

# WEATHER IN PAKISTAN WINTER SEASON (JANUARY -MARCH 2007)

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## **Introduction:**

Weather remained dry on most of the days during the month of January. However few strong western disturbances affected the country during the month of February and March. Under the influence of these weather systems rain/thundershowers with a number of moderate to heavy and few very heavy falls and dust storms in plains occurred at a few places in the country during last two months of the quarter. In association with these systems heavy snowfall also occurred over hilly areas of Pakistan.

## **Seasonal Rainfall (January - March):**

Seasonal rainfall out of 56 meteorological observing stations in the whole country was in large excess in 27, moderate excess in 6, slight excess in 4, normal in 1, slight deficit in 8, moderate deficit in 8 and in large deficit in 2.

Rainfall was in large excess in Parachinar, Kohat, Peshawar, Risalpur, Cherat, D.I.Khan, Chaklala, Jhelum, Mianwali, Sargodha, Shorekot, Lahore (PBO), Lahore (A/P), Multan, Bahawalpur, Bahawalnagar, Khanpur, Sibbi, Moenjodaro, Jacobabad, Rohri, Nawabshah, Padidan, Hyderabad, Chhor, Karachi (A/P) and Karachi (Masroor), moderate excess in Kotli, Drosh, Sialkot, Faisalabad, Zhob and Barkhan, slight excess in Gupis, Saidu Sharif, Kalat and Badin, normal in Quetta, slight deficit in Muzaffarabad, Garhi Dupatta, Dir, Kakul, Murree, Dalbandin, Khuzdar and Pasni, moderate deficit in Gilgit, Skardu, Bunji, Chilas, Astor, Balakot, Nokkundi and Jiwani and was in large deficit in Chitral and Panjgur. The Principal amounts of rainfall during the month of January, February and March 2007 are given in Table-1. Seasonal station wise percentage rainfall departures are given in Fig-1 and percentage departure in Table-2 whereas province wise graphic representation of rainfall is given in Fig-2.

## **Monthly Features:**

### **January:**

#### Weather and associated synoptic features:

Details of weather systems formed during the month are given in Table-3.

Rain/thunderstorms with a few falls of snow over hills occurred almost at all the places or at a number of places on 1 - 2 days in FATA, Malakand, D.I.Khan and Quetta regions. Rain/thunderstorms and snowfall over hills also occurred at a few places or at isolated places on 3 - 4 days in FATA, Malakand, Hazara,

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Quetta and Kalat regions and on 1- 2 days in Peshawar, Rawalpindi, Zhob and Sibbi regions.

**Rainfall Distribution:**

The rainfall during the month of January 2007 remained in *large deficit* in all 56 meteorological observing stations of the country.

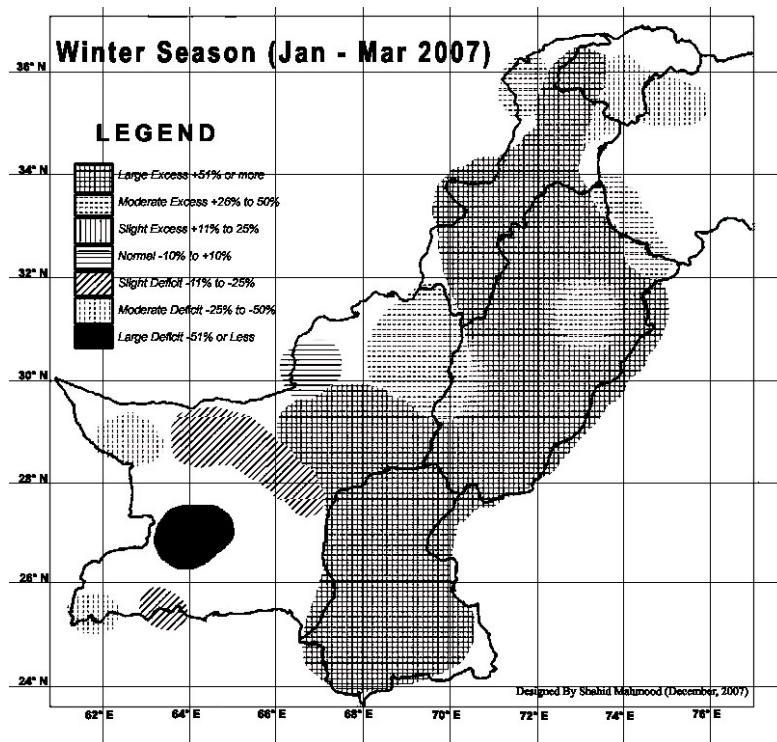


Figure 1

Table 1: Principal amounts of rainfall (30 mm and above)

