



Statistiques des précipitations extrêmes des communes belges

Lierneux (INS 63045)

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 | 8.2 | 11.7 | 14.4 | 16.0 | 17.2 | 18.2 | 19.0 | 20.2 | 21.3 | 23.2 | 24.7 | 28.4 |
| 20 min | 12.3 | 17.8 | 22.0 | 24.5 | 26.4 | 27.8 | 29.1 | 31.1 | 32.7 | 35.7 | 38.0 | 43.7 |
| 30 min | 14.4 | 20.9 | 25.8 | 28.7 | 30.9 | 32.6 | 34.1 | 36.4 | 38.3 | 41.8 | 44.4 | 51.1 |
| 1 h | 17.9 | 25.6 | 31.3 | 34.8 | 37.4 | 39.4 | 41.1 | 43.8 | 46.0 | 50.2 | 53.2 | 61.1 |
| 2 h | 21.8 | 30.5 | 37.0 | 40.9 | 43.8 | 46.1 | 48.0 | 51.1 | 53.5 | 58.2 | 61.6 | 70.4 |
| 3 h | 24.2 | 33.3 | 40.1 | 44.2 | 47.1 | 49.5 | 51.5 | 54.7 | 57.3 | 62.1 | 65.7 | 74.7 |
| 6 h | 29.4 | 38.0 | 44.4 | 48.3 | 51.1 | 53.3 | 55.2 | 58.2 | 60.6 | 65.1 | 68.5 | 77.0 |
| 12 h | 36.5 | 46.7 | 54.2 | 58.7 | 62.0 | 64.6 | 66.8 | 70.3 | 73.1 | 78.3 | 82.2 | 92.1 |
| 1 j | 44.6 | 56.4 | 64.9 | 69.9 | 73.6 | 76.4 | 78.8 | 82.6 | 85.6 | 91.3 | 95.4 | 105.7 |
| 2 j | 58.6 | 73.6 | 84.1 | 90.3 | 94.7 | 98.2 | 101.0 | 105.5 | 109.1 | 115.7 | 120.5 | 132.3 |
| 3 j | 63.8 | 80.3 | 91.7 | 98.3 | 103.0 | 106.7 | 109.7 | 114.5 | 118.3 | 125.2 | 130.2 | 142.4 |
| 4 j | 70.2 | 87.9 | 100.1 | 107.2 | 112.1 | 116.0 | 119.2 | 124.2 | 128.2 | 135.4 | 140.6 | 153.2 |
| 5 j | 79.8 | 99.6 | 113.0 | 120.7 | 126.2 | 130.4 | 133.9 | 139.3 | 143.6 | 151.4 | 157.0 | 170.6 |
| 7 j | 93.1 | 114.5 | 129.0 | 137.2 | 142.9 | 147.4 | 151.1 | 156.8 | 161.3 | 169.5 | 175.3 | 189.3 |
| 10 j | 112.1 | 137.9 | 155.0 | 164.7 | 171.5 | 176.7 | 181.0 | 187.6 | 192.8 | 202.2 | 208.9 | 224.9 |
| 15 j | 136.3 | 166.1 | 185.6 | 196.5 | 204.2 | 210.0 | 214.8 | 222.2 | 228.0 | 238.3 | 245.6 | 263.1 |
| 20 j | 158.8 | 194.0 | 216.8 | 229.5 | 238.3 | 245.0 | 250.5 | 259.1 | 265.6 | 277.4 | 285.7 | 305.4 |
| 25 j | 171.3 | 208.6 | 232.5 | 245.8 | 255.0 | 262.0 | 267.7 | 276.6 | 283.4 | 295.5 | 304.1 | 324.3 |
| 30 j | 197.8 | 236.9 | 261.9 | 275.7 | 285.2 | 292.5 | 298.3 | 307.4 | 314.4 | 326.9 | 335.7 | 356.3 |

