



Statistiques des précipitations extrêmes des communes belges

Maaseik (INS 72021)

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 | 7.5 | 10.7 | 13.2 | 14.7 | 15.7 | 16.6 | 17.4 | 18.5 | 19.5 | 21.3 | 22.6 | 26.0 |
| 20 min | 10.6 | 15.2 | 18.7 | 20.8 | 22.3 | 23.5 | 24.6 | 26.2 | 27.6 | 30.1 | 31.9 | 36.7 |
| 30 min | 12.6 | 18.3 | 22.6 | 25.2 | 27.1 | 28.6 | 29.9 | 32.0 | 33.6 | 36.7 | 39.0 | 44.9 |
| 1 h | 15.6 | 21.8 | 26.3 | 29.1 | 31.2 | 32.8 | 34.1 | 36.3 | 38.1 | 41.4 | 43.8 | 50.0 |
| 2 h | 18.7 | 25.6 | 30.7 | 33.8 | 36.1 | 37.9 | 39.4 | 41.9 | 43.8 | 47.5 | 50.2 | 57.2 |
| 3 h | 20.7 | 28.4 | 34.2 | 37.7 | 40.2 | 42.2 | 43.9 | 46.7 | 48.8 | 53.0 | 56.0 | 63.7 |
| 6 h | 24.9 | 33.1 | 39.2 | 42.9 | 45.5 | 47.7 | 49.4 | 52.3 | 54.6 | 58.9 | 62.0 | 70.1 |
| 12 h | 30.2 | 40.1 | 47.4 | 51.7 | 54.9 | 57.5 | 59.6 | 63.0 | 65.7 | 70.9 | 74.6 | 84.2 |
| 1 j | 37.1 | 48.4 | 56.6 | 61.5 | 65.0 | 67.7 | 70.0 | 73.7 | 76.6 | 82.0 | 86.0 | 95.9 |
| 2 j | 46.5 | 59.9 | 69.3 | 74.8 | 78.7 | 81.8 | 84.3 | 88.4 | 91.6 | 97.4 | 101.7 | 112.3 |
| 3 j | 49.1 | 63.2 | 73.0 | 78.6 | 82.7 | 85.8 | 88.4 | 92.5 | 95.7 | 101.6 | 105.9 | 116.4 |
| 4 j | 53.2 | 68.1 | 78.4 | 84.3 | 88.5 | 91.8 | 94.5 | 98.7 | 102.0 | 108.1 | 112.4 | 123.1 |
| 5 j | 60.3 | 76.4 | 87.3 | 93.5 | 98.0 | 101.4 | 104.2 | 108.7 | 112.2 | 118.5 | 123.0 | 134.1 |
| 7 j | 69.2 | 86.6 | 98.2 | 104.9 | 109.6 | 113.2 | 116.2 | 120.9 | 124.5 | 131.1 | 135.8 | 147.2 |
| 10 j | 82.0 | 101.2 | 113.9 | 121.1 | 126.2 | 130.1 | 133.2 | 138.2 | 142.1 | 149.1 | 154.0 | 166.0 |
| 15 j | 99.2 | 121.6 | 136.3 | 144.6 | 150.3 | 154.7 | 158.3 | 163.9 | 168.2 | 176.0 | 181.5 | 194.6 |
| 20 j | 115.5 | 141.6 | 158.5 | 167.9 | 174.4 | 179.4 | 183.5 | 189.8 | 194.7 | 203.4 | 209.6 | 224.2 |
| 25 j | 122.6 | 150.4 | 168.3 | 178.2 | 185.0 | 190.2 | 194.5 | 201.1 | 206.1 | 215.2 | 221.6 | 236.6 |
| 30 j | 144.0 | 174.0 | 193.2 | 203.8 | 211.1 | 216.7 | 221.2 | 228.2 | 233.6 | 243.2 | 249.9 | 265.7 |