| Date | January | February | March |
|------|---------|----------|-------|
| (1)  | (2)     | (3)      | (4)   |
| 1    | Nil     | Nil      | Nil   |
| 2    | Nil     | Nil      | Nil   |
| 3    | Nil     | Nil      | Nil   |
| 4    | Nil     | Nil      | Nil   |
| 5    | Nil     | Nil      | Nil   |
| 6    | Nil     | Nil      | Nil   |
| 7    | Nil     | Nil      | Nil   |
| 8    | Nil     | Nil      | Nil   |
| 9    | Nil     | Nil      | Nil   |

| Date | January | February   | March  |
|------|---------|--|--|
| (1)  | (2)     | (3)  | (4)  |
| 10   | Nil     | Kohat & Sibbi 46, D.I.Khan 44, Cherat 39, Khanpur 37, Rahim Yar Khan 33, Kamra & Mianwali 31 & Risalpur 30.  | M. Jabba 59, S. Sharif 55 & Dir 31.  |
| 11   | Nil     | Kamra 100, Rawalpindi 95, Mianwali 90, Kohat 89, Risalpur 86, Peshawar 84, Cherat 80, Sargodha 63, M. Bahauddin 53, Lahore(PBO) 49, Lahore(A/P) & Mangla 47, Jhelum 40, Kotli & Rawalakot 36, M. Jabba 32 & Murree 31. | Khuzdar 31.  |
| 12   | Nil     | Cherat 81, Risalpur 69, Kamra 59, Peshawar 57, Rawalakot 55, M. Jabba 43, Sialkot 42, Dir 41, Kotli 39, S. Sharif & Rawalpindi 36, Mangla 35 & Murree 31.  | Kotli 62, Rawalakot 51, Dir & Islamabad 50, Ormara 48, Muzaffarabad 47, Rawalpindi & Mangla 46, S. Sharif 44, M. Jabba 43, G. Dupatta 42, Murree & Jhelum 35, S. Balakot 34, Risalpur, Kamra & Karachi(A/P) 31 & Peshawar 30.                          |
| 13   | Nil     | Kamra 56, Multan 44, Shorekot 37, Cherat 36 & Risalpur 35.   | Rawalakot 64, Mangla 44, Jhelum 34, M. Jabba & Balakot 32 & Kotli 30.  |
| 14   | Nil     | Nil  | Nil  |
| 15   | Nil     | Nil  | Nil  |
| 16   | Nil     | Nil  | Nil  |
| 17   | Nil     | Nil  | Nil  |
| 18   | Nil     | Nil  | Ormara 85 & Kalam 36.  |
| 19   | Nil     | Nil  | Kalam 57, Pasni 53, M. Jabba 34 & Parachinar 30.   |
| 20   | Nil     | Nil  | Drosh 111, Rawalakot 102, Rawalpindi 74, Islamabad 73, Cherat 70, Murree 69, Kalam 63, S. Sharif 62, Kotli 54, Mangla & Peshawar 46, G. Dupatta & M. Bahauddin 45, Balakot 44, Kakul 43, Mianwali 39, Muzaffarabad 37 & Kohat 35, Sibbi 31 & Jhang 30. |
| 21   | Nil     | Quetta 32  | Rawalakot 85, Risalpur 81, Astor 43, Murree 36, Kotli 34, G. Dupatta 33 & Muzaffarabad 30.   |
| 22   | Nil     | Nil  | Rawalakot 76, Kotli 38, G. Dupatta 35 & Jhelum 31.   |
| 23   | Nil     | Nil  | Nil  |
| 24   | Nil     | Nil  | Nil  |

| Date | January | February  | March    |
|------|---------|---|----------|
| (1)  | (2)     | (3)   | (4)      |
| 25   | Nil     | Nil   | Nil      |
| 26   | Nil     |   | Nil.     |
| 27   | Nil     | Dir & Kalam 31 & G. Dupatta 30.                                   | Nil      |
| 28   | Nil     | Mangla 58, M. Bahauddin 41, S. Sharif 38, Kotli 36 & M. Jabba 35. | Nil      |
| 29   | Nil     | —   | Nil      |
| 30   | Nil     | —   | Nil      |
| 31   | Nil     | —   | Drosh 58 |

Table 2: Station wise rainfall (mm) for each month and season as a whole (Jan. – March. 2007)

