

## A. METEOROLOGICAL STUDIES



## A.1 METEOROLOGICAL DATA FOR STUDIES

Meteorological data for the project area and its surrounding areas were collected from climatological records published by the Department of Hydrology and Meteorology (DHM), GoN(DHM, 2009).

### Meteorological Stations

**Table 1: Meteorological stations in project area and its surroundings**

Index	Location	Latitude (N)	Longitude (E)	Altitude (m)
101	Kakerpakha	29°39'	80°30'	842
102	Baitadi	29°33'	80°25'	1,635
103	Patan (West)	29°28'	80°32'	1,266
104	Dadeldhura	29°18'	80°35'	1,848
108	Satbanjh	29°32'	80°28'	2,370
201	Pipalkot	29°37'	80°52'	1,456
202	Chainpur (West)	29°33'	81°13'	1,304
203	Silgadhi (Doti)	29°16'	80°59'	1,360
205	Katai	29°00'	81°08'	1,388
206	AsaraGhat	28°57'	81°27'	650
207	Tikapur	28°32'	81°07'	140
208	Sandepani	28°45'	80°55'	195
209	Dhangadhi(Attariya)	28°48'	80°33'	187
212	Sitapur	28°34'	80°49'	152
214	Kola Gaun	29°07'	80°41'	1,304
217	Mangalsen	29°09'	81°17'	1,345

## A.2 PRECIPITATION DATA FOR STUDIES

### Rainfall data of surrounding meteorological stations season wise

Index No.	Station	Winter		Pre-monsoon		Monsoon				Post monsoon		Winter	Annual	
		Rainfall (mm)												
		January	February	March	April	May	June	July	August	September	October	November	December	
101	Kakerpakha	41.5	52.8	56.1	50.4	128.1	248.5	471.9	394.6	217.7	50.7	7.7	22.2	1724.1
102	Baitadi	42.7	59.5	59.0	54.7	122.7	196.4	318.2	272.9	164.8	40.9	9.0	31.2	1392.3
103	Patan (west)	39.7	48.2	49.4	54.3	104.4	175.5	329.5	294.9	152.2	27.6	7.6	23.7	1290.6
104	Dadeldhura	46.1	64.7	60.9	57.5	89.5	173.5	324.0	302.0	183.1	34.0	8.1	27.4	1371.3
108	Satbanjh	46.7	57.1	62.6	64.6	121.2	211.5	378.3	370.4	198.6	36.2	9.0	27.5	1591.6
201	Pipalkot	44.7	57.2	63.3	61.5	132.0	315.9	614.7	573.6	295.5	47.8	10.3	27.4	2256.3
202	Chainpur (west)	52.5	69.1	63.8	53.3	77.7	177.1	384.8	389.3	208.1	38.2	10.6	27.7	1559.8
203	Silgadhi (Doti)	47.9	61.2	50.2	49.5	99.6	187.0	299.4	257.8	189.1	51.4	8.5	28.1	1333.1
205	Katai	40.1	52.7	52.7	47.3	113.2	288.6	417.7	392.3	245.5	32.8	9.5	22.0	1725.8
206	AsaraGhat	45.6	48.9	41.9	33.6	94.0	188.3	293.4	262.3	127.3	29.7	9.7	24.3	1199.1
207	Tikapur	38.5	29.6	17.8	15.9	73.3	228.5	487.8	461.6	269.1	41.2	3.9	17.5	1731.9
208	Sandepani	32.4	30.2	18.4	19.2	63.0	256.5	548.2	545.8	304.3	47.2	3.9	23.5	1914.8
212	Sitapur	33.6	30.2	14.2	15.5	61.3	210.0	445.2	429.3	244.8	38.3	8.1	14.8	1552.9
214	Kola Gaun	53.4	65.3	45.6	40.4	113.9	266.9	477.9	441.2	245.9	43.4	11.9	31.9	1937.7
217	Mangalsen	61.1	72.7	57.3	43.2	103.0	199.8	328.5	304.6	175.2	41.7	10.6	30.8	1428.9

