



Statistiques des précipitations extrêmes des communes belges

Marche-en-Famenne (INS 83034)

1. Niveau de retour estimé pour une durée de précipitations de 10 minutes à 30 jours (lignes) et une période de retour de 2 à 200 années (colonnes). Unités : mm.

| Durée | Période de retour (années) | | | | | | | | | | | |
|--------|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 2 | 5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 75 | 100 | 200 |
| 10 min | 7.8 | 11.2 | 13.7 | 15.3 | 16.4 | 17.3 | 18.1 | 19.3 | 20.3 | 22.2 | 23.6 | 27.1 |
| 20 min | 11.4 | 16.4 | 20.2 | 22.5 | 24.2 | 25.5 | 26.7 | 28.5 | 29.9 | 32.7 | 34.7 | 40.0 |
| 30 min | 13.4 | 19.5 | 24.1 | 26.8 | 28.9 | 30.5 | 31.8 | 34.0 | 35.8 | 39.1 | 41.5 | 47.8 |
| 1 h | 16.7 | 23.5 | 28.7 | 31.8 | 34.0 | 35.8 | 37.3 | 39.8 | 41.7 | 45.4 | 48.2 | 55.1 |
| 2 h | 20.1 | 27.8 | 33.6 | 37.1 | 39.7 | 41.7 | 43.4 | 46.1 | 48.3 | 52.4 | 55.5 | 63.3 |
| 3 h | 22.3 | 30.7 | 36.9 | 40.7 | 43.4 | 45.6 | 47.4 | 50.4 | 52.7 | 57.2 | 60.4 | 68.8 |
| 6 h | 27.0 | 35.4 | 41.6 | 45.3 | 48.1 | 50.3 | 52.1 | 55.0 | 57.4 | 61.8 | 65.0 | 73.3 |
| 12 h | 33.1 | 43.1 | 50.5 | 54.9 | 58.2 | 60.8 | 62.9 | 66.4 | 69.1 | 74.3 | 78.1 | 87.8 |
| 1 j | 40.9 | 52.5 | 60.8 | 65.7 | 69.3 | 72.1 | 74.5 | 78.2 | 81.2 | 86.7 | 90.7 | 100.9 |
| 2 j | 52.6 | 66.8 | 76.8 | 82.6 | 86.8 | 90.1 | 92.7 | 97.0 | 100.4 | 106.7 | 111.2 | 122.4 |
| 3 j | 56.6 | 71.8 | 82.4 | 88.6 | 93.0 | 96.4 | 99.2 | 103.6 | 107.1 | 113.5 | 118.2 | 129.5 |
| 4 j | 61.8 | 78.1 | 89.4 | 95.9 | 100.4 | 104.0 | 107.0 | 111.6 | 115.2 | 121.9 | 126.6 | 138.3 |
| 5 j | 70.2 | 88.1 | 100.3 | 107.3 | 112.2 | 116.1 | 119.2 | 124.2 | 128.0 | 135.1 | 140.2 | 152.5 |
| 7 j | 81.3 | 100.7 | 113.8 | 121.2 | 126.4 | 130.5 | 133.8 | 139.0 | 143.1 | 150.5 | 155.7 | 168.5 |
| 10 j | 97.2 | 119.7 | 134.7 | 143.1 | 149.0 | 153.6 | 157.3 | 163.2 | 167.7 | 175.9 | 181.7 | 195.7 |
| 15 j | 117.9 | 144.1 | 161.2 | 170.8 | 177.5 | 182.7 | 186.8 | 193.4 | 198.4 | 207.5 | 213.9 | 229.2 |
| 20 j | 137.4 | 168.1 | 187.9 | 199.0 | 206.7 | 212.6 | 217.3 | 224.8 | 230.5 | 240.8 | 248.0 | 265.2 |
| 25 j | 147.2 | 179.8 | 200.7 | 212.3 | 220.4 | 226.5 | 231.5 | 239.2 | 245.1 | 255.8 | 263.2 | 280.9 |
| 30 j | 171.2 | 205.8 | 227.9 | 240.1 | 248.5 | 254.9 | 260.1 | 268.2 | 274.4 | 285.5 | 293.2 | 311.5 |

2. Niveau de retour estimé et écart-type de l'estimation pour une durée de précipitations de 10 minutes à 30 jours (lignes) et une période de retour de 2 à 200 années (colonnes). Unités : mm.

