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TÍTULO: A FURTHER NOTE ON THE DYNAMIC INSTABILITY OF ZONAL CURRENT DURING A BREAK MONSOON

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A FURTHER NOTE ON THE DYNAMIC INSTABILITY OF ZONAL CURRENT DURING A BREAK MONSOON

by

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In an earlier investigation by one of the authors (Brahmananda Rao 1970), it was suggested that the monsoon situation exhibits Barotropic type Oscillations. He argued that the decrease of distance between the Esaterlies in the South and the westerlies in the North during a Break Monsoon increases the Instability. He presented a single case of Break Monsoon to show the decrease of the distance between the Easterlies and Westerlies. The purpose of the present note is to present more evidence to support that observation.

Five Break Monsoon situations are taken during the years 1963 through 1967. In each case the Normal Monsoon day, the Break Monsoon day and the revival day are selected. These days are fixed according to the criterion that the Rainfall is well distributed over the country (at least 75% of the stations receive the normal daily rainfall) during the normal and revival day and rainfall is concentrated along the submontane regions only during the Break.The meridional distribution of the zonal wind with height is shown in Figs. 1 through 5 for the five Break situations along with the situations during normal and revival days. The distance between the Easterlies and westerlies is given in Table 1. For the 1963 situation it has been possible to obtain the distance between Easterly and westerly Jet Streams, but for other situations the data is not available for the northern stations. Thus the distance between the Easterly Jet and the Zero isopleth at 12.0 km is

given in Table 1. The names of the stations used for the analysis are given in Table 2 with their locations. From the table 1 it can be seen that the decrease of the distance between the Easterlies and westerlies during a Break is a general feature in all the five cases. The distance between Easterly and Westerly Jet Streams is taken as half the channel width (D/2, See Rao 1970) and the distance between the Easterly Jet and zero isopleth is taken as one fourth of the channel width. Then the mean channel width before, during and after the Break are 81, 66, and 110° of latitude respectively. Thus during Break, the channel width decreases considerably giving rise to the Instability.

ACKNOWLEDGEMENT:

Thanks are due to Dr. Fernando de Mendonça for his interest in this work.

REFERENCE:

Brahmananda Rao V. 1970, Dynamic Instability of the Zonal Current during the Break Monsoon Tellus. vol. 22 nº 5.

TABLE 1

Serial No	Type of Monsoon Situation	Day	Latitudenal Distance Between Easterlies and Westerlies or Zero isopleth
1*	Normal	8th July 1963	34.49
	Break	11th July 1963	25.16
	Revival	18th July 1963	32.46
2**	Normal	5th July 1964	20.05
	Break	15th July 1964	16.00
	Revival	23rd July 1964	32.00
3**	Normal	1st Aug. 1965	20.05
	Break	12th Aug. 1965	16.00
	Revival	23rd Aug. 1965	21.00
4**	Normal	21st Aug. 1965	22.00
	Break	25th Aug. 1966	21.00
	Revival	30th Aug. 1966	32.00
5**	Normal	2nd July 1967	20.00
	Break	5th July 1967	17.00
	Revival	13th July 1967	37.00

* Distance given in column 4 represents $\frac{D}{2}$ in degrees where D is the channel width.

** Distance in column 4 represents $\frac{D}{4}$.

TABLE 2

Station	Name	Latitude	Longitude	Station	Name	Latitude	Longitude
TRV	Trivandrum	8° 30'N	76° 59'E	HTN	Hotien	37°- 'N	80° - 'E
BNG	Bangalore	12° 58'N	77° 35'E	SHL	Shillong	26°- 'N	92° - 'E
BMB	Bombay	19° 04'N	72° 06'E	TSK	Tashkent	41°16'N	69° 16'E
NGP	Nagpur	21° 09'N	79° 07'E	ALA	Alamata	43°19'N	76° 56'E
AHM	Ahmedabad	23° 04'N	72° 35'E	KRG	Karigundem	49°70'N	77° - 'E
JDP	Jodhpur	26° 16'N	73° 03'E	LHR	Lahore	31°- 'N	73° - 'E
DLH	Delhi	28° 35'N	77° 12'E	PWR	Peshawar	34°- 'N	72° - 'E
AMB	Ambala	30° - 'N	76° - 'E				
SRN	Srinagar	34° 05'N	74° 50'E				

LEGEND FOR FIGURES

Figure 1.- Meridional Distribution of zonal wind with height on 8th, 11th and 18th July 1963