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 | 7.5 | 10.7 | 13.2 | 14.7 | 15.7 | 16.6 | 17.4 | 18.5 | 19.5 | 21.3 | 22.6 | 26.0 |
| | 0.2 | 0.3 | 0.5 | 0.7 | 0.8 | 0.9 | 1.0 | 1.2 | 1.3 | 1.7 | 1.9 | 2.6 |
| 20 min | 10.6 | 15.2 | 18.7 | 20.8 | 22.3 | 23.5 | 24.6 | 26.2 | 27.6 | 30.1 | 31.9 | 36.7 |
| | 0.3 | 0.5 | 0.7 | 0.9 | 1.1 | 1.2 | 1.3 | 1.6 | 1.7 | 2.1 | 2.4 | 3.4 |
| 30 min | 12.6 | 18.3 | 22.6 | 25.2 | 27.1 | 28.6 | 29.9 | 32.0 | 33.6 | 36.7 | 39.0 | 44.9 |
| | 0.4 | 0.6 | 0.9 | 1.1 | 1.3 | 1.4 | 1.5 | 1.7 | 1.9 | 2.3 | 2.6 | 3.4 |
| 1 h | 15.6 | 21.8 | 26.3 | 29.1 | 31.2 | 32.8 | 34.1 | 36.3 | 38.1 | 41.4 | 43.8 | 50.0 |
| | 0.4 | 0.7 | 1.1 | 1.3 | 1.6 | 1.7 | 1.9 | 2.2 | 2.5 | 3.0 | 3.4 | 4.6 |
| 2 h | 18.7 | 25.6 | 30.7 | 33.8 | 36.1 | 37.9 | 39.4 | 41.9 | 43.8 | 47.5 | 50.2 | 57.2 |
| | 0.5 | 0.9 | 1.2 | 1.5 | 1.8 | 2.0 | 2.2 | 2.5 | 2.8 | 3.3 | 3.8 | 5.1 |
| 3 h | 20.7 | 28.4 | 34.2 | 37.7 | 40.2 | 42.2 | 43.9 | 46.7 | 48.8 | 53.0 | 56.0 | 63.7 |
| | 0.6 | 1.0 | 1.3 | 1.6 | 1.8 | 2.0 | 2.2 | 2.5 | 2.8 | 3.3 | 3.7 | 4.9 |
| 6 h | 24.9 | 33.1 | 39.2 | 42.9 | 45.5 | 47.7 | 49.4 | 52.3 | 54.6 | 58.9 | 62.0 | 70.1 |
| | 0.8 | 1.1 | 1.5 | 1.8 | 2.1 | 2.4 | 2.6 | 3.0 | 3.4 | 4.1 | 4.7 | 6.4 |
| 12 h | 30.2 | 40.1 | 47.4 | 51.7 | 54.9 | 57.5 | 59.6 | 63.0 | 65.7 | 70.9 | 74.6 | 84.2 |
| | 1.0 | 1.4 | 2.0 | 2.4 | 2.8 | 3.1 | 3.4 | 3.9 | 4.4 | 5.3 | 6.1 | 8.3 |
| 1 j | 37.1 | 48.4 | 56.6 | 61.5 | 65.0 | 67.7 | 70.0 | 73.7 | 76.6 | 82.0 | 86.0 | 95.9 |
| | 1.1 | 1.4 | 1.8 | 2.0 | 2.3 | 2.5 | 2.6 | 2.9 | 3.2 | 3.7 | 4.1 | 5.2 |
| 2 j | 46.5 | 59.9 | 69.3 | 74.8 | 78.7 | 81.8 | 84.3 | 88.4 | 91.6 | 97.4 | 101.7 | 112.3 |
| | 1.7 | 2.3 | 3.0 | 3.5 | 4.0 | 4.3 | 4.6 | 5.2 | 5.6 | 6.5 | 7.2 | 9.1 |
| 3 j | 49.1 | 63.2 | 73.0 | 78.6 | 82.7 | 85.8 | 88.4 | 92.5 | 95.7 | 101.6 | 105.9 | 116.4 |
| | 2.0 | 2.8 | 3.5 | 4.0 | 4.5 | 4.8 | 5.1 | 5.7 | 6.1 | 6.9 | 7.6 | 9.4 |