| Durée | Période de retour (années) | | | | | | | | | | | |
|--------|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 2 | 5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 75 | 100 | 200 |
| 10 min | 7.8 | 11.2 | 13.7 | 15.3 | 16.4 | 17.3 | 18.1 | 19.3 | 20.3 | 22.2 | 23.6 | 27.1 |
| | 0.2 | 0.4 | 0.6 | 0.7 | 0.9 | 1.0 | 1.1 | 1.3 | 1.4 | 1.8 | 2.0 | 2.8 |
| 20 min | 11.4 | 16.4 | 20.2 | 22.5 | 24.2 | 25.5 | 26.7 | 28.5 | 29.9 | 32.7 | 34.7 | 40.0 |
| | 0.4 | 0.6 | 0.9 | 1.1 | 1.3 | 1.5 | 1.7 | 1.9 | 2.1 | 2.6 | 3.0 | 4.0 |
| 30 min | 13.4 | 19.5 | 24.1 | 26.8 | 28.9 | 30.5 | 31.8 | 34.0 | 35.8 | 39.1 | 41.5 | 47.8 |
| | 0.4 | 0.6 | 0.9 | 1.0 | 1.2 | 1.3 | 1.4 | 1.6 | 1.8 | 2.1 | 2.4 | 3.2 |
| 1 h | 16.7 | 23.5 | 28.7 | 31.8 | 34.0 | 35.8 | 37.3 | 39.8 | 41.7 | 45.4 | 48.2 | 55.1 |
| | 0.5 | 0.8 | 1.1 | 1.4 | 1.6 | 1.8 | 2.0 | 2.3 | 2.5 | 3.1 | 3.5 | 4.7 |
| 2 h | 20.1 | 27.8 | 33.6 | 37.1 | 39.7 | 41.7 | 43.4 | 46.1 | 48.3 | 52.4 | 55.5 | 63.3 |
| | 0.6 | 0.9 | 1.3 | 1.6 | 1.9 | 2.1 | 2.3 | 2.6 | 2.9 | 3.5 | 4.0 | 5.4 |
| 3 h | 22.3 | 30.7 | 36.9 | 40.7 | 43.4 | 45.6 | 47.4 | 50.4 | 52.7 | 57.2 | 60.4 | 68.8 |
| | 0.7 | 1.0 | 1.3 | 1.6 | 1.8 | 2.0 | 2.2 | 2.5 | 2.7 | 3.2 | 3.6 | 4.8 |
| 6 h | 27.0 | 35.4 | 41.6 | 45.3 | 48.1 | 50.3 | 52.1 | 55.0 | 57.4 | 61.8 | 65.0 | 73.3 |
| | 0.8 | 1.0 | 1.4 | 1.7 | 2.0 | 2.2 | 2.4 | 2.8 | 3.2 | 3.9 | 4.5 | 6.2 |
| 12 h | 33.1 | 43.1 | 50.5 | 54.9 | 58.2 | 60.8 | 62.9 | 66.4 | 69.1 | 74.3 | 78.1 | 87.8 |
| | 1.1 | 1.4 | 1.9 | 2.3 | 2.7 | 3.0 | 3.4 | 3.9 | 4.4 | 5.3 | 6.1 | 8.4 |
| 1 j | 40.9 | 52.5 | 60.8 | 65.7 | 69.3 | 72.1 | 74.5 | 78.2 | 81.2 | 86.7 | 90.7 | 100.9 |
| | 1.2 | 1.5 | 1.7 | 1.9 | 2.1 | 2.3 | 2.4 | 2.7 | 2.9 | 3.4 | 3.7 | 4.8 |
| 2 j | 52.6 | 66.8 | 76.8 | 82.6 | 86.8 | 90.1 | 92.7 | 97.0 | 100.4 | 106.7 | 111.2 | 122.4 |
| | 1.9 | 2.4 | 2.9 | 3.4 | 3.7 | 4.0 | 4.3 | 4.8 | 5.2 | 6.0 | 6.6 | 8.4 |
| 3 j | 56.6 | 71.8 | 82.4 | 88.6 | 93.0 | 96.4 | 99.2 | 103.6 | 107.1 | 113.5 | 118.2 | 129.5 |
| | 2.4 | 3.0 | 3.6 | 4.1 | 4.5 | 4.8 | 5.1 | 5.5 | 5.9 | 6.7 | 7.4 | 9.1 |
| 4 j | 61.8 | 78.1 | 89.4 | 95.9 | 100.4 | 104.0 | 107.0 | 111.6 | 115.2 | 121.9 | 126.6 | 138.3 |
| | 2.7 | 3.4 | 3.9 | 4.3 | 4.6 | 4.9 | 5.1 | 5.5 | 5.8 | 6.5 | 7.0 | 8.4 |
| 5 j | 70.2 | 88.1 | 100.3 | 107.3 | 112.2 | 116.1 | 119.2 | 124.2 | 128.0 | 135.1 | 140.2 | 152.5 |
| | 3.2 | 3.9 | 4.5 | 4.9 | 5.2 | 5.5 | 5.7 | 6.1 | 6.4 | 7.1 | 7.6 | 8.9 |
| 7 j | 81.3 | 100.7 | 113.8 | 121.2 | 126.4 | 130.5 | 133.8 | 139.0 | 143.1 | 150.5 | 155.7 | 168.5 |
| | 3.8 | 4.5 | 5.1 | 5.4 | 5.7 | 6.0 | 6.1 | 6.5 | 6.7 | 7.3 | 7.7 | 8.8 |
| 10 j | 97.2 | 119.7 | 134.7 | 143.1 | 149.0 | 153.6 | 157.3 | 163.2 | 167.7 | 175.9 | 181.7 | 195.7 |
| | 4.8 | 5.9 | 6.7 | 7.2 | 7.6 | 7.9 | 8.1 | 8.5 | 8.8 | 9.5 | 10.0 | 11.3 |
| 15 j | 117.9 | 144.1 | 161.2 | 170.8 | 177.5 | 182.7 | 186.8 | 193.4 | 198.4 | 207.5 | 213.9 | 229.2 |
| | 5.9 | 7.1 | 8.0 | 8.4 | 8.8 | 9.0 | 9.2 | 9.6 | 9.9 | 10.4 | 10.7 | 11.7 |
| 20 j | 137.4 | 168.1 | 187.9 | 199.0 | 206.7 | 212.6 | 217.3 | 224.8 | 230.5 | 240.8 | 248.0 | 265.2 |
| | 6.9 | 8.5 | 9.5 | 10.0 | 10.4 | 10.8 | 11.0 | 11.4 | 11.8 | 12.4 | 12.9 | 14.1 |
| 25 j | 147.2 | 179.8 | 200.7 | 212.3 | 220.4 | 226.5 | 231.5 | 239.2 | 245.1 | 255.8 | 263.2 | 280.9 |
| | 7.7 | 9.5 | 10.8 | 11.6 | 12.1 | 12.6 | 13.0 | 13.6 | 14.1 | 15.1 | 15.9 | 17.8 |
| 30 j | 171.2 | 205.8 | 227.9 | 240.1 | 248.5 | 254.9 | 260.1 | 268.2 | 274.4 | 285.5 | 293.2 | 311.5 |
| | 8.5 | 10.3 | 11.7 | 12.6 | 13.3 | 13.9 | 14.3 | 15.1 | 15.8 | 17.0 | 17.9 | 20.4 |

