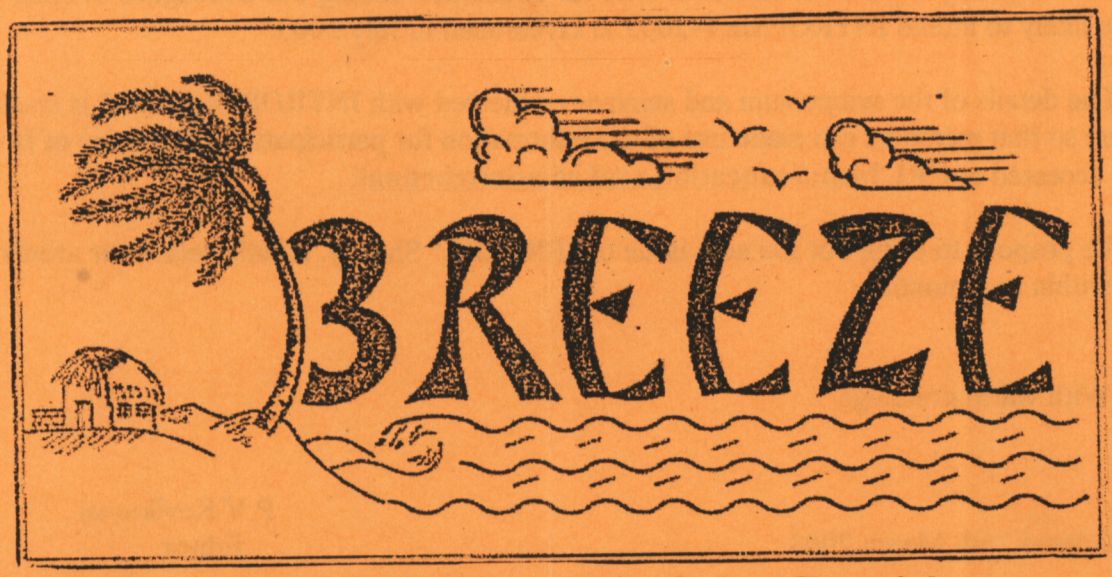

The news letter of Indian Meteorological Society, Chennai chapter

Vol 5 2002

CONTENTS

Editorial

Dear Member,

The current issue of Vol-5 of "BREEZE" is brought out as a combined one for the Year 2002. Though it was delayed a bit but almost in time for circulation among our colleagues of other chapters who are likely to attend INTROPMET-2003 at Hyderabad in July 2003.

The details of the symposium and seminar connected with INTROPMET-2003 is enclosed in this issue so that members can make use of the information for participation. This issue of Breeze can also be accessed at URL http://education.vsnl.com/imschennai.

We propose to bring out the next issue of "BREEZE" Shortly. Kindly send your article to the Editor within two months.

With warm greetings.

P.V.Revikumar.
Editor.

Chennai dated 25th March 2003

The Editor and the IMS-Chennai Chapter are not responsible for the views expressed by the authors.

Membership details of IMS-Chennai Chapter as on 1 January 2003

Life Members: 59 **Ordinary Members: 87** **Total: 146**

MURPHY'S LAW IN METEOROLOGY

S. Raghavan

Those who have worked in the field of electronics will be familiar with "Murphy's Law". It states that

"if anything **can** go wrong, it **will**".

To interpret this statement correctly, we must add

"it will go wrong when it will have the maximum impact".

Thus, your television set will work very well except on the day you are keen to watch a cricket match or any other match or any other favourite programme of yours. After the match is over, the set will probably work normally, much to your irritation. The same thing can be said of any other appliance at home or office. There are other corollaries applicable to servicing of equipment e.g. "any wire cut to size will be found too short".

Murphy's Law is universal i.e. it applies not only to equipment but everything else. For example, you are all set to go to a long-awaited theatre event or a holiday trip or whatever. The weather which was benign till then, starting pouring. Or may be somebody suddenly organises a bandh. You have to cancel the trip. Once you have cancelled it, the weather becomes benign again or a bandh is called off.

Believing in Murphy's Law is apparently unscientific. But think again, after studying the examples below from the experience of Meteorologists and others. To explain the success of Murphy's Law, someone has formulated another theorem. "Inanimate objects tend to conspire actively against human beings".