| 4 j | 53.2 | 68.1 | 78.4 | 84.3 | 88.5 | 91.8 | 94.5 | 98.7 | 102.0 | 108.1 | 112.4 | 123.1 |
| | 2.3 | 3.0 | 3.6 | 4.0 | 4.3 | 4.6 | 4.9 | 5.3 | 5.7 | 6.4 | 6.9 | 8.4 |
| 5 j | 60.3 | 76.4 | 87.3 | 93.5 | 98.0 | 101.4 | 104.2 | 108.7 | 112.2 | 118.5 | 123.0 | 134.1 |
| | 2.7 | 3.3 | 3.9 | 4.3 | 4.6 | 4.9 | 5.1 | 5.5 | 5.8 | 6.5 | 7.0 | 8.3 |
| 7 j | 69.2 | 86.6 | 98.2 | 104.9 | 109.6 | 113.2 | 116.2 | 120.9 | 124.5 | 131.1 | 135.8 | 147.2 |
| | 3.2 | 3.8 | 4.4 | 4.8 | 5.1 | 5.3 | 5.5 | 5.9 | 6.2 | 6.7 | 7.2 | 8.3 |
| 10 j | 82.0 | 101.2 | 113.9 | 121.1 | 126.2 | 130.1 | 133.2 | 138.2 | 142.1 | 149.1 | 154.0 | 166.0 |
| | 3.9 | 4.9 | 5.6 | 6.0 | 6.4 | 6.7 | 6.9 | 7.3 | 7.6 | 8.2 | 8.7 | 10.0 |
| 15 j | 99.2 | 121.6 | 136.3 | 144.6 | 150.3 | 154.7 | 158.3 | 163.9 | 168.2 | 176.0 | 181.5 | 194.6 |
| | 4.8 | 5.9 | 6.6 | 7.0 | 7.3 | 7.5 | 7.7 | 8.0 | 8.2 | 8.6 | 9.0 | 9.8 |
| 20 j | 115.5 | 141.6 | 158.5 | 167.9 | 174.4 | 179.4 | 183.5 | 189.8 | 194.7 | 203.4 | 209.6 | 224.2 |
| | 5.7 | 7.0 | 7.9 | 8.4 | 8.8 | 9.1 | 9.3 | 9.7 | 10.0 | 10.6 | 11.0 | 12.2 |
| 25 j | 122.6 | 150.4 | 168.3 | 178.2 | 185.0 | 190.2 | 194.5 | 201.1 | 206.1 | 215.2 | 221.6 | 236.6 |
| | 6.3 | 7.9 | 9.0 | 9.7 | 10.2 | 10.7 | 11.0 | 11.6 | 12.1 | 13.0 | 13.7 | 15.6 |
| 30 j | 144.0 | 174.0 | 193.2 | 203.8 | 211.1 | 216.7 | 221.2 | 228.2 | 233.6 | 243.2 | 249.9 | 265.7 |
| | 7.0 | 8.7 | 10.1 | 11.0 | 11.7 | 12.2 | 12.7 | 13.5 | 14.1 | 15.4 | 16.3 | 18.7 |

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 | 7.1 | 10.1 | 12.1 | 13.3 | 14.2 | 14.8 | 15.4 | 16.2 | 16.9 | 18.0 | 18.9 | 20.9 |
| | 7.9 | 11.4 | 14.2 | 16.0 | 17.3 | 18.4 | 19.3 | 20.9 | 22.1 | 24.5 | 26.4 | 31.2 |
| 20 min | 10.0 | 14.2 | 17.3 | 19.0 | 20.2 | 21.2 | 22.0 | 23.2 | 24.1 | 25.9 | 27.1 | 30.1 |
| | 11.3 | 16.2 | 20.1 | 22.6 | 24.4 | 25.9 | 27.2 | 29.3 | 31.0 | 34.3 | 36.7 | 43.3 |
| 30 min | 11.8 | 17.1 | 20.9 | 23.1 | 24.7 | 25.9 | 26.9 | 28.6 | 29.8 | 32.2 | 34.0 | 38.2 |