3. Intervalle de confiance à 95% de la période de retour estimée pour une durée de précipitations de 10 minutes à 30 jours (lignes) et une période de retour de 2 à 200 années (colonnes). Unités : mm.

| Durée | Période de retour (années) | | | | | | | | | | | |
|--------|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 2 | 5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 75 | 100 | 200 |
| 10 min | 7.4 | 10.4 | 12.6 | 13.8 | 14.7 | 15.4 | 15.9 | 16.8 | 17.5 | 18.7 | 19.6 | 21.7 |
| | 8.3 | 11.9 | 14.9 | 16.7 | 18.1 | 19.3 | 20.2 | 21.8 | 23.1 | 25.7 | 27.6 | 32.6 |
| 20 min | 10.7 | 15.2 | 18.4 | 20.3 | 21.6 | 22.6 | 23.4 | 24.7 | 25.7 | 27.6 | 28.9 | 32.0 |
| | 12.1 | 17.6 | 22.0 | 24.7 | 26.8 | 28.5 | 29.9 | 32.2 | 34.1 | 37.8 | 40.6 | 47.9 |
| 30 min | 12.6 | 18.3 | 22.4 | 24.8 | 26.5 | 27.9 | 29.1 | 30.9 | 32.3 | 34.9 | 36.8 | 41.6 |
| | 14.3 | 20.8 | 25.8 | 28.9 | 31.2 | 33.0 | 34.6 | 37.2 | 39.2 | 43.2 | 46.2 | 54.0 |
| 1 h | 15.7 | 22.0 | 26.4 | 29.0 | 30.9 | 32.3 | 33.5 | 35.3 | 36.8 | 39.4 | 41.3 | 45.9 |
| | 17.7 | 25.1 | 30.9 | 34.5 | 37.2 | 39.4 | 41.2 | 44.3 | 46.7 | 51.5 | 55.0 | 64.4 |
| 2 h | 18.9 | 26.0 | 31.0 | 33.9 | 36.0 | 37.6 | 39.0 | 41.0 | 42.7 | 45.6 | 47.7 | 52.8 |
| | 21.3 | 29.7 | 36.2 | 40.2 | 43.3 | 45.7 | 47.8 | 51.2 | 54.0 | 59.3 | 63.3 | 73.8 |
| 3 h | 20.9 | 28.7 | 34.3 | 37.5 | 39.9 | 41.7 | 43.2 | 45.6 | 47.4 | 50.8 | 53.3 | 59.3 |
| | 23.7 | 32.7 | 39.5 | 43.8 | 47.0 | 49.5 | 51.7 | 55.2 | 58.1 | 63.5 | 67.6 | 78.3 |
| 6 h | 25.4 | 33.3 | 38.9 | 42.0 | 44.3 | 45.9 | 47.3 | 49.4 | 51.1 | 54.1 | 56.1 | 61.0 |
| | 28.6 | 37.4 | 44.3 | 48.6 | 51.9 | 54.6 | 56.9 | 60.6 | 63.6 | 69.5 | 73.9 | 85.5 |
| 12 h | 30.9 | 40.3 | 46.8 | 50.4 | 52.9 | 54.8 | 56.3 | 58.7 | 60.6 | 63.9 | 66.1 | 71.5 |
| | 35.3 | 45.9 | 54.2 | 59.5 | 63.5 | 66.7 | 69.5 | 74.0 | 77.7 | 84.8 | 90.1 | 104.2 |
| 1 j | 38.4 | 49.6 | 57.4 | 62.0 | 65.2 | 67.7 | 69.7 | 73.0 | 75.5 | 80.1 | 83.4 | 91.5 |
| | 43.3 | 55.3 | 64.1 | 69.5 | 73.4 | 76.6 | 79.2 | 83.4 | 86.8 | 93.3 | 98.0 | 110.2 |
