



Government of Nepal
Ministry of Energy, Water Resource and Irrigation
Department of Hydrology and Meteorology
Climate Division (Climate Analysis Section)
Babarmahal, Kathmandu

15th February 2023

Preliminary Precipitation and Temperature Summary
Post-monsoon Season (October - November), 2023

Highlights

Precipitation over the country as a whole during Post-monsoon season (October - November, 2023) was 150.8% of the normal precipitation of the season. Maximum temperatures were above normal over most parts of the country while minimum temperatures were below normal over northern parts and above normal over southern parts.

Precipitation

Central parts of Gandaki Province recorded precipitation above 200 mm while north-western part of Karnali Province and central part of Sudurpaschim Province recorded precipitation less than 25 mm (Figure 1). North-eastern part of Karnali Province, Central and eastern part of Lumbini Province, Gandaki Province, Bagmati Province, Madhesh Province and most parts of Koshi Province recorded normal to above normal precipitation while remaining parts of the country received below normal precipitation in this Post-monsoon season. South-western part of Sudurpaschim Province faced extreme drought condition (below normal precipitation by 70%) (Figure 2).

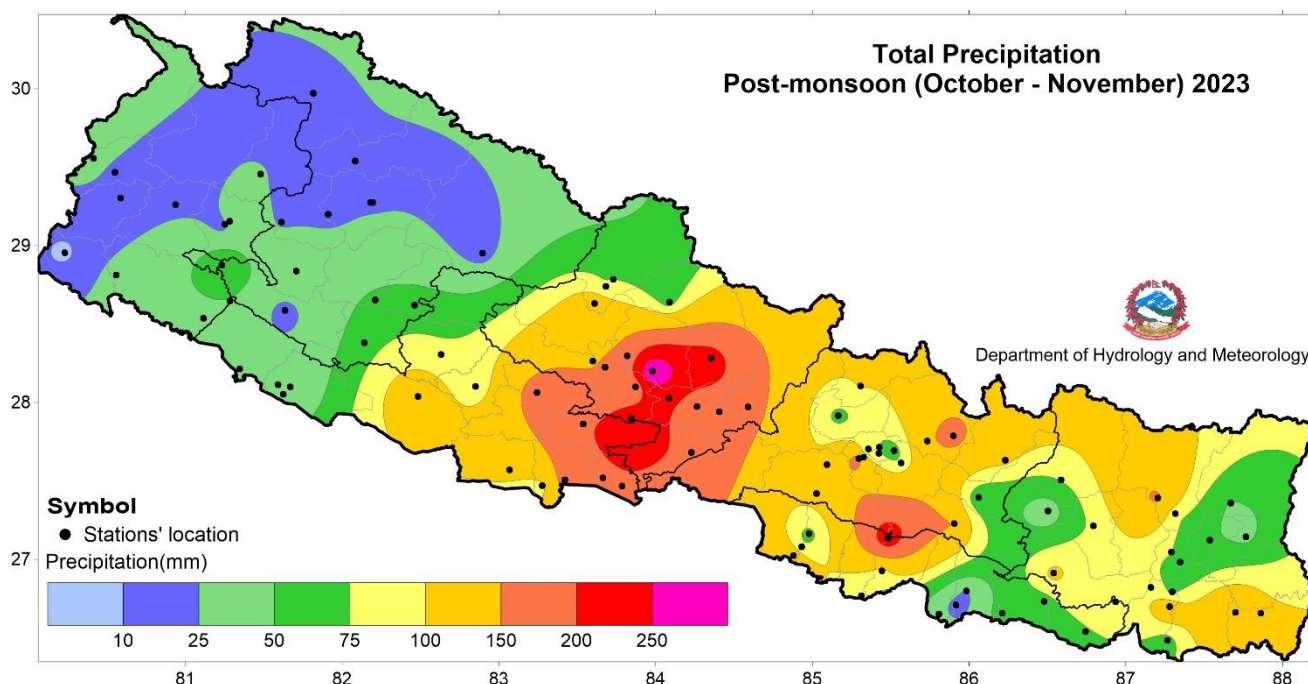


Figure 1: Total precipitation in Post-monsoon 2023.

Pokhara Airport station of Kaski district recorded the highest seasonal precipitation of 299.3 mm while Mahendranagar station of Kanchanpur district recorded the lowest of 6.8 mm. Similarly, the highest (438.1%) and the lowest (12.9%) percentage of seasonal normal precipitation were recorded at Gorkha (Birenchowk) station of Gorkha district and Mahendranagar station of Kanchanpur district respectively (Annex 1). Based on the average of 89 stations shown in figure 2, Nepal received 150.8% of the normal precipitation of the season. In general, less than 90% of normal precipitation is considered as below normal, 90 to 110% is considered as near normal, and more than 110% of normal precipitation is considered as above normal precipitation for the season.



