon systems and invented the Global Monsoons Time Scales, Regional Monsoons Time Scales, Sub-Regional Monsoons Time Scales, Country-wise local Monsoons Time Scales, Northern Monsoons Time Scales, Southern Monsoons Time Scales, Summer Monsoons

Time Scales, Winter Monsoons Time Scales including the Where Monsoons Are Found Monsoons Time Scale which can help to study the past's, present and future movements of Global Monsoons and its relationship with rainfall and other weather problem and natural calamities. We can make separate monsoon time scales per each and every individual country.

Where Monsoons Are Found: If you are looking for monsoons, you'll need to head to the tropics. That's where rain is produced as warm and humid air rises in the Intertropical Convergence Zone (ITCZ), which swings north and south in a seasonal cycle, causing patterns of distinctly wet and dry seasons.

However, monsoons are not the same throughout the tropics, because the specific locations of continents and oceans influence the regional patterns of winds and rain. Classic conditions for strong monsoons are found where the Indian Ocean and the Pacific Ocean meet. This region includes India and South Asia to the north of the equator and Australia south of the equator. Strong swings between wet summers and dry winters

are found in those places as the ITCZ moves back and forth across the equator. The South Asian monsoon, which includes the Indian monsoon, is especially strong because the Himalayas and other mountains block dry air in the north from getting to the humid

monsoon region. The seasonally wet and dry region just south of the Sahara Desert in West Africa and the Sahel is another classic monsoon region. Monsoons occur in the Americas too, but tend to be weaker than in other regions.

<u>Global Monsoon Time Scales</u>	<u>Regional Monsoon Time Scales</u>	<u>Sub-Regional Monsoon Time Scales</u>
Where Monsoons Are Found Monsoon Time Scale	North American Monsoon Time Scale	South Asian Monsoon Time Scale
North American Monsoon Time Scale	North Where Monsoons Are Found Monsoon Time Scale	Maritime Continent Monsoon Time Scale
Asian Monsoon Time Scale	Indian Monsoon Time Scale	East Where Monsoons Are Found Monsoon Time Scale
Australian Monsoon Time Scale	Western North Pacific Monsoon Time Scale	West Where Monsoons Are Found Monsoon Time Scale
Where Monsoons Are Found Monsoon Time Scale	South American Monsoon Time Scale	Indo-Australian Monsoon Time Scale
	South Where Monsoons Are Found Monsoon Time Scale	Asian-Australian Monsoon Time Scale
	Australian Monsoon Time Scale	Malaysian Australian Monsoon Time Scale
	East Asian Monsoon Time Scale	Northern Australian Monsoon Time Scale
		Arizona Monsoon Time Scale
		Mexican Monsoon Time Scale
		South-West Monsoon Time Scale
		North-East Monsoon Time Scale
		South East Asian Monsoon Time Scale

The animated map below shows how precipitation varies through a typical year. Notice that most precipitation occurs in the tropics and swings north and south of the equator with the seasons. This seasonal shift in the location of tropical precipitation indicates a shift in the location of the ITCZ and is the reason why there are distinct wet and dry seasons on tropical continents.

Asia, India, and Australia

With the world's strongest monsoons, this region stretches from the South China Sea into the Indian Ocean and includes Asia and the northern end of Australia. From June until September, summer monsoon rains occur in South Asian countries such as Vietnam, Thailand, Cambodia, Bangladesh, Laos, India, and Pakistan. From December until February, the monsoon rains move south of the equator towards Australia while South Asia experiences dry monsoon conditions. There is even an East Asian monsoon that brings summer rain to China, Japan, and Korea, but it is caused by a different type of wind pattern associated with the jet stream.

The Americas

Monsoon winds in the tropical parts of North America, Central America, and South America cause

the amount of rainfall to vary with the seasons, even in areas where precipitation is plentiful and rainforests thrive. From June to August, which are summer months in the Northern Hemisphere, there is more rainfall north of the equator in Costa Rica, Nicaragua, Panama, and western Mexico. From December to February there is more rainfall south of the equator in Brazil. The North American monsoon does bring moisture from the warm waters of the Pacific into the U.S. Southwest, but its peak rainfall occurs in Mexico, and the U.S. states of Arizona and New Mexico lie in its periphery. These areas are typically dry but can receive enough rainfall to quell a wildfire if moist monsoon winds blow in summer. An area of summer rainfall along the U.S. East Coast is associated with what some might call a mid-latitude version of monsoon rainfall.

