

## CRIDA: HYDERABAD

Answer to the provisionally admitted question for the Rajya Sabha - Q.No. S549, U372

**a) Whether total rainfall and distribution of rainfall has changed during last ten years in Northern India**

Yes, the last ten years rainfall data analysis showed a change in monthly, seasonal and annual rainfall.

**b) If so, the details thereof**

**Annual and Seasonal rainfall analysis**

- On annual basis, except east and west Rajasthan, all other subdivisions of northern states received deficit rainfall
- Except east Rajasthan, all other subdivisions of northern states received deficit rainfall during winter season
- Haryana, East and west Rajasthan received more rainfall during summer season and remaining all other subdivisions of northern states received deficit rainfall
- Jammu & Kashmir, East and west Rajasthan received considerable excess rainfall and remaining all other subdivisions of northern states received deficit rainfall during Southwest monsoon season
- During the post monsoon season, all subdivisions of northern states received deficit rainfall (table.1)

Table1. Deviation in ten year seasonal average rainfall from the long term normal in the meteorological subdivisions of Northern states of India

Sub Division	JF	MAM	JJAS	OND	ANNUAL
Jammu & Kashmir	18	-21	9	-31	-4
Himachal Pradesh	-9	-25	-3	-37	-11
Punjab	-22	-20	-18	-47	-20
Haryana	-29	8	-16	-55	-17
Uttarakhand	-24	-20	-1	-50	-8
East Uttar Pradesh	-14	-14	-26	-38	-26
West Uttar Pradesh	-9	-7	-24	-38	-23
East Rajasthan	7	12	7	-35	5
West Rajasthan	-9	25	26	-10	24

**Monthly rainfall analysis**

- It was observed from the last 10 years rainfall analysis of Northern states that the rainfall increased considerably in east and west Rajasthan during Southwest Monsoon Season by 7 and 26% respectively. Monthly distribution showed excess rainfall was observed in March and April months in summer and all the four months in SW monsoon season in both east and west Rajasthan subdivisions

- Whereas deficit rainfall conditions were observed in all other subdivisions of northern states except excess rainfall received in few months (table.2)

Table2. Ten year average monthly rainfall deviation from normal in the meteorological subdivisions of Northern states of India

<b>Sub Division</b>	<b>JAN</b>	<b>FEB</b>	<b>MAR</b>	<b>APR</b>	<b>MAY</b>	<b>JUN</b>	<b>JUL</b>	<b>AUG</b>	<b>SEP</b>	<b>OCT</b>	<b>NOV</b>	<b>DEC</b>
Jammu & Kashmir	26	13	-29	-8	-25	27	-6	11	24	-27	-53	-34
Himachal Pradesh	-11	-8	-35	-10	-26	17	-18	6	1	-41	-33	-37
Punjab	-7	-34	-35	19	-24	50	-37	-19	-11	-37	-68	-45
Haryana	-31	-27	7	32	1	35	-35	-29	22	-42	-65	-61
Uttarakhand	-33	-16	-41	-4	-8	16	3	-9	-9	-36	-63	-61
East Uttar Pradesh	-13	-15	7	-37	-13	-7	-22	-27	-40	-26	-74	-79
West Uttar Pradesh	-3	-15	2	-23	-6	7	-18	-34	-33	-34	-15	-56
East Rajasthan	36	-14	103	49	-28	23	8	5	-2	-32	-21	-71
West Rajasthan	-7	-9	29	88	3	29	14	31	47	1	-21	-15