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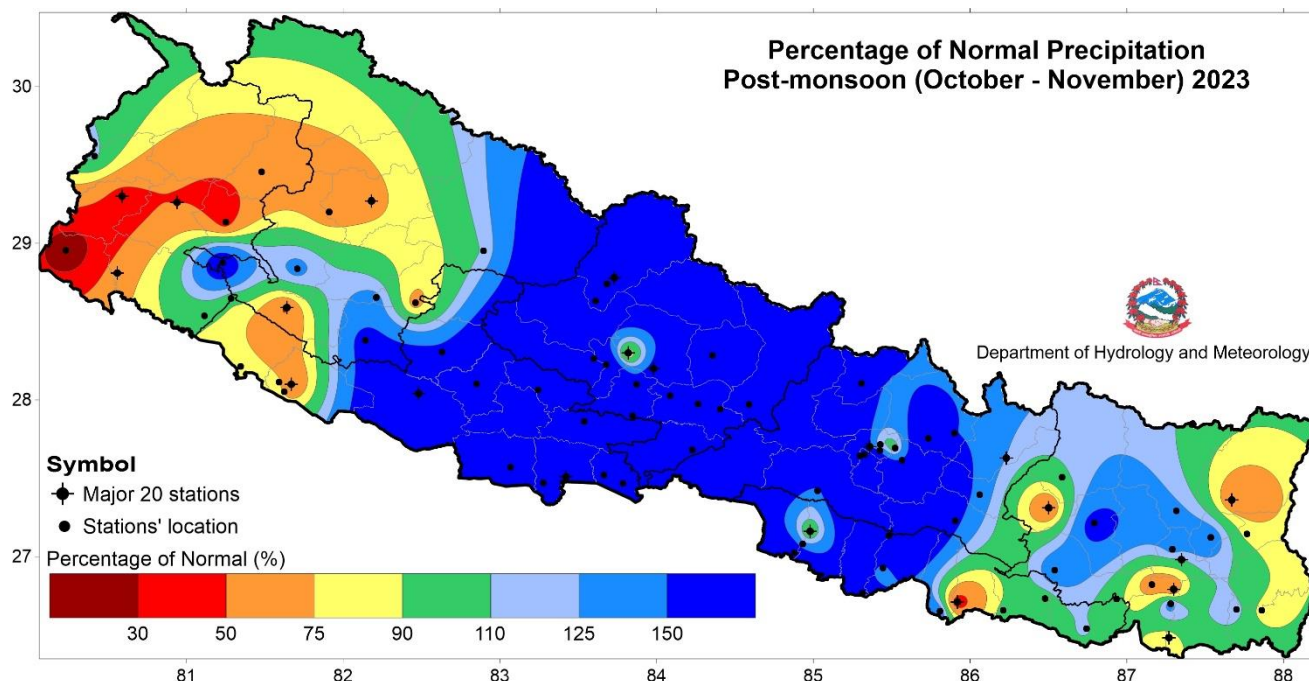


Figure 2: Percentage of normal precipitation in Post-monsoon 2023.

Figures 3 and 4, respectively, show the temporal distribution of annual and seasonal (Post-monsoon) cumulative average of daily precipitation at 20 major stations located as shown in figure 2. The timeseries of precipitation shows that precipitation was near-normal during the Post-monsoon season.

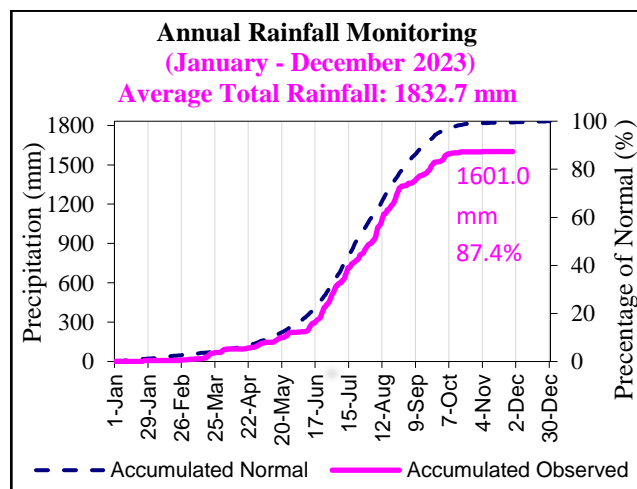


Figure 3: Cumulative average of daily normal and observed precipitation at throughout the year.

