



Statistiques des précipitations extrêmes des communes belges

Paliseul (INS 84050)

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 | 8.5 | 12.1 | 14.9 | 16.5 | 17.8 | 18.7 | 19.6 | 20.9 | 22.0 | 24.0 | 25.5 | 29.3 |
| 20 min | 12.9 | 18.8 | 23.2 | 25.9 | 27.9 | 29.5 | 30.8 | 32.9 | 34.6 | 37.9 | 40.3 | 46.4 |
| 30 min | 15.1 | 21.9 | 26.9 | 30.0 | 32.3 | 34.1 | 35.6 | 38.1 | 40.0 | 43.7 | 46.5 | 53.5 |
| 1 h | 18.8 | 27.1 | 33.2 | 37.0 | 39.7 | 41.9 | 43.8 | 46.7 | 49.1 | 53.5 | 56.8 | 65.3 |
| 2 h | 22.9 | 32.4 | 39.3 | 43.6 | 46.7 | 49.2 | 51.2 | 54.5 | 57.2 | 62.2 | 65.9 | 75.4 |
| 3 h | 25.5 | 35.2 | 42.3 | 46.6 | 49.8 | 52.3 | 54.4 | 57.8 | 60.5 | 65.6 | 69.3 | 78.9 |
| 6 h | 31.0 | 39.9 | 46.4 | 50.3 | 53.2 | 55.5 | 57.4 | 60.5 | 62.9 | 67.5 | 70.9 | 79.6 |
| 12 h | 38.9 | 49.2 | 56.7 | 61.3 | 64.6 | 67.3 | 69.5 | 73.0 | 75.9 | 81.2 | 85.1 | 95.1 |
| 1 j | 48.7 | 60.7 | 69.3 | 74.5 | 78.2 | 81.1 | 83.5 | 87.4 | 90.5 | 96.2 | 100.4 | 110.9 |
| 2 j | 65.1 | 81.0 | 92.1 | 98.6 | 103.3 | 107.0 | 110.0 | 114.8 | 118.5 | 125.5 | 130.6 | 143.1 |
| 3 j | 71.7 | 89.5 | 101.8 | 108.9 | 114.0 | 117.9 | 121.2 | 126.4 | 130.4 | 137.9 | 143.2 | 156.4 |
| 4 j | 79.3 | 98.6 | 111.8 | 119.4 | 124.8 | 129.0 | 132.5 | 138.0 | 142.2 | 150.1 | 155.7 | 169.4 |
| 5 j | 90.3 | 112.0 | 126.8 | 135.3 | 141.3 | 145.9 | 149.8 | 155.8 | 160.5 | 169.1 | 175.2 | 190.2 |
| 7 j | 106.0 | 129.6 | 145.4 | 154.5 | 160.8 | 165.8 | 169.8 | 176.1 | 181.1 | 190.0 | 196.4 | 211.9 |
| 10 j | 128.2 | 157.6 | 177.0 | 188.1 | 195.8 | 201.7 | 206.6 | 214.2 | 220.1 | 230.8 | 238.3 | 256.6 |
| 15 j | 156.1 | 189.9 | 212.0 | 224.4 | 233.1 | 239.7 | 245.1 | 253.5 | 260.0 | 271.8 | 280.0 | 299.8 |
| 20 j | 182.1 | 222.1 | 248.1 | 262.5 | 272.6 | 280.3 | 286.5 | 296.2 | 303.7 | 317.1 | 326.6 | 349.0 |
| 25 j | 197.5 | 239.8 | 267.0 | 282.1 | 292.6 | 300.6 | 307.0 | 317.1 | 324.8 | 338.7 | 348.4 | 371.3 |
| 30 j | 226.7 | 270.7 | 298.8 | 314.3 | 325.0 | 333.1 | 339.7 | 350.0 | 357.8 | 371.9 | 381.7 | 404.9 |