Suppose you are spreading jam on a slice of bread; if you let it slop, the slice will fall on the floor carpet. what is the probability that it will fall the "jam" side down and spoil the carpet? Did you say 50%? No, it will be much higher, because it will try to maximise the damage (to the carpet). Try throwing a crumpled piece of paper through a window, which has vertical bars. What is the probability that it hits one of the bars and comes back to you instead of going our through the spaces between the bars? Your would think that the probability must be small because the space between the bars is usually much more that the cross-section of the bar. No, when you actually try it and want the paper to go out, it will more often than not, come back to you. you can try the experiment for yourself, but remember that throwing waste paper is unfriendly to the environment; you should clean up afterwards.

What has all this to do with Meteorology? If you are a forecaster you would have noticed that your forecast is correct most of the time but fails on the crucial occasion when everybody's attention is on you. All your good forecasts are forgotten, and a newspaper writes a nasty editorial and even includes it in its centenary volume, as one of its best editorials! if your are an astronomer, you go on an expedition to a place where clear weather is forecast, to see a total solar eclipse (Your life's ambition). But cloud gather there too, to watch the eclipse, as it were! Or you go to a conference of Meteorologists-in the fair weather season. But the convergence of Meteorologists produces convergence in the atmosphere too. It pours and possibly you may have to return to your base to man your post.

Many years ago I was working on radar and other equipment at New Delhi. Electronic equipment in those days used vacuum tubes and other old technology and was prone to frequent failure. But believe me, most cases of failure would occur just before closing time or on Saturday noon just before the weekend break (Saturdays used to be half-working days in those time) so as to maximise the impact on the enjoyment of our evening or weekend.

A more spectacular case of this behaviour was the radar, which was installed at Chennai (then Madras) Airport in 1959. It was primitive by today's standards, but since it was the first weather radar in southern India, we had great expectations. It worked well for some time but when the north-east monsoon was about to set in, a bearing in the drive motor became faulty. As the supplier was supposed to repair it under warranty, I was asked to wait till their engineer came. He was busy servicing marine radars all over the Arabian sea and when he finally came and repaired the radar, the northeast monsoon season was over!

In the subsequent northeast monsoon season, a depression formed in the Bay of Bengal on 18th November. We were looking forward for the first opportunity of observe a cyclonic disturbance with the radar. Indeed the depression became a "midget" cyclone and crossed coast very close to Meenambakkam on the 20th, causing damage, limited to a very small area (Sarma and Bedekar, 1962). Trees around my house fell and my family narrowly escaped being hit. But what abut the radar? On the night of the 18th, a rat living in the cable ducts of the Civil Aviation Department decided to try the taste of the radar cables. It got electrocuted and in the process burnt up a large part of the wiring going to the radar display. We worked on it night and day and re-commissioned the radar, but not before the storm had passed. We had to listen to the taunts of our own colleagues.

Twelve years later we installed a cyclone warning radar at Chennai. The installation was delayed due to red tape with customs and others. Before we could complete it, a cyclone came along. We tracked it successfully and accurately, that being the first occasion in India when a cyclone was tracked by radar for an appreciable period of time. But this had to be done in pouring rain, baling out water all the time from around the antenna and transmitter. A month later our installation was complete, including a radome. For nearly three years thereafter, no cyclone approached us! I told the minister, at the next ACR (Annual Cyclone Review) meeting that the radar was driving away the cyclones.

Now in 2002-2003, equipment has improved, resulting in much larger MTBF (Mean Time Between Failures). Forecasts and their appreciation by the media have also improved to some extent. But Murphy's Law? it is universal and permanent. If affects Researchers too. American atmospheric physicist and research meteorologist. R.Jeck (2002) writes in the Bulletin of the American Meteorological Society that whenever he organises a field trip to study some phenomenon, either the weather of interest does not occur when he is ready, or the aircraft or some other equipment fails when the phenomenon occurs. He has formulated the Jeck's Law of Meteorological Research, which says:

(1) Nature never really cooperates.
(a) Neither does the instrumentation.
(2) If they do cooperate, it is never at the same time.
(b) she (Nature) can hold out for a long time.