|                 | January     |             |            | February    |             |           | March       |             |           | Season      |             |           |
|-----------------|-------------|-------------|------------|-------------|-------------|-----------|-------------|-------------|-----------|-------------|-------------|-----------|
|                 | Actual (mm) | Normal (mm) | Dep % (mm) | Actual (mm) | Normal (mm) | Dep% (mm) | Actual (mm) | Normal (mm) | Dep% (mm) | Actual (mm) | Normal (mm) | Dep% (mm) |
| 1 Gupis         | 0           | 5           | -100       | 9           | 10          | -10       | 28          | 17          | 65        | 37          | 32          | 16        |
| 2 Gilgit        | 0           | 4           | -100       | 1           | 6           | -83       | 12          | 14          | -14       | 13          | 24          | -46       |
| 3 Skardu        | 0           | 32          | -100       | 5           | 27          | -81       | 56          | 46          | 22        | 61          | 105         | -42       |
| 4 Bunji         | 0           | 6           | -100       | 1           | 6           | -83       | 14          | 15          | -7        | 15          | 27          | -44       |
| 5 Chilas        | 0           | 11          | -100       | 1           | 13          | -92       | 33          | 33          | 0         | 34          | 57          | -40       |
| 6 Astor         | 1           | 44          | -98        | 1           | 45          | -98       | 92          | 88          | 5         | 94          | 177         | -47       |
| 7 Muzaffar-abad | 6           | 106         | -94        | 107         | 136         | -21       | 257         | 182         | 41        | 370         | 424         | -13       |
| 8 Garhi Dupatta | 9           | 110         | -92        | 109         | 132         | -17       | 218         | 191         | 14        | 336         | 433         | -22       |
| 9 Kotli         | 1           | 79          | -99        | 174         | 95          | 83        | 250         | 127         | 97        | 425         | 301         | 41        |
| 10 Parachinar   | 9           | 48          | -81        | 177         | 77          | 130       | 237         | 137         | 73        | 423         | 262         | 61        |
| 11 Chitral      | 11          | 42          | -74        | 31          | 64          | -51       | 24          | 111         | -78       | 66          | 217         | -69       |
| 12 Dir          | 13          | 123         | -89        | 179         | 171         | 5         | 306         | 264         | 16        | 498         | 558         | -11       |
| 13 Drosh        | 1           | 49          | -98        | 58          | 74          | -22       | 253         | 116         | 118       | 312         | 239         | 31        |
| 14 Saidu Sharif | 1           | 85          | -99        | 162         | 109         | 49        | 255         | 175         | 46        | 418         | 369         | 13        |
| 15 Kakul        | 2           | 73          | -97        | 86          | 107         | -20       | 179         | 152         | 18        | 267         | 332         | -19       |
| 16 Balakot      | 3           | 103         | -97        | 125         | 141         | -11       | 194         | 193         | 1         | 322         | 437         | -26       |

|    |                   | January        |                |               | February       |                |              | March          |                |              | Season         |                |              |
|----|-------------------|----------------|----------------|---------------|----------------|----------------|--------------|----------------|----------------|--------------|----------------|----------------|--------------|
|    |                   | Actual<br>(mm) | Normal<br>(mm) | Dep %<br>(mm) | Actual<br>(mm) | Normal<br>(mm) | Dep%<br>(mm) | Actual<br>(mm) | Normal<br>(mm) | Dep%<br>(mm) | Actual<br>(mm) | Normal<br>(mm) | Dep%<br>(mm) |
| 17 | Kohat             | 0              | 28             | -100          | 196            | 43             | 356          | 83             | 83             | 0            | 279            | 154            | 81           |
| 18 | Peshawar          | 0              | 31             | -100          | 236            | 47             | 402          | 128            | 83             | 54           | 364            | 161            | 126          |
| 19 | Risalpur          | 1              | 42             | -98           | 266            | 57             | 367          | 148            | 84             | 76           | 415            | 183            | 127          |
| 20 | Cherat            | 0              | 40             | -100          | 305            | 63             | 384          | 145            | 105            | 38           | 450            | 208            | 116          |
| 21 | D.I.Khan          | 5              | 11             | -55           | 120            | 15             | 700          | 70             | 37             | 89           | 195            | 63             | 209          |
| 22 | Chaklala          | 1              | 59             | -98           | 184            | 80             | 130          | 186            | 97             | 92           | 371            | 236            | 57           |
| 23 | Murree            | 5              | 155            | -97           | 175            | 166            | 5            | 236            | 197            | 20           | 416            | 518            | -20          |
| 24 | Jhelum            | 1              | 37             | -97           | 138            | 53             | 160          | 165            | 69             | 139          | 304            | 159            | 91           |
| 25 | Sialkot           | 0              | 42             | -100          | 90             | 49             | 84           | 110            | 53             | 107          | 200            | 144            | 39           |
| 26 | Mianwali          | 0              | 22             | -100          | 193            | 29             | 565          | 77             | 67             | 15           | 270            | 118            | 129          |
| 27 | Sargodha          | 0              | 17             | -100          | 96             | 25             | 284          | 56             | 32             | 75           | 152            | 74             | 105          |
| 28 | Faisalabad        | 0              | 11             | -100          | 37             | 19             | 95           | 34             | 22             | 55           | 71             | 52             | 37           |
| 29 | Shorekot          | 0              | 8              | -100          | 102            | 11             | 827          | 44             | 20             | 120          | 146            | 39             | 274          |
| 30 | Lahore<br>(P.B.O) | 0              | 23             | -100          | 106            | 30             | 253          | 65             | 38             | 71           | 171            | 91             | 88           |
| 31 | Lahore<br>(A/P)   | 0              | 22             | -100          | 109            | 33             | 230          | 58             | 38             | 53           | 167            | 93             | 79           |
| 32 | Multan            | 0              | 8              | -100          | 88             | 11             | 700          | 36             | 17             | 112          | 124            | 36             | 244          |
| 33 | Bahawal-<br>pur   | 0              | 7              | -100          | 30             | 11             | 173          | 43             | 9              | 378          | 73             | 27             | 170          |
| 34 | Bahawal-<br>Nagar | 0              | 9              | -100          | 44             | 14             | 214          | 17             | 14             | 21           | 61             | 37             | 65           |
| 35 | Khanpur           | 0              | 4              | -100          | 50             | 5              | 900          | 20             | 4              | 400          | 70             | 13             | 438          |
| 36 | Quetta            | 11             | 64             | -83           | 131            | 49             | 167          | 40             | 62             | -35          | 182            | 175            | 4            |
| 37 | Dalbandin         | 7              | 18             | -61           | 20             | 19             | 5            | 17             | 22             | -23          | 44             | 59             | -25          |
| 38 | Nokkundi          | 3              | 8              | -63           | 7              | 8              | -13          | 4              | 7              | -43          | 14             | 23             | -39          |
| 39 | Zhob              | 1              | 20             | -95           | 81             | 26             | 211          | 41             | 48             | -15          | 123            | 94             | 31           |
| 40 | Barkhan           | 0              | 14             | -100          | 61             | 21             | 190          | 36             | 31             | 16           | 97             | 66             | 47           |
| 41 | Sibbi             | 1              | 10             | -90           | 71             | 15             | 373          | 56             | 21             | 167          | 128            | 46             | 178          |
| 42 | Kalat             | 15             | 38             | -61           | 71             | 30             | 137          | 37             | 33             | 12           | 123            | 101            | 22           |
| 43 | Khuzdar           | 0              | 22             | -100          | 24             | 30             | -20          | 37             | 26             | 42           | 61             | 78             | -22          |