**Rainfall data of surrounding meteorological stations of the PMP area**

Station	Annual	Monsoon	Post Monsoon	Winter	Pre monsoon
	Rainfall (mm)				
Kakerpakha	1,724.1	1,334.3	58.4	116.0	224.5
Baitadi	1,392.3	952.2	49.9	135.1	236.4
Patan (west)	1,290.6	952.1	35.2	112.3	208.2
Dadeldhura	1,371.3	982.7	42.2	139.3	208.0
Satbanjh	1,591.6	1,158.9	45.1	131.3	248.4
Pipalkot	2,256.3	1,799.7	54.9	124.7	256.9
Chainpur (west)	1,559.8	1,169.5	48.8	148.4	194.7
Silgadhi (Doti)	1,333.1	932.7	59.9	136.2	199.4
Katai	1,725.8	1,359.6	42.4	113.8	213.1
AsaraGhat	1,199.1	871.4	39.4	117.8	169.5
Tikapur	1,731.9	1,435.8	45.1	86.0	106.9
Sandepani	1,914.8	1,684.2	52.9	85.7	100.6
Sitapur	1,552.9	1,334.5	46.4	78.6	91.0
Kola Gaun	1,837.7	1,431.8	55.3	149.2	199.9
Mangalsen	1,428.9	1,010.1	52.3	168.5	200.1

### A.3 WIND DATA OF DIFFERENT STATION

Station: Dadeldhura

76 – 84: 6.0m

Index: 0104

86 – 90: 2.7m

Year/Month	January	February	March	April	May	June	July	August	September	October	November	December
1978									8	10.2	10	9.2
1979	11.8	12.7	13.6	14	13.4	12.6	10.6	9.9	8	10.7	10.4	10.3
1980	9.8	13.6	13.7	13.2	14.2	11.7	10.4	8.8	9.3	8.6	7	8.7
1981	10.7	12.1	14	13.9	0	9.3	10.3	9.3	9.3	8.6	7	4.8
1982	5.1	1.5	5.9	4.6	11.8	7	7.6	4.9	6.3	7.2	4.4	0
1983												
1984												
1985	7.4	7.8	8.7	8.8	9.3	8.7	6.5	6.8	7	9	7	7.2
1986	7.7	8.4	9.1	9.6	9.9	7.9	7.2	6.2	7.1	7.3	7.2	8
1987	7.7	9	8.6	10.1	10.4	9.3	7.5	7.4	7.2	8.6	7.4	7.9
1988	8.1	10.4	11.1	10.1	9.9	9	7.5	8	8.3	8.2	8.7	9.6
1989	8.7	9.5	9.7	9.6	10	8.3	7.5	7.9	6.9	8.2	8.7	8.1
1990	8.5	10.5	10.9	11.1	10.4	8.5	8	7.7	7.2	8.1	8.6	9
1991	9.3	10.3	10.3	12.2	11.4	8.5	7.1	7.4	7.1	8.5	8.1	8.4
1992	9	8.4	10.3	10	10.5	9.7	7.6	7	7.7	9	8.3	7.5
1993	3.9	4.3	4.8	4.7	4.5	3.6	2.5	2.2	2.6	2.8	3.3	3.5
1994	3.9	4.2	4.1	5.1	4.7	3.4	2.6	2.1	2	3	3.4	3.2
1995	4.2	4.3	4.6	4.9	4.4	3.7	2.5	2.4	2.6	2.8	3.6	3.2
1996	4	4.4	3.9	5	5.2	3.4	2.1	2.3	2.4	3.2	3.2	3.3
1997	3.4	3.9	4.1	4.7	4.3	3.7	2.2	2.3	2.1	3.3	3.5	4.1
1998	3.5	3.8	3.9	4.1	4.3	3.4	2.3	2	2.4	2.6	3.3	2.9

