# Statistiek van de extreme neerslag voor de Belgische gemeenten

## Boom (NIS 11005)

**1.** Geschatte neerslaghoeveelheid voor een neerslagduur van 10 minuten tot 30 dagen (rijen) en een terugkeerperiode van 2 tot 200 jaar (kolommen). Eenheid: mm.

| | Terugkeerperiode (jaren) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Duur** | **2** | **5** | **10** | **15** | **20** | **25** | **30** | **40** | **50** | **75** | **100** | **200** |
| **10 min** | 7.6 | 10.9 | 13.3 | 14.8 | 15.9 | 16.8 | 17.6 | 18.8 | 19.7 | 21.6 | 22.9 | 26.4 |
| **20 min** | 10.9 | 15.6 | 19.1 | 21.3 | 22.9 | 24.1 | 25.2 | 26.9 | 28.3 | 30.8 | 32.8 | 37.7 |
| **30 min** | 12.9 | 18.7 | 23.0 | 25.7 | 27.6 | 29.2 | 30.5 | 32.6 | 34.2 | 37.4 | 39.8 | 45.8 |
| **1 u** | 16.0 | 22.3 | 27.0 | 29.9 | 32.0 | 33.7 | 35.1 | 37.3 | 39.1 | 42.6 | 45.1 | 51.5 |
| **2 u** | 19.1 | 26.2 | 31.6 | 34.8 | 37.1 | 39.0 | 40.6 | 43.1 | 45.2 | 49.0 | 51.8 | 59.0 |
| **3 u** | 21.1 | 29.1 | 35.0 | 38.5 | 41.2 | 43.2 | 45.0 | 47.8 | 50.0 | 54.2 | 57.3 | 65.2 |
| **6 u** | 25.5 | 33.8 | 39.9 | 43.6 | 46.3 | 48.4 | 50.2 | 53.1 | 55.4 | 59.7 | 62.9 | 71.0 |
| **12 u** | 31.0 | 41.0 | 48.3 | 52.7 | 55.9 | 58.4 | 60.6 | 64.0 | 66.7 | 71.9 | 75.7 | 85.3 |
| **1 d** | 37.4 | 48.8 | 57.0 | 61.8 | 65.3 | 68.1 | 70.4 | 74.1 | 77.0 | 82.4 | 86.4 | 96.4 |
| **2 d** | 47.0 | 60.5 | 69.9 | 75.4 | 79.4 | 82.5 | 85.1 | 89.1 | 92.3 | 98.3 | 102.5 | 113.2 |
| **3 d** | 49.8 | 64.0 | 73.8 | 79.5 | 83.6 | 86.7 | 89.3 | 93.5 | 96.7 | 102.7 | 106.9 | 117.5 |
| **4 d** | 53.9 | 69.0 | 79.4 | 85.3 | 89.6 | 92.8 | 95.5 | 99.8 | 103.2 | 109.3 | 113.7 | 124.4 |
| **5 d** | 61.2 | 77.4 | 88.4 | 94.7 | 99.2 | 102.7 | 105.5 | 110.0 | 113.5 | 119.9 | 124.5 | 135.7 |
| **7 d** | 70.2 | 87.8 | 99.6 | 106.3 | 111.1 | 114.7 | 117.7 | 122.5 | 126.1 | 132.8 | 137.6 | 149.1 |
| **10 d** | 83.3 | 102.8 | 115.7 | 123.0 | 128.2 | 132.1 | 135.3 | 140.4 | 144.3 | 151.4 | 156.4 | 168.6 |
| **15 d** | 100.8 | 123.6 | 138.5 | 146.9 | 152.7 | 157.2 | 160.8 | 166.5 | 170.9 | 178.8 | 184.3 | 197.7 |
| **20 d** | 117.4 | 143.9 | 161.1 | 170.6 | 177.2 | 182.3 | 186.4 | 192.9 | 197.8 | 206.7 | 212.9 | 227.8 |
| **25 d** | 124.8 | 153.0 | 171.1 | 181.1 | 188.1 | 193.4 | 197.7 | 204.4 | 209.5 | 218.8 | 225.2 | 240.5 |
| **30 d** | 146.4 | 176.8 | 196.2 | 207.0 | 214.4 | 220.0 | 224.6 | 231.7 | 237.1 | 246.9 | 253.7 | 269.7 |