|    |                   | January     |             |            | February    |             |           | March       |             |           | Season      |             |           |
|----|-------------------|-------------|-------------|------------|-------------|-------------|-----------|-------------|-------------|-----------|-------------|-------------|-----------|
|    |                   | Actual (mm) | Normal (mm) | Dep % (mm) | Actual (mm) | Normal (mm) | Dep% (mm) | Actual (mm) | Normal (mm) | Dep% (mm) | Actual (mm) | Normal (mm) | Dep% (mm) |
| 44 | Panjgur           | 0           | 16          | -100       | 12          | 16          | -25       | 9           | 18          | -50       | 21          | 50          | -58       |
| 45 | Pasni             | 0           | 24          | -100       | 4           | 21          | -81       | 53          | 21          | 152       | 57          | 66          | -14       |
| 46 | Jiwani            | 0           | 22          | -100       | 19          | 31          | -39       | 19          | 15          | 27        | 38          | 68          | -44       |
| 47 | Moenjo-daro       | 0           | 3           | -100       | 31          | 4           | 675       | 14          | 2           | 600       | 45          | 9           | 400       |
| 48 | Jacobabad         | 0           | 4           | -100       | 15          | 7           | 114       | 53          | 11          | 382       | 68          | 22          | 209       |
| 49 | Rohri             | 0           | 5           | -100       | 38          | 6           | 533       | 5           | 5           | 0         | 43          | 16          | 169       |
| 50 | Nawabshah         | 0           | 2           | -100       | 2           | 3           | -33       | 37          | 2           | 1750      | 39          | 7           | 457       |
| 51 | Padidan           | 0           | 3           | -100       | 12          | 5           | 140       | 21          | 4           | 425       | 33          | 12          | 175       |
| 52 | Hyderabad         | 0           | 2           | -100       | 3           | 4           | -25       | 33          | 2           | 1550      | 36          | 8           | 350       |
| 53 | Badin             | 0           | 2           | -100       | 8           | 6           | 33        | 2           | 1           | 100       | 10          | 9           | 11        |
| 54 | Chhor             | 0           | 1           | -100       | 14          | 3           | 367       | 15          | 1           | 1400      | 29          | 5           | 480       |
| 55 | Karachi (A/P)     | 0           | 11          | -100       | 13          | 10          | 30        | 33          | 7           | 371       | 46          | 28          | 64        |
| 56 | Karachi (Masroor) | 0           | 9           | -100       | 10          | 10          | 0         | 43          | 5           | 760       | 53          | 24          | 121       |

