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Letters to the Editor

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AN UNUSUALLY NORTHERN POSITION OF ITCZ DURING THE LAST WEEK OF APRIL (21-26 APRIL) 1999 AND ASSOCIATED WEATHER OVER TAMILNADU AND KERALA

1. The semi permanent wind discontinuity/trough line in the lower troposphere over southern peninsula running from north to south is the main cause of thundershowers over Kerala in the summer months of March to May. Cyclonic circulations moving across the extreme south peninsula from east to west can also cause rainfall over Kerala as pointed by Lakshminarayanan (1998). While studying heavy rains in Kerala during the southwest monsoon Julius Joseph *et al.* came to the conclusion that "presence of tropical storms in and around Gulf of Tonkin in south China Sea strengthens the monsoon westerlies over Kerala and Kerala experiences active/vigorous monsoon conditions." They also noted that "simultaneous presence of low pressure systems in the north Bay of Bengal and Gulf of Tonkin more conducive for heavy rainfall over Kerala in monsoon months.

1.1. Normally in the month of April the ITCZ will be around 5° N latitude. Lower tropospheric cyclonic circulations which form in the ITCZ move west to westnorthwest causing good rainfall over extreme south peninsula.

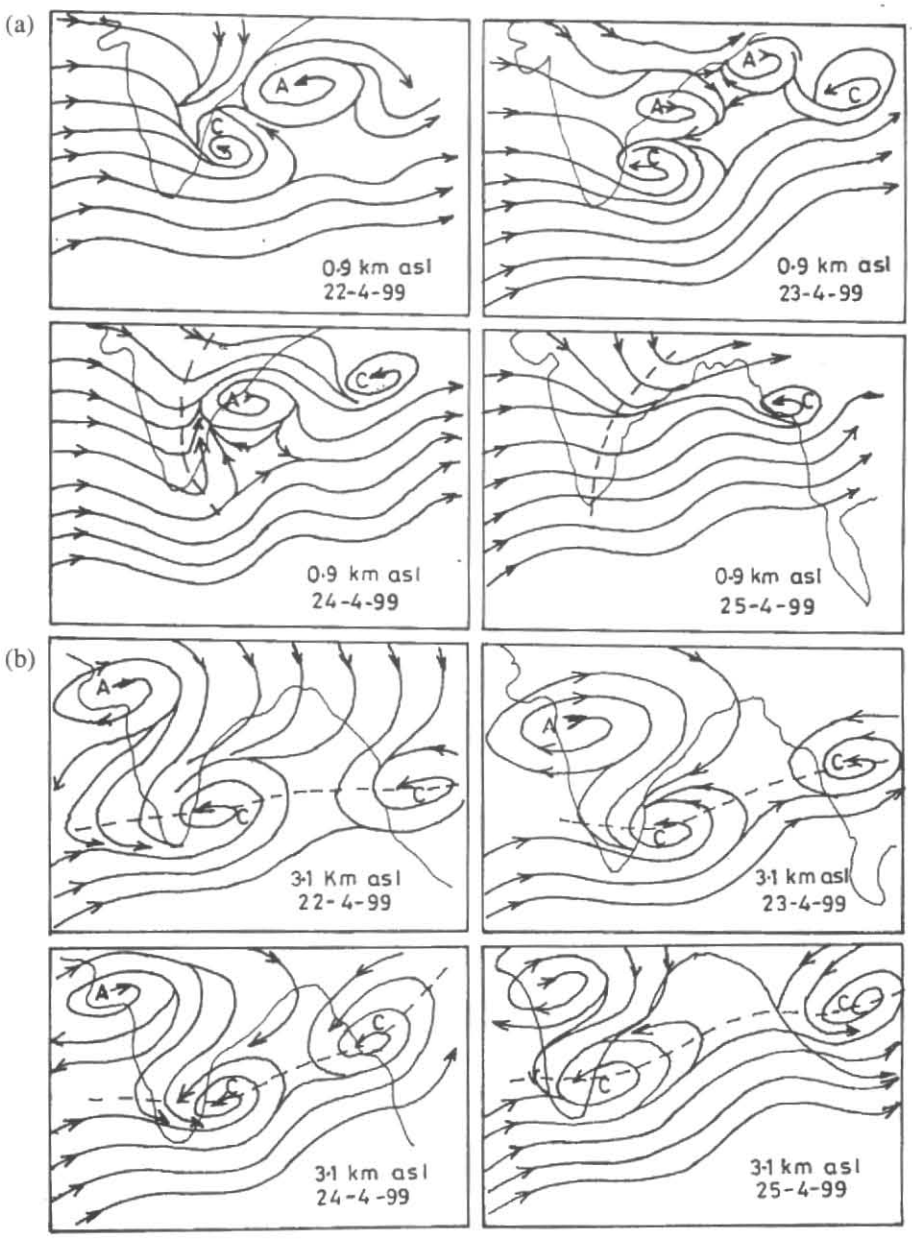
1.2. The ITCZ was very much to the northern latitude of roughly around 12° to 13° N during the last week of April 1999. During the period 21 to 26 April the ITCZ was very active with a low pressure area over southwest and adjoining West Central Bay of north Tamilnadu coast on 21 and two tropospheric cyclonic circulations extending up to mid tropospheric levels one over the North Andaman sea and another over Thailand and adjoin areas.