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 | 8.5 | 12.1 | 14.9 | 16.5 | 17.8 | 18.7 | 19.6 | 20.9 | 22.0 | 24.0 | 25.5 | 29.3 |
| | 0.4 | 0.7 | 1.0 | 1.2 | 1.3 | 1.5 | 1.6 | 1.8 | 2.0 | 2.4 | 2.7 | 3.5 |
| 20 min | 12.9 | 18.8 | 23.2 | 25.9 | 27.9 | 29.5 | 30.8 | 32.9 | 34.6 | 37.9 | 40.3 | 46.4 |
| | 0.6 | 1.1 | 1.6 | 2.0 | 2.2 | 2.5 | 2.7 | 3.1 | 3.4 | 4.0 | 4.5 | 5.9 |
| 30 min | 15.1 | 21.9 | 26.9 | 30.0 | 32.3 | 34.1 | 35.6 | 38.1 | 40.0 | 43.7 | 46.5 | 53.5 |
| | 0.7 | 1.1 | 1.5 | 1.7 | 1.9 | 2.0 | 2.1 | 2.4 | 2.5 | 2.9 | 3.2 | 4.0 |
| 1 h | 18.8 | 27.1 | 33.2 | 37.0 | 39.7 | 41.9 | 43.8 | 46.7 | 49.1 | 53.5 | 56.8 | 65.3 |
| | 0.9 | 1.3 | 1.8 | 2.2 | 2.5 | 2.7 | 2.9 | 3.3 | 3.6 | 4.3 | 4.8 | 6.2 |
| 2 h | 22.9 | 32.4 | 39.3 | 43.6 | 46.7 | 49.2 | 51.2 | 54.5 | 57.2 | 62.2 | 65.9 | 75.4 |
| | 1.0 | 1.5 | 2.1 | 2.4 | 2.7 | 3.0 | 3.2 | 3.7 | 4.0 | 4.7 | 5.3 | 6.9 |
| 3 h | 25.5 | 35.2 | 42.3 | 46.6 | 49.8 | 52.3 | 54.4 | 57.8 | 60.5 | 65.6 | 69.3 | 78.9 |
| | 1.1 | 1.6 | 2.2 | 2.5 | 2.8 | 3.0 | 3.2 | 3.6 | 3.9 | 4.5 | 4.9 | 6.2 |
| 6 h | 31.0 | 39.9 | 46.4 | 50.3 | 53.2 | 55.5 | 57.4 | 60.5 | 62.9 | 67.5 | 70.9 | 79.6 |
| | 1.2 | 1.7 | 2.2 | 2.5 | 2.8 | 3.1 | 3.4 | 3.8 | 4.1 | 4.9 | 5.5 | 7.3 |
| 12 h | 38.9 | 49.2 | 56.7 | 61.3 | 64.6 | 67.3 | 69.5 | 73.0 | 75.9 | 81.2 | 85.1 | 95.1 |
| | 1.5 | 2.0 | 2.7 | 3.2 | 3.7 | 4.0 | 4.4 | 5.0 | 5.5 | 6.6 | 7.4 | 9.8 |
| 1 j | 48.7 | 60.7 | 69.3 | 74.5 | 78.2 | 81.1 | 83.5 | 87.4 | 90.5 | 96.2 | 100.4 | 110.9 |
| | 1.6 | 1.9 | 2.1 | 2.3 | 2.5 | 2.6 | 2.7 | 2.9 | 3.1 | 3.5 | 3.8 | 4.8 |
| 2 j | 65.1 | 81.0 | 92.1 | 98.6 | 103.3 | 107.0 | 110.0 | 114.8 | 118.5 | 125.5 | 130.6 | 143.1 |
| | 2.4 | 3.0 | 3.6 | 4.0 | 4.4 | 4.6 | 4.9 | 5.3 | 5.7 | 6.4 | 7.0 | 8.6 |
| 3 j | 71.7 | 89.5 | 101.8 | 108.9 | 114.0 | 117.9 | 121.2 | 126.4 | 130.4 | 137.9 | 143.2 | 156.4 |
| | 3.0 | 3.9 | 4.6 | 5.1 | 5.5 | 5.8 | 6.1 | 6.5 | 6.9 | 7.7 | 8.3 | 10.0 |