**2.** Geschatte neerslaghoeveelheid en standaardafwijking van deze schatting voor een neerslagduur van 10 minuten tot 30 dagen (rijen) en een terugkeerperiode van 2 tot 200 jaar (kolommen). Eenheid: mm.

| | **Terugkeerperiode (jaren)** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Duur** | **2** | **5** | **10** | **15** | **20** | **25** | **30** | **40** | **50** | **75** | **100** | **200** |
| **10 min** | 7.6 | 10.9 | 13.3 | 14.8 | 15.9 | 16.8 | 17.6 | 18.8 | 19.7 | 21.6 | 22.9 | 26.4 |
| | 0.2 | 0.3 | 0.5 | 0.7 | 0.8 | 0.9 | 1.0 | 1.2 | 1.4 | 1.7 | 1.9 | 2.7 |
| **20 min** | 10.9 | 15.6 | 19.1 | 21.3 | 22.9 | 24.1 | 25.2 | 26.9 | 28.3 | 30.8 | 32.8 | 37.7 |
| | 0.3 | 0.5 | 0.8 | 0.9 | 1.1 | 1.3 | 1.4 | 1.6 | 1.8 | 2.2 | 2.6 | 3.5 |
| **30 min** | 12.9 | 18.7 | 23.0 | 25.7 | 27.6 | 29.2 | 30.5 | 32.6 | 34.2 | 37.4 | 39.8 | 45.8 |
| | 0.4 | 0.6 | 0.8 | 1.0 | 1.2 | 1.3 | 1.4 | 1.7 | 1.8 | 2.2 | 2.5 | 3.3 |
| **1 u** | 16.0 | 22.3 | 27.0 | 29.9 | 32.0 | 33.7 | 35.1 | 37.3 | 39.1 | 42.6 | 45.1 | 51.5 |
| | 0.4 | 0.7 | 1.1 | 1.3 | 1.5 | 1.7 | 1.9 | 2.2 | 2.4 | 3.0 | 3.4 | 4.6 |
| **2 u** | 19.1 | 26.2 | 31.6 | 34.8 | 37.1 | 39.0 | 40.6 | 43.1 | 45.2 | 49.0 | 51.8 | 59.0 |
| | 0.5 | 0.9 | 1.2 | 1.5 | 1.8 | 2.0 | 2.1 | 2.5 | 2.8 | 3.3 | 3.8 | 5.1 |
| **3 u** | 21.1 | 29.1 | 35.0 | 38.5 | 41.2 | 43.2 | 45.0 | 47.8 | 50.0 | 54.2 | 57.3 | 65.2 |
| | 0.7 | 0.9 | 1.3 | 1.6 | 1.8 | 2.0 | 2.1 | 2.4 | 2.7 | 3.2 | 3.6 | 4.8 |
| **6 u** | 25.5 | 33.8 | 39.9 | 43.6 | 46.3 | 48.4 | 50.2 | 53.1 | 55.4 | 59.7 | 62.9 | 71.0 |
| | 0.8 | 1.0 | 1.4 | 1.7 | 2.0 | 2.3 | 2.5 | 2.9 | 3.3 | 4.0 | 4.6 | 6.3 |
| **12 u** | 31.0 | 41.0 | 48.3 | 52.7 | 55.9 | 58.4 | 60.6 | 64.0 | 66.7 | 71.9 | 75.7 | 85.3 |
| | 1.0 | 1.4 | 1.9 | 2.3 | 2.7 | 3.0 | 3.3 | 3.9 | 4.3 | 5.3 | 6.0 | 8.2 |
| **1 d** | 37.4 | 48.8 | 57.0 | 61.8 | 65.3 | 68.1 | 70.4 | 74.1 | 77.0 | 82.4 | 86.4 | 96.4 |
| | 1.4 | 1.6 | 1.9 | 2.2 | 2.4 | 2.6 | 2.7 | 3.0 | 3.3 | 3.8 | 4.2 | 5.3 |
| **2 d** | 47.0 | 60.5 | 69.9 | 75.4 | 79.4 | 82.5 | 85.1 | 89.1 | 92.3 | 98.3 | 102.5 | 113.2 |
| | 2.1 | 2.7 | 3.3 | 3.8 | 4.2 | 4.6 | 4.9 | 5.4 | 5.8 | 6.7 | 7.3 | 9.2 |
| **3 d** | 49.8 | 64.0 | 73.8 | 79.5 | 83.6 | 86.7 | 89.3 | 93.5 | 96.7 | 102.7 | 106.9 | 117.5 |
| | 2.5 | 3.3 | 4.0 | 4.5 | 4.9 | 5.2 | 5.5 | 6.0 | 6.5 | 7.3 | 7.9 | 9.7 |
| **4 d** | 53.9 | 69.0 | 79.4 | 85.3 | 89.6 | 92.8 | 95.5 | 99.8 | 103.2 | 109.3 | 113.7 | 124.4 |
| | 2.9 | 3.6 | 4.2 | 4.6 | 5.0 | 5.2 | 5.5 | 5.9 | 6.2 | 6.9 | 7.4 | 8.9 |
| **5 d** | 61.2 | 77.4 | 88.4 | 94.7 | 99.2 | 102.7 | 105.5 | 110.0 | 113.5 | 119.9 | 124.5 | 135.7 |
| | 3.3 | 4.1 | 4.7 | 5.1 | 5.5 | 5.7 | 5.9 | 6.3 | 6.6 | 7.3 | 7.8 | 9.1 |
| **7 d** | 70.2 | 87.8 | 99.6 | 106.3 | 111.1 | 114.7 | 117.7 | 122.5 | 126.1 | 132.8 | 137.6 | 149.1 |
| | 4.0 | 4.8 | 5.4 | 5.8 | 6.1 | 6.4 | 6.6 | 6.9 | 7.2 | 7.8 | 8.2 | 9.3 |
| **10 d** | 83.3 | 102.8 | 115.7 | 123.0 | 128.2 | 132.1 | 135.3 | 140.4 | 144.3 | 151.4 | 156.4 | 168.6 |
| | 5.0 | 6.2 | 7.0 | 7.6 | 7.9 | 8.2 | 8.5 | 8.9 | 9.2 | 9.9 | 10.4 | 11.7 |
| **15 d** | 100.8 | 123.6 | 138.5 | 146.9 | 152.7 | 157.2 | 160.8 | 166.5 | 170.9 | 178.8 | 184.3 | 197.7 |
| | 6.2 | 7.5 | 8.4 | 8.8 | 9.2 | 9.5 | 9.7 | 10.0 | 10.3 | 10.8 | 11.2 | 12.1 |
| **20 d** | 117.4 | 143.9 | 161.1 | 170.6 | 177.2 | 182.3 | 186.4 | 192.9 | 197.8 | 206.7 | 212.9 | 227.8 |
| | 7.3 | 8.9 | 10.0 | 10.6 | 11.0 | 11.4 | 11.6 | 12.1 | 12.4 | 13.1 | 13.6 | 14.8 |
| **25 d** | 124.8 | 153.0 | 171.1 | 181.1 | 188.1 | 193.4 | 197.7 | 204.4 | 209.5 | 218.8 | 225.2 | 240.5 |
| | 8.2 | 10.0 | 11.2 | 12.0 | 12.6 | 13.0 | 13.4 | 14.0 | 14.5 | 15.5 | 16.2 | 18.0 |
| **30 d** | 146.4 | 176.8 | 196.2 | 207.0 | 214.4 | 220.0 | 224.6 | 231.7 | 237.1 | 246.9 | 253.7 | 269.7 |
| | 9.0 | 10.9 | 12.4 | 13.3 | 14.0 | 14.5 | 15.0 | 15.8 | 16.4 | 17.6 | 18.5 | 20.9 |