| | 13.4 | 19.5 | 24.3 | 27.3 | 29.6 | 31.4 | 32.9 | 35.4 | 37.4 | 41.2 | 44.1 | 51.6 |
| 1 h | 14.8 | 20.3 | 24.2 | 26.5 | 28.1 | 29.3 | 30.4 | 32.0 | 33.2 | 35.5 | 37.1 | 41.1 |
| | 16.5 | 23.2 | 28.4 | 31.7 | 34.2 | 36.2 | 37.9 | 40.6 | 42.9 | 47.2 | 50.4 | 59.0 |
| 2 h | 17.6 | 23.9 | 28.3 | 30.8 | 32.7 | 34.1 | 35.2 | 37.0 | 38.4 | 41.0 | 42.8 | 47.2 |
| | 19.7 | 27.3 | 33.1 | 36.8 | 39.6 | 41.8 | 43.7 | 46.8 | 49.3 | 54.1 | 57.7 | 67.2 |
| 3 h | 19.4 | 26.6 | 31.6 | 34.5 | 36.6 | 38.3 | 39.6 | 41.7 | 43.4 | 46.4 | 48.6 | 54.0 |
| | 21.9 | 30.3 | 36.8 | 40.8 | 43.8 | 46.2 | 48.3 | 51.6 | 54.3 | 59.5 | 63.3 | 73.4 |
| 6 h | 23.5 | 31.0 | 36.3 | 39.3 | 41.4 | 43.0 | 44.3 | 46.3 | 47.9 | 50.7 | 52.7 | 57.4 |
| | 26.4 | 35.2 | 42.1 | 46.4 | 49.7 | 52.3 | 54.6 | 58.2 | 61.2 | 67.0 | 71.3 | 82.7 |
| 12 h | 28.2 | 37.3 | 43.5 | 47.1 | 49.5 | 51.4 | 52.9 | 55.3 | 57.2 | 60.4 | 62.7 | 68.0 |
| | 32.2 | 42.9 | 51.2 | 56.4 | 60.4 | 63.6 | 66.3 | 70.7 | 74.3 | 81.3 | 86.6 | 100.4 |
| 1 j | 34.9 | 45.6 | 53.1 | 57.4 | 60.5 | 62.9 | 64.8 | 67.9 | 70.4 | 74.8 | 77.9 | 85.7 |
| | 39.3 | 51.2 | 60.1 | 65.5 | 69.4 | 72.6 | 75.2 | 79.5 | 82.9 | 89.3 | 94.0 | 106.2 |
| 2 j | 43.2 | 55.3 | 63.4 | 67.8 | 70.9 | 73.3 | 75.2 | 78.3 | 80.6 | 84.7 | 87.6 | 94.5 |
| | 49.8 | 64.4 | 75.2 | 81.7 | 86.5 | 90.2 | 93.4 | 98.5 | 102.5 | 110.2 | 115.8 | 130.0 |
| 3 j | 45.1 | 57.8 | 66.1 | 70.7 | 73.9 | 76.4 | 78.3 | 81.4 | 83.8 | 88.0 | 91.0 | 98.0 |
| | 53.1 | 68.6 | 79.8 | 86.5 | 91.4 | 95.2 | 98.4 | 103.6 | 107.6 | 115.2 | 120.8 | 134.7 |
| 4 j | 48.6 | 62.3 | 71.4 | 76.5 | 80.0 | 82.7 | 84.9 | 88.3 | 90.9 | 95.6 | 98.9 | 106.7 |
| | 57.7 | 74.0 | 85.4 | 92.2 | 97.0 | 100.9 | 104.0 | 109.1 | 113.1 | 120.6 | 126.0 | 139.5 |
| 5 j | 55.1 | 69.8 | 79.6 | 85.1 | 88.9 | 91.8 | 94.2 | 97.9 | 100.7 | 105.8 | 109.4 | 117.8 |
| | 65.5 | 82.9 | 95.0 | 102.0 | 107.0 | 111.0 | 114.3 | 119.5 | 123.6 | 131.2 | 136.7 | 150.4 |
| 7 j | 63.0 | 79.0 | 89.6 | 95.6 | 99.7 | 102.8 | 105.4 | 109.4 | 112.4 | 117.9 | 121.8 | 130.9 |