### Temperature Distribution:

Severe cold wave conditions prevailed on 5 days in FATA and 1 day in Quetta region. Appreciable to moderate cold wave conditions prevailed on 12 – 14 days in FATA, Hazara, D.I.Khan and Gujranwala regions, on 5 – 8 days in Peshawar, Rawalpindi, Zhob, Kalat, Quetta and Sukkur regions, on 1 – 4 days in Malakand, Kohat, Faisalabad, Bahawalpur, Sibbi, Mekran, Mirpurkhas and Karachi regions. Night temperatures were appreciably to markedly above normal on 8 – 9 days in Sukkur and Karachi regions, on 4 – 6 days in Peshawar, Rawalpindi, Quetta, Hyderabad and Larkana regions, on 1 – 3 days in Malakand, Hazara, D.I.Khan, Gujranwala, Sargodha, Lahore, Multan, Bahawalpur, Sibbi, Kalat, Mekran and Mirpurkhas regions. They were considerably above normal on 1 day each in Rawalpindi, Gujranwala, Sargodha, Faisalabad, Multan and Kalat regions. The month's lowest minimum temperature in plains of the country was  $-5.0^{\circ}\text{C}$  recorded at Nokkundi (Quetta region) on January 5, 2007.

Table 3: **Details of the weather system during January 2007**

| S. No                                       | System   | Period | Place of first location | Direction of movement | Place of final location | Remarks                          |
|---|--|--------|-------------------------|-----------------------|-------------------------|----------------------------------|
| (1)   | (2)  | (3)    | (4)                     | (5)                   | (6)                     | (7)                              |
| Western Disturbance/Eastwards moving system |  |        |                         |                       |                         |                                  |
| 1)  | Low pressure area.                                     | 18-19  | NWFP & adj. Balochistan | Eastwards             | Kashmir and adj. areas  | Moved away Northeastwards on 20. |
| 2)  | Low pressure area extended upto mid-tropospheric level | 24-27  | Do                      | Do                    | Do                      | Moved away Northeastwards on 28. |

#### Disastrous Weather Events and Associated Damages:

No such report appeared in the national press during this month.

### **February:**

#### Weather and Associated Synoptic Features:

Detail of weather systems formed during the month is given in Table 4.

Rain/thundershowers with a number of moderate to heavy and few very heavy falls and snowfall over hills occurred almost at all the places or at a number of places on 8 – 11 days in FATA, Malakand, Hazara, Peshawar, Kohat, Rawalpindi, Sargodha, Gujranwala and Zhob regions, on 4 – 7 days in Bannu, D.I.Khan, Lahore, Faisalabad, Multan and Quetta regions, on 1 – 3 days in Bahawalpur, D.G.Khan, Kalat, Sibbi, Mekran, Sukkur, Larkana, Hyderabad, Mirpurkhas and Karachi regions. Rain/thunderstorms also occurred at a few places or at isolated places on 5 – 8 days in FATA, Malakand, Hazara, Bannu, D.I.Khan, Rawalpindi, Faisalabad, Multan, Bahawalpur and D.G.Khan regions, on 1 – 4 days in Peshawar, Kohat, Sargodha, Lahore, Gujranwala, Quetta, Zhob, Kalat, Sibbi, Mekran, Sukkur, Mirpurkhas, Larkana and Karachi regions.

#### Rainfall Distribution:

The rainfall was in large excess in 30 meteorological observing stations, (Kotli, Parachinar, Kohat, Peshawar, Risalpur, Cherat, D.I.Khan, Chaklala, Jhelum, Sialkot, Mianwali, Sargodha, Faisalabad, Shorekot, Lahore (PBO), Lahore (A/P), Multan, Bahawalpur, Bahawalnagar, Khanpur, Quetta, Zhob, Barkhan, Sibbi, Kalat, Moenjodaro, Jacobabad, Rohri, Padidan and Chhor); moderate excess in 3 meteorological observing station (Saidu Sharif, Badin and Karachi (A/P)); normal in 5 meteorological observing stations (Gupis, Dir, Murree, Dalbandin and Karachi (Masroor)); slight deficit in 9 meteorological observing

stations (Muzaffarabad, Garhi Dupatta, Drosh, Kakul, Balakot, Nokkundi, Khuzdar, Panjgur and Hyderabad); moderate deficit in 2 meteorological observing stations (Jiwani and Nawabshah); and in large deficit in 7 meteorological observing stations (Gilgit, Skardu, Bunji, Chilas, Astor, Chitral and Pasni).