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 | 8.2 | 11.7 | 14.4 | 16.0 | 17.2 | 18.2 | 19.0 | 20.2 | 21.3 | 23.2 | 24.7 | 28.4 |
| | 0.3 | 0.5 | 0.8 | 1.0 | 1.1 | 1.2 | 1.3 | 1.6 | 1.7 | 2.1 | 2.4 | 3.2 |
| 20 min | 12.3 | 17.8 | 22.0 | 24.5 | 26.4 | 27.8 | 29.1 | 31.1 | 32.7 | 35.7 | 38.0 | 43.7 |
| | 0.5 | 0.9 | 1.3 | 1.6 | 1.8 | 2.1 | 2.2 | 2.6 | 2.8 | 3.4 | 3.8 | 5.1 |
| 30 min | 14.4 | 20.9 | 25.8 | 28.7 | 30.9 | 32.6 | 34.1 | 36.4 | 38.3 | 41.8 | 44.4 | 51.1 |
| | 0.6 | 0.9 | 1.1 | 1.3 | 1.5 | 1.6 | 1.7 | 1.9 | 2.1 | 2.4 | 2.7 | 3.4 |
| 1 h | 17.9 | 25.6 | 31.3 | 34.8 | 37.4 | 39.4 | 41.1 | 43.8 | 46.0 | 50.2 | 53.2 | 61.1 |
| | 0.7 | 1.1 | 1.5 | 1.8 | 2.0 | 2.3 | 2.5 | 2.8 | 3.1 | 3.7 | 4.1 | 5.5 |
| 2 h | 21.8 | 30.5 | 37.0 | 40.9 | 43.8 | 46.1 | 48.0 | 51.1 | 53.5 | 58.2 | 61.6 | 70.4 |
| | 0.8 | 1.2 | 1.7 | 2.0 | 2.3 | 2.5 | 2.8 | 3.1 | 3.4 | 4.1 | 4.6 | 6.1 |
| 3 h | 24.2 | 33.3 | 40.1 | 44.2 | 47.1 | 49.5 | 51.5 | 54.7 | 57.3 | 62.1 | 65.7 | 74.7 |
| | 0.9 | 1.3 | 1.7 | 2.0 | 2.3 | 2.5 | 2.7 | 3.0 | 3.2 | 3.8 | 4.2 | 5.4 |
| 6 h | 29.4 | 38.0 | 44.4 | 48.3 | 51.1 | 53.3 | 55.2 | 58.2 | 60.6 | 65.1 | 68.5 | 77.0 |
| | 1.0 | 1.4 | 1.7 | 2.1 | 2.3 | 2.6 | 2.8 | 3.2 | 3.6 | 4.3 | 4.9 | 6.6 |
| 12 h | 36.5 | 46.7 | 54.2 | 58.7 | 62.0 | 64.6 | 66.8 | 70.3 | 73.1 | 78.3 | 82.2 | 92.1 |
| | 1.3 | 1.7 | 2.3 | 2.7 | 3.1 | 3.5 | 3.8 | 4.4 | 4.9 | 5.9 | 6.7 | 9.0 |
| 1 j | 44.6 | 56.4 | 64.9 | 69.9 | 73.6 | 76.4 | 78.8 | 82.6 | 85.6 | 91.3 | 95.4 | 105.7 |
| | 1.5 | 1.7 | 1.9 | 2.1 | 2.2 | 2.4 | 2.5 | 2.7 | 2.9 | 3.3 | 3.6 | 4.6 |
| 2 j | 58.6 | 73.6 | 84.1 | 90.3 | 94.7 | 98.2 | 101.0 | 105.5 | 109.1 | 115.7 | 120.5 | 132.3 |
| | 2.2 | 2.7 | 3.2 | 3.6 | 4.0 | 4.2 | 4.5 | 4.9 | 5.3 | 6.0 | 6.6 | 8.3 |
| 3 j | 63.8 | 80.3 | 91.7 | 98.3 | 103.0 | 106.7 | 109.7 | 114.5 | 118.3 | 125.2 | 130.2 | 142.4 |
| | 2.8 | 3.5 | 4.1 | 4.6 | 5.0 | 5.3 | 5.5 | 6.0 | 6.4 | 7.1 | 7.7 | 9.4 |