| 4 j | 79.3 | 98.6 | 111.8 | 119.4 | 124.8 | 129.0 | 132.5 | 138.0 | 142.2 | 150.1 | 155.7 | 169.4 |
| | 3.4 | 4.3 | 5.1 | 5.6 | 6.0 | 6.3 | 6.6 | 7.0 | 7.4 | 8.1 | 8.6 | 10.1 |
| 5 j | 90.3 | 112.0 | 126.8 | 135.3 | 141.3 | 145.9 | 149.8 | 155.8 | 160.5 | 169.1 | 175.2 | 190.2 |
| | 3.9 | 5.1 | 6.1 | 6.7 | 7.1 | 7.5 | 7.8 | 8.3 | 8.7 | 9.5 | 10.1 | 11.8 |
| 7 j | 106.0 | 129.6 | 145.4 | 154.5 | 160.8 | 165.8 | 169.8 | 176.1 | 181.1 | 190.0 | 196.4 | 211.9 |
| | 4.7 | 5.9 | 6.8 | 7.4 | 7.8 | 8.1 | 8.4 | 8.9 | 9.3 | 10.0 | 10.5 | 11.9 |
| 10 j | 128.2 | 157.6 | 177.0 | 188.1 | 195.8 | 201.7 | 206.6 | 214.2 | 220.1 | 230.8 | 238.3 | 256.6 |
| | 6.0 | 7.7 | 8.9 | 9.7 | 10.2 | 10.6 | 11.0 | 11.6 | 12.1 | 13.0 | 13.6 | 15.4 |
| 15 j | 156.1 | 189.9 | 212.0 | 224.4 | 233.1 | 239.7 | 245.1 | 253.5 | 260.0 | 271.8 | 280.0 | 299.8 |
| | 7.3 | 9.0 | 10.3 | 11.0 | 11.6 | 12.0 | 12.3 | 12.9 | 13.3 | 14.2 | 14.8 | 16.3 |
| 20 j | 182.1 | 222.1 | 248.1 | 262.5 | 272.6 | 280.3 | 286.5 | 296.2 | 303.7 | 317.1 | 326.6 | 349.0 |
| | 8.5 | 10.6 | 12.1 | 13.0 | 13.6 | 14.0 | 14.4 | 15.1 | 15.5 | 16.5 | 17.1 | 18.8 |
| 25 j | 197.5 | 239.8 | 267.0 | 282.1 | 292.6 | 300.6 | 307.0 | 317.1 | 324.8 | 338.7 | 348.4 | 371.3 |
| | 9.5 | 12.0 | 13.9 | 15.0 | 15.8 | 16.4 | 17.0 | 17.9 | 18.6 | 19.9 | 20.9 | 23.4 |
| 30 j | 226.7 | 270.7 | 298.8 | 314.3 | 325.0 | 333.1 | 339.7 | 350.0 | 357.8 | 371.9 | 381.7 | 404.9 |
| | 10.1 | 12.5 | 14.4 | 15.5 | 16.3 | 17.0 | 17.6 | 18.5 | 19.2 | 20.7 | 21.7 | 24.5 |

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 | 7.7 | 10.8 | 13.0 | 14.3 | 15.2 | 15.9 | 16.4 | 17.3 | 18.0 | 19.3 | 20.2 | 22.4 |
| | 9.3 | 13.4 | 16.7 | 18.8 | 20.4 | 21.6 | 22.7 | 24.4 | 25.9 | 28.6 | 30.7 | 36.2 |
| 20 min | 11.7 | 16.7 | 20.1 | 22.1 | 23.5 | 24.6 | 25.5 | 26.9 | 28.0 | 30.0 | 31.4 | 34.8 |
| | 14.1 | 20.9 | 26.3 | 29.8 | 32.3 | 34.4 | 36.1 | 39.0 | 41.3 | 45.8 | 49.1 | 58.0 |
| 30 min | 13.6 | 19.7 | 24.1 | 26.7 | 28.7 | 30.2 | 31.4 | 33.5 | 35.1 | 38.1 | 40.3 | 45.7 |
