



Statistiek van de extreme neerslag voor de Belgische gemeenten

Grez-Doiceau (NIS 25037)

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

| Duur | Terugkeerperiode (jaren) | | | | | | | | | | | |
|--------|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 2 | 5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 75 | 100 | 200 |
| 10 min | 7.5 | 10.7 | 13.2 | 14.7 | 15.8 | 16.6 | 17.4 | 18.5 | 19.5 | 21.3 | 22.6 | 26.1 |
| 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 u | 15.7 | 21.8 | 26.4 | 29.1 | 31.2 | 32.8 | 34.1 | 36.3 | 38.1 | 41.4 | 43.8 | 50.1 |
| 2 u | 18.7 | 25.6 | 30.7 | 33.8 | 36.1 | 37.9 | 39.5 | 41.9 | 43.9 | 47.6 | 50.3 | 57.2 |
| 3 u | 20.7 | 28.4 | 34.2 | 37.7 | 40.2 | 42.3 | 44.0 | 46.7 | 48.9 | 53.0 | 56.0 | 63.7 |
| 6 u | 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 u | 30.2 | 40.1 | 47.4 | 51.8 | 55.0 | 57.5 | 59.6 | 63.0 | 65.8 | 70.9 | 74.6 | 84.2 |
| 1 d | 36.4 | 47.7 | 55.8 | 60.6 | 64.1 | 66.9 | 69.2 | 72.8 | 75.7 | 81.1 | 85.1 | 95.0 |
| 2 d | 45.3 | 58.6 | 67.8 | 73.3 | 77.2 | 80.2 | 82.7 | 86.7 | 89.9 | 95.7 | 99.9 | 110.3 |
| 3 d | 47.7 | 61.6 | 71.2 | 76.7 | 80.7 | 83.8 | 86.3 | 90.4 | 93.5 | 99.4 | 103.5 | 113.8 |
| 4 d | 51.6 | 66.2 | 76.3 | 82.1 | 86.2 | 89.5 | 92.1 | 96.2 | 99.5 | 105.5 | 109.7 | 120.2 |
| 5 d | 58.4 | 74.1 | 84.8 | 90.9 | 95.3 | 98.6 | 101.4 | 105.7 | 109.1 | 115.3 | 119.8 | 130.6 |
| 7 d | 66.9 | 83.9 | 95.3 | 101.8 | 106.4 | 109.9 | 112.8 | 117.4 | 121.0 | 127.4 | 132.0 | 143.2 |
| 10 d | 79.1 | 97.7 | 110.0 | 116.9 | 121.8 | 125.6 | 128.7 | 133.5 | 137.2 | 144.0 | 148.8 | 160.3 |
| 15 d | 95.6 | 117.4 | 131.6 | 139.6 | 145.1 | 149.4 | 152.9 | 158.3 | 162.5 | 170.0 | 175.4 | 188.1 |
| 20 d | 111.4 | 136.6 | 152.9 | 162.0 | 168.3 | 173.1 | 177.0 | 183.2 | 187.9 | 196.3 | 202.3 | 216.4 |
| 25 d | 118.0 | 144.8 | 162.1 | 171.7 | 178.3 | 183.3 | 187.4 | 193.8 | 198.7 | 207.5 | 213.6 | 228.2 |
| 30 d | 138.8 | 168.0 | 186.6 | 196.9 | 204.0 | 209.4 | 213.8 | 220.6 | 225.8 | 235.1 | 241.6 | 257.0 |

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.