| | 75.3 | 94.1 | 106.9 | 114.3 | 119.5 | 123.6 | 127.0 | 132.4 | 136.6 | 144.3 | 149.9 | 163.6 |
| 10 j | 74.3 | 91.6 | 103.0 | 109.3 | 113.7 | 117.0 | 119.7 | 123.9 | 127.2 | 132.9 | 137.0 | 146.4 |
| | 89.6 | 110.7 | 124.9 | 133.0 | 138.7 | 143.1 | 146.7 | 152.5 | 157.0 | 165.2 | 171.1 | 185.5 |
| 15 j | 89.8 | 110.2 | 123.5 | 130.9 | 136.1 | 140.1 | 143.3 | 148.3 | 152.2 | 159.1 | 164.0 | 175.5 |
| | 108.6 | 133.1 | 149.2 | 158.2 | 164.5 | 169.4 | 173.3 | 179.5 | 184.3 | 192.9 | 199.1 | 213.8 |
| 20 j | 104.4 | 127.8 | 143.0 | 151.4 | 157.2 | 161.7 | 165.2 | 170.8 | 175.1 | 182.7 | 188.0 | 200.4 |
| | 126.7 | 155.3 | 174.0 | 184.4 | 191.6 | 197.2 | 201.7 | 208.8 | 214.3 | 224.2 | 231.2 | 248.0 |
| 25 j | 110.2 | 135.0 | 150.6 | 159.1 | 164.9 | 169.3 | 172.9 | 178.3 | 182.4 | 189.7 | 194.7 | 206.1 |
| | 135.0 | 165.8 | 185.9 | 197.2 | 205.1 | 211.1 | 216.1 | 223.8 | 229.9 | 240.7 | 248.5 | 267.1 |
| 30 j | 130.2 | 157.0 | 173.5 | 182.3 | 188.3 | 192.7 | 196.3 | 201.8 | 205.9 | 213.0 | 217.9 | 229.0 |
| | 157.8 | 191.1 | 212.9 | 225.3 | 233.9 | 240.6 | 246.0 | 254.6 | 261.2 | 273.3 | 281.8 | 302.4 |

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 | 133.4 | 0.4745 | 298.4 | 0.7246 | 53.8 | 0.5276 |
| 5 | 192.8 | 0.4776 | 458.2 | 0.7465 | 83.4 | 0.5507 |
| 10 | 235.9 | 0.4764 | 586.1 | 0.7591 | 110.1 | 0.5669 |
| 15 | 261.7 | 0.4749 | 667.2 | 0.7657 | 128.3 | 0.5762 |
| 20 | 280.3 | 0.4737 | 728.3 | 0.7703 | 142.6 | 0.5828 |
| 25 | 295.1 | 0.4726 | 777.8 | 0.7737 | 154.6 | 0.5879 |
| 30 | 307.3 | 0.4716 | 819.8 | 0.7764 | 164.9 | 0.5921 |
| 40 | 327.0 | 0.4700 | 889.0 | 0.7807 | 182.5 | 0.5987 |
| 50 | 342.6 | 0.4686 | 945.3 | 0.7839 | 197.3 | 0.6038 |
| 75 | 371.7 | 0.4660 | 1053.9 | 0.7897 | 226.7 | 0.6131 |
| 100 | 393.0 | 0.4640 | 1136.2 | 0.7938 | 250.0 | 0.6197 |
| 200 | 446.7 | 0.4588 | 1354.5 | 0.8034 | 315.1 | 0.6358 |

Références

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