#### Temperature Distribution:

Night temperatures were appreciably to markedly below normal on 5 – 8 days in Hazara and Kohat regions, on 1 – 3 days in D.I.Khan, Rawalpindi and Zhob regions. They were appreciably to markedly above normal on 11 – 14 days in Rawalpindi, Bahawalpur, Multan, Quetta, Mekran, Larkana, Mirpurkhas, Sukkur, Hyderabad and Karachi regions, on 8 – 9 days in Peshawar, Lahore and Sargodha regions, on 3 – 5 days in Malakand, D.I.Khan, Gujranwala and Sibbi regions, on 1 day each in FATA, Hazara, Kohat, Faisalabad and Zhob regions. They were considerably above normal on 1 – 3 days in Rawalpindi, Bahawalpur, Quetta, Kalat, Mekran, Hyderabad, Mirpurkhas and Karachi regions. The month's lowest minimum temperature in plains of the country was - 0.5° C recorded at D.I.Khan (D.I.Khan region) on February 15, 2007.

#### Disastrous Weather Events and Associated Damages:

According to press reports dated February 12, the inclement weather wreaked havoc in the NWFP, Punjab and Balochistan, causing intense cold, triggering landslides, washing away bridges, bringing down roof of houses, inundating low lying areas and disrupting communication system as well as electricity and gas supplies. Rain related incidents over two days took the death toll to 31.

At least 12 people were killed and 21 others injured in different incidents of roof and house collapse as torrential rains wreaked havoc across the NWFP during the past 24 hours reported on February 13.

Four children and their mother were killed when a room in their house collapsed on February 14 in Jamrud Tehsil (NWFP) because of heavy rain.



Table 4: **Details of the weather systems during February 2007**

| S. No                                       | System   | Period | Place of first location                                      | Direction of movement | Place of final location | Remarks                          |
|---|--|--------|--|-----------------------|-------------------------|----------------------------------|
| (1)   | (2)  | (3)    | (4)  | (5)                   | (6)                     | (7)                              |
| Western Disturbance/Eastwards moving system |  |        |  |                       |                         |                                  |
| 1)  | Low pressure area                                      | 3-4    | Northeast Afghanistan & adj. NWFP.                           | Eastwards             | Kashmir and adj. areas  | Moved away Northeastwards on 5.  |
| 2)  | Do   | 6-7    | Upper NWFP & adj. Areas. It trough extended upto Balochistan | Do                    | Do                      | Moved away Northeastwards on 8.  |
| 3)  | Low pressure area extended upto mid-tropospheric level | 9-11   | Balochistan & adj. North Arabian Sea.                        | Do                    | Do                      | Moved away eastwards on 12.      |
| 4)  | Do   | 9-14   | NWFP & adj. Punjab.  | Do                    | Kashmir & adj. areas.   | Moved away northeastwards on 15. |
| 5)  | Do   | 15-17  | NWFP & adj. areas.   | Do                    | Do                      | Moved away northeastwards on 18. |
| 6)  | Low pressure area                                      | 18-19  | Do   | Do                    | Do                      | Moved away northeastwards on 20. |
| 7)  | Low pressure area extended upto mid-tropospheric       | 21-22  | Northeast Balochistan & adj. NWFP.                           | Northeastwards        | Do                      | Moved away northeastwards on 23. |

| S. No | System | Period | Place of first location                                       | Direction of movement | Place of final location | Remarks   |
|-------|--------|--------|---|-----------------------|-------------------------|---|
| (1)   | (2)    | (3)    | (4)   | (5)                   | (6)                     | (7)   |
|       | level  |        |   |                       |                         |   |
| 8)    | Do     | 26-28  | Upper NWFP & adj. areas. Its trough extended upto Balochistan | Eastwards             | Kashmir & adj. areas.   | Moved away northeastwards on 2nd of next month. |

## March:

### Weather and Associated Synoptic Features:

Details of weather systems formed during the month are given in Table 5.

Rain/thundershowers with a number of moderate to heavy and few very heavy falls and snowfall over hills occurred almost at all the place or at a number of places on 8 – 12 days in FATA, Malakand, Hazara and Rawalpindi regions, on 4 – 7 days in Peshawar, Kohat, D.I.Khan, Lahore, Gujranwala, Sargodha and Zhob regions, on 1 – 3 days in Bannu, D.G.Khan, Faisalabad, Multan, Bahawalpur, Kalat, Quetta, Mekran, Sibbi, Sukkur, Larkana, Mirpurkhas, Hyderabad and Karachi regions. Rain/thunderstorms and snowfall over hills also occurred at a few places or at isolated places on 4 – 7 days in FATA, Malakand, Hazara, Peshawar, Bannu, Kohat, Rawalpindi, Gujranwala and Quetta regions, on 1 – 3 days in D.I.Khan, Lahore, D.G.Khan, Faisalabad, Sargodha, Multan, Bahawalpur, Kalat, Zhob, Sibbi, Mekran, Larkana, Sukkur, Mirpurkhas and Hyderabad regions.