So, Murphy's Law is truly universal!!

References

1. Jeck R., 2002, "A new law of nature", Bull.Amer.Meteor.Soc., 83, 960-961.

2. sarma V.V. and V.C.Bedekar, 1962, "Midget cyclone over Madras - 20 November 1960", Ind.J.Meteor.Geophys., 13, 472-480.

STUDY ON THE SIMPLE DECISION RULE FOR FORECASTING SEASONAL RAINFALL

C.VASANTHI, V.GEETHALAKSHMI, R.SELVARAJU AND T.N.BALASUBRAMANIAN .

Forecasting rainfall is vital for taking any viable farm decision. It has been established that losses in agricultural production could be minimised, if weather information is known two to three days ahead of any farm operations to be taken. In this context the India Meteorological Department and National Centre for Medium Range Weather forecasting employ synoptic chart, power regression model and numerical weather prediction model etc., to forecast forthcoming rainfall events. These approaches not only require huge man power but also vast infrastructure facilities. Hence the simple study was undertaken at the Department of Agricultural Meteorology, Tamilnadu Agricultural University, Coimbatore-3 by utilising daily data on weather parameters.

For study purpose daily rainfall, maximum temperature, minimum temperature, diurnal variation, grass minimum temperature, relative humidity (morning), relative humidity (evening) and wind speed at 10 feet height were collected from Department of Agricultural Meteorology, Tamilnadu Agricultural University, Coimbatore-3, (latitude 11' N, longitude 77' E and altitude 426.7 m MSL) for El-Nino Year (1997), La-Nina year (1998) and Normal Year (1999) for the location ofCoimbatore. These data were grouped into twelve categories as given in Table 1 and simple relationship was established between these group data and rainfall events (Table 2).

This study results indicated that during South West Monsoon (SWM) of both El-Nino and La-Nina years, the weather parameters grouped in 'E' category (Max temp>30' C, Min temp>20'C, Diurnal variation <10'C, Grass minimum temp>20'C, RH (m) >70%, RH (E) >40% and wind speed >5KMPH) had brought more rainfall to 32.2 and 29.4 percent of the days of the season respectively.

In respect of the North East Monsoon (NEM) season El-Nino years, there was 47.0 percentage of contribution form the category 'G' (Max temp <30'C, Min temp >20'C Diurnal variation <10'C, Grass minimum temp <20'C, RH (m) >70%, RH (E) >40% and wind speed $\gtrsim$ 5 KMPH).

Interestingly the weather parameters listed out in the category 'H' (Max temp<30'C, Min temp >20' C, Diurnal variation <10'C, Grass minimum temp >20'C, RH(m) >70%, RH (E) >40% and wind speed $\gtrsim$ 5KMPH) did influence the rainfall events during NEM of both La-Nina (28.6 percent) and Normal (40.0 percent) years and SWM season of normal (26 percent) year. Hence the developed thumbrule may be employed for forecasting rainfall under short rangeforecst.

Table: 1 Weather parameter's relationship related to rainfall occurrence.

category	Max. Temp	Min. Temp	Diurnal variation ('C)	Grass Min. Temp ('C)	RH % (m)	RH % (e)	WindSpeed (KMPH)
A	>30	>20	>10	>20	>70	>40	<5
B	>30	>20	<10	>20	>70	>40	<5
C	>30	>20	>10	<20	>70	>40	<5
D	>30	>20	>10	>20	>70	>40	>5
E	>30	>20	<10	>20	>70	>40	>5
F	>30	<20	>10	<20	>70	>40	>5
G	<30	>20	<10	<20	>70	>40	≥ 5
H	<30	>20	<10	>20	>70	>40	≥ 5
I	<30	<20	>10	<20	>70	>40	<5
J	>30	>20	<10	>20	<70	>40	>5
K	>30	>20	<10	<20	>70	>40	<5
L	>30	>20	<10	<20	>70	>40	>5

Table : 2 Percentage of rain days of seasonal rainfall

Category	Normal Year (1999)		El-Nino Year (1997)		La_Nina year (1998)	
	SWM	NEM	SWM	NEM	SWM	NEM
E	-	-	32.2	-	29.4	-
G	-	-	-	47.0	-	-
H	26.0	40.0	-	-	-	28.6

SWM: South West Monsoon season (June-Septmeber)
NEM: North East Monsoon season (October-December)

BEHAVIOUR OF RAINY DAYS DURING NORMAL, EL-NINO AND LA-NINA YEARS

C.VASANTHI, V.GEETHALAKSHMI, R.SELVARAJU AND T.N.BALASUBRAMANIAN .