| 4 j | 70.2 | 87.9 | 100.1 | 107.2 | 112.1 | 116.0 | 119.2 | 124.2 | 128.2 | 135.4 | 140.6 | 153.2 |
| | 3.2 | 4.0 | 4.6 | 5.0 | 5.4 | 5.6 | 5.9 | 6.3 | 6.6 | 7.2 | 7.8 | 9.2 |
| 5 j | 79.8 | 99.6 | 113.0 | 120.7 | 126.2 | 130.4 | 133.9 | 139.3 | 143.6 | 151.4 | 157.0 | 170.6 |
| | 3.7 | 4.7 | 5.4 | 5.9 | 6.3 | 6.6 | 6.8 | 7.3 | 7.6 | 8.3 | 8.8 | 10.3 |
| 7 j | 93.1 | 114.5 | 129.0 | 137.2 | 142.9 | 147.4 | 151.1 | 156.8 | 161.3 | 169.5 | 175.3 | 189.3 |
| | 4.5 | 5.5 | 6.2 | 6.6 | 6.9 | 7.2 | 7.4 | 7.8 | 8.1 | 8.7 | 9.1 | 10.3 |
| 10 j | 112.1 | 137.9 | 155.0 | 164.7 | 171.5 | 176.7 | 181.0 | 187.6 | 192.8 | 202.2 | 208.9 | 224.9 |
| | 5.8 | 7.1 | 8.2 | 8.8 | 9.2 | 9.6 | 9.9 | 10.4 | 10.7 | 11.5 | 12.1 | 13.6 |
| 15 j | 136.3 | 166.1 | 185.6 | 196.5 | 204.2 | 210.0 | 214.8 | 222.2 | 228.0 | 238.3 | 245.6 | 263.1 |
| | 7.0 | 8.5 | 9.6 | 10.2 | 10.6 | 11.0 | 11.3 | 11.7 | 12.1 | 12.7 | 13.2 | 14.4 |
| 20 j | 158.8 | 194.0 | 216.8 | 229.5 | 238.3 | 245.0 | 250.5 | 259.1 | 265.6 | 277.4 | 285.7 | 305.4 |
| | 8.2 | 10.1 | 11.4 | 12.1 | 12.6 | 13.0 | 13.3 | 13.8 | 14.2 | 15.0 | 15.5 | 16.9 |
| 25 j | 171.3 | 208.6 | 232.5 | 245.8 | 255.0 | 262.0 | 267.7 | 276.6 | 283.4 | 295.5 | 304.1 | 324.3 |
| | 9.2 | 11.4 | 12.9 | 13.9 | 14.5 | 15.1 | 15.5 | 16.3 | 16.9 | 18.0 | 18.9 | 21.1 |
| 30 j | 197.8 | 236.9 | 261.9 | 275.7 | 285.2 | 292.5 | 298.3 | 307.4 | 314.4 | 326.9 | 335.7 | 356.3 |
| | 10.0 | 12.1 | 13.7 | 14.7 | 15.5 | 16.1 | 16.6 | 17.4 | 18.1 | 19.4 | 20.4 | 22.9 |

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 | 7.6 | 10.7 | 12.9 | 14.1 | 15.0 | 15.7 | 16.3 | 17.2 | 17.9 | 19.2 | 20.1 | 22.2 |
| | 8.8 | 12.8 | 15.9 | 17.9 | 19.4 | 20.6 | 21.6 | 23.3 | 24.7 | 27.3 | 29.3 | 34.6 |
| 20 min | 11.3 | 16.1 | 19.5 | 21.4 | 22.8 | 23.8 | 24.7 | 26.1 | 27.1 | 29.1 | 30.5 | 33.8 |
| | 13.3 | 19.5 | 24.5 | 27.6 | 30.0 | 31.9 | 33.5 | 36.1 | 38.3 | 42.4 | 45.5 | 53.7 |
| 30 min | 13.2 | 19.2 | 23.5 | 26.1 | 28.0 | 29.4 | 30.7 | 32.6 | 34.2 | 37.1 | 39.2 | 44.4 |