### Rainfall Distribution:

The rainfall was in large excess in 29 meteorological observing stations (Gupis, Kotli, Parachinar, Drosh, Peshawar, Risalpur, D.I.Khan, Chaklala, Jhelum, Sialkot, Sargodha, Faisalabad, Shorekot, Lahore (PBO), Lahore (A/P), Multan, Bahawalpur, Khanpur, Sibbi, Pasni, Moenjodaro, Jacobabad, Nawabshah, Padidan, Hyderabad, Badin, Chhor, Karachi (A/P) and Karachi (Masroor); moderate excess in 5 meteorological observing stations (Muzaffarabad, Saidu Sharif, Cherat, Khuzdar and Jiwani); slight excess in 9 meteorological observing stations (Skardu, Garhi Dupatta, Dir, Kakul, Murree, Mianwali, Bahawalnagar, Barkhan and Kalat); normal in 6 meteorological observing stations (Bunji, Chilas, Astor, Balakot, Kohat and Rohri); slight deficit in 3 meteorological observing stations (Gilgit, Dalbandin and Zhob); moderate deficit in 3 meteorological observing stations (Quetta, Nokkundi and Panjgur); and in large deficit in 1 meteorological observing station (Chitral).

Table 5: **Details of the weather system during March 2007.**

| S. No                                       | System  | Period       | Place of first location               | Direction of movement | Place of final location         | Remarks  |
|---|---|--------------|---------------------------------------|-----------------------|---------------------------------|--|
| (1)   | (2)   | (3)          | (4)                                   | (5)                   | (6)                             | (7)  |
| Western Disturbance/Eastwards moving system |   |              |                                       |                       |                                 |  |
| 1)  | Low pressure area                                     | 28 Feb to 1. | Sindh & adj. areas.                   | Eastwards             | Rajasthan (India) & adj. areas. | Moved away eastwards on 2.                     |
| 2)  | Low pressure area extended upto mid-troposphere level | 1-5          | Upper NWFP & adj. areas.              | Do                    | Kashmir & adj. areas            | Moved away northeastwards on 6.                |
| 3)  | Do  | 8-14         | Northeast Afghanistan & adj. areas.   | Do                    | Kashmir and adj. areas          | Moved away northeastwards on 15.               |
| 4)  | Do  | 11-12        | Balochistan & adj. North Arabian Sea. | Do                    | Sindh & adj. areas.             | Moved away eastwards on 13.                    |
| 5)  | Low pressure area                                     | 17-18        | Upper NWFP & adj. areas               | Do                    | Kashmir & adj. areas.           | Moved away Northeastwards on 19.               |
| 6)  | Do  | 18-21        | Balochistan & adj. North Arabian Sea  | Eastnorth-eastwards   | South Punjab & adj. areas       | Moved away Eastwards on 22.                    |
| 7)  | Low pressure area extended upto mid-troposphere level | 19-22        | Upper NWFP & adj. areas.              | Eastwards             | Kashmir & adj. areas.           | Moved away northeastwards on 23.               |
| 8)  | Low pressure area                                     | 29-31        | Do                                    | Do                    | Do                              | Moved away northeastwards on 1st of next month |

### Temperature Distribution:

Night temperatures were appreciably to markedly below normal on 10 – 12 days in Hazara, Kohat and Zhob regions, on 3 – 5 day in Malakand, Peshawar, D.I.Khan, Quetta and Mekran regions, on 1 – 2 days in FATA, Rawalpindi, Gujranwala, Multan, Faisalabad and Mirpurkhas regions. They were appreciably to markedly above normal on 10 – 11 days in Quetta and Mekran regions, on 4 – 7 days in Peshawar, Rawalpindi, Sargodha, Multan, Bahawalpur, Kalat and Mirpurkhas regions, on 1 – 3 days in FATA, Gujranwala, Lahore,

Faisalabad, Zhob, Larkana, Hyderabad and Karachi regions. The month's lowest minimum temperature in plains of the country was 4.5° C recorded at Islamabad (Rawalpindi region) on March 5, 2007.

**Disastrous Weather Events and Associated Damages:**

10 people killed in Swat and 1 in Karachi in rain-related incidents on March 10.

A woman and her five children were killed while the family head was injured when a roof of the room collapsed due to heavy rain in the Kharari village of Mamond Tehsil on March 10.

At least 5 people including two children died in rain-related incidents while seven others injured in Sialkot and Sahiwal districts on March 12.