**3.** 95%-betrouwbaarheidsinterval van de geschatte neerslaghoeveelheid voor een neerslagduur van 10 minuten tot 30 dagen (rijen) en een terugkeerperiode van 2 tot 200 jaar (kolommen). Eenheid: mm.

| | **Terugkeerperiode (jaren)** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Duur** | **2** | **5** | **10** | **15** | **20** | **25** | **30** | **40** | **50** | **75** | **100** | **200** |
| **10 min** | 7.2 | 10.2 | 12.3 | 13.5 | 14.4 | 15.0 | 15.6 | 16.4 | 17.1 | 18.3 | 19.1 | 21.2 |
| | 8.0 | 11.5 | 14.4 | 16.2 | 17.5 | 18.6 | 19.6 | 21.1 | 22.4 | 24.8 | 26.7 | 31.6 |
| **20 min** | 10.2 | 14.6 | 17.6 | 19.4 | 20.7 | 21.7 | 22.4 | 23.7 | 24.7 | 26.5 | 27.7 | 30.8 |
| | 11.5 | 16.6 | 20.6 | 23.1 | 25.0 | 26.6 | 27.9 | 30.1 | 31.8 | 35.2 | 37.8 | 44.6 |
| **30 min** | 12.1 | 17.5 | 21.4 | 23.7 | 25.3 | 26.6 | 27.6 | 29.3 | 30.7 | 33.1 | 34.9 | 39.3 |
| | 13.6 | 19.9 | 24.7 | 27.7 | 30.0 | 31.8 | 33.3 | 35.8 | 37.8 | 41.7 | 44.6 | 52.2 |
| **1 u** | 15.1 | 20.9 | 24.9 | 27.3 | 29.0 | 30.3 | 31.4 | 33.1 | 34.4 | 36.8 | 38.5 | 42.6 |
| | 16.8 | 23.7 | 29.1 | 32.5 | 35.0 | 37.0 | 38.8 | 41.6 | 43.9 | 48.3 | 51.7 | 60.5 |
| **2 u** | 18.0 | 24.5 | 29.2 | 31.8 | 33.7 | 35.2 | 36.4 | 38.3 | 39.8 | 42.4 | 44.3 | 48.9 |
| | 20.1 | 27.9 | 34.0 | 37.7 | 40.6 | 42.9 | 44.8 | 48.0 | 50.6 | 55.5 | 59.2 | 69.0 |
| **3 u** | 19.9 | 27.2 | 32.5 | 35.5 | 37.7 | 39.4 | 40.8 | 43.0 | 44.7 | 47.9 | 50.1 | 55.7 |
| | 22.4 | 30.9 | 37.5 | 41.6 | 44.6 | 47.1 | 49.2 | 52.5 | 55.3 | 60.5 | 64.4 | 74.7 |
| **6 u** | 24.0 | 31.8 | 37.2 | 40.2 | 42.3 | 44.0 | 45.3 | 47.4 | 49.0 | 51.8 | 53.9 | 58.6 |
| | 27.0 | 35.8 | 42.6 | 47.0 | 50.2 | 52.9 | 55.1 | 58.8 | 61.8 | 67.6 | 71.9 | 83.4 |
| **12 u** | 29.0 | 38.2 | 44.6 | 48.1 | 50.6 | 52.5 | 54.0 | 56.4 | 58.3 | 61.5 | 63.8 | 69.1 |
| | 33.1 | 43.7 | 52.0 | 57.2 | 61.2 | 64.4 | 67.1 | 71.6 | 75.2 | 82.2 | 87.5 | 101.4 |
| **1 d** | 34.8 | 45.6 | 53.2 | 57.5 | 60.6 | 63.1 | 65.0 | 68.2 | 70.6 | 75.1 | 78.2 | 86.0 |
| | 40.1 | 52.0 | 60.8 | 66.1 | 70.0 | 73.2 | 75.8 | 80.0 | 83.4 | 89.8 | 94.6 | 106.7 |