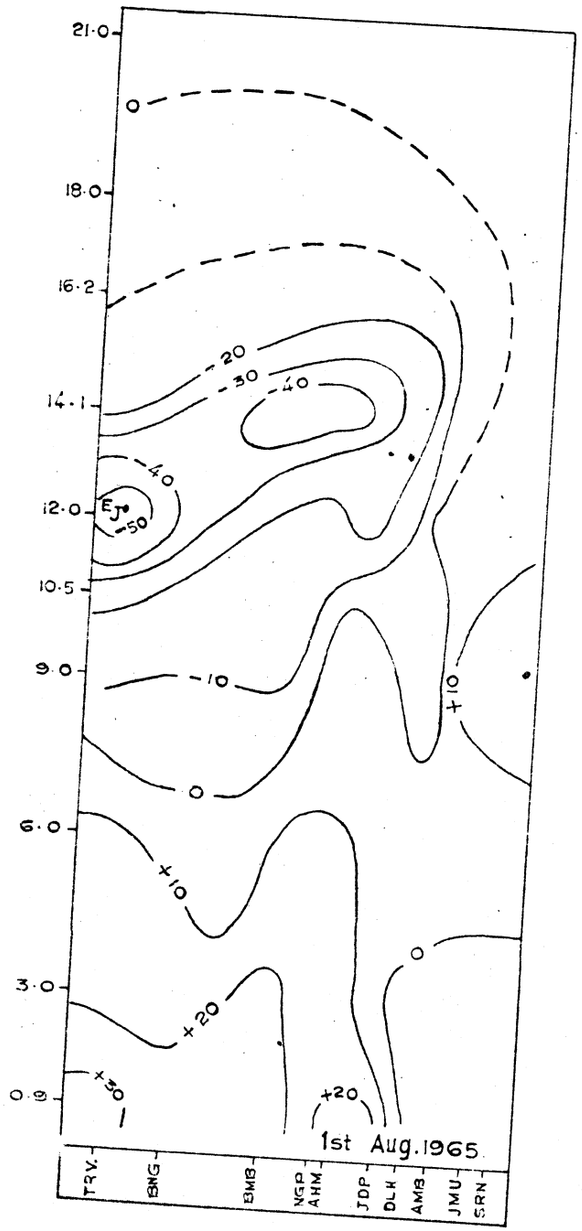
Figure 2.- Same as Fig 1 but for the dates 5th, 15th and 23rd July 1964