One analytical study was made of rainy days of Normal, El-Nino and La-Nina years of Coimbatore. For this purpose daily rainfall data were collected from the Department of Agricultural Meteorology, Tamilnadu Agricultural University, Coimbatore-3, from the year 1908 to 2000. These

data were aggregated into seasonal events for Normal, El-Nino and La-Nina Years. Even though there are four seasons per calendar year, considering the agricultural importance only South West Monsoon (SWM) rainy days and North East Monsoon (NEM) rainy days have been taken for study. Out of the total 93 years of study, the El-Nino were 30 years, Normal years were 45 and 18 years were La-Nina. the result is presented in Table 1.

Table: 1 Mean annual rainy days (%) variation between Normal, El-Nino and La-Nina years.

Season	El_Nino (30 Years)	Normal(45 Years)	La-Nina (18 Years)
South West Monsoon	34.1	34.3	42.1
North East Monsoon	44.4	40.7	35.8

In the normal years there was 34.3 per cent of total annual rainy days distributed in SWM and while it was 40.7 percent in NEM season. Variation occurred during El-Nino and La-Nina years. In respect of El-Nino years especially in SWM season about 34.1 percent of total annual rainy days occurred and this is more or less nearer to the normal year distribution. While duringNEM season about 44.4 percent of rainy days could be observed. In respect of La-Nina years 42.1 percent of annual rainy days was found in SWM and it was 35.8 percent in NEM season. The result further indicated that during El-Nino year, crowded rainy days were seen in NEM when compared to SWM, whereas it was a reversed trend in La-Nina years.

This information would be a tool for developing weather forecast during Normal, El-Nino and La-Nina years.

CYCLONIC STORMS STRIKING INDIAN COAST DURING THE PERIOD 1971-2000

S.sridharan and D.Rajan Babu

Tropical cyclone, one of the violent manifestations of nature is intense low-pressure area. Low pressure system are classified according to maximum surface winds associated with them. When the wind speed in a rotating tropical disturbance exceeds 31 kmph it is termed a cyclonic disturbance/depression and when it exceeds 63 kmph it is termed a cyclonic storm. On an average 80 cyclonic storms occur in the tropical oceanic areas around the world every year, the Bay of Bengal accounting for 4 and the Arabian sea 1.

This study is on the cyclonic disturbances (CD) that occurred in the Indian seas during the period 1971-2000. The cyclonic disturbances, which intensified into cyclonic storms (CS) and crossed Indian coast during the same period have been examined and the results are presented.

The monthly distribution of cyclonic disturbances and cyclonic storms over the Bay of Bengal

and the Arabian sea are shown in Table 1.1 and 1.2 respectively. It is seen that the cyclonic disturbances are three times more frequent over the Bay of Bengal than over the Arabian sea. Around half of the disturbances in Bay as well as Arabian sea intensified into cyclonic storms. In the Bay of Bengal 47% of cyclonic disturbances occurred in the post monsoon season (October-December) and southwest monsoon season (June-September) accounted for 40% of cyclone disturbances. As regards cyclonic storms in the Bay, 63% of them occurred in the post monsoon season and 17% in the monsoon season. In the case of Arabian Sea, 55% of the cyclonic disturbances occurred in the post monsoon season and 32% in the monsoon season. As regards cyclonic storms in the Arabian Sea, 54% of them occurred in the post monsoon season. It is seen that the annual average of cyclonic disturbances in the Bay of Bengal is 7.6 and cyclonic storms 3.7. The number of cyclonic disturbances in the Bay varied from a minimum of 3 in 1997 & 1998 to a maximum of 13 in 1975 and the cyclonic storms varied from a minimum to 1 in 1986 & 1993 to a maximum of 7 in 1976. In the case of Arabian Sea, annual average of cyclonic disturbances is 2.4 and cyclonic storm 1.2. It is further seen that in the years 1991 & 2000 no cyclonic disturbances occurred in the Arabian sea.