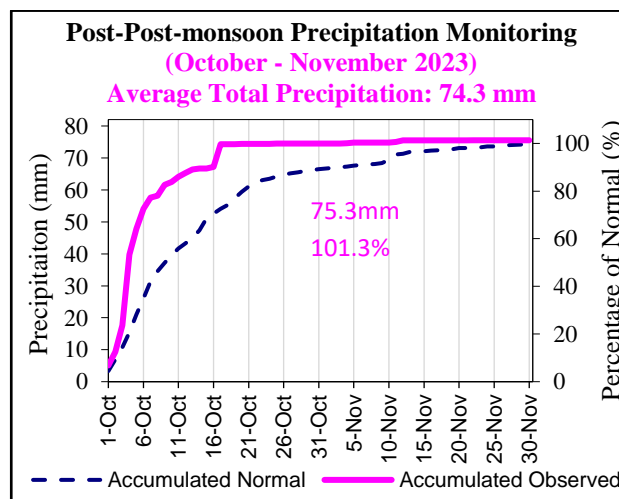


Figure 4: Cumulative average of daily normal and observed precipitation during Post-monsoon season.

Maximum Temperature

Northern part of the country recorded seasonal maximum temperature less than 9°C while southern plain recorded above 30°C during Post-monsoon season (Figure 5). Most parts of the country recorded above normal maximum temperature while central parts of Lumbini Province, Karnali Province and Sudurpaschim Province recorded near-normal to below normal maximum temperature (Figure 6).



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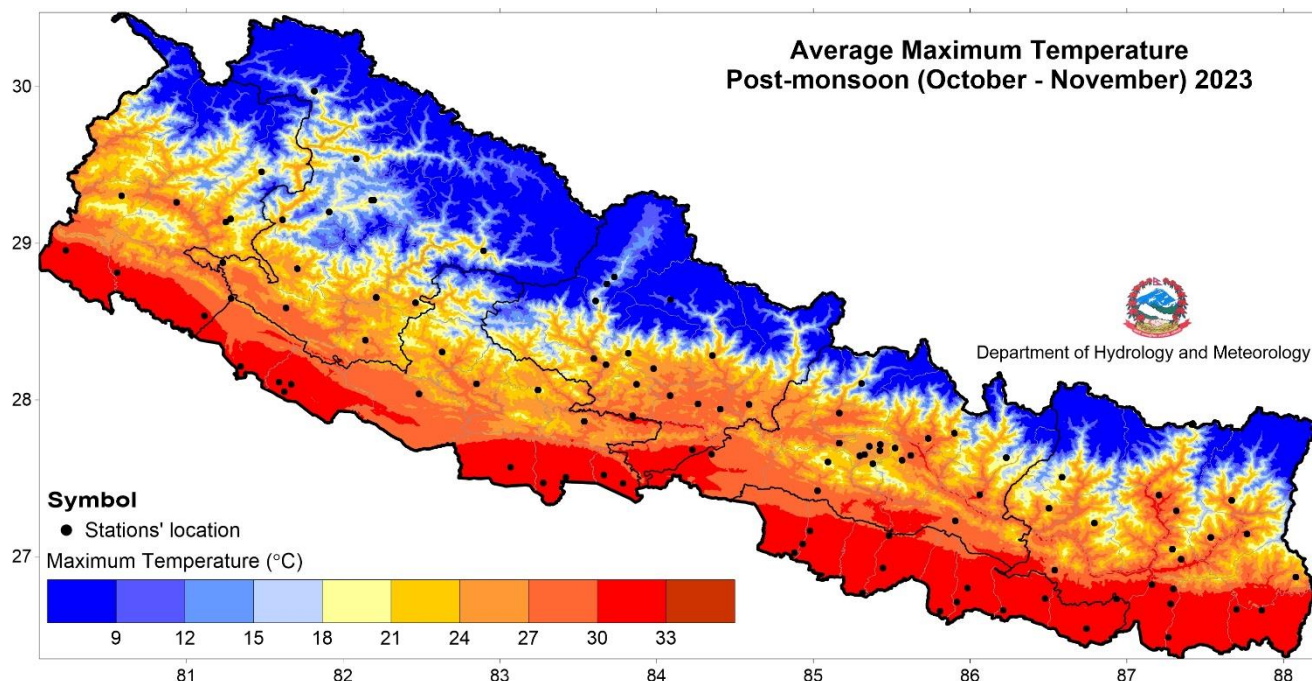


Figure 5: Maximum Temperature in Post-monsoon 2023.