| 2 j | 48.9 | 62.1 | 71.0 | 76.0 | 79.5 | 82.1 | 84.3 | 87.7 | 90.3 | 94.9 | 98.2 | 105.9 |
| | 56.3 | 71.5 | 82.5 | 89.2 | 94.1 | 98.0 | 101.2 | 106.4 | 110.6 | 118.4 | 124.2 | 138.9 |
| 3 j | 51.9 | 66.0 | 75.3 | 80.6 | 84.2 | 87.0 | 89.2 | 92.8 | 95.5 | 100.3 | 103.7 | 111.8 |
| | 61.2 | 77.7 | 89.5 | 96.6 | 101.7 | 105.7 | 109.1 | 114.5 | 118.8 | 126.7 | 132.6 | 147.3 |
| 4 j | 56.4 | 71.6 | 81.7 | 87.4 | 91.4 | 94.5 | 96.9 | 100.8 | 103.8 | 109.2 | 112.9 | 121.8 |
| | 67.1 | 84.7 | 97.0 | 104.3 | 109.5 | 113.6 | 117.0 | 122.4 | 126.7 | 134.6 | 140.4 | 154.8 |
| 5 j | 64.0 | 80.4 | 91.4 | 97.6 | 102.0 | 105.3 | 108.0 | 112.2 | 115.5 | 121.3 | 125.4 | 135.1 |
| | 76.3 | 95.7 | 109.1 | 116.9 | 122.4 | 126.8 | 130.4 | 136.1 | 140.6 | 149.0 | 155.0 | 170.0 |
| 7 j | 73.8 | 91.8 | 103.8 | 110.5 | 115.2 | 118.8 | 121.8 | 126.4 | 129.9 | 136.2 | 140.7 | 151.2 |
| | 88.7 | 109.6 | 123.7 | 131.9 | 137.7 | 142.2 | 145.9 | 151.7 | 156.3 | 164.7 | 170.8 | 185.7 |
| 10 j | 87.8 | 108.1 | 121.5 | 129.0 | 134.2 | 138.2 | 141.4 | 146.5 | 150.4 | 157.3 | 162.2 | 173.6 |
| | 106.6 | 131.3 | 147.8 | 157.2 | 163.9 | 169.0 | 173.2 | 179.9 | 185.1 | 194.5 | 201.3 | 217.9 |
| 15 j | 106.4 | 130.1 | 145.6 | 154.3 | 160.3 | 165.0 | 168.7 | 174.6 | 179.1 | 187.2 | 192.9 | 206.3 |
| | 129.4 | 158.0 | 176.8 | 187.3 | 194.7 | 200.3 | 204.9 | 212.1 | 217.7 | 227.8 | 234.9 | 252.1 |
| 20 j | 123.8 | 151.5 | 169.4 | 179.3 | 186.2 | 191.5 | 195.7 | 202.3 | 207.4 | 216.5 | 222.8 | 237.7 |
| | 151.0 | 184.6 | 206.5 | 218.7 | 227.2 | 233.7 | 238.9 | 247.2 | 253.6 | 265.1 | 273.3 | 292.8 |
| 25 j | 132.1 | 161.2 | 179.6 | 189.7 | 196.6 | 201.8 | 206.0 | 212.5 | 217.4 | 226.1 | 232.1 | 245.9 |
| | 162.4 | 198.4 | 221.9 | 235.0 | 244.1 | 251.2 | 256.9 | 265.9 | 272.9 | 285.4 | 294.4 | 315.9 |
| 30 j | 154.6 | 185.6 | 204.9 | 215.3 | 222.4 | 227.8 | 232.0 | 238.6 | 243.5 | 252.1 | 258.0 | 271.5 |
| | 187.8 | 226.0 | 250.9 | 264.8 | 274.6 | 282.1 | 288.3 | 297.9 | 305.3 | 318.8 | 328.4 | 351.5 |