| **2 d** | 43.0 | 55.3 | 63.4 | 68.0 | 71.2 | 73.6 | 75.5 | 78.6 | 81.0 | 85.2 | 88.2 | 95.1 |
| | 51.1 | 65.7 | 76.4 | 82.9 | 87.6 | 91.4 | 94.6 | 99.6 | 103.7 | 111.3 | 116.9 | 131.2 |
| **3 d** | 44.8 | 57.6 | 66.0 | 70.7 | 74.0 | 76.5 | 78.5 | 81.6 | 84.1 | 88.4 | 91.4 | 98.5 |
| | 54.8 | 70.3 | 81.6 | 88.3 | 93.1 | 97.0 | 100.2 | 105.3 | 109.4 | 116.9 | 122.5 | 136.5 |
| **4 d** | 48.2 | 62.0 | 71.1 | 76.3 | 79.9 | 82.6 | 84.8 | 88.3 | 91.0 | 95.8 | 99.1 | 107.1 |
| | 59.7 | 76.1 | 87.6 | 94.4 | 99.3 | 103.1 | 106.3 | 111.4 | 115.4 | 122.8 | 128.2 | 141.8 |
| **5 d** | 54.6 | 69.3 | 79.1 | 84.7 | 88.5 | 91.5 | 93.9 | 97.6 | 100.5 | 105.7 | 109.3 | 117.9 |
| | 67.7 | 85.4 | 97.7 | 104.8 | 109.9 | 113.9 | 117.2 | 122.4 | 126.6 | 134.2 | 139.7 | 153.5 |
| **7 d** | 62.3 | 78.3 | 89.0 | 94.9 | 99.1 | 102.3 | 104.9 | 108.9 | 112.0 | 117.6 | 121.5 | 130.8 |
| | 78.1 | 97.2 | 110.2 | 117.7 | 123.0 | 127.2 | 130.6 | 136.0 | 140.2 | 148.0 | 153.6 | 167.4 |
| **10 d** | 73.5 | 90.6 | 101.9 | 108.2 | 112.6 | 116.0 | 118.7 | 123.0 | 126.2 | 132.0 | 136.1 | 145.7 |
| | 93.2 | 115.0 | 129.5 | 137.8 | 143.7 | 148.3 | 152.0 | 157.8 | 162.4 | 170.8 | 176.8 | 191.4 |
| **15 d** | 88.7 | 108.9 | 122.1 | 129.5 | 134.7 | 138.6 | 141.8 | 146.8 | 150.7 | 157.6 | 162.5 | 174.0 |
| | 113.0 | 138.3 | 154.9 | 164.2 | 170.7 | 175.7 | 179.7 | 186.1 | 191.0 | 199.9 | 206.2 | 221.4 |
| **20 d** | 103.1 | 126.4 | 141.5 | 149.9 | 155.6 | 160.1 | 163.6 | 169.2 | 173.5 | 181.1 | 186.4 | 198.8 |
| | 131.7 | 161.4 | 180.6 | 191.4 | 198.9 | 204.6 | 209.3 | 216.5 | 222.2 | 232.3 | 239.5 | 256.7 |
| **25 d** | 108.8 | 133.4 | 149.1 | 157.6 | 163.4 | 167.9 | 171.4 | 176.9 | 181.1 | 188.4 | 193.5 | 205.2 |
| | 140.8 | 172.5 | 193.1 | 204.7 | 212.7 | 218.9 | 224.0 | 231.9 | 238.0 | 249.1 | 256.9 | 275.8 |
| **30 d** | 128.7 | 155.4 | 172.0 | 181.0 | 187.0 | 191.6 | 195.2 | 200.8 | 205.0 | 212.3 | 217.3 | 228.7 |
| | 164.1 | 198.2 | 220.4 | 233.0 | 241.7 | 248.5 | 253.9 | 262.6 | 269.3 | 281.4 | 290.0 | 310.7 |