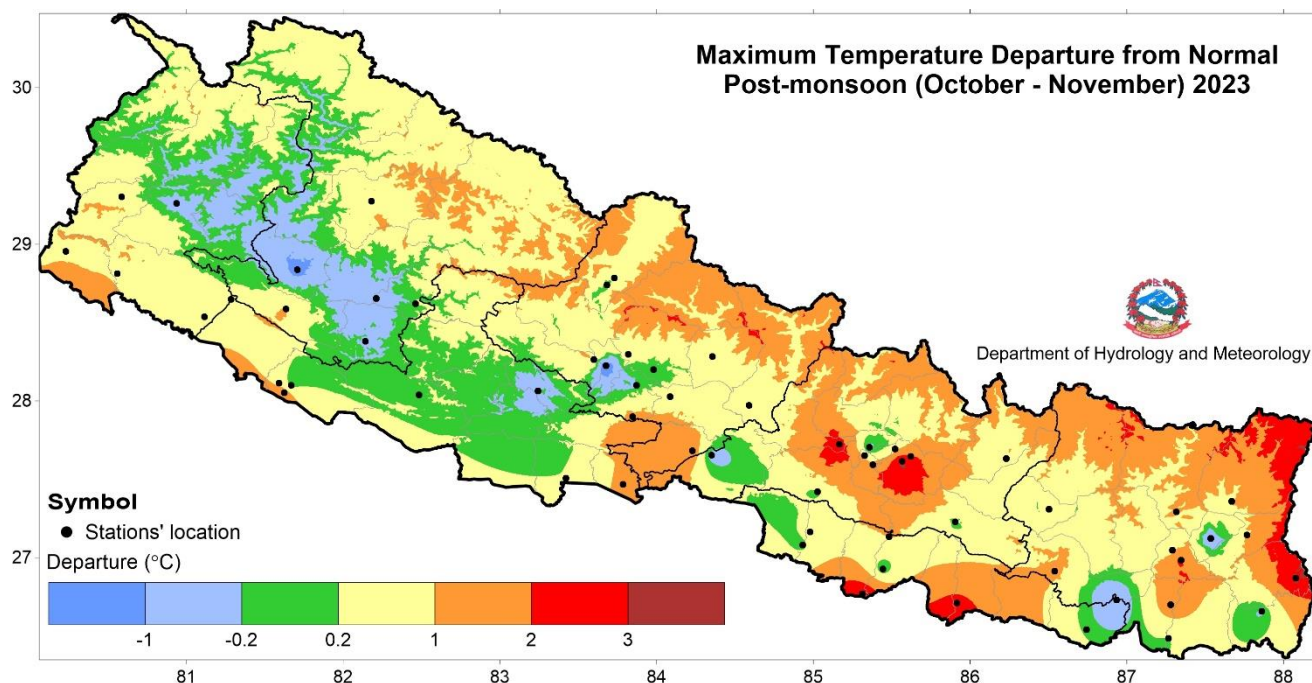


Figure 6: Departure from normal maximum temperature in Post-monsoon 2023.

Janakpur Airport station of Dhanusha district and Humde station of Manang district recorded the highest and lowest seasonal maximum temperature of 33.2°C and 12.2°C respectively. Similarly, the highest seasonal anomaly of 3.3°C was recorded at Dhulikhel station of Kavrepalanchok district and the lowest of -1.8°C was recorded at Kusma station of Parbat district (Annex 1). The highest daily maximum temperature of 38.5°C was recorded at Panchkhal station of Kavrepalanchok district on 26th October while the lowest daily maximum temperature of 5.9°C was recorded at Humde station of Manang district on 11th November.



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Minimum Temperature

Northern part of the country recorded seasonal minimum temperature less than -3.0°C while southern plain recorded more than 18°C during Post-monsoon season (Figure 7). Northern part of the country, as well as some central part of Koshi Province and eastern part of Madhesh Province recorded near-normal to below normal minimum temperature while the remaining part of the country recorded above normal minimum temperature (Figure 8).