| Duur | Terugkeerperiode (jaren) | | | | | | | | | | | |
|--------|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 2 | 5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 75 | 100 | 200 |
| 10 min | 7.5 | 10.7 | 13.2 | 14.7 | 15.8 | 16.6 | 17.4 | 18.5 | 19.5 | 21.3 | 22.6 | 26.1 |
| | 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 | 1.8 | 2.1 | 2.5 | 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 u | 15.7 | 21.8 | 26.4 | 29.1 | 31.2 | 32.8 | 34.1 | 36.3 | 38.1 | 41.4 | 43.8 | 50.1 |
| | 0.4 | 0.8 | 1.1 | 1.4 | 1.6 | 1.8 | 1.9 | 2.2 | 2.5 | 3.0 | 3.4 | 4.6 |
| 2 u | 18.7 | 25.6 | 30.7 | 33.8 | 36.1 | 37.9 | 39.5 | 41.9 | 43.9 | 47.6 | 50.3 | 57.2 |
| | 0.5 | 0.9 | 1.3 | 1.6 | 1.8 | 2.0 | 2.2 | 2.5 | 2.8 | 3.4 | 3.8 | 5.1 |
| 3 u | 20.7 | 28.4 | 34.2 | 37.7 | 40.2 | 42.3 | 44.0 | 46.7 | 48.9 | 53.0 | 56.0 | 63.7 |
| | 0.7 | 1.0 | 1.3 | 1.6 | 1.9 | 2.1 | 2.2 | 2.5 | 2.8 | 3.3 | 3.8 | 5.0 |
| 6 u | 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 u | 30.2 | 40.1 | 47.4 | 51.8 | 55.0 | 57.5 | 59.6 | 63.0 | 65.8 | 70.9 | 74.6 | 84.2 |
| | 1.1 | 1.5 | 2.0 | 2.4 | 2.8 | 3.1 | 3.4 | 3.9 | 4.4 | 5.3 | 6.1 | 8.3 |
| 1 d | 36.4 | 47.7 | 55.8 | 60.6 | 64.1 | 66.9 | 69.2 | 72.8 | 75.7 | 81.1 | 85.1 | 95.0 |
| | 1.2 | 1.5 | 1.8 | 2.1 | 2.4 | 2.6 | 2.7 | 3.0 | 3.3 | 3.8 | 4.2 | 5.4 |
| 2 d | 45.3 | 58.6 | 67.8 | 73.3 | 77.2 | 80.2 | 82.7 | 86.7 | 89.9 | 95.7 | 99.9 | 110.3 |
| | 1.7 | 2.4 | 3.1 | 3.7 | 4.1 | 4.5 | 4.8 | 5.3 | 5.8 | 6.7 | 7.4 | 9.3 |
| 3 d | 47.7 | 61.6 | 71.2 | 76.7 | 80.7 | 83.8 | 86.3 | 90.4 | 93.5 | 99.4 | 103.5 | 113.8 |
| | 2.1 | 2.8 | 3.6 | 4.2 | 4.6 | 5.0 | 5.3 | 5.8 | 6.2 | 7.1 | 7.8 | 9.6 |
| 4 d | 51.6 | 66.2 | 76.3 | 82.1 | 86.2 | 89.5 | 92.1 | 96.2 | 99.5 | 105.5 | 109.7 | 120.2 |
| | 2.4 | 3.0 | 3.7 | 4.1 | 4.5 | 4.8 | 5.0 | 5.4 | 5.8 | 6.5 | 7.1 | 8.5 |
| 5 d | 58.4 | 74.1 | 84.8 | 90.9 | 95.3 | 98.6 | 101.4 | 105.7 | 109.1 | 115.3 | 119.8 | 130.6 |
| | 2.7 | 3.4 | 4.0 | 4.4 | 4.7 | 5.0 | 5.2 | 5.6 | 6.0 | 6.6 | 7.1 | 8.4 |
| 7 d | 66.9 | 83.9 | 95.3 | 101.8 | 106.4 | 109.9 | 112.8 | 117.4 | 121.0 | 127.4 | 132.0 | 143.2 |
| | 3.2 | 3.9 | 4.5 | 4.9 | 5.2 | 5.5 | 5.7 | 6.1 | 6.3 | 6.9 | 7.4 | 8.6 |
| 10 d | 79.1 | 97.7 | 110.0 | 116.9 | 121.8 | 125.6 | 128.7 | 133.5 | 137.2 | 144.0 | 148.8 | 160.3 |
| | 4.0 | 5.0 | 5.7 | 6.2 | 6.5 | 6.8 | 7.1 | 7.5 | 7.8 | 8.4 | 8.9 | 10.2 |
| 15 d | 95.6 | 117.4 | 131.6 | 139.6 | 145.1 | 149.4 | 152.9 | 158.3 | 162.5 | 170.0 | 175.4 | 188.1 |
| | 4.9 | 6.0 | 6.7 | 7.1 | 7.4 | 7.7 | 7.8 | 8.2 | 8.4 | 8.8 | 9.2 | 10.0 |
| 20 d | 111.4 | 136.6 | 152.9 | 162.0 | 168.3 | 173.1 | 177.0 | 183.2 | 187.9 | 196.3 | 202.3 | 216.4 |
| | 5.8 | 7.2 | 8.1 | 8.6 | 9.0 | 9.3 | 9.5 | 9.9 | 10.3 | 10.9 | 11.3 | 12.5 |
| 25 d | 118.0 | 144.8 | 162.1 | 171.7 | 178.3 | 183.3 | 187.4 | 193.8 | 198.7 | 207.5 | 213.6 | 228.2 |
| | 6.5 | 8.0 | 9.2 | 9.9 | 10.4 | 10.8 | 11.2 | 11.8 | 12.3 | 13.2 | 13.9 | 15.7 |
| 30 d | 138.8 | 168.0 | 186.6 | 196.9 | 204.0 | 209.4 | 213.8 | 220.6 | 225.8 | 235.1 | 241.6 | 257.0 |
| | 7.2 | 8.9 | 10.3 | 11.2 | 11.8 | 12.4 | 12.9 | 13.7 | 14.3 | 15.5 | 16.5 | 18.9 |

