

UNPRECEDENTED FLOODS IN SOUTH RAJASTHAN IN JULY 1979

Floods in southwest Rajasthan are very rare. The only significant river, there is the *Luni* (Fig. 1) which is considered to be a blessing to south Rajasthan. In July 1979, however, the river got flooded and caused considerable misery. Slow movement of a low pressure area with associated cyclone circulation extending upto middle troposphere, its intensification over west Rajasthan as a result of upper air divergence in association with a trough in westerlies, subsequent almost stationary position over southwest Rajasthan and later movement northeastwards have been found to be the synoptic situation responsible for the heavy rain near the source of the *Luni* river and over the area traversed by it and for the resulting floods.

2. Veeraraghavan and Ghosh (1974) studied the very unusual formation and movement of a monsoon depression which caused generally widespread rains over west Rajasthan for a period of about six days during August 1973. The system lay over west Rajasthan during 15 to 18 August 1973. In July 1979 the rainfall was almost continuous during 15 to 19 July due to the stationary nature of a low pressure area. Ajmer in north Rajasthan had an all time record rainfall of 29.4 cm on 16 July 1979. It had another 14.0 cm on 19 July. This rain contributed significantly to the flooding of the *Luni* river which rises in the hills

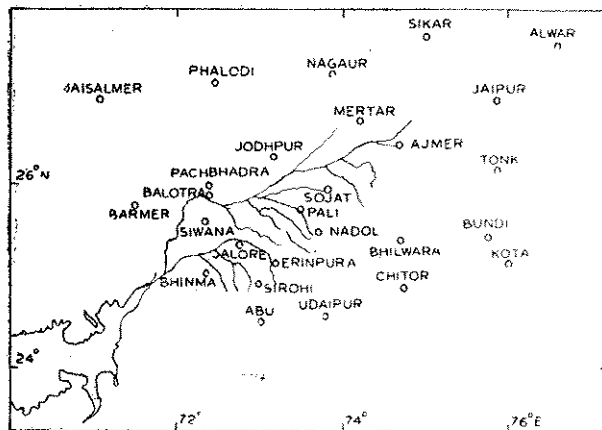


Fig. 1. The course of river *Luni* and its tributaries

southwest of Ajmer at Lat. $26^{\circ} 25' N$, Long. $74^{\circ} 34' E$.

3. A mid-tropospheric cyclonic circulation developed on 12 July 1979 over north Madhya Pradesh and adjoining south Uttar Pradesh. It persisted there the next day and moved slightly westwards to northwest Madhya Pradesh and adjoining east Rajasthan where it lay as a low pressure area on 14th. Moving slowly westwards it intensified into a well marked low pressure area on 16th. Under the influence of a trough in wester-

lies located at 300 mb with its axis along longitude 64° east having a westward displacement required for intensification of the low pressure area (Haltiner and Martin 1957). The trough in westerlies having axis along 64 east had just the optimum westward tilt of about 10 degrees required for intensifying the pre-existing low level system (Veeraraghavan & Gupta 1977). The well marked low pressure area lay over southwest Rajasthan during the next two days. On 19 July it lay over northeast Rajasthan as an upper air cyclonic circulation extending upto middle tropospheric levels and merged with the seasonal trough by the same evening. Under influence of this system southwest monsoon advanced into west Rajasthan on 15 July and widespread rain with vigorous monsoon conditions prevailed in west Rajasthan between 16 and 18 July.

As a result of very heavy rainfall associated with the well marked low pressure area persisting over southwest Rajasthan for 2 to 3 days unprecedented floods occurred in the Luni river. The total loss of property and crops estimated by the State Government

was approximately Rupees sixty crores. 237 people died and another 231 were reported missing. The head of livestock lost numbered nearly 2 lakh.

4. The author is thankful to Shri Subhash Chand for the preparation of diagrams and to Shrimati Sneha Lata for typing the manuscript.

References

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25 January 1982*