

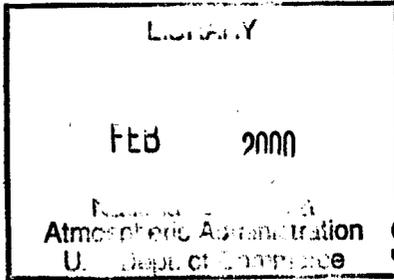
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GOVERNMENT OF INDIA

METEOROLOGICAL DEPARTMENT

INDIA WEATHER REVIEW, 1956

Annual Summary



PART B



SNOWFALL

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INDIA WEATHER REVIEW, 1956

ANNUAL SUMMARY

PART B

SNOWFALL

This part contains a summary of the reports of snowfall in the mountain regions to the north of India based on (a) records of snowfall observations made at observatories and (b) reports collected by local officers from the local residents, headmen of villages, or from travellers who have passed through the region and are then transmitted to this office.

The amount of snowfall is usually measured by finding the depth of undisturbed snow lying on the ground. The measurements are given in feet and inches. At places provided with raingauges the snow collected in the gauge is melted and measured as rain. This is indicated in the text and the measurements are given in inches and cents.

Cold Weather Period—January and February

I—JAMMU AND KASHMIR

Gilgit District

Gurez.—There were several snowfalls during January and February. The depth of snow in the valley was 4' and on the mountains about 10' to 12'. Snowfalls were of normal character in both the months.

South Anantnag District

Srinagar.—Light to moderate falls of fresh snow on the surrounding mountains and in the valley were observed on several days during the two months. The total snowfall melted into water, was 2.36" in January and 1.87" in February, both the amounts being below normal. The heaviest snowfall of 0.61" was recorded on 3rd January 1956. The accumulations of snow on the surrounding mountains were 10 ft. at the end of January and only 1 to 2 ft. at the end of February.

Patni-Top (Batote).—During January there were four snowfalls of which three were heavy associated with thunder with the snow line descending to less than 5000 ft. February also witnessed an equal number of snow falls out of which on one occasion the snowline descended to 5000 ft. The total snowfall was estimated to be above the average of previous years during January and below average in February.

Ladakh District

Kargil.—The reported amounts of snow accumulation was 6' on higher passes at the end of January; while at the end of February 8' accumulation was recorded at Swing Peak, 6' at Humlootingle Peak and

10' on Naqthal Peak. The accumulations were above normal during the period.

Sonemarg.—There were nine occasions of snowfall in January and 4 occasions in February with total depth of 6 ft. 4 in. Snow accumulation at the station was about 4 to 5 ft. in each of the months. The falls were above normal during the period.

Dras.—There were slight falls of snow on 10 days in January and on 9 days in February. At Dras the depth of snow lying on the ground at the end of January and February was 2.5' and 5.0' respectively. In both the months the falls were above normal.

Leh.—Each month recorded two heavy snowfalls. As a result January experienced unusual cold. The snowfall amount was normal in each month. The snowline descended to 10,500 ft. at the lowest point of the surroundings.

II—THE PUNJAB (I)

Chamba District

Pangi

Kilan (Pangi Range).—Snow fell on 10 days in January and on 9 days in February. The total snowfalls melted into water were 3.41" and 7.64" respectively, which were above normal in both the months. The snow accumulation at Sach Pass, ht. 14478', was estimated to be 25 ft.

Churah

Tissa.—January witnessed 2 falls and February only one. Sach Pass (14300 ft.) is said to have an accumulation of about 10 ft. at the end of the period. Snowfall was below normal during the period.

Bhandal.—The snowfall during January was below normal, 1 ft. of snow occurred on 10th January and about 2" on the 26th. There was no snowfall in February. The accumulations at the end of January were 6 ft. on Padri Pass and Gamgahal while at the end of February they were only of the order of 4 ft.

Tikri.—Six snowfalls were reported during January amounting to a total of snow of 5½ ft. The falls however did not descend below 5000 ft., and above 5000 ft. there was 2 ft. of snow accumulation. The snow accumulations at Drati Pass were 15 ft. at the end of January. Apparently, February had no snow.

Chamba

Upper Chamba.—Snow fell on four days during January when snowline descended to less than 5000 ft. There were no snowfalls during February. The following table gives the estimated depth of snow at some important places, at the end of January.

Place	Bakani	Kundi	Bohar Pass	Balaini Pass	Chali Churasi Dhar
(Approx. height).	(4300ft)	(6300ft)	(11000ft)	(12245ft)	(15000ft)
Depth of snow.	1"	10"	1'-9"	2'-8"	6'-5"

The total fall was normal during the period.

Lower Chamba.—In January snowfall was confined to elevations higher than 6,500 ft. only. The snowline during the fall descended to 6500 ft. As ascertained from local people the snowfall was much below normal.

Bhattiyat.

Kalatop (Dalhousi Forest Range).—Two occasions of snowfall were recorded during January, total depth being 10 inches. The accumulations of snow at Dain Kund were 4 ft. The snowfall was an average one during the month.