Station: Mahendra Nagar

76 – 84: 6.0m

Index: 0105

86 – 90: 2.7m

Year/Month	January	February	March	April	May	June	July	August	September	October	November	December
1977	2.4	2.5	3.1	4.7	4.4	4.9	3.6	2.9	2.5	2	1.2	1.8
1978	1.8	2.4	3.1	3.4	4.6	3.8	3.2	2.7	2.6	1.6	1.8	1.4
1979	2	2.2	3.3	5	4.7	3	3.1	2.5	1.7	1.8	1.4	1.3
1980	1.5	2.3	2.9	3.1	4.2	2.8	2.4	1.9	1.5	1.3	0.8	1.4
1981	1.7	2.2	2.4	2.9	3.5	2.8	2.4	1.7	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	1.4	1.5	2.3	3.2	2.1	2	1	0.7	0.7	1	0.9	0.9
1984	1.2	2.2	2.1	3.4	3.4	3	2.4	2.2	2	1.5	1.1	1.5
1985	1.6	1.9	2.6	3.4	3.3	3.2	0	0	0	0	0	0
1986	1.2	1.9	2.5	2.7	2.3	1.8	0	0	0	0	0.8	0
1987	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	1.5	1.9	1.8	1.4	1.4	0	0	0
1990	1.6	3	2.1	3.5	2.5	2.5	3.2	2.2	1.7	1.4	1.6	1.7
1991	2.6	3.9	3.6	4.8	5.9	4.5	4.1	3.6	2.3	1.9	2	2.7
1992	2.7	0	4.3	4.6	4.8	4.5	3.7	2.6	2.1	1.8	1.7	1.3
1993	1	1.5	2.1	2.2	3.1	2.1	2.3	0.9	1.2	0.8	0	0
1994	0	0	0	0	0	2.1	0	0	1.3	1	0.7	0.6
1995	0.7	0.7	1.3	2.9	2.2	1.5	1	1.7	2	1.4	1.5	1.2
1996	0.5	0.9	2.1	3.4	3.6	1.6	0.6	0.8	0.7	0.3	0.4	0.4
1997	0.3	0.7	1	1.7	2.7	2.2	0.7	0.6	0.7	1.6	1.8	1.7
1998	1.6	2.1	2.6	3.2	3.3	3.7	0	0	0	0	0	0

Station:Dipayal

Index: 0218

Year/Month	January	February	March	April	May	June	July	August	September	October	November	December
1982	0	0	0	0	0	0	3.1	2.2	2.5	2.8	2.5	1.6
1983	1.3	1.9	2.3	3.3	3.3	3.5	2.8	2.3	1.9	1.8	1.6	1.1
1984	1.2	3.8	4.9	7.5	8.5	7.5	2.7	2.3	2.5	2.7	2	1.1
1985	1.3	2	2.6	3.5	4.1	4.3	3.2	2.1	1.8	2.3	1.9	1.4
1986	1.2	1.7	2.5	3.3	3.7	3	2.7	1.9	2.1	2.1	1.9	1.2
1987	0.9	1.7	2.7	3	0	0	0	0	0	0	0	0
1988	1.4	1.7	2.2	3.1	3.6	4.1	2.4	1.5	1.9	2.5	1.8	1
1989	0.5	1	1.6	2.5	3.6	3.1	2.9	1.9	1.9	2.4	1.9	1.1
1990	0.6	0	1	1.7	1.9	2.4	1.5	0.8	0.7	1	0.3	0.2
1991	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0.9	1.5	2.1	2.7	3	2.4	1	1.9	1.8	1.2	0.5
1995	0.8	1.1	1.1	1.8	1.7	2.6	2.3	1.3	1.4	1.7	1.1	0.6
1996	0.7	1	1.3	2.2	2.7	2.5	2.2	1.4	1.6	1.6	1.2	0.5
1997	0.6	1.2	1.6	2.2	2.1	2.2	2.4	1.2	1.5	1.4	1	0.7
1998	0.6	1.1	1.4	2.2	2.7	2.5	2	1	1.3	1.2	0.8	0.4

Station:Dhangadhi

76 – 84: 6.0m

Index: 0209

86 – 90: 2.7m

Year/Month	January	February	March	April	May	June	July	August	September	October	November	December
1989	0	0	0	0	0	0	4.5	3.3	3	1.9	2.3	2.3
1990	2.8	3.4	3.4	5.5	4.9	4.6	4.3	3.4	3.3	0	2.2	2.2
1991	2.2	3.5	3.4	4.6	5.9	4.9	3.9	3.3	2.1	2.1	1.9	2.1
1992	2.5	3.1	4.8	5.6	5.3	5.2	4.6	3	2.3	2.1	1.9	1.7
1993	2.7	2.6	4.6	4.6	5.5	5.3	4.4	3.3	2.5	1.8	1.8	1.6
1994	2.3	2.8	3.9	4.2	5.3	4.9	3.8	2	2.2	1.9	1.5	1.5
1995	2.3	2.6	3.7	4.8	5.1	5.3	2.9	2.5	2	1.4	1.6	1.6
1996	2	2.2	3.1	4	5.5	4.7	2.9	2.3	1.9	1.2	1.2	1
1997	1.4	2.2	3	4	4.5	4.8	3.1	2.7	1.7	1.6	1.6	2.2
1998	1.6	1.8	2.8	3.6	4.1	4.7	3.1	1.9	1.6	1	1.1	1.1

#### A.4 RELATIVE HUMIDITY DATA OF STATION 209, DHANGADHI, ATTARIA

Year	January	February	March	April	May	June	July	August	September	October	November	December	Year
2012	93.3	77.5	59.8	43.4	34.1	48.2	80.4	84.8	83.0	78.5	84.1	87.7	71.2