| | 15.6 | 22.6 | 28.0 | 31.3 | 33.8 | 35.8 | 37.4 | 40.2 | 42.4 | 46.6 | 49.7 | 57.9 |
| 1 h | 16.5 | 23.5 | 28.4 | 31.3 | 33.4 | 35.0 | 36.3 | 38.4 | 40.0 | 43.0 | 45.2 | 50.4 |
| | 19.3 | 27.7 | 34.3 | 38.3 | 41.4 | 43.8 | 45.9 | 49.3 | 52.1 | 57.3 | 61.3 | 71.8 |
| 2 h | 20.2 | 28.0 | 33.6 | 36.9 | 39.3 | 41.1 | 42.6 | 44.9 | 46.8 | 50.1 | 52.6 | 58.4 |
| | 23.4 | 32.9 | 40.3 | 44.9 | 48.3 | 51.0 | 53.4 | 57.2 | 60.3 | 66.2 | 70.6 | 82.3 |
| 3 h | 22.4 | 30.7 | 36.6 | 40.1 | 42.7 | 44.6 | 46.3 | 48.9 | 50.9 | 54.7 | 57.4 | 64.1 |
| | 26.0 | 35.9 | 43.5 | 48.2 | 51.6 | 54.4 | 56.7 | 60.6 | 63.6 | 69.5 | 73.9 | 85.4 |
| 6 h | 27.3 | 35.3 | 41.0 | 44.2 | 46.5 | 48.3 | 49.7 | 51.9 | 53.6 | 56.7 | 58.9 | 64.0 |
| | 31.4 | 40.7 | 47.8 | 52.3 | 55.6 | 58.4 | 60.7 | 64.5 | 67.6 | 73.6 | 78.1 | 90.0 |
| 12 h | 33.9 | 43.3 | 49.7 | 53.3 | 55.8 | 57.7 | 59.3 | 61.7 | 63.5 | 66.8 | 69.1 | 74.4 |
| | 39.1 | 50.0 | 58.6 | 64.0 | 68.1 | 71.4 | 74.2 | 78.9 | 82.6 | 89.9 | 95.3 | 109.8 |
| 1 j | 41.8 | 53.1 | 61.2 | 65.9 | 69.2 | 71.8 | 73.9 | 77.3 | 80.0 | 84.8 | 88.2 | 96.6 |
| | 47.5 | 59.7 | 68.6 | 73.9 | 77.9 | 81.0 | 83.7 | 87.9 | 91.3 | 97.8 | 102.5 | 114.8 |
| 2 j | 54.3 | 68.2 | 77.8 | 83.2 | 87.0 | 89.9 | 92.2 | 95.9 | 98.8 | 103.9 | 107.5 | 116.0 |
| | 63.0 | 79.0 | 90.5 | 97.4 | 102.5 | 106.5 | 109.8 | 115.2 | 119.5 | 127.5 | 133.5 | 148.6 |
| 3 j | 58.3 | 73.4 | 83.6 | 89.3 | 93.3 | 96.4 | 98.9 | 102.8 | 105.8 | 111.3 | 115.1 | 124.1 |
| | 69.4 | 87.2 | 99.8 | 107.3 | 112.7 | 117.0 | 120.6 | 126.2 | 130.8 | 139.2 | 145.3 | 160.8 |
| 4 j | 63.8 | 80.1 | 91.1 | 97.3 | 101.6 | 105.0 | 107.7 | 112.0 | 115.3 | 121.2 | 125.4 | 135.3 |
| | 76.5 | 95.7 | 109.2 | 117.0 | 122.6 | 127.0 | 130.7 | 136.5 | 141.1 | 149.6 | 155.8 | 171.2 |
| 5 j | 72.5 | 90.4 | 102.4 | 109.1 | 113.9 | 117.5 | 120.5 | 125.1 | 128.7 | 135.1 | 139.7 | 150.4 |
| | 87.1 | 108.7 | 123.6 | 132.3 | 138.5 | 143.3 | 147.2 | 153.6 | 158.5 | 167.7 | 174.3 | 190.8 |
| 7 j | 84.2 | 103.9 | 116.9 | 124.2 | 129.4 | 133.3 | 136.6 | 141.6 | 145.5 | 152.5 | 157.4 | 169.1 |