Bhattiyat.—Each of the months January and February received 2 snowfalls. The accumulations of snow were 5 ft. in Surgdawai Dhlu and 2 ft. at Kharadunda Jote at the end of the period.

Trehta.—Seven snowfalls were recorded during January and two in February. The total depth of falls was 3 ft. 3 in. in January and 11 inches in February. The snowline descended to an elevation of 4000' in January. The nearby peaks and passes were overlaid with snow. Falls were normal in January and below normal in February.

Brahmour

It snowed on 8 days in January and on 2 days in February at the station proper. Snowfall was below normal during the period. The accumulations at Kugti, Chobia and Kalicha passes were 8 to 10 ft. at the end of January.

Mahasu District

Chopal.—January recorded light snowfalls on six days while February did not record any. Snowfall descended to the height of 4000 ft. in January. The falls were below average. The snow accumulation on higher passes at the end of the period was about 6 in.

Shilaru.—Snowfall was experienced twice during January when the snowline descended to 7000 ft. a.s.l. Report for February is not available. The falls in January were below average.

Pandrabis.—There were ten falls of snow in January at Phancha totalling to 3'2" of snow. February had no snowfall. The accumulations at the end of the month on Sirikhand peak and Spiti pass were about 6 ft. which remained in tact till the end of the period. Snowfall and accumulation during the period were below normal.

Kilba-Kailash.—The total depth of snowfalls during January and February and snow accumulation at the end of February at Kilba, Sangla and Purbani were as follows:—

	Month	Kilba		Sangla		Purbani	
		ft.	in.	ft.	in.	ft.	in.
Snowfall	January	1	8	3	2	2	7
	February	Nil		2	2	1	1
Snow accumulations of February.		1	9	6	9	4	5

The accumulations at the end of the period were estimated to be about 8 ft. on the well-known passes of Rupan, Shathul and Barran. The snowfall and accumulations were below the average.

Nichar (Tranda Range).—Snow fell on 9 days in January while on one day in February, the total depths of falls being 4 ft. and 3 in. respectively. The accumulations at the end of January were about 10 ft. on high peaks and 2 ft. at the station. By the end of the cold weather period 7 to 8 ft. of snow was left on the peaks while at the station proper it was melted off. The snowline was at 3000 ft. in January and at 6000 ft. in February.

Chini (Kalpa).—Snow fell on 10 days in January and on 4 days in February, the total amount being 5 ft. The fall during the period was above normal.

Rampur.—January witnessed 6 snowstorms during which 2 and 4 ft. of snow accumulated at well-known peak of Hatu and Darnghat Pass respectively. There were also 2 snowstorms during February, but the accumulation on the peaks was comparatively less.

Kumarsain.—From the available reports, light snowfalls, depth varying from 2" to 8" were recorded on 5 days in January. In February light snow fell only on the peaks above 7000 ft.

Suni.—There were two heavy falls and five light falls of snow during January. The snowline descended to 5500 ft. on one occasion. The accumulation on the highest peak 'Shali' (9600 ft.) was 1½ ft. at the end of the month. There was no snowfall during February, and the passes were clear of snow at the end of the month. The falls were below normal.

Lower Pabar Range.—In January there were 9 days of snowfall at Khadrula and Bashla. Total snowfall was about 6' in January which was much less than that in the previous years. Very little snow fell in February.

Arki.—No snowfall was reported during the period.

Solan.—No snowfall occurred during the period.

Jubal.—There was a long spell of cloudy weather with three falls of snow in the first half of January. Two more falls occurred on the 18th and 19th of the month. Two falls were reported in February. The following table gives the amounts of snowfall at various stations nearby:

Station	Ht. above sea level	Depth of snow in			
		January		February	
		Ft.	In.	Ft.	In.
Chopal	7685	3	3	4½	
Jubbal	6205	1	1	1	

Station	Ht. above sea level Ft.	Depth of snow in	
		January	February
		Ft. In.	Ft. In.
Chur Peak	11,966	7	1 9
Kanda	7,200	3 2	.. 3
Tharoch	6,826	1 6	.. 3
Sarain	7,246	2 5	.. 5
Deya	7,300	2 8	.. 4

Kangra District

Seraj.—In January snowfall was reported on several occasions at the higher elevations. Snowline descended to 6000 ft. In February there were only light falls of snow on the high peaks and snowline was confined to 8000 ft. The snowfall was below normal during the period. The table below gives accumulation on peaks:—

Peak	Accumulations in Feet	
	January	February
	Feet	Feet
Sirikhand	6½	3½
Chol	½	½
Maghan	1	1
Dundku	½	½
Tikar	½	½
Ramgarh	½	½
Nobun	1	1
Raghopur	1	½
Jalori Pass	½	½
Sakirn	½	½
Lambri	1	½
Gargarasan	1	½
Shepakaru	1½	1½
Bashleo	1	1
Mach	1	1
Tirth	1	1

Kulu.—There were seven occasions of snowfall, which were confined to higher elevations with snowline descending upto 6000 ft. The accumulations at the end of January and February were as follows:—

Peak	Accumulations in Feet	
	January	February
Hamta	20	20
Rehtang	14	13½

Peak	Accumulations in Feet	
	January	February
Bhojdhar	4	3
Barai	4	3
Chandarkhani	4	3
Bhubhu	3	3
Bashtari	1	1
Mujhag	1	1
Sari	3	3
Lohriachhari	4	3

Falls were below normal during the period.