2. The low pressure area over Southwest Bay and adjoining area with associated cyclonic circulation extending up to mid tropospheric levels sloping southwestwards with height was seen on 21. The rainfall associated with this system in Tamilnadu and Kerala during the period 22 to 26 April is given in Table 1.

2.1. Pressure fell over Tamilnadu coast and was of the order of 2 hPa on 22, increased to 3 hPa by 23 and then slowly decreased and changed to positive by 25. By 23 evening the negative pressure changes were of the order of 4 hPa over interior portions of southern peninsula and by 24 pressure changes were negative and maximum over Kerala and adjoining Lakshadweep and later on 25 changed to positive. The lower tropospheric cyclonic circulation associated with the low-pressure

TABLE 1

Date	Tamilnadu		Kerala	
April 1999	Spatial distribution	Heavy/very heavy rainfall (cm)	Spatial distribution	Heavy/very heavy rainfall in (cm)
22	Most places	Nil	Isolated	Nil
23	Most places	Sriperumbudur25, Tambaram21, Kancheepuram18, Chengalpattu13 Tirivallur 8	Few	Nil
24	Few	Nil	Many	Kollam 10, Trv AP 8 Trv city 7
25	Few	Nil	Many	Haripad 10 Alapuzha and Peermedu 8 each
26	Few	Nil	Most	Alapuzha 14 Mancompu 13 Ponnani 10 Kozhicode AP & Perintalmanna 8 each, Manathavadi 7



Figs. 1(a&b). Upper air chart of 0000 UTC at (a) 0.9 km a.s.l. and (b) 3.1 km a.s.l., from 22 to 25 April 1999

area moved westwards inland on 23 night and later weakened and was seen only as an upper air trough on 24. This can be easily seen from the upper air chart of 0000 UTC at 0.9 km a.s.l. and 3.1 km a.s.l. from 22 to 25 in Figs. 1(a&b). The rainfall received during the period 23 to 26 over Kerala is given in Fig. 2. The low-pressure area weakened by 23 night and became less marked on 24. The satellite pictures of 22 to 24 April indicated the westward movement of the clouds across the peninsula.

2.2. A station in Malay peninsula at 7°N and 100° E reported a wind maximum speed of 65 kt easterly on 21 April morning at 147 hPa

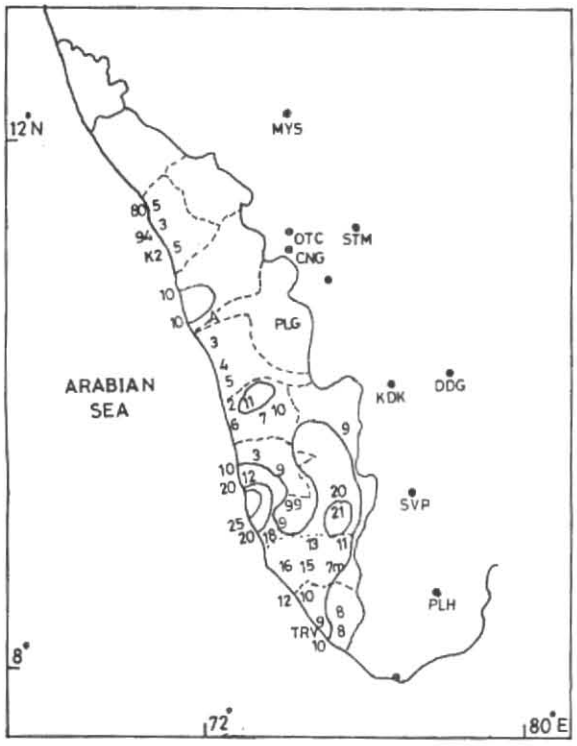


Fig. 2. Rainfall of Kerala (cm) from 23 to 26 April 1999

level. It is also interesting to note the appearance of tropical easterly jet stream over Minicoy latitude. Minicoy reported 120°/70 kt at 141 hPa and 090/70 kt at 137 hPa on 22 and 23 April.

2.3. On scrutiny of upper air charts it was noticed that the strong upper tropospheric easterlies have appeared at 150 hPa on 7 April itself and on 7 April, Port Blair reported 120°/55 kt. Prevalance of strong upper tropospheric easterlies continued then on and in fact Minicoy, Thiruvananthapuram and Bangalore reported easterly jet stream at 113,134,114 hPa levels of 85, 65 and 60 kt respectively on 16 April 1999. Further examination of the charts revealed prevalence of easterlies continued from the first week of April and it continued in May also. The appearance of tropical easterly jet stream so early in mid April appears to be rather anomalous and requires further investigation. The depth of westerlies continued up to 500 hPa from the third week of April till the onset of monsoon on 25 May except for a brief period 1 to 5 May when the depth of the westerlies wee confined only up to 700 hPa over the south peninsula .

2.4. ITCZ in April 1999 was unusually in a northern position leading to formation of a low pressure over southwest Bay off Tamilnadu coast on 21 and its movement westwards across south peninsula causing very heavy rainfall in north Tamilnadu on 23 and heavy rainfall in Kerala during the period 24 to 26 April 1999. Presence of simultaneous occurrence of weather systems over Gulf of Thailand and Andaman sea strengthens the westerlies over southern peninsula and sometimes lead to formation of a low pressure area over South west Bay . This factor should be taken into account while forecasting heavy rainfall for southern peninsula in April and May. Appearance of Tropical easterly jet stream in mid April itself appears to be rather anomalous and requires a deeper investigation and its relation to the onset and withdrawal of monsoon.

References

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