The decadal variation of cyclonic disturbances and cyclonic storms over the Bay of Bengal and the Arabian Sea are shown in Table 2. In the case of Bay of Bengal decreasing trend is seen in the occurrence of cyclonic disturbances and cyclonic storms. As regards Arabian Sea, maximum number of cyclonic disturbances occurred in the decade 1971-1980 and the least number of cyclonic storms occurred in the decade 1981-1990.

The details of cyclonic storms crossing different sections of east coast of India are shown in Table 3.1. It is seen that Andhra and Orissa-West Bengal coasts accounted for almost equal number of cyclonic storms. In the case of Orissa-West Bengal coast, 50% of them crossed during southwest monsoon season, where as in the case of Andhra, 80% of the cyclonic storms crossed coast during post monsoon season. As regards Tamilnadu, cyclonic storms crossed coast only during post monsoon season and 64% of them occurred in the month of November alone. The details of cyclonic storms crossing different sections in the west coast of India are shown in Table 3.2. It is seen that cyclonic storms crossed only Gujarat and Karnataka coasts. In the case of Gujarat, majority of them (67%) occurred in the post monsoon months of October & November taken together. As regards Karnataka, cyclonic storms crossed coast only in the month of November during the period of study.

TABLE 1.1

Monthly distibution of cyclonic disturances over the Bay of Bengal (1971-2000)

	Jan	Feb	Mar	Apl	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Total No. of cyclonic disturbances	4	1	1	4	19	20	17	33	21	42	48	17	227
Percentage distribution	1.8	0.4	0.4	1.8	8.4	8.8	7.5	14.5	9.3	18.5	21.1	7.5	
Total No. which intensified	1	1	1	4	15	4	3	4	8	23	37	9	110

into cyclonic storm													
percentage distribution	0.9	0.9	0.9	3.6	13.6	3.6	2.7	3.6	7.3	20.9	33.6	8.2	

Table 1.2
Monthly distiution of cyclonic distrubances over the Arabian Sea (1971-2000)

	Jan	Feb	Mar	Apl	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Total No. of cyclonic disturbances	-	-	-	1	9	15	4	1	3	17	17	6	73
Percentage distribution	-	-	-	1.4	12.3	20.5	5.5	1.4	4.1	23.3	23.3	8.2	
Total No. which intensified into cyclonic storm	-	-	-	1	6	7	-	-	2	9	7	3	35
percentage distribution	-	-	-	2.9	17.1	20	-	-	5.7	25.7	20	8.6	

Table 2
Decadal frequency of cyclonic disturbances

Decade	Bay of Bengal		Arabian Sea	
	CD	CS	CD	CS
1971-1980	94	45	39	19
1981-1990	77	35	17	03
1991-2000	56	30	17	13

Table 3.1
No. of cyclonic storms striking east coast of India (1971-2000)

	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Orissa-West Bengal coast	2	1	2	4	5	6	3	1	24
Andhra coast	2	1	1	-	1	8	11	1	25
Tamilnadu coast	-	-	-	-	-	1	7	3	11

Table 3.2
No. of cyclonic storms striking west coast of India (1971-2000)

	May	June	Oct	Nov	Total
Gujarat coast	1	2	3	3	9
Karnataka coast	-	-	-	2	2

INTROMET-2003

International Symposium on Natural Hazards

(23-26 July 2003)

&

Seminar on Impacts of Climate change

(27 July 2003)

Hyderabad

Venue: Hotel Kakatiya Shereton, Hyderabad

Inauguration:

The symposium is likely to be inaugurated by Hon'ble Prime Minister of India. Prof. Murli Manohar Joshi, Hon'ble Minister HRD, S&T and Ocean Development to be the Chief Guest. Shri Chandrababu Naidu, Hon'ble Chief Minister Andhra Pradesh to preside over.

Proposed Evening Lectures by luminaries: Prof. G.O.P Obasi, Dr.M.S.Swaminathan, Dr.K.Kasturirangan Shri Chandrababu Naidu, Shri Sanjiv Goeneka.

Participation of different sectors: Science & Technology, Environment, Agriculture, Disaster Management, State & Central Government, Industries, Power, Planning, NGOs, Finance, Insurance.