Mandi District

Mandi Forest Division.—Snowstorms occurred on 6 days in January in the Seraj Range, while Kataula Range received three snowfalls. The snow accumulation on the well known peaks was as follows:—

Peak	Height of the peak in feet	Accumulation in feet
Shikaridevi	11,000	6
Raigarh	9,500	3
Tungasi	9,000	2
Kashiham	8,000	2
Bhuboo	9,000	3
Tunga Devi	9,600	3½

The snowfall was more than normal in January. In February there was light snowfall accumulating to an inch on the Bhuboo and Tunga Devi ranges.

Suket Forest Division.—Snow occurred on two days in January at Jhungi with a total depth of snow of 2 ft. No snow occurred at Suket and Karsog. The snow accumulation on higher peaks of Jhungi Range was about 8' in January and 2½' in February. According to the reports, snowfall in January was less than that of last year. There was no snowfall in February.

Sirmur District

Haripur.—Four snowfalls were recorded during January, when the snowline descended to 6000'. The accumulation at Chur peak was estimated to be 4 ft. Falls were below normal. Report for February is not available.

III—UTTAR PRADESH

Tehri Garhwal District

Snow fell on six days in January and on four days in February accumulating about 1 ft. to 2 ft. on the high peaks of Top-Tiba, Nag Tiba, Shiva Dama etc. The snowfall for the season was estimated to be below average of the previous years, for both the months. The snowline descended to the height of 6000 ft. during the period.

Garhwal District

It snowed on 4 occasions in January and on 11 occasions in February. The depth of the accumulations at the heights of 8000' to 11,000' was between 2 to 4 inches in January and between 1 to 2 inches in February.

Almora District

The following table gives the amount of falls during the month January and February and accumulation at the end of the months.

Locality	Total amount of falls in Feet	
	January	February
Malla Danpur	6 to 26	7 to 22
Malla Johar	3 to 5	1 to 4 (on higher peaks only)
Malla Darma	1½ to 3	2

Peak	Depth at the end of	
	January	February
	Feet	Feet
Kautela Peak	6	7 to 8
Kafini Peak	7	11 to 12
Bankatia Peak	18	18 to 20
Pindar Peak	22	21 to 22
Nandakhat	26	21 to 22
Sundardhunga	20	20 to 22
Panchchuli	3	3
Ralamdhura	2	2
Pinder Valley	24	..
Nanda Valley	30	..
Sunder Valley	22	..
Untadhura	5	..

The snowfall is reported to be more than average at Malla Danpur but less than average at Malla Johar and Malla Darma.

Nainital District

Mukteswar.—There were 3 snowfalls in January and two in February, all being light and intermittent in character. Reports say that the snowfall was very light and much below the normal. The snowfall extended to all the surrounding peaks such as Nainital, Ramgarh etc. The snowfall of the season was much below average.

IV—ASSAM

'Nil' reports of snowfall have been received from Sibsagar, Khasi and Jainthia Hills and Cachar district.

Hot Weather Period—March to May

I—JAMMU AND KASHMIR

Gilgit District

Gurez.—March received 18 snowfalls and the depth of the snow was 2 ft. in the valley and about 15 ft. on the peaks. No reports for April and May have been received.

North Baramulla District

Gulmarg.—Reports for March and April were not received. Slight snowfall occurred during May. Accumulations on peaks and passes were above normal.

South Anantnag District

Srinagar.—Several light to moderate snowfalls were observed in March on the surrounding mountains as well as in the valley. In April the snowfall was mainly confined to the mountains. The total amount of precipitation at Srinagar was 4.51 and 5.42 inches respectively in the two months. Snowfall in these 2 months was above normal. There was no snowfall in May. More than one foot of accumulation were left on the neighbouring mountains during March and April which thinned off considerably by the end of May.

Patni Top (Batote).—There were five moderate to heavy snowfalls in March, snowline descending to 5500 ft. April and May did not receive any snowfall; all the snow had melted away from the ground and in lower regions upto 5500 ft. by the end of March; which also vanished by April from all the ranges except from the East Pirpanjal Range (13,480 ft.) which remained covered till the end of the period. Snowfall in March was above average.

Ladakh District

Kargil.—No snowfall occurred during the entire period.

Sonemarg.—It snowed on 8 days in March and on one day in April. There was no snowfall during May. The snow accumulation was about 5 ft. on plains in March, which had melted away by April. The accumulations on the peaks and the passes, however, continued as usual during the period. Snowfall was above average in March and below average in April.