Figure 3.- Same as Fig 1 but for the dates 1st, 12th and 23rd Aug 1965

Figure 4.- Same as Fig 1 but for the dates 21st, 25th and 30th Aug 1966

Figure 5 - Same as Fig 1 but for the dates 2nd, 5th and 13th July 1967

Fig. 3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14·1
12·0
10·5
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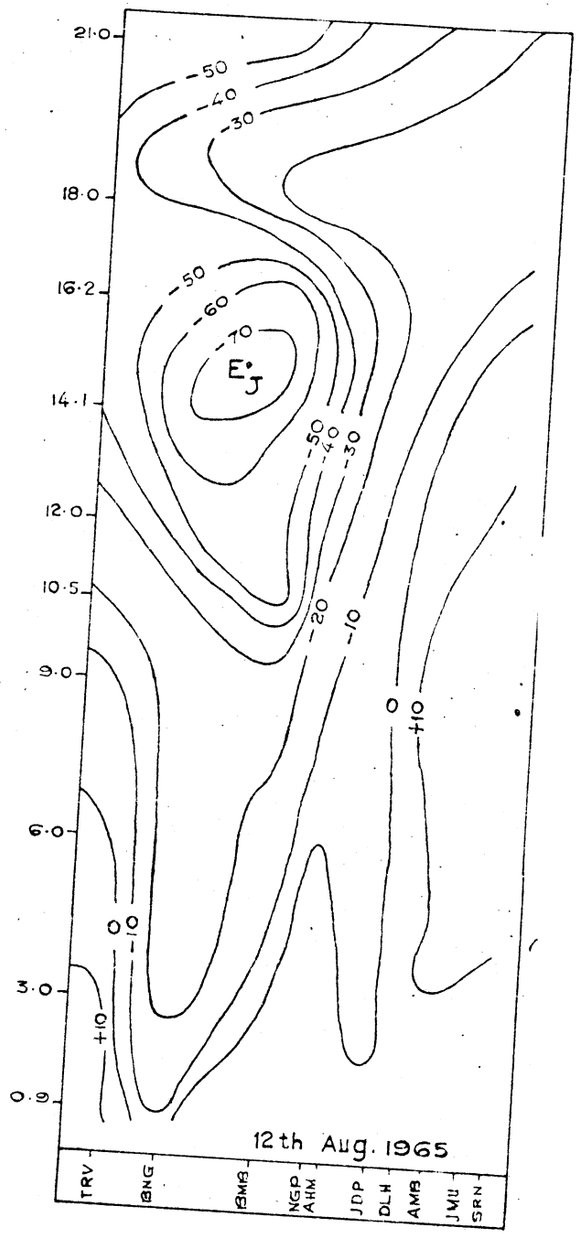
6·0
3·0
0·9
0
-20
-30
-40
-50
-10
+10
+20
+30
E·J
TRV
BNG
BMB
NGP
AHM
JDP
DLH
AMB
JMU
SRN
1st Aug. 1965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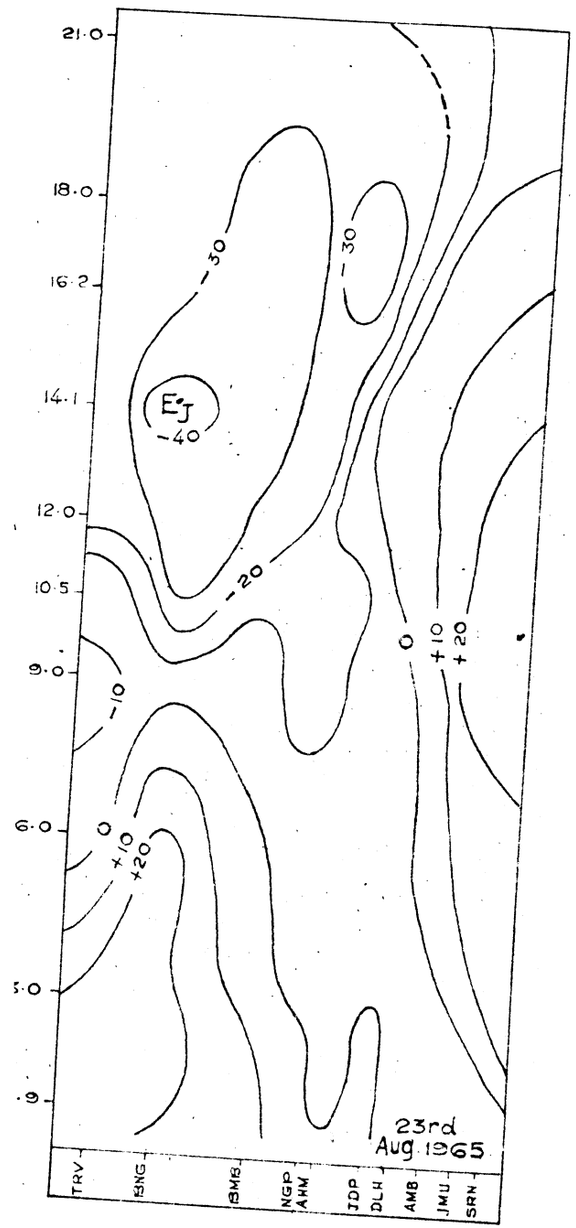
AHM
JDP
DLH
AMB
JMU
SRN
12th Aug. 1965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+10
+20
E·J
TRV
BNG
BMB
NGP
AHM
JDP
DLH
AMB
JMU
SRN
23rd Aug. 1965

8th. july, 1963.
11th. july, 1963.
18th. july 1963.
TRV
BNG
BMB
NGP
AHM
JDP
DLH
AMB
SRN
HTN
SHL
TSK
ALA
KRG
21·0
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16·2
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12·0
10·5
9·0
6·0
3·0
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EJ