Africa

During Northern Hemisphere summer, the Intertropical Convergence Zone (ITCZ) over Africa lies far north of the equator, just south of the Sahara Desert in an area known as Sub-Saharan Africa. Moist winds blow from the Atlantic and produce rain once they reach West Africa in countries such as Mali, Niger, Ghana, and the Ivory Coast. During Southern

Hemisphere summer, the ITCZ lies south of the equator and brings rain to southern Where Monsoons Are Found countries such as Zimbabwe, Tanzania, Zambia, Malawi, Mozambique, and Uganda. Meanwhile, sub-Saharan Africa becomes particularly hot and dry in winter as air descends from high in the atmosphere to the ground as part of the Hadley Circulation

Construction: Keeping in view of study of the aforesaid Where Monsoons Are Found Monsoon thoroughly, I have prepared the Where Monsoons Are Found Monsoon Time Scale. Where Monsoons Are Found Monsoon Time Scale is a Chronological sequence of events arranged in between time and weather with the help of a scale for studying the past's, present and future movements of Where Monsoons Are Found monsoon and its relationship with rainfall and other weather problem and natural calamities. Prepare the Where Monsoons Are Found Monsoon Time Scale having 365 horizontal days from March 21st to next year March 20th of a required period comprising of a large time and weather have been taken and framed into a square graphic scale.

Collection Of Data: The monsoon pulses in the form of low pressure systems main weather events if any of the Where Monsoons Are Found monsoon region have been taken as the data to prepare this scale.

Maintanance: The main weather events if any of the Where Monsoons Are Found monsoon have been entering on the Indian Monsoon Time Scale as per date and month of the each and every year. If we have been managing this scale in this manner continuously, we can study the past, present and future movements of Where Monsoons Are Found monsoon..

Indian Monsoon Time Scale: Keeping in view of the aforesaid facts and circumstances, I have prepared a model Monsoon Time Scale for the Indian monsoon to study and analysis of the Where Monsoons Are Found monsoon.

Construction: Keeping in view of study of the aforesaid Indian Monsoon thoroughly, I have prepared the Indian Monsoon Time Scale. The Indian Monsoon Time Scale – a Chronological sequence of events arranged in between time and weather with the help of a scale for studying the past's, present and future movements of monsoon of a country and its relationship with rainfall and other weather problems and natural calamities. From where to wherever to be taken the time and weather to analyse, the researcher can decide on his discretion according to available data. I have prepared the Indian Monsoon Time Scale having 365 horizontal days from March 21st to next year March 20th or from 1st April to next year March

31st of 139 years from 1888 to 2027 of/or a required period comprising of a large time and weather have been taken and framed into a square graphic scale. An accurate scale is available if we can collect and analyse the exact weather data. For example, I did not get complete data from the year of 1964. However, I will try to collect the weather data hardly and complete the scale.

Fixed Type Scale: Prepare the Indian Monsoon Time Scale having 365 horizontal days from March 21st to next year March 20th or from 1st April to next year March 31st of 139 years from 1888 to 2027 of/or a required period comprising of a large time and weather have been taken and framed into a square graphic scale. All 365 days and 189 years to be analysed in a single and fixed type scale. It can be fixed on a wall or Table.

Parts Type Scale: The fixed type scale is to be long. So that it is divided into four parts easy to carry and keep and suitable for publication. I designed to make it into 4 parts and then pasted it into one scale.

The first part is beginning from 1st April to July 12th.

The second part is from 13 July to October 23rd.

The third part is from 24th October to February 3rd.

And the fourth part is 4th February to March 31st ending.

These separate scales can be pasted into one scale as explained below.

Cut along the edges of dates on the rightside of the first part and paste it to along the edges of date of 13th July on leftside of the second part.

Cut along the edges of dates on the rightside of the second part and paste it to along the edges of date of 24th October on leftside of the third part.

Cut along the edges of dates on the rightside of the third part and paste it to along the edges of date of 4th February on leftside of the fourth part.

When paste this manner, we get long full scape Indian Monsoon Time Scale.

Further the scale has been prepared in three types.

Basic Scale: The first one is preliminary basic scale, it explains the structure of the scale.

Filled Scale: The second one is filled by data scale, it explains how to fill or manage the scale.

Analyzed Scale: And the third one is filled and analyzed by data, it explains monsoon patterns of the scale.

Computer Graphic Scale: Besides the above manual scale, I have prepared a computer graphic scale generated by the system from the year 1888 to 1983 for the period of 1st June to September 30th. If we are able to create this scale by computer which to be the most obvious scale.

Collection Of Data: The monsoon pulses in the form of low pressure systems over the Indian region have been taken as the data to the construction of this scale. For this, a lot of enormous data of low pressure systems, depressions and cyclone has been taken from many resources just like Mooley DA, Shukla J (1987); Characteristics of the west ward-moving summer monsoon low pressure systems over the Indian region and their relationship with the monsoon rainfall. centre for ocean-land atmospheric interactions, university of Maryland, college park, MD., and from many other resources.