Dras.—Nine occasions of snowfall were reported in March and four in April and none in May. There was about 10 ft. of accumulated snow on the ground at the end of March, which had melted away by the end of April. Snowfall was estimated to be a little above the average.

Leh.—No reports were received for March and April. May had insignificant snowfall. The accumulations were 10 to 12 ft. on the peaks, 16,000 to 20,000 ft. in height and were reported to be above normal.

II—THE PUNJAB (I)

Chamba District

Pangi

Kilan (Pangi Range).—The following information is available for the period.

Month	Snowfalls and amount of snow (melted water) at Kilan		Accumulation at Sach Pass (14478 Feet)
	Number	Amount Inches	Feet
March	12	9.28	25
April	5	1.03	15
May	Nil	..	20

The snow accumulation was estimated to be above the average of the previous years.

Churah

Bhanddal.—It snowed on 2 days in March, the depth varying from 3 to 6 inches. Snowline descended to 5675 ft. Weather was clear and dry in April and May.

Tikri.—No report is available for the month of March. In April, there was no snowfall below 10,000 ft. and the accumulation at Drati Pass was estimated to be 6 ft. In May a strong hail storm was witnessed which gathered about 2" of hail stones on ground.

Chamba

Upper Chamba.—There was no snowfall in the lower range below 6000 ft. The accumulation of snow was 3ft. at 15,000 ft.

Lower Chamba.—There was no snowfall during the period.

Bhattiyat

Kala Top (Dalhousi Forest Range).—Snow fell on 2 days in March amounting to 18 inches. No snowfall was reported in April or May. The falls and accumulations were normal during the period.

Bhattiyat.—Only one snowfall, 6 inches in depth was reported in March. The depth of snow accumulation at the end of March was about 3 ft. on the nearby passes. The snowfall and accumulations were in general below average for the season.

Trehta.—March experienced 3 light falls of snow, the snowline descending to 6,000 ft. However, heavy snowfall was reported at higher passes. In April it snowed only on the higher peaks with elevation above 6000 ft. and at Jatsu pass (12000') 2 ft. of accumulation was estimated. While in May accumulation was about 5 ft. above 14000 ft. elevation. The snowfall was above normal in March and below normal in April and May.

Brahmour

Brahmour.—There were four snowfalls in March at the station totalling to 1'7" in depth. It snowed on one day in April to a depth of 3 inches. Snow accumulation was above normal at the end of May; at 11,000 ft. it was about 6 inches and on higher passes about 4 ft.

Mahasu District

Chopal.—Only one snowfall was recorded in March when it descended to 6000 ft. The amount varied from 3 inches to a foot with the height. An accumulation of the order of 1 ft. was seen only on the high peaks. Snowfall was below average. No reports are available for April and May.

Pandrabis.—Snow fell only on higher elevation and snowline descended to 9600 ft. in March. At the end of the period the snow accumulations on the well-known passes and peaks of Sirikhand and Spiti were estimated to be below normal.

Kilba-Kailash.—At the three stations, Kilba, Sangla and Purbani, the following amount of snowfall was recorded.

Station	March		April		May	
	No.	Amount (inches)	No.	Amount (inches)	No.	Amount (inches)
Kilba	2	4.5	..	..	..	..
Sangla	9	45.0	1	1.0	..	..
Purbani	9	49.5	1	2.5	..	..

Nichar (Tranda Range).—Snow fell on two days in March amounting to a total fall of 1 ft. April did not have any snowfall and presumably also May. Snowfall was less than that in the previous years during the period.

Rampur.—Snow storms occurred on eight days in March. The snow accumulation at Daranghat and Hatu peak at the end of March was about 1/2 ft. In April, snowstorm was experienced twice and the accumulation on the above 2 peaks was estimated to be about 1 ft. There was no snowfall in May.

Kumarsain.—In March snowfall was experienced only on the higher peaks above 7000' on 3 days, the snow depth in each fall varying from 2 to 4 inches. Reports for April and May are not available.

Suni.—Snow fell on 2 days in March and the depth at Shali Peak was 4" and 8" respectively. The snowfall during the month was less than normal. All the snow had melted away by the end of March. No snowfall was reported in April. Report for May is not received.

Lower Pabar Range.—Report is available only for March. Snow fell on twelve days at Khadrula with a total fall of 6 1/2 ft. and on 3 days at Bashla to a depth of 7". The falls were above the average.

Arki.—No snow fell during the whole period.

Solan.—No snowfall was observed in March.

Kangra District

Seraj.—The following table shows the amount of snow accumulation at the different peaks at the end of each month during the period.