**4.** Schatting van de coefficienten van Montana.
Formule van Montana : intensiteit[mm/h] = $a$ . duur[min]$^{-b}$ voor verschillende tijdsduren
$a_1$, $b_1$ : duur $<$ 25 min
$a_2$, $b_2$ : duur tussen 25 min en 6000 min (= 100 h)
$a_3$, $b_3$ : duur $>$ 6000 min (= 100 h)

| Terugkeerperiode (jaren) | $a_1$ | $b_1$ | $a_2$ | $b_2$ | $a_3$ | $b_3$ |
|---|---|---|---|---|---|---|
| 2 | 131.6 | 0.4630 | 307.2 | 0.7263 | 53.7 | 0.5259 |
| 5 | 189.4 | 0.4642 | 473.6 | 0.7490 | 82.3 | 0.5479 |
| 10 | 231.3 | 0.4622 | 606.8 | 0.7618 | 108.1 | 0.5635 |
| 15 | 256.3 | 0.4604 | 691.3 | 0.7686 | 125.6 | 0.5726 |
| 20 | 274.5 | 0.4589 | 754.9 | 0.7732 | 139.3 | 0.5790 |
| 25 | 288.8 | 0.4577 | 806.5 | 0.7767 | 150.8 | 0.5840 |
| 30 | 300.7 | 0.4566 | 850.2 | 0.7795 | 160.8 | 0.5881 |
| 40 | 319.8 | 0.4548 | 922.3 | 0.7838 | 177.7 | 0.5945 |
| 50 | 335.0 | 0.4533 | 981.0 | 0.7871 | 191.8 | 0.5996 |
| 75 | 363.3 | 0.4505 | 1094.2 | 0.7930 | 220.1 | 0.6087 |
| 100 | 384.0 | 0.4484 | 1180.0 | 0.7971 | 242.4 | 0.6152 |
| 200 | 436.2 | 0.4429 | 1407.6 | 0.8069 | 304.9 | 0.6310 |

## Referenties

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