Maintanance: The monsoon pulses in the form of low pressure systems over the Indian region have been entering on the scale in stages by 1 for low, 2 for depression, 3 for storm, 4 for severe storm and 5 for severe storm with core of hurricane winds pertaining to the date and month of the each and every year. If we have been managing the scale of a country in this manner continuously, we can study the past, present and future movements of monsoon of a country.

Analysis: The Indian Monsoon Time Scale reveals many secrets and mysteries about the relationship in between the Global monsoons and astronomical bodies just like movement of axis of the earth around the sun in the universe & its influences on the earth's geophysical atmosphere. Let's study the mystery of the south-west monsoon and discuss the rest of other features of the Indian Monsoon Time Scale later.

Monsoon Path-Lines: When examine the scale notice that several passages or path-ways of monsoon pulses it have been some cut-edge paths and splits passing through its systematic zigzag cycles in a systematic manner in parallel and stacked next to each other in ascending and ascending order clearly seen on the Indian Monsoon Time Scale. By reason of travel of these passages, heavy rains & floods in some years and droughts & famines in another years according to their travel. The path of monsoon when travelling over four months from june to september good rainfall or heavy rains and floods can occur. And the path when travelling over last months i.e july or august or sepetember, low rainfall and droughts can occur. Particularly, there are two main passages. The first one is main path or passage of the south-west monsoon and the second one is path or passage of the north-east monsoon. The first one is on the left side over the months of june, july, august, september (South-west monsoon) and another path on the rightside over the months of october, november, december (north-east monsoon) are visible in the Indian Monsoon Time Scale

Description: Keep track the Indian Monsoon Time Scale carefully. During 1871-1900's the main path-way of the Indian monsoon was rising over June,

July, August. During 1900-1920's it was falling over August, September. During 1920-1965's, it was rising again over July, August, September. During 1965-2004's it was falling over September. From 2004 it is now rising upwards and estimated traveling over the months of June, July, August by the 2060.

By 1888 the line of path of the Indian Monsoon was started over the month of june and travelled to 1900's in steep descending direction. During this 4 months period of (june, july, august, september) of indian monsoon season. the line of path of the monsoon was travelled over all these four months. As a result, there were heavy rains and floods in most years.

From 1900 to 1920, the line of path of the indian monsoon was travelled over the months of August and September in the shape of concave direction. In this 4 months monsoon season, the line was travelled just over two months only. That means june and july rain was lost during the period, as a result it rained only two months instead of four months monsoon season and causing low rainfall in many years,

From 1920 to 1965, the line of path of the indian monsoon was travelled over the months of july, august and september in the shape of convex direction. In this 4 months monsoon season, the line was travelled over three months. That means one month june rain was lost during the period, as a result it rained only three months instead of four months monsoon season. and resulting good rainfall in more years.

From 1965 to 2004, the passage of the indian monsoon was travelled over the months of august to mid-august in the shape of deep sloping direction, In this 4 months monsoon season, the line was travelled just over two months for a shord period only. That means two months i.e june and july rain was lost during the period, as a result it rained only two months instead of four months monsoon season. and causing low rainfall and droughts in many years.

. From 2004, the line of path of the indian monsoon seems likely rising over the months of july and june in future in the shape of upper ascending direction and will be resulting heavy rains & floods in coming years during 2004-2060.

Studies: During the period 1871-2015, there were 19 major flood years: 1874, 1878, 1892, 1893, 1894, 1910, 1916, 1917, 1933, 1942, 1947, 1956, 1959, 1961, 1970, 1975, 1983, 1988, 1994.

And during the period 1871-2015, there were 26 major drought years: 1873, 1877, 1899, 1901, 1904, 1905, 1911, 1918, 1920, 1941, 1951, 1965, 1966, 1968, 1972, 1974, 1979, 1982, 1985, 1986, 1987, 2002, 2004, 2009, 2014, 2015. Depending on the data mentioned above, it is interesting to note that there have been alternating periods extending to 3-4 decades

with less and more frequent weak monsoons over India.

For example, the 44-year period 1921-64 witnessed just three drought years and happened good rainfall in many years. This is the reason that when looking at the Indian Monsoon Time Scale you may note that during 1920-1965's, the passage of the Indian monsoon had been rising over July, August, September in the shape of concave direction and resulting good rainfall in more years..