5th July' 1964.
15th. July' 1964
23rd. July' 1964.
TRV
BNG
BMB
NGP
AHM
JDP
DLH
LHR
PWR
21·0
18·0
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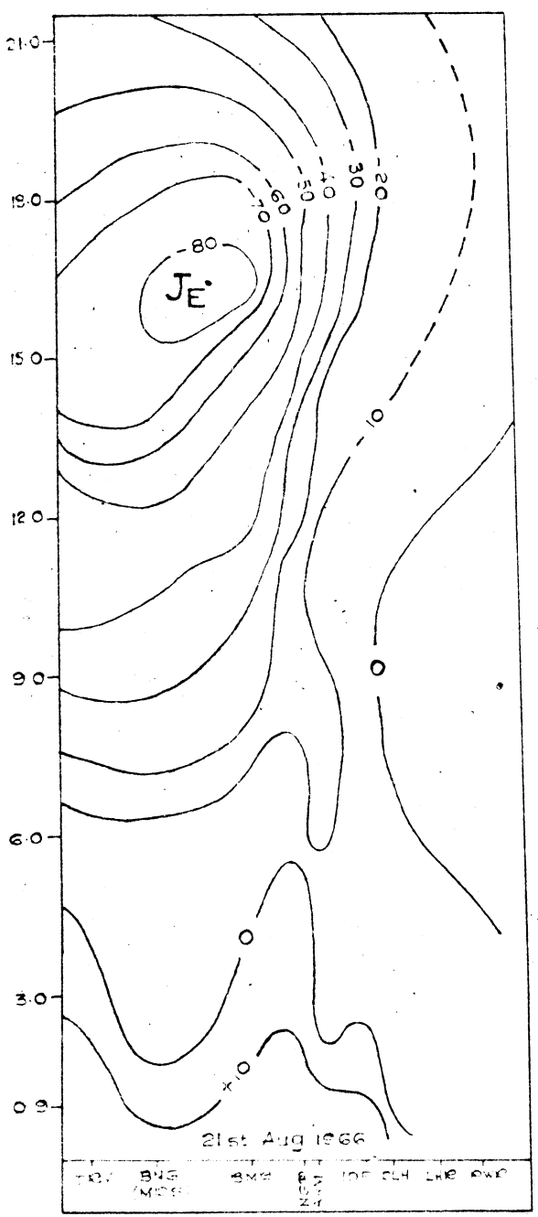
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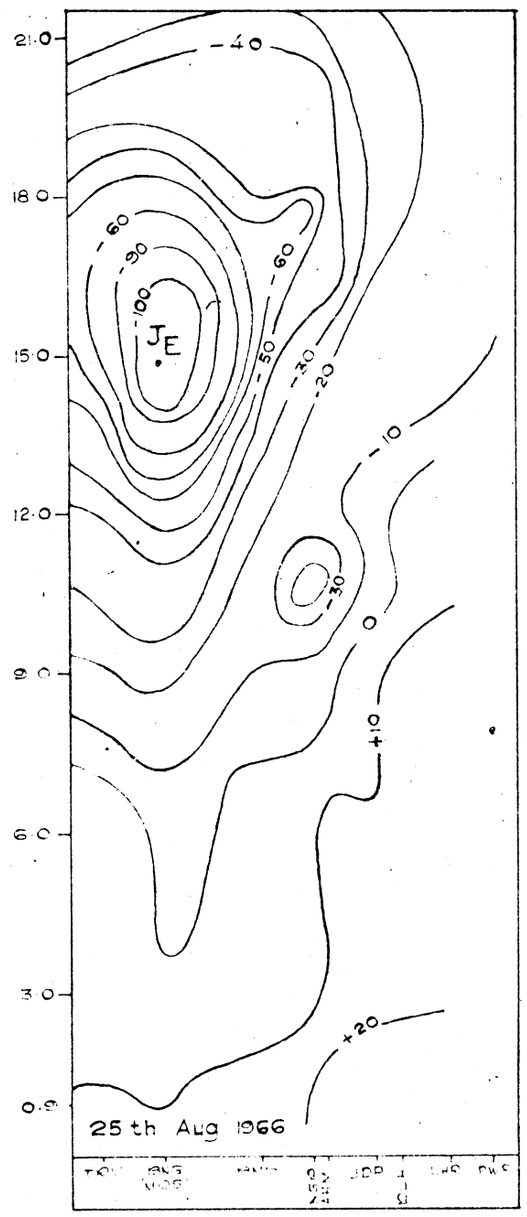
J_E
21st Aug 1966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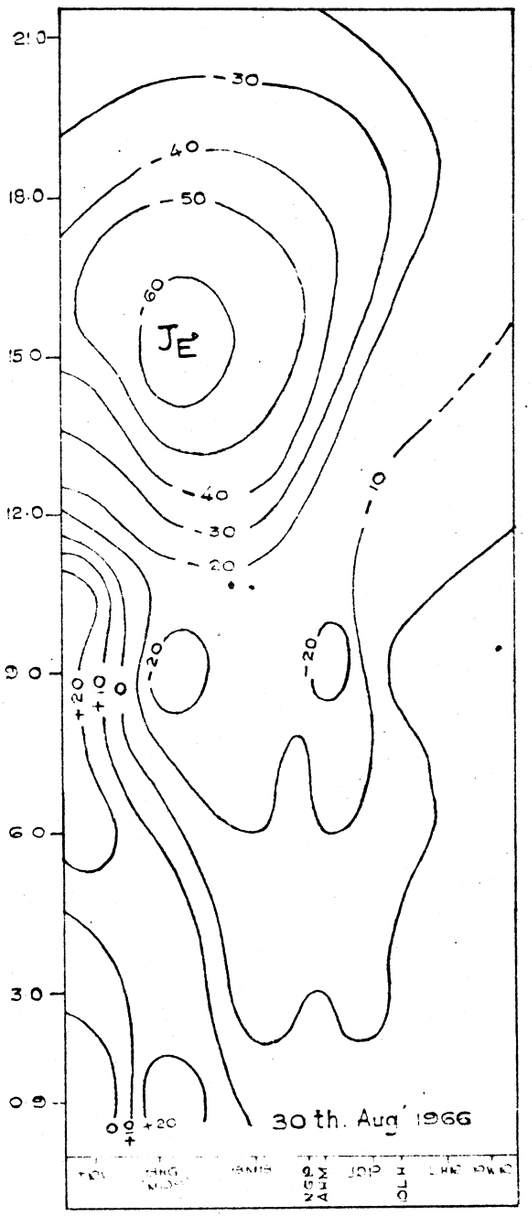
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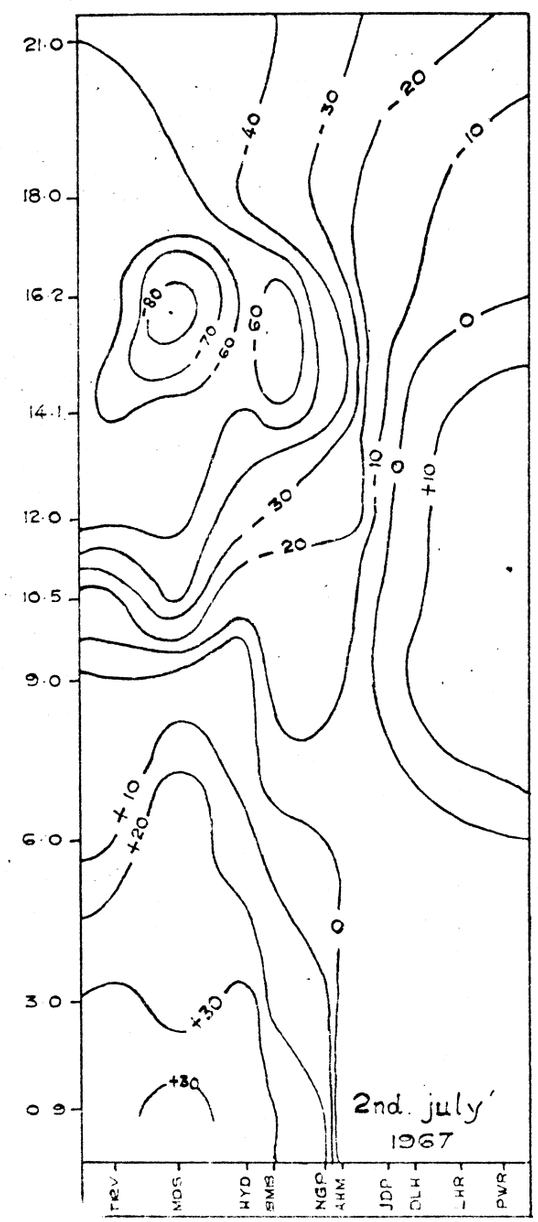
J_E
30 th. Aug 1966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2nd. july'
1967
TRV
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AHM