| | 16.5 | 24.0 | 29.8 | 33.3 | 36.0 | 38.1 | 39.8 | 42.7 | 45.0 | 49.4 | 52.7 | 61.3 |
| 1 h | 17.1 | 24.5 | 29.6 | 32.7 | 34.9 | 36.6 | 38.0 | 40.2 | 42.0 | 45.2 | 47.5 | 53.1 |
| | 20.4 | 29.7 | 36.8 | 41.3 | 44.6 | 47.3 | 49.5 | 53.2 | 56.2 | 61.9 | 66.2 | 77.4 |
| 2 h | 21.0 | 29.4 | 35.3 | 38.8 | 41.3 | 43.2 | 44.8 | 47.4 | 49.4 | 53.0 | 55.6 | 61.9 |
| | 24.9 | 35.3 | 43.4 | 48.4 | 52.1 | 55.1 | 57.6 | 61.7 | 65.0 | 71.4 | 76.2 | 88.8 |
| 3 h | 23.4 | 32.0 | 38.1 | 41.7 | 44.3 | 46.3 | 48.0 | 50.8 | 52.9 | 56.8 | 59.7 | 66.8 |
| | 27.6 | 38.3 | 46.5 | 51.5 | 55.3 | 58.2 | 60.7 | 64.8 | 68.1 | 74.3 | 79.0 | 91.1 |
| 6 h | 28.7 | 36.5 | 42.1 | 45.3 | 47.6 | 49.4 | 50.8 | 53.0 | 54.8 | 57.9 | 60.1 | 65.4 |
| | 33.4 | 43.2 | 50.6 | 55.3 | 58.8 | 61.6 | 64.0 | 67.9 | 71.0 | 77.1 | 81.7 | 93.8 |
| 12 h | 36.0 | 45.2 | 51.4 | 55.0 | 57.5 | 59.3 | 60.9 | 63.3 | 65.1 | 68.3 | 70.6 | 75.9 |
| | 41.7 | 53.1 | 62.0 | 67.6 | 71.8 | 75.2 | 78.1 | 82.8 | 86.7 | 94.0 | 99.6 | 114.3 |
| 1 j | 45.6 | 57.0 | 65.2 | 69.9 | 73.3 | 76.0 | 78.2 | 81.6 | 84.4 | 89.3 | 92.9 | 101.6 |
| | 51.7 | 64.3 | 73.5 | 79.0 | 83.0 | 86.2 | 88.9 | 93.2 | 96.6 | 103.1 | 107.9 | 120.2 |
| 2 j | 60.5 | 75.0 | 85.0 | 90.7 | 94.8 | 97.9 | 100.4 | 104.4 | 107.4 | 113.0 | 116.9 | 126.2 |
| | 69.8 | 86.9 | 99.2 | 106.5 | 111.8 | 116.0 | 119.5 | 125.2 | 129.6 | 138.1 | 144.2 | 159.9 |
| 3 j | 65.8 | 81.9 | 92.8 | 98.9 | 103.2 | 106.6 | 109.3 | 113.5 | 116.8 | 122.7 | 126.9 | 136.9 |
| | 77.6 | 97.0 | 110.8 | 118.9 | 124.7 | 129.3 | 133.1 | 139.2 | 144.0 | 153.0 | 159.5 | 176.0 |
| 4 j | 72.6 | 90.0 | 101.8 | 108.4 | 113.1 | 116.7 | 119.6 | 124.2 | 127.8 | 134.2 | 138.7 | 149.5 |
| | 85.9 | 107.1 | 121.8 | 130.4 | 136.6 | 141.4 | 145.4 | 151.7 | 156.7 | 165.9 | 172.6 | 189.3 |
| 5 j | 82.6 | 102.0 | 114.9 | 122.2 | 127.4 | 131.3 | 134.5 | 139.5 | 143.4 | 150.4 | 155.4 | 167.1 |
| | 98.0 | 122.0 | 138.7 | 148.3 | 155.2 | 160.6 | 165.0 | 172.1 | 177.6 | 187.7 | 195.1 | 213.3 |