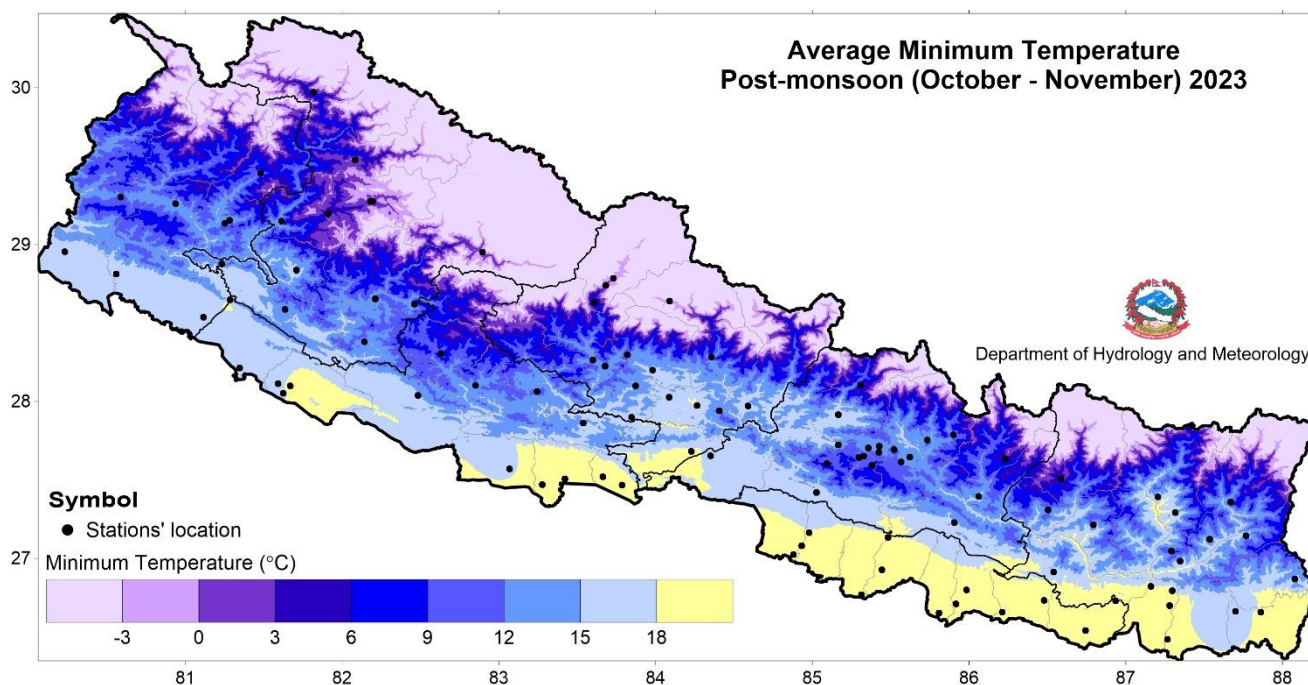


Figure 7: Minimum Temperature in Post-monsoon 2023.

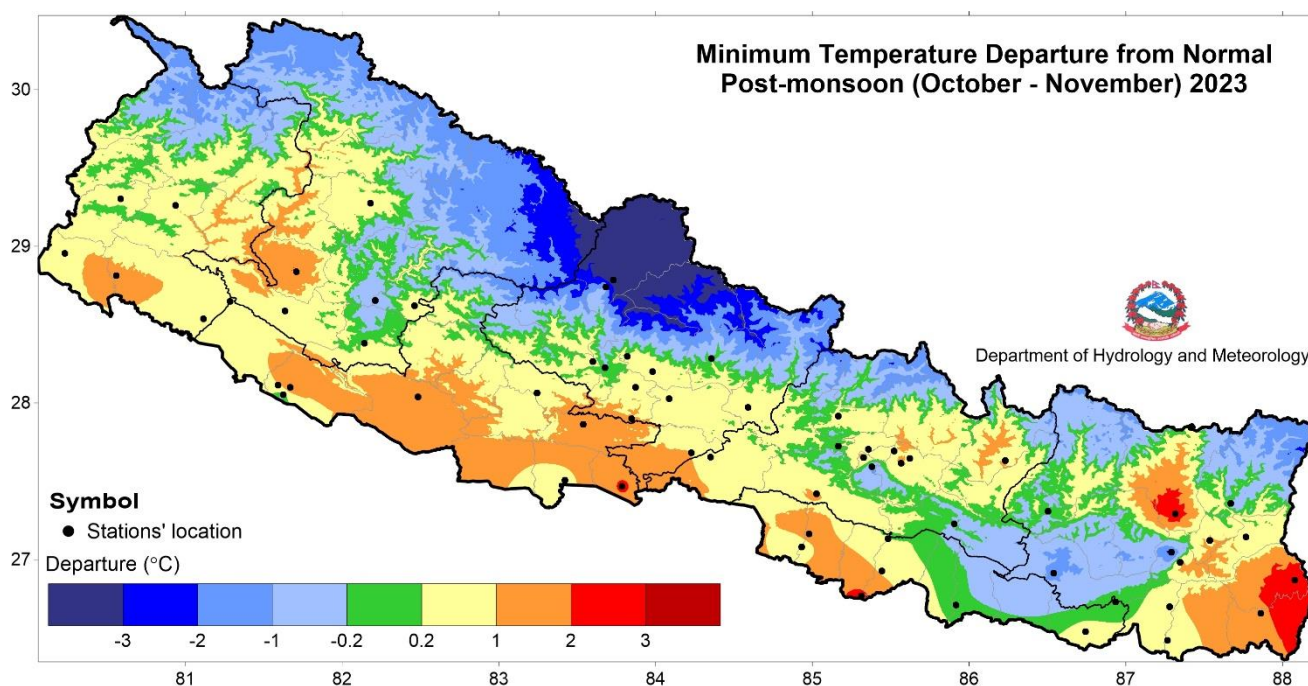


Figure 8: Departure from normal minimum temperature in Post-monsoon 2023.