JDP
DLH
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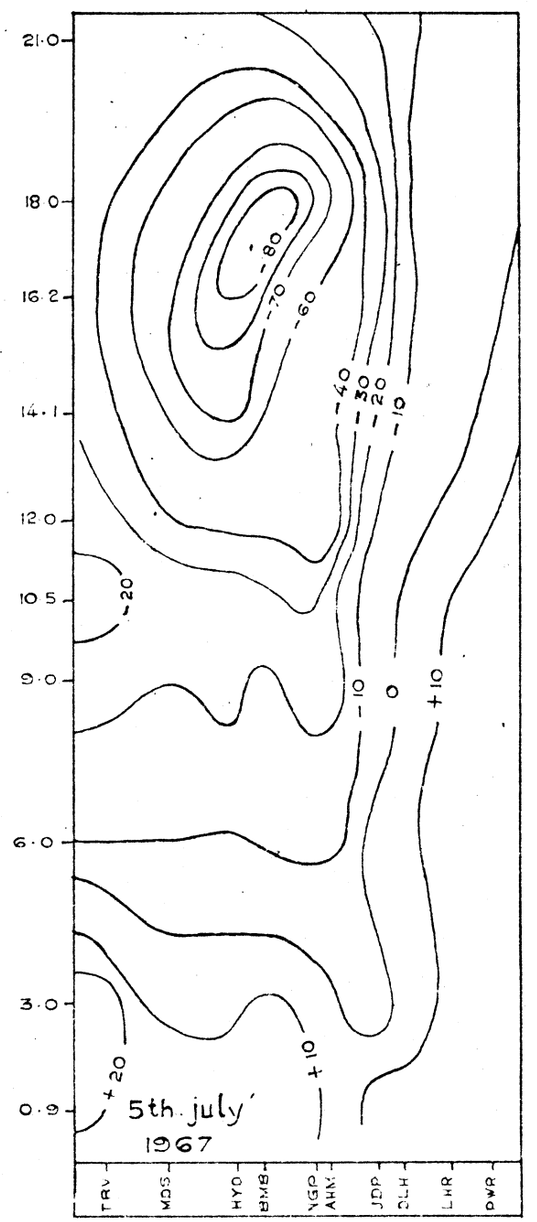
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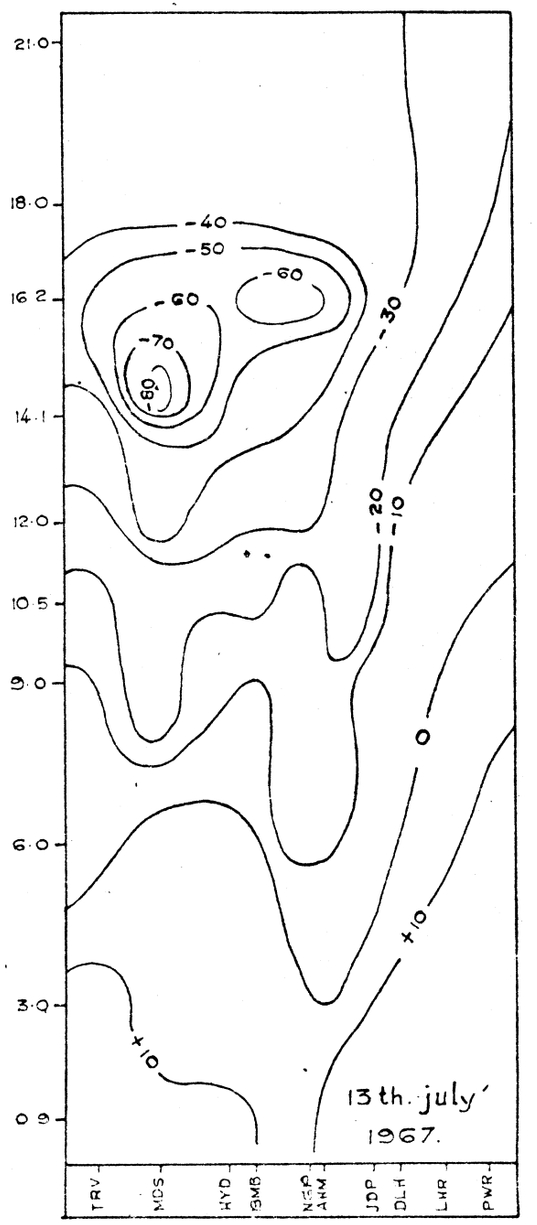
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13th. july'
1967.
TRV
MDS
HYD
BMB
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AHM
JDP
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LHR
PWR

Suitable for publication. However, there are minor suggestions as follows:

1. The fourth sentence in para 2 page 1 may be modified as: "The meridional distribution.....five break situations along with the situations during normal and revival days".

2. The authors may put * against serial nº 1 and ** against serial nºs 2 - 5 in Table with the following explanations below the Table:

   * Distance given in Column 4 represents $\frac{D}{2}$ in degrees where D is the channel width.

   ** Distance in Column 4 represents $\frac{D}{4}$.

3. Figs. 1 - 5 - The unit of the ordinate may be mentioned. Along the abscissa the names of stations in abbreviated forms have been given. For a better appreciation, the authors may give the full names of these stations along with their latitudes and longitudes in a Tabular form, in an appropriate place in the body of the paper.