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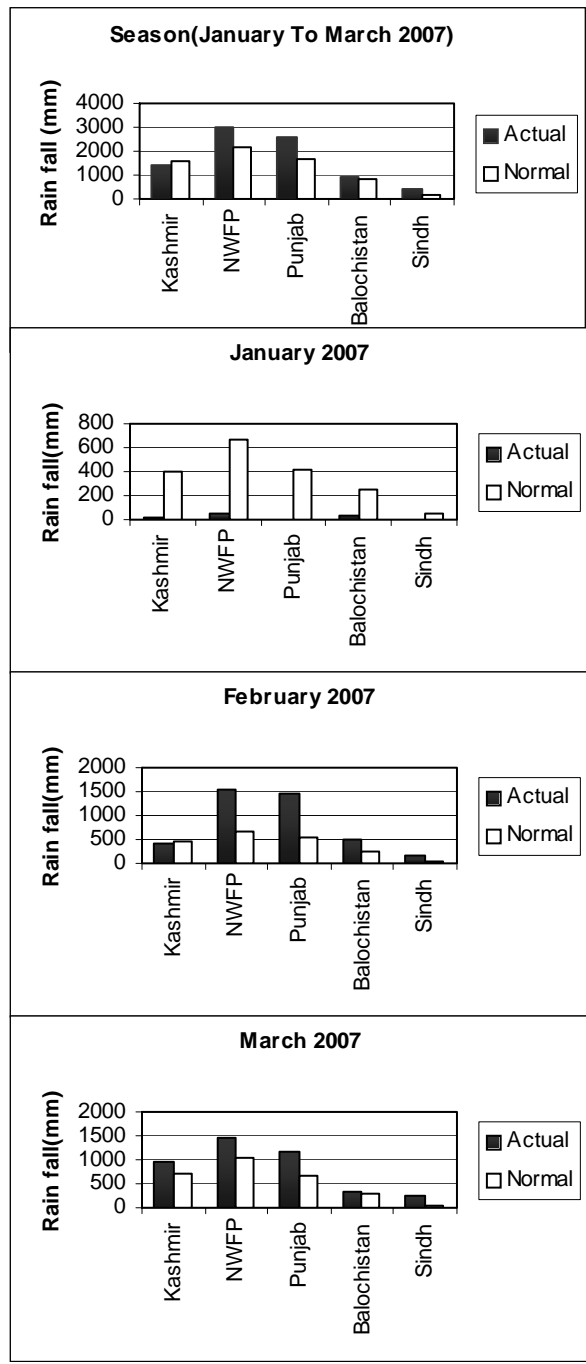


Figure 2

## Appendix

Definition of the terms used.

|                                  |  |                                  |   |
|----------------------------------|--|----------------------------------|---|
| <i>Large Excess</i>              | Percentage departure from normal rainfall is + 51% or more.                            | <i>Heavy Rain</i>                | rainfall amount is from 44.5 mm to 88.9 mm in 24 hour   |
| <i>Moderate Excess</i>           | Percentage departure from normal rainfall is + 26% to + 50%.                           | <i>Very Heavy Rainfall</i>       | rainfall amount is 89.0 mm or more in 24 hours.   |
| <i>Slight Excess</i>             | percentage departure from normal rainfall is + 11% to + 25%.                           | <i>Severe Heat Wave</i>          | Departure of maximum temperature from normal is + 8° C or more for the regions where normal max. temp. is more than 40° C. Declared only when the max. temp. of a station reaches at least 40° C for plains and at least 35° C for Hilly regions. |
| <i>Normal</i>                    | percentage departure from normal rainfall is - 10% to + 10%.                           | <i>Heat Wave Conditions</i>      | Departure of max. temp. from normal is between + 4° C to + 7° C   |
| <i>Slight Deficit</i>            | percentage departure from normal rainfall is - 11% to - 25%.                           | <i>(Appreciable + Moderate)</i>  | where the normal max. temp. is more than 40° C.   |
| <i>Moderate Deficit</i>          | percentage departure from normal rainfall is - 26% to - 50%.                           | <i>Hot day conditions</i>        | Whenever the max. temp remains 40° C or more and minimum remains 5° C or more above normal, provided, it is not satisfying the heat wave criteria.  |
| <i>Large Deficit</i>             | percentage departure from normal rainfall is - 51% or less.                            | <i>Markedly above Normal</i>     | Departure of max. temperature from normal is between + 6° C to + 7° C   |
| <i>Almost at all places</i>      | 66 % or more stations of a meteorological division reporting at least 2.5 mm rainfall. | <i>Appreciably above Normal</i>  | Departure of max. temperature from normal is between + 4° C to + 5° C   |
| <i>Almost a number of places</i> | 33 % to 66 % stations of a meteorological division reporting at least 2.5 mm rainfall. | <i>Appreciably below Normal</i>  | Departure of max. temperature from normal is between - 4° C to - 5° C.  |
| <i>At a few place</i>            | 33 % or less stations of a meteorological division reporting at least 2.5 mm rainfall. | <i>Markedly below Normal</i>     | Departure of max. temperature from normal is between - 6° C to -7° C.   |
| <i>Isolated places</i>           | One or two stations of a meteorological division.                                      | <i>Considerably below Normal</i> | Departure of max. temperature from normal is - 8° C or less.  |