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Gaur station of Rautahat district and Humde station of Manang district recorded the highest and lowest seasonal minimum temperature of 20.5°C and -1.6°C respectively. Similarly, the highest seasonal anomaly of 2.7°C was recorded at Chainpur station of Sankhuwasava district and the lowest anomaly of -4.2°C was recorded at Jomsom station of Mustang district (Annex 1). The highest daily minimum temperature of 28.0°C was recorded at Lumbini station of Kapilbastu district on 1st October while the lowest daily minimum temperature of -6.5°C was recorded at Humde station of Manang district on 30th November.

Drought

Most parts of the country faced extreme drought condition (below normal precipitation by 70%) after the second week of October. However, wet condition persisted until mid-October (Figure 4). Percentage of normal monthly precipitation during October and November are shown in figure 9 and 10. A drought is defined as moderate, severe and extreme as given in the table 1.

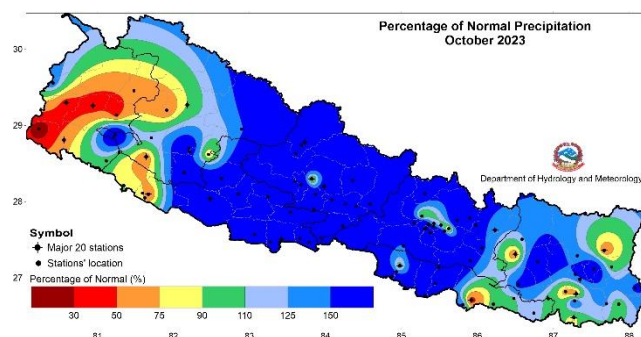


Figure 9: Percentage of normal precipitation in October 2023.

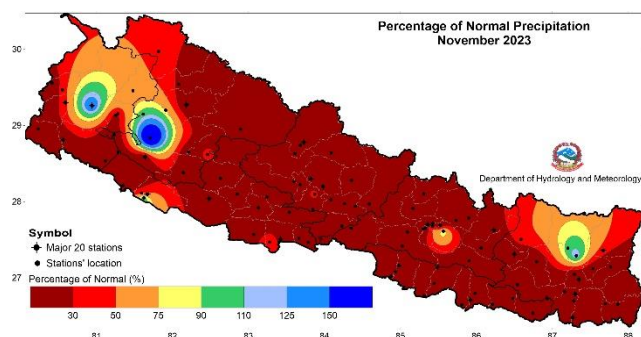


Figure 10: Percentage of normal precipitation in November 2023.

Table 1: Categorization of Drought

S.N.	Percentage of normal precipitation (%)	Drought category
1	50 - 75	Moderate drought
2	30 - 50	Severe drought
3	< 30	Extreme drought



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Annex 1: Seasonal precipitation and temperature data of Post-monsoon 2023