4. Estimation des coefficients de Montana.

Formule de Montana : intensité[mm/h] = $a \cdot \text{durée}[\text{min}]^{-b}$ pour une plage de durées

a_1, b_1 : durées < 25 min

a_2, b_2 : durées entre 25 min et 6000 min (= 100 h)

a_3, b_3 : durées > 6000 min (= 100 h)

| Période de retour (années) | a_1 | b_1 | a_2 | b_2 | a_3 | b_3 |
|----------------------------|-------|--------|--------|--------|-------|--------|
| 2 | 139.5 | 0.4727 | 297.6 | 0.7082 | 50.9 | 0.5052 |
| 5 | 197.5 | 0.4674 | 466.3 | 0.7342 | 72.9 | 0.5209 |
| 10 | 239.6 | 0.4624 | 601.9 | 0.7486 | 92.7 | 0.5336 |
| 15 | 264.7 | 0.4593 | 688.0 | 0.7561 | 106.1 | 0.5413 |
| 20 | 282.8 | 0.4570 | 752.9 | 0.7612 | 116.6 | 0.5468 |
| 25 | 297.2 | 0.4552 | 805.6 | 0.7650 | 125.4 | 0.5512 |
| 30 | 309.1 | 0.4537 | 850.3 | 0.7681 | 133.0 | 0.5548 |
| 40 | 328.2 | 0.4512 | 924.0 | 0.7728 | 145.9 | 0.5605 |
| 50 | 343.4 | 0.4493 | 984.0 | 0.7763 | 156.6 | 0.5651 |
| 75 | 371.7 | 0.4457 | 1099.8 | 0.7827 | 178.0 | 0.5734 |
| 100 | 392.5 | 0.4431 | 1187.6 | 0.7871 | 194.9 | 0.5793 |
| 200 | 444.7 | 0.4366 | 1420.6 | 0.7974 | 241.9 | 0.5939 |

Références

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