**A.5 SUNSHINE DATA OF DIFFERENT STATION**

Dadeldhura, station number: 104

Year/Month	January	February	March	April	May	June	July	August	September	October	November	December
1978		6.6	7.4	9.7	11.1	5.9	5.3	3.6	4	9.7	8.3	9
1979	7.1	7	8.7	9.4	9.4	7.4	3.8			8	7.6	6.3
1980	7.6	7.7										
1981	6.5	7.1	6.1	8.9	7.1	7.3	2.9	3.5	5.6	9	7.5	8.1
1982	6.1	7.7	6									
1983	7.4				7	6.5	4.9	4.1	4.9	8.2	8.9	7.6
1984	6.3	7.6	8.5	7.4	6.1	4.2	3.8	4.3	6.9	8.2	8.6	7.2
1985	5.8	8.7	7.9	8.7	8.5	6.8	2.5	3	3.5	5.9	8.4	4.9
1986	7.4	7.2	7.2	8.1	6.8	7.8	2.6	4	4.6	7.8	7.9	6.8
1987	7.4	6.4	7.2	9	9.1	10.4	5.1	5.1	7.1	9	9.7	8.3
1988	7.9	6.5	8.2	9.2	9.9	8	2.9	3.5	5.9	10	9.5	6.8
1989	7.8	8.6	8.9	9.8	9.3	6.2	5.1	4.5	5.8	9.4	8.5	7.9
1990	8.3	5.2	7.4	9.5	7.4	7.8	3	4.3	5.2	9.2	9	7.2
1991	7.6	7.7	7.9	9.6	10.1	8.2	4.3	2.9	6.4	9.6	8	7.1
1992	6.3	7.6	6.7	7.8						8.4		
1993												
1994										9.8	9.2	8.2
1995	7	7.1										
1996												
1997			7.6	8.5	9.3	7.7	4.7	4.4	5.7	6.3	6.8	6.7
1998												

## Mahendra Nagar, station number: 105

Year/Month	January	February	March	April	May	June	July	August	September	October	November	December
1978	6.6	7.3	6.7	8.5	8.2	6.4	5.6	3.9				
1979												
1980												3.2
1981	2.8		7	9.1								
1982												
1983						8.1	6	4.3	5.5	7.9	7.6	6.5
1984	6.8	7.2	9	9.4	9.6							
1985	6.3	7.9	7.8	8.7								
1986	6.7	7.1	6.8	7.1	8.6	6	2.5	5.3	7.2	7.1	6.4	6.5
1987												
1988												
1989					7	6	5.3	4.9	5.7			
1990	5.4	4.7	7.5	8.3	7.7	6.6	3.4	6.3	6.3	8.2	7.8	5.7
1991		7.3	7.9		8.6	7.8	5.1	3.6	5.7	8.2	6.9	5.5
1992	4.9											
1993						6.5	6.5	6.5	5.8	5.2	9.4	
1994	6.3	7.7	8.9	9.1	10.4	8.2						
1995	6.4	7	7.9	10.1	9.7	8.4	5.3	5.2	6.8	9	8.8	6.9
1996	6.4	7.2	7.7	9.1	8.9	6.6	4.6	4.1	6	5.8	8.8	8
1997												
1998												

## Dipayal, station number: 0218

Year/Month	January	February	March	April	May	June	July	August	September	October	November	December
1984		7	8.5	7.3	7.7	5	5	6	7.5	8	8.2	6.8
1985	5.5	8	7.4	7.4	8.4	6.6	4.3	5	4.9	4.8	7.4	5.2
1986	6.2	6.7	7.3	7.7	7.5	6.6	4.2	4.7	4.2	7.6	6.9	5.6
1987	6.9	6	7.3	7.4	8.3	8	4.4	5.5	6.8	7.5	8.4	7
1988	6.5	4.7	6.1	6.8	8.5	7.5	4.5	5	6	8.8	8.3	5.6
1989	6	7.4	7.7	8.4	7	5.6	5.4	5.3	5.7	8.1	7.5	6.6
1990	7.3	4.7	6.8	8.5	7.3	7.6	4.4	5.8	6	8.3	7.9	5.7
1991	6.3	6.8	7.1	8	7.8	6.9	4.8	4.5	6.6	8.4	6.9	5.3
1992	5.1	6.6										
1993 – 1995												
1996			6.8	7.6	9	7.6	5.4	5.3	6.5	6.2	6.2	5.1