Station	Latitude	Longitude	Elevation	Precipitation		Temperature			
				Total (mm)	Percentage of Normal (%)	Maximum		Minimum	
						Average (°C)	Departure from normal (°C)	Average (°C)	Departure from normal (°C)
Baglung	28.2636	83.6003	964	140.7	213.2	28.0	0.9	14.5	0.7
Bahrabise	27.7887	85.9000	884	163.7	152.7	28.0	-	14.0	-
Baitadi (Gothalapani)	29.5574	80.4132	1352	38.8	114.9	-	-	-	-
Bajura (Martadi)	29.4570	81.4804	1598	25.8	63.5	23.0	-	11.3	-
Bandipur	27.9418	84.4064	991	180.2	342.6	26.2	-	11.3	-
Bhairahawa Airport	27.5068	83.4204	108	168.2	238.9	31.1	0.3	18.2	0.6
Bhaktapur	27.6767	85.4240	1315	77.5	152.9	26.7	-	11.7	-
Bijuwara Tar	28.1035	82.8520	835	82.1	232.6	28.3	-	14.5	-
Biratnagar Airport	26.4840	87.2670	72	62.1	78.1	30.9	0.2	18.9	0.4
Birganj	27.0232	84.8782	67	134.8	214.7	32.1	-	19.8	-
Chainpur (East)	27.2921	87.3170	1277	83.4	132.1	25.5	1.3	15.3	2.7
Changu Narayan	27.7161	85.4268	1502	77.9	119.3	26.5	-	12.9	-
Chapakot	27.8999	83.8459	617	223.7	412.7	29.3	1.3	16.7	1.1
Chatara	26.8204	87.1592	105	92.3	57.3	33.1	-	19.0	-
Chaurjhari Tar	28.6540	82.2103	863	54.7	134.1	25.3	-0.9	12.8	-0.7
Chautara	27.7538	85.7321	1552	142.2	221.6	25.8	-	11.8	-
Chisapani (Karnali)	28.6472	81.2854	201	48.5	96.1	28.9	0.5	18.8	0.6
Dadeldhura	29.3014	80.5878	1879	14.8	37.3	21.9	0.8	10.0	0.2
Dailekh	28.8381	81.7085	1394	44.4	136.6	22.9	-1.2	13.5	1.8
Damak	26.6623	87.6988	119	153.3	118.1	31.5	-	15.8	-
Daman	27.6044	85.0920	2265	103.0	-	19.3	-	8.0	-
Damauli	27.9737	84.2651	347	164.6	389.1	29.6	-	18.7	-
Dhangadhi (Attariya)	28.8127	80.5600	184	31.8	60.2	30.8	0.9	17.2	1.2
Dhankuta	26.9832	87.3460	1192	49.4	107.2	27.1	2.4	14.7	0.9
Dharan Bazar	26.7922	87.2978	310	69.6	53.3	30.6	-	19.1	-
Dhulikhel	27.6161	85.5655	1543	79.3	155.2	23.9	3.3	11.6	1.1
Dhunde	28.1053	85.3077	2005	100.7	163.5	19.4	-	9.7	-
Dhunibesi	27.7229	85.1643	991	-	-	28.0	2.6	15.0	0.0
Diktel	27.2125	86.7919	1612	78.7	168.9	21.8	-	13.8	-
Dipayal (Doti)	29.2621	80.9369	563	21.8	49.6	29.1	-0.6	14.5	1.0
Dumkauli	27.6807	84.2285	183	192.2	236.7	31.9	1.8	18.8	1.0
Dunai	28.9507	82.8960	2098	16.6	112.2	24.4	-	2.6	-
Gaida (Kankai)	26.6569	87.8607	107	110.7	83.5	31.0	-0.3	19.0	1.7
Gaur	26.7671	85.3130	77	78.2	175.3	32.9	3.2	20.5	2.3
Ghorai (Dang)	28.0372	82.4842	663	131.7	239.5	27.6	0.1	15.5	1.8
Godavari	27.5929	85.3788	1527	-	-	23.4	1.2	9.0	-0.9
Gorkha (Birenchowk)	27.9714	84.5894	724	171.7	438.1	26.8	0.5	15.7	0.6
Gulariya	28.2128	81.3452	126	40.8	85.8	30.1	-	17.0	-
Hardinath	26.8000	85.9833	93	22.7	-	30.9	-	18.8	-
Hetauda N.F.I.	27.4202	85.0252	452	110.4	136.0	28.8	0.1	16.6	1.1
Humde	28.6399	84.0881	3401	64.4	-	12.2	-	-1.6	-
Jalesor	26.6522	85.8073	68	32.7	148.0	31.5	-	19.7	-
Janakpur Airport	26.7097	85.9172	76	18.2	32.7	33.2	2.4	18.9	-0.1
Jiri	27.6304	86.2321	1877	105.4	125.0	20.7	0.4	7.7	1.2
Jomsom	28.7840	83.7298	2741	76.3	334.6	16.9	0.4	-0.7	-4.2
Jumla	29.2747	82.1796	2363	23.7	68.5	21.5	0.6	2.7	1.0
Jumla Airport	29.2740	82.1942	2384	23.2	-	20.3	-	2.1	-
Kanyam Tea Estate	26.8681	88.0783	1570	-	-	23.9	3.2	13.8	2.7
Karmaiya	27.1330	85.4841	139	233.3	281.4	31.6	1.0	20.0	0.3
Kathmandu Airport	27.7038	85.3562	1337	79.8	160.6	25.1	-0.3	12.0	0.8
Khadbari	27.3911	87.2044	1064	158.4	-	27.1	-	15.3	-
Khairini Tar	28.0270	84.0866	515	215.5	345.4	28.4	0.5	17.4	0.6
Khajura (Nepalganj)	28.1137	81.5903	129	37.6	82.1	30.9	0.8	17.4	0.9
Khokana	27.6438	85.2967	1309	168.5	385.6	25.8	-	9.8	-