Peak	March	April	May
	Feet	Feet	Feet
Sirikhand	5	4	..
Maghan	1 1/2	1/2	..
Jalori Pass	1 1/2	1	..
Shepakaru	1 1/2	2	..
Bashleo	3 1/2	2 1/2	..
Tirth	1	2	1
Palach	1	1/2	..
Chol	1	1/2	..
Dundkoo	1	1/2	..
Tikar	1	1/2	..
Ramgarh	1	1/2	..
Nehun	1	1/2	..
Raghopur	1	1/2	..
Sakim	1/2	..	..
Lambri	1	1/2	..
Gargarasan	1	1/2	1/2

The falls were below normal during the period. The snowline descended to 6000 ft. during March.

Kulu.—Snow occurred on 16 days in March. The snow accumulations at the end of March and April at the different peaks are given below. No reports for May are available.

Peak	March ft.	April ft.
Hamta	27	19
Rohtang	17	10
Barsai	6	0
Baragarh	5	0
Chandarkhani	6	0
Lohriachhari	7	0
Hhubhu	6	0
Bashtari	4	0
Mujhag	4	0
Sari	7	0

Snowfall was above normal in March and normal in April. The snowline descended to 8000 ft. during March, which receded to 9000 ft. by the end of the month. It receded further with the advance of the season.

Mandi District

Mandi Forest Division.—There were 3 moderate falls of snow in March, while April and May had only rains. The accumulations at Tunga Devi and Bhuboo were 1½ ft. and 1 ft. respectively at the end of March, which had melted away by April. The snowfall is reported to be much less than in the previous years.

Suket Forest Division.—There was no snowfall during the period; nor were any accumulations left on the peaks and passes even in the beginning of the period.

III—UTTAR PRADESH

Tehri Garhwal District

The whole season was dry except for one snowfall in March. The depth of snow was estimated to be between 4 to 6 inches on peaks like Tope-Tibba, Nag-Tibba etc. Snowline descended to 4,500 ft.

Garhwal District

There were 17 falls of snow during March, 18 in April and 5 in May. The accumulations were confined to peaks above 10,000 ft. and were less than an inch deep. In general the snowfall was less than normal.

Almora District

The 4 patties viz., Malla Danpur, Malla Johar, Malla Darma and Byans reported the following amount of snowfall.

Station	March Feet	April Feet	May Feet
Malla Danpur	6 to 20	1 to 6	1 to 1½
Malla Johar	4	..	..
Malla Darma	6	2	2
Byans . . . . .	..	..	1½

The depth of snow accumulation at the end of each month at certain localities was as follows:—

Peak	March Feet	April Feet	May Feet
Kantela Peak	6	1	..
Kantela Valley	7	1½	..
Kafini Peak	10	2	..
Kafini Valley	11	3	..
Bankatia Peak	16	4	1
Bankatia Valley	18	..	..
Pindar Peak	20	5	1
Pindar Valley	21	6	..
Nanda Khat	20	6	1½
Nanda Valley	21	..	..
Sundardhunga Peak	18	5	1
Sundardhunga Valley	20	6	..
Panchchuli Peak	4	..	..
Untadhura	4	..	..
Hansing	4	..	..
Lipu Leg . . . . .	..	..	1
Lampia Leg . . . . .	..	..	1½

The snowfall was about normal. The accumulations at the end of the period were much below normal.

Southwest Monsoon-Period—June to September, June and July

I—JAMMU AND KASHMIR

North Baramulla District

Gulmarg.—Eleven light snowfalls were observed on the Handibal and Apharvat ranges in June. July did not record any snowfall. The snow accumulation on the surrounding mountains as well as the snowfall for the season was above the average.

South Anantnag District

Srinagar.—No fresh snowfall was observed either in the main valley or on the surrounding mountains throughout the period. Very thin layers of snow accumulation were visible on high peaks at the close of the period. This was estimated to be below the average.

Patni-Top (Batote).—Snow did not fall during any of the two months. A little amount of snow accumulation was observed on the eastern Pirpanjal range (ht. 13,480) at the end of the period.

Ladakh District

Kargil.—There was no snowfall.

Sonemarg.—No snow fell during the period. The snow accumulation on the high peaks was estimated to be about 2 ft. at the end of June and as usual at the end of the period.

Dras.—There was no snowfall during the period, neither was there any snow accumulation on the ground.

Leh.—There was no snowfall in June. In July about 8 inches of snow was estimated to have fallen over mountains 18,000 to 20,000 ft. in height. The snow covering at the height of 20,000 ft. was observed to be more than average.

II—THE PUNJAB (I)

Chamba District

Pangi

Kilan (Pangi Range).—There was no snowfall at the raingauge station, Kilan, during the two months June and July. One fall was witnessed on the high peaks in July. The snow accumulation at Sach Pass was reported to be about 10 ft. at the end of June, which melted away at the end of the period. The falls during and the accumulations at the end of the period were below normal.

Churah

Bhandal.—No snowfall.

Tikri.—No snowfall descended below 10,000' during June and July. The snow accumulation at the Drati Pass was estimated to be 5 to 6 ft. at the end of June and about 4 ft. at the end of July. The accumulations at the end of the period were above normal.