THEME FOR THE SYMPOSIUM

- **Tropical cyclones: Understanding, Observations, Genesis, Structure, Modeling, Forecasting and Impacts.**
- **Extra-tropical cyclones and winter storms**
- **local extreme weather events**
- **Marine Hazards**
- **Floods, Drought and Forest Fires**
- **Earthquakes, land slides, mud slides**
- **Aviation Hazards**
- **Operational aspects of Natural Hazards**
- **Field/Simulation Mock Experiments for effective response**
- **Disaster Mitigation & Management: Role of Disaster managers and planners, Industries, Economic & Societal Impact, Community participation, Role of NGOs**

Symposium:

Authors desirous of contributing papers covering one or more of the above themes should send their extended Abstract (limited to 3-5 pages-including diagrams and tables on A-4 size paper in single space) electronically (word document) before April 30, 2003. On acceptance of the abstract, the contributors would be informed about time and duration of the presentation. Those who do not have papers to present can also participate in the symposium by payment of requisite registration fee. Selected papers from the proceedings of the conference would appear in Double issue of the **International Journal of Natural Hazards** subjected to the usual peer review procedures of the journal. The prescribed format for submitting the paper for the above journal would be intimated later.

Seminar:

For participation in the seminar, no extra registration fee will be charged for participants already registered for symposium. However, those who wish to participate only in seminar will have to pay a registration fee as per details given below.

REGISTRATION FEE

CATEGORY	INDIAN PARTICIPANTS			Foreign Participants
	Symposium	*Seminar*	*Both*	
Non-IMS Member	Rs. 2000/-	Rs. 1000/-	Rs 2000/-	US$ 300
IMS Member	Rs. 1500/-	Rs. 500/-	Rs 1500/-	US$ 250
STUDENTS	Rs. 1000/-	Rs. 500/-	Rs 1000/-	US$ 150

Registration Fee is to be sent along with the Pre-Registration Form through **Demand Draft/ Pay Order/ Electronic Transfer** in favour of **"INTROMET-2003 (SWIFT NO. SBININBBX312; Account No. 0100-0005-284)** Payable at Hyderabad, A.P., India with an e-mail communication to Dr.K.J.Ramesh, Chairman, Local Organising Committee.

CHAPTER NEWS

A mini seminar on Monsoon 2001 was held at Regional Met. Centre, Chennai on 14th March 2002. It comprises of three scientific presentations.

a) Review of Monsoon-2001 Shri S.K.Subramanian Director ACWC, RMC Chennai.

b) Rain water harvesting and flood mitigation by Shri Das Meena IAS, Executive Director, Chennai Metro Water supply and sewage Board Chennai.

c) Water starved Chennai city - Is there a solution. by Dr.Y.E.A.Raj, Director RMC Chennai.

SCIENTIFIC LECTURES:

1. Shri E.Kulandaivelu, Meteorologist Gr.I RMC Chennai, spoken on "Ozone hole over Antarctica during spring season of 2000" on 24th April 2002.

2. Dr.V.Ramasamy, Senior Scietist NOAA/Geophysical fluid Dynamics Laboratory Princeton University, N.J USA-spoken on "Global Climate forcing and change" on 26 Nov 2002.

3. Shir S.Raghavan, DDGM (Rtd) RMC Chennai spoken on "Trends in Tropical Cyclones, Are they in occurrence or in impact?" on 26 Nov 2002.

4. Dr.T.Vasanthakumaran, Professor Dept. of Geography, University of Madras spoken on "Our Future Climate" on 21 March 2003.

A mini seminar on monsoon 2002 was conducted on 26th February 2003 at RMC Chennai, With following scientific presentation.

1. Review of Monsoon 2002 by Shri S.R.Ramanan Director and P.V.Revikumar Meteorologist Gr.I ACWC RMC Chennai.

2. "Global scale features associated with monsoon 2002" and "Drought in Tamilnadu a cascading effert" by Dr.Y.E.A.Raj, Director RMC, Chennai.

3. Ground water level conditions in Tamilnadu - A General scenario by Dr.K.Sridhar, Asst, Hydrogeologist TWAD Board, Chennai.

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