Khudi Bazar	28.2822	84.3564	838	223.1	235.6	27.2	0.2	14.1	0.2
Khumaltar	27.6517	85.3257	1334	118.7	307.5	25.6	1.1	11.9	1.2
Kushma	28.2249	83.6769	900	164.0	230.0	26.8	-1.8	13.6	-0.2
Lahan	26.7327	86.4776	110	62.1	95.7	32.5	-	19.2	-
Lete	28.6327	83.6092	2490	126.0	201.9	18.9	-	6.5	-
Libang Gaun	28.3062	82.6323	1314	82.7	162.8	25.8	-	10.3	-
Lumbini	27.4703	83.2761	95	90.1	156.7	30.7	-	20.0	-
Lumle	28.2965	83.8179	1738	167.2	73.4	20.9	0.9	11.4	0.3
Mahendra Nagar	28.9548	80.2305	197	6.8	12.9	30.5	0.9	16.5	0.9
Mangalsen	29.1361	81.2501	1310	16.6	35.9	25.5	-	11.7	-
Manma	29.1488	81.6135	1729	22.9	-	21.8	-	11.1	-
Manthali	27.3947	86.0612	497	53.0	141.7	31.0	-	15.9	-
Manusmara	26.9280	85.4451	90	88.7	138.8	30.6	-0.1	19.2	0.9
Musikot (Rukumkot)	28.6190	82.4625	1412	63.4	65.4	24.4	0.1	12.5	0.7
Nagarkot	27.6933	85.5209	2147	63.4	98.6	19.8	0.6	9.9	0.6
Nagma	29.2006	81.9106	2017	20.5	59.2	20.7	-	6.7	-
Nepalgunj Airport	28.1006	81.6682	165	23.8	47.2	30.2	0.0	18.4	1.6
Nepalgunj (Reg. Off.)	28.0520	81.6228	141	33.0	75.8	31.8	1.9	17.8	-0.3
Nuwakot	27.9150	85.1646	966	66.9	-	26.6	-	15.8	0.1
Okhaldhunga	27.3081	86.5042	1731	33.7	48.6	22.7	0.4	11.7	-0.2
Oli Gaun (Patkani)	29.1559	81.2831	989	36.9	-	22.2	-	13.6	-
Pakhribas	27.0463	87.2925	1720	77.4	131.4	21.5	0.9	9.2	-2.4
Panchkhal	27.6451	85.6209	857	-	-	30.1	2.2	13.8	0.8
Parasi	27.5193	83.6622	112	187.0	252.7	30.8	-	18.0	-
Parwanipur	27.0789	84.9327	87	82.8	135.7	31.0	0.1	18.4	0.7
Phattepur	26.7305	86.9348	101	83.3	94.4	31.2	-0.9	18.4	-0.1
Phidim (Panchther)	27.1437	87.7656	1157	44.5	85.2	27.5	0.9	14.3	0.7
Pokhara Airport	28.2002	83.9795	827	299.3	169.7	26.2	-0.1	15.5	0.7
Pusma Camp	28.8755	81.2327	953	71.7	192.8	24.0	-	13.6	-
Rajbiraj	26.5407	86.7425	68	73.6	111.9	31.2	0.1	19.4	0.5
Rampur	27.6540	84.3508	189	-	-	29.8	-0.4	17.3	0.7
Rara	29.5401	82.0818	2989	24.9	-	15.9	-	2.0	-
Salleri	27.5051	86.5862	2383	75.2	103.0	22.2	-	5.6	-
Salyan Bazar	28.3821	82.1423	1557	63.7	165.1	25.2	-0.3	12.7	0.1
Semari	27.4682	83.7861	110	192.6	265.7	30.9	1.2	18.4	2.1
Simara Airport	27.1642	84.9800	137	65.2	89.9	31.0	0.4	18.2	1.2
Simikot	29.9715	81.8161	2993	23.3	-	16.2	-	3.7	-
Sindhuli Madhi	27.2281	85.9050	556	149.9	159.0	28.8	0.1	15.5	-0.2
Siraha	26.6561	86.2117	63	61.5	96.1	32.1	-	20.1	-
Surkhet Airport	28.5879	81.6352	683	17.41	47.1	28.6	1.1	14	0.8
Syangja	28.0988	83.8722	871	166.74	180.1	26.5	-0.25	15.2	1
Tamghas	28.0636	83.2435	1547	174.41	363.4	21.5	-0.35	11.6	0.4
Tansen	27.8637	83.5387	1183	194.72	381.1	25.8	-	14.9	1.7
Taplejung	27.3586	87.67	1744	48.43	56.7	22.1	1	10.4	-0.5
Tarahara	26.6987	87.2786	120	128.81	136.9	32	1.6	18.2	0.8
Taulihawa	27.5711	83.0672	106	107.12	313.2	30.3	-	17.5	-
Terhathum	27.1230	87.5362	1525	54.0	147.9	23.9	-0.6	12.7	0.8
Thakmarpha	28.7409	83.6816	2655	77.9	255.5	16.6	-0.1	2.4	-0.5
Tikapur	28.5366	81.1150	149	38.4	94.6	30.5	0.6	16.4	0.8
Udayapur Gadhi	26.9130	86.5397	469	108.6	145.6	30.0	1.2	17.5	-1.1

Note:

- “mm” = millimeter; “-” = Data Not Available.
- This summary is prepared based on the precipitation and temperature received at 104 meteorological stations during Post-monsoon, 2023. Out of 104 stations, 89 stations have normal precipitation data, 42 stations have normal maximum temperature data and 40 stations have normal minimum temperature data. Normal precipitation/temperature is the average of the seasonal precipitation/temperature for period of 1991-2020.