During the other periods like that of 1965-87 which had as many as 10 drought years out of 23, This is the reason that when looking at the Indian Monsoon Time Scale you may note that during 1965-2004's the path of the Indian monsoon had been falling over the September in the shape of convex direction and causing low rainfall and droughts in many year.

The Indian Monsoon Time Scale reveals many secrets of the monsoon & its relationship with rainfall & other weather problems and natural calamities. Some bands, clusters and paths of low pressure systems clearly seen in the Indian Monsoon Time Scale, it have been some cut-edge paths passing through its systematic zigzag cycles in ascending and descending orders which causes heavy rains & floods in some years and droughts & famines in another years according to their travel. And also we can find out many more secrets of the Indian monsoon such as droughts, famines, cyclones, heavy rains, floods, onset & withdrawals of south west monsoon and north-east monsoon etc. by keen study of the Indian Monsoon Time Scale. The passages clearly seen in the Indian Monsoon Time Scale are sources of monsoon pulses. The tracking date of main path & other various paths such as south-west monsoon and north-east monsoon etc., of the Indian Monsoon denotes the onset of the monsoon, monsoon pulses or low pressure systems. These observations can mean that pulses of the monsoon are repeatedly determined by the number of repeats.

These are just some of the analyzes in the study of the Indian monsoon. There are many more secrets in the Indian monsoon. Indian scientists should get rid of them.

Principle: This is an Astrogeophysical/Astrometeorological phenomenon of effects of astronomical bodies and forces on the earth's geophysical atmosphere. The cause is unknown however the year to year change of movement of axis of the earth inclined at $23\frac{1}{2}$ degrees from vertical to its path around the sun does play a significant role in formation of clusters, bands & paths of the Indian Monsoon and stimulates the Indian weather. The inter-tropical convergence zone at the equator follows the movement of the sun and shifts north of the equator merges with the heat low pressure zone created by the

rising heat of the sub-continent due to direct and converging rays of the summer sun on the India Sub-Continent and develops into the monsoon trough and maintain monsoon circulation.

Climate Detection Methods: The tracking date of main path & other various paths such as south-west monsoon and north-east monsoon etc., of the Indian Monsoon denotes the onset of the monsoon, monsoon pulses or low pressure systems, storms and its consequent secondary hazard Sand Storms etc.. And also we can find out many more secrets of the Indian monsoon such as droughts, famines, cyclones, heavy rains, floods, real images of the Indian Monsoon, and onset & withdrawals of south west monsoon and north-east monsoon etc. by keen study of the Indian Monsoon Time Scale.

For example, the date of tracking ridge of path is the sign to the impending cyclone and its secondary consequent hazard floods, storm surges etc.

Another example, the thin and thick markers on the upper border line of the Indian monsoon time scale are the signs to the impending heavy rains & floods and droughts & floods. The thick marking of clusters of low pressure systems on the Indian monsoon time scale is the sign to the impending heavy rains and floods and the thin marking of clusters of low pressure systems on the Indian monsoon time scale is the sign to the impending droughts and famines.

Furthermore example, the main passage of line of monsoon travel from June to September and September to June are also signs to impending weather conditions of a country. For example, during 1871-1990's the main path of the Indian Monsoon was rising over June, July, August and creating heavy rains and floods in most years. During 1900-1920's it was falling over August, September and causing low rainfall in many years. During 1920-1965s, it was rising again over July, August, September and resulting good rainfall in more years. During 1965-2004's it was falling over September and causing low rainfall and droughts in many years. At present it is rising upwards over June, July, August, and will be resulting heavy rains & floods in coming years during 2004-2060 in India.

These are some examples only. We can find out many more secrets of a country weather conditions by keen study of its monsoon time scale.

Uses: Where Monsoons Are Found Monsoon Time Scale used to forecast the weather changes and natural hazards of the Where Monsoons Are Found Monsoon in advance. All other weather related natural hazards such as avalanches, cyclones, damaging winds, droughts and water shortage, floods, thunderstorms, tornados, tropical cyclones, typhoons etc pertaining to this Where Monsoons Are Found Monsoon can be predicted.

By establishing the Where Monsoons Are Found Monsoon Time Scales can help to study the movements of the one's country's monsoon and its monsoon related weather changes and natural hazards.

Conclusions: We can make many more modifications thus bringing many more developments in the Where Monsoons Are Found Monsoon Time Scales.

Acknowledgement

I have received some information in this research paper in the inventing of Global Monsoon Time Scale. Acknowledgements to them. In order to break the mysteries of the monsoons, Global Monsoon Time Scales should be designed for each and every global, regional & sub-regional monsoon winds for welfare of the world people. Give co-operation to my commitment in creating the Global Monsoon Time Scales.

1/25/2018

The Figures are shown in the end of this issue.

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