| | 102.0 | 125.2 | 141.0 | 150.1 | 156.5 | 161.5 | 165.6 | 172.1 | 177.1 | 186.4 | 193.1 | 209.5 |
| 10 j | 100.8 | 123.9 | 139.0 | 147.5 | 153.4 | 157.9 | 161.6 | 167.4 | 171.8 | 179.7 | 185.2 | 198.3 |
| | 123.4 | 151.9 | 171.0 | 181.9 | 189.5 | 195.4 | 200.3 | 207.9 | 213.9 | 224.8 | 232.5 | 251.5 |
| 15 j | 122.5 | 149.4 | 166.8 | 176.5 | 183.3 | 188.5 | 192.7 | 199.3 | 204.3 | 213.4 | 219.8 | 234.8 |
| | 150.0 | 182.8 | 204.4 | 216.5 | 225.0 | 231.5 | 236.8 | 245.2 | 251.6 | 263.2 | 271.5 | 291.3 |
| 20 j | 142.7 | 174.2 | 194.5 | 205.8 | 213.6 | 219.6 | 224.5 | 232.0 | 237.8 | 248.1 | 255.3 | 272.2 |
| | 175.0 | 213.8 | 239.0 | 253.1 | 262.9 | 270.5 | 276.6 | 286.1 | 293.5 | 306.8 | 316.1 | 338.6 |
| 25 j | 153.3 | 186.3 | 207.2 | 218.7 | 226.5 | 232.5 | 237.3 | 244.7 | 250.3 | 260.2 | 267.1 | 283.0 |
| | 189.4 | 230.8 | 257.9 | 273.0 | 283.5 | 291.6 | 298.2 | 308.5 | 316.4 | 330.9 | 341.0 | 365.6 |
| 30 j | 178.3 | 213.2 | 235.0 | 246.8 | 254.9 | 261.0 | 265.8 | 273.3 | 279.0 | 288.9 | 295.8 | 311.3 |
| | 217.4 | 260.7 | 288.8 | 304.5 | 315.5 | 323.9 | 330.8 | 341.6 | 349.9 | 364.9 | 375.6 | 401.3 |

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 | 142.8 | 0.4603 | 306.6 | 0.6977 | 50.0 | 0.4893 |
| 5 | 198.6 | 0.4474 | 488.7 | 0.7271 | 66.9 | 0.4986 |
| 10 | 239.0 | 0.4392 | 635.8 | 0.7431 | 82.3 | 0.5081 |
| 15 | 263.2 | 0.4347 | 729.4 | 0.7514 | 92.8 | 0.5144 |
| 20 | 280.6 | 0.4315 | 799.9 | 0.7569 | 101.0 | 0.5190 |
| 25 | 294.4 | 0.4291 | 857.2 | 0.7610 | 107.8 | 0.5227 |
| 30 | 305.9 | 0.4271 | 905.8 | 0.7643 | 113.7 | 0.5258 |
| 40 | 324.3 | 0.4239 | 986.0 | 0.7694 | 123.7 | 0.5308 |
| 50 | 338.9 | 0.4215 | 1051.4 | 0.7732 | 132.0 | 0.5348 |
| 75 | 366.1 | 0.4171 | 1177.6 | 0.7800 | 148.7 | 0.5421 |
| 100 | 386.1 | 0.4140 | 1273.3 | 0.7847 | 161.7 | 0.5475 |
| 200 | 436.3 | 0.4064 | 1527.6 | 0.7957 | 198.0 | 0.5608 |

Références

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