Chamba

Lower Chamba.—The weather remained dry as usual during the period. No snowfall was recorded and the passes nearby were clear of snow from the beginning of the period.

Bhattiyat

Kala-Top (Dalhousi Forest Range).—No snowfall.

Bhattiyat.—No snowfall.

Mahasu District

Kilba-Kailash.—There has been no snowfall in this region during the period. The accumulations were less than normal.

Chini (Kalpar).—No snow fell during June and July. The snowline was confined to heights above 13,000 ft. and the accumulation at Rupar Pass was about 1 ft.

Rampur.—No snowfall was recorded during the period.

Kangra District

Seraj.—There was no snowfall. The snow accumulations on the peaks were as under.

Peak	Accumulation in Feet	
	June	July
Sirikhand	1	Nil
Shepakaru	1	Nil
Tirth	1	Nil

Kulu.—No snow fell. The snow depth at Hamta Pass was ½ ft. at the end of July.

Mandi District

Mandi Forest Division.—No snowfall was witnessed during the two months, June and July.

Suket Forest Division.—There was no snowfall during the period nor were there any accumulations left.

III—UTTAR PRADESH

Tehri Garhwal District

No snowfall.

Gerhwal District

June did not witness any snowfall while July received 5 snowfalls. The snowfall at peaks over 13,000 ft. was about 6" to 1 ft. The snow accumulation on well-known passes and peaks was between 2 to 4 ft.

The snowfall was below normal in June and above it in July. The accumulations on the well-known passes and peaks were about normal.

Almora District

No abnormal thickness of snow covering has been reported during the period. At Malla Darma one foot of snow was estimated at the end of the period while there was not any snow accumulation at Malla Johar or Malla Danpur. On the whole the snowfall was normal and the accumulations were below the average.

August and September.

I—JAMMU AND KASHMIR

North Baramulla District

Gulmarg.—No snow fell in August but September had one light fall on the Agharwat and Handibal mountain ranges. Only slight accumulation was observed on the surrounding mountains which was said to be above normal.

South Anantnag District

Srinagar.—As usual no snowfall was experienced during the period. The thin layers of accumulated snow which were seen on the high peaks at the end of July had melted away during August.

Patni-Top (Batote).—No snow nor accumulations were observed during the period.

Ladakh District

Kargil.—It did not snow in any of the two months.

Sonemarg.—No snow fell.

Dras.—No snowfall occurred.

II—THE PUNJAB (I)

Chamba District

Pangi

Kilan (Pangi Range).—A few light snowfalls occurred during August and September above 12,000 ft.

Churah

Tissa.—There were 2 occasions of snowfall during the period which were confined to heights above 13,000 ft.

Pass	Snowfall in	
	August	September
Sach Pass (14,478 ft.)	2"	3"
Chini Pass (14,302 ft.)	2"	..
Marwa Pass (14,100 ft.)	1"	..

There were no accumulations left on any of these passes.

Bhandal.—No snowfall was observed during the period.

Tikri.—No snowfall descended below the Drati Pass during August. At Drati Pass the depth of snow was estimated to be about 2½ ft. to 3½ ft. Report for September is not available.

Chamba

Lower Chamba.—There was no snowfall nor was there any accumulation on the peaks during the period.

Mahasa District

Kilba-Kailash.—No snow fell.

Chini (Kalpar).—No snow fell during the period.

Rampur.—No snow fell.

Kangra District

Seraj.—Neither snowfall nor any accumulation has been recorded in August as usual. Report for September has not been received.

Mandi District

Mandi Forest Division.—No snow fell during the period.

Suket Forest Division.—Snow did not fall during any of the two months August and September nor was any accumulation observed on the peaks.

III—UTTAR PRADESH**Tehri Garhwal District**

It did not snow during the period.

Garhwal District

Report for August is not available. In September 8 falls of snow were recorded. The total depths of the falls were about 4 inches at 16,000 ft. height. The snow remained unmelted.

Almora District

The following table gives the snowfall amount and snow accumulations at some of the peaks.

Snowfall at	August	September
Malla Darma	½ ft. to 3 ft.	2 ft.
Malla Johar	..	No snowfall.
Malla Danpur	1 to 2 inches	6 to 7 inches
<i>Snow accumulations in inches</i>		
Bankatia Peak	1½	6
Pindar Peak	1½	6
Nanda Khat	2	7
Sundardhunga Peak	1	6

The snowfall in August was a little more than the average while in September it was a little less than the average. The accumulations at the end of both the months were much below normal.

Post-Monsoon Period—October to December**I—JAMMU AND KASHMIR****South Anantnag District**

Srinagar.—A few fresh snowfalls of light to moderate intensity were observed in October and November and several such in December. Snow accumulation was about 8 inches at the end of October on the surrounding mountains, which melted away partly during November. At the end of December there was 3 ft. of snow on these mountains. The snowfall on the whole was below the average during the first two months, and above the average in December.