| 7 j | 96.7 | 118.0 | 132.1 | 140.0 | 145.5 | 149.8 | 153.3 | 158.7 | 162.9 | 170.5 | 175.8 | 188.6 |
| | 115.2 | 141.1 | 158.8 | 168.9 | 176.1 | 181.7 | 186.3 | 193.6 | 199.2 | 209.6 | 217.0 | 235.2 |
| 10 j | 116.4 | 142.5 | 159.6 | 169.1 | 175.8 | 180.9 | 185.0 | 191.5 | 196.4 | 205.3 | 211.6 | 226.4 |
| | 140.1 | 172.6 | 194.5 | 207.0 | 215.8 | 222.6 | 228.1 | 236.9 | 243.7 | 256.2 | 265.1 | 286.7 |
| 15 j | 141.9 | 172.3 | 191.9 | 202.8 | 210.4 | 216.2 | 220.9 | 228.2 | 233.9 | 244.0 | 251.1 | 267.9 |
| | 170.4 | 207.5 | 232.1 | 246.0 | 255.7 | 263.2 | 269.3 | 278.8 | 286.2 | 299.5 | 309.0 | 331.7 |
| 20 j | 165.3 | 201.3 | 224.4 | 237.1 | 246.0 | 252.7 | 258.2 | 266.7 | 273.2 | 284.9 | 293.0 | 312.2 |
| | 198.8 | 242.9 | 271.8 | 287.9 | 299.2 | 307.8 | 314.8 | 325.7 | 334.2 | 349.4 | 360.1 | 385.9 |
| 25 j | 178.8 | 216.3 | 239.9 | 252.8 | 261.6 | 268.3 | 273.7 | 282.1 | 288.4 | 299.6 | 307.4 | 325.4 |
| | 216.1 | 263.3 | 294.2 | 311.5 | 323.5 | 332.8 | 340.3 | 352.1 | 361.2 | 377.7 | 389.3 | 417.2 |
| 30 j | 206.9 | 246.1 | 270.6 | 283.9 | 292.9 | 299.8 | 305.3 | 313.7 | 320.1 | 331.4 | 339.1 | 356.8 |
| | 246.6 | 295.2 | 326.9 | 344.6 | 357.0 | 366.5 | 374.2 | 386.2 | 395.6 | 412.4 | 424.3 | 453.0 |

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 | 150.2 | 0.4661 | 301.4 | 0.6824 | 49.6 | 0.4751 |
| 5 | 206.2 | 0.4478 | 486.6 | 0.7145 | 62.8 | 0.4792 |
| 10 | 246.8 | 0.4374 | 636.7 | 0.7318 | 75.2 | 0.4863 |
| 15 | 271.0 | 0.4318 | 732.3 | 0.7406 | 83.7 | 0.4913 |
| 20 | 288.6 | 0.4280 | 804.5 | 0.7465 | 90.4 | 0.4952 |
| 25 | 302.5 | 0.4251 | 863.2 | 0.7509 | 95.9 | 0.4983 |
| 30 | 314.0 | 0.4228 | 913.0 | 0.7544 | 100.7 | 0.5010 |
| 40 | 332.5 | 0.4192 | 995.2 | 0.7597 | 108.9 | 0.5054 |
| 50 | 347.2 | 0.4164 | 1062.1 | 0.7638 | 115.6 | 0.5089 |
| 75 | 374.6 | 0.4115 | 1191.5 | 0.7709 | 129.1 | 0.5155 |
| 100 | 394.7 | 0.4080 | 1289.7 | 0.7759 | 139.7 | 0.5203 |
| 200 | 445.2 | 0.3996 | 1550.7 | 0.7873 | 169.0 | 0.5326 |

Références

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