Patni-Top (Batote).—There were four snowfalls in October, one in November and six in December. The total depth of falls was about 12 inches in December. Banihal and Ensin Dhar tops were covered with snow at the end of October. The accumulation of snow on the Banihal Pass was 4 ft. towards the end of December. The snowline descended to 4700 ft. during December. The snowfall during the period was reported to be below normal.

Ladakh District

Kargil.—Snow fell to a depth of 1 inch at the station and about 6 inches on the surrounding peaks during October. No reports are available for November and December.

Sonemarg.—October had 2 occasions of snowfall but that did not accumulate any snow on the ground. Zojilla Pass was closed to traffic and the accumulation there was not less than 2 ft. November turned out to be a dry month. December witnessed as many as nine moderate to heavy snowfalls. The snowfall was above the average of previous years for the period.

Dras.—Report for October is not available. In November no snowfall was recorded. The first snow for the season fell on the 13th of December and about 65 inches of snow accumulated on the ground by the end of the month. The snowfall in December was above average.

Leh.—November remained dry. In December snowfall was observed on 2 days at heights of 14,000 to 20,000 ft. and there was about 6 inches of snow at the station. On higher passes snow was experienced almost daily.

II—THE PUNJAB (I)**Chamba District****Pangi**

Kilan (Pangi Range).—October received one snowfall, while no snow fell in November. Thirteen falls of snow were recorded in December and the total amount of snow converted into water amounted to 6.98 inches. At Sach Pass the snow accumulation was about 6 ft. at the end of October and November and about 25 ft. at the end of the period. The snowfall in October and November was below normal while it was much above normal in December.

Churah

Tissa.—Snowfall occurred on 3 days at elevations of 12 to 14 thousand ft. and the snowline descended to 9000 ft. in October. At Sach Pass the falls were 2 in., 4 in. and 3 ft. respectively. At Satrundi it snowed to a depth of 1½ ft. No information is available for November and December.

Bhandal.—There was no snowfall in October. November experienced one snowfall at the elevation of 9000 ft. and there was about 4" of snow at Siragarh pass. In December 7 snowfalls were recorded at the station proper, and about 6 ft. of snow was observed at the Padri and Gamgual passes. The same amounts have been reported as accumulations. The falls were above the average.

Tikri.—Reports for October and November are not available. In December there were 3 snowfalls all of which were restricted to heights above 5000 ft. The snow accumulation at Drati pass was about 12 ft. The snowfall was in excess.

Chamba

Upper Chamba.—The report received for December mentions 2 falls, the depth of snowfall being 1 ft. and 2 ft. respectively. Snowfall was experienced upto a

height of 6000 ft. a.s.l. The accumulations at the end of the period were as given below :—

Place	Accumulation at end of December (feet)
Bohar	5
Balani	7
Kankot	6

The falls were above average.

Lower Chamba.—It did not snow during the first two months. In December there was a heavy snowfall descending down to a height of 5000 ft. The approximate snow accumulation at the following places was as under :—

Place	Accumulation in feet
Khajiar	4
Chhabaru	5
Lower Jhamalu	2
Sabo	7
Sillagrat	3

The snowfall was above the average in December.

Bhattiyat

Trehta.—Report is available only for the month of December when it snowed on eight days to a depth of 12 inches at heights above 5500 ft. At Holi about 3" of snow was seen at the end of the month while on higher passes and peaks the accumulations were assessed to be 8 to 12 ft. The snowfall in December was as usual.

Mahasu District

Pandrabas.—Only December report is available. 1'8" of snowfall was recorded at Phancha raingauge station. The snowline descended to 6000' elevation. The snow accumulation on the Spiti Bhaba Pass was about 4'. The snowfall was above average.

Kilba-Kailash.—Reports for October are not available. November did not have any snowfall while in December snowfall was witnessed on several occasions at Kilba, Sangla and Purhani and the total falls were 9", 3' 1" and 2' 5" respectively at these three stations.

Chini (Kalpar).—Reports for October are not available. No snowfall occurred in November. Snow fell on 9 days in the month of December to a total depth of 3 ft. 6 inches. This was more than the average.

Rampur.—There was no snowfall in the months of October and November. December received a few snowstorms which came down to an elevation of 6000 ft. The amount of snow at Daran Ghati and Hatu peak was estimated to be 2 to 3 ft. The snowfall of December was above normal.

Kumarsain.—Reports were not received for October and November. In December the snowfall was restricted to heights above 6500 ft. The snow depth at 6500 ft. was estimated to be 3" and on the passes at heights of 9000 ft. it was about 4".

Suni.—There were 4 occasions of snowfall accompanied by snowstorm in the month of December when the falls descended to as low as 4000 ft., depth varying

from 2" to 1 ft. The accumulation on the peak Shali (9000') was about 7 ft. at the end of the period. The falls were reported above normal.

Lower Paber Range.—The snowfalls in December at Khadrata and Bashla amounted to 3'6" and 1'2" respectively. The snowfall during this month was above the average.

Arki.—No snow fall in December for which the report is available.

Solan.—No reports are available for October and November. It did not snow at the station proper in December, but light snowfall was seen on Karol hill.

Kangra District

Seraj.—The information of snow accumulations on the various peaks at the end of December is as given below.

Peaks	Depth of snow at the end of December in feet
Siribhand	10
Ghol	6
Maghan	2
Dundboo	2½
Tikar	2
Nehun	4½
Raghopur	5½
Jalori	6
Sakirn	6½
Lambri	6½
Gargarasan	7
Shepakaru	7
Bashlep	8
Palach	9
Tirth	8
Rangarh	3

Kulu.—Snow fell on high peaks in all the 3 months and the depth of snow on the nearby peaks was as follows :—

Peaks	Depth of snow at the end of period in feet
Hanta	12
Rohtang	10
Barsai	8
Bhojchar	7
Chandarkhani	6
Lohriachhaci	5
Sari	4
Bhubhu	3
Bastari	2
Mujbag	1

The snowfall during the period was less than the average of previous years.

Mandi District

Mandi Forest Division.—There was no snowfall during October and November. In December 3 snowstorms were experienced, preceded by strong cold winds. The depth of falls varied from 2" to 1 ft. The snowline during the snowstorms descended down to the well-known peaks like Shikari, Tungasi, Raigarh and Kashi-han. The accumulations on those peaks were 5, 4, 4 and 4 ft. respectively. The snowfall of December was reported to be above the average.

Suket Forest Division.—No snow fell in the months of October and November. In December Jhungi rain-gauge station recorded only 0.1 in. of snowfall on one occasion. Snow accumulation on the nearby peaks was estimated to be 2 ft.

III—UTTAR PRADESH**Tehri Garhwal District**

It did not snow in the months of October and November. December recorded a few light snowfalls when the snowline descended to 8000 ft. The snow accumulation was estimated to be between 1 and 3 inches on the high peaks of Bandurpuchha etc. The snowfall was less than average.

Garhwal District

The snowfall this year started unusually early, October recording 11 falls, with an accumulation of 4 in. at 9,000 ft. elevation. Due to this early severe snowfalls there was much loss of human lives and of cattle. November recorded 9 falls with 4 in. accumulation at 10,000 ft. There were 12 falls in December when the snowline descended to 6000 ft. The falls were much above the average during the period.

Almora District

The information about snowfall and accumulation for the 3 months was as follows:—

Snowfall at	October	November	December
	Feet	Feet	Feet
Malla Darma	6	2	6
Malla Danpur	1 to 4	3½	3 to 14
Malla Johar . . . . .	..	4	..
Accumulation at			
Kautela peak	1	½	3
Kafini Peak	2	½	4
Bankatia Peak	3	3	8
Bankatia Valley . . . . .	..	..	10
Pindar Peak	3	3	10
Pindar Valley . . . . .	..	½	12
Nanda Khat	4	3½	12

N.B.—It is not possible to adopt a single classification of seasons which will be satisfactory for the whole of India. The classification adopted in this publication, is, however, considered as the most satisfactory one and the least open to objection especially from the point of view of rainfall.

Accumulation at	October	November	December
	Feet	Feet	Feet
Nanda Khat Valley . . . . .	..	..	14
Sunderdhunga Peak	3	3	10
Sunderdhunga Valley	2½	2½	12
Untadhura . . . . .	..	10	..
Millan pass . . . . .	..	4	..

The snowfall of the period was more than the average at Malla Darma and a little less than average at Malla Danpur. The accumulations at the end of the period were about normal.

Nainital District

Mukteshwar.—Report is available only for December when there were 2 snowfalls with snow depths 1½" and 2½" respectively. The snowfalls were light in character, but above the average of previous years.

SUMMARY**Cold Weather Period—January and February.**

Snowfall during the period was normal in Jammu and Kashmir, and below normal in Punjab (I) and Uttar Pradesh. The accumulations were slightly above normal in Jammu and Kashmir and below normal in Punjab (I).

Hot Weather Period—March to May.

Snowfall was normal in Jammu and Kashmir and a little less than normal in Punjab (I) and Uttar Pradesh. The accumulations were slightly above normal in Jammu and Kashmir and normal in Punjab (I).

Monsoon Period—June and July.

As usual snowfall was almost nil at many of the places in Jammu and Kashmir and Punjab (I) while it was normal in Uttar Pradesh. The accumulations were nearly normal.

Monsoon Period—August and September.

As usual very little snow fell in Jammu and Kashmir and Punjab (I) while in Uttar Pradesh it was normal. The accumulations in Uttar Pradesh were below normal.

Post-Monsoon Period—October to December.

Snowfall was normal or in slight defect in Jammu and Kashmir and slightly above normal in Uttar Pradesh. In Punjab (I) snowfall was less than average in October and November and more than average in December and on the whole it can be said that it was nearly normal for the period. The accumulations were normal in Uttar Pradesh.