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.

| Duur | Terugkeerperiode (jaren) | | | | | | | | | | | |
|--------|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 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 | 18.1 | 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 | 17.2 | 19.0 | 20.2 | 21.2 | 21.9 | 23.2 | 24.1 | 25.9 | 27.1 | 30.1 |
| | 11.3 | 16.3 | 20.1 | 22.6 | 24.4 | 25.9 | 27.2 | 29.3 | 31.0 | 34.3 | 36.8 | 43.3 |
| 30 min | 11.8 | 17.1 | 20.9 | 23.1 | 24.7 | 25.9 | 26.9 | 28.6 | 29.9 | 32.2 | 34.0 | 38.3 |
| | 13.4 | 19.6 | 24.4 | 27.4 | 29.6 | 31.4 | 32.9 | 35.4 | 37.4 | 41.2 | 44.1 | 51.6 |
| 1 u | 14.8 | 20.3 | 24.2 | 26.5 | 28.1 | 29.3 | 30.3 | 32.0 | 33.2 | 35.5 | 37.1 | 41.1 |
| | 16.5 | 23.3 | 28.5 | 31.8 | 34.3 | 36.3 | 37.9 | 40.7 | 42.9 | 47.3 | 50.5 | 59.0 |
| 2 u | 17.6 | 23.8 | 28.3 | 30.8 | 32.6 | 34.0 | 35.2 | 37.0 | 38.4 | 40.9 | 42.8 | 47.2 |
| | 19.7 | 27.3 | 33.2 | 36.9 | 39.6 | 41.9 | 43.8 | 46.8 | 49.3 | 54.2 | 57.8 | 67.3 |
| 3 u | 19.4 | 26.5 | 31.6 | 34.5 | 36.6 | 38.2 | 39.6 | 41.7 | 43.4 | 46.4 | 48.6 | 54.0 |
| | 22.0 | 30.4 | 36.8 | 40.9 | 43.9 | 46.3 | 48.3 | 51.7 | 54.4 | 59.5 | 63.4 | 73.5 |
| 6 u | 23.4 | 31.0 | 36.3 | 39.3 | 41.4 | 43.0 | 44.3 | 46.3 | 47.9 | 50.8 | 52.8 | 57.5 |
| | 26.5 | 35.3 | 42.1 | 46.5 | 49.7 | 52.3 | 54.6 | 58.3 | 61.2 | 67.0 | 71.3 | 82.7 |
| 12 u | 28.1 | 37.2 | 43.5 | 47.1 | 49.5 | 51.4 | 53.0 | 55.3 | 57.2 | 60.4 | 62.7 | 68.0 |
| | 32.3 | 42.9 | 51.2 | 56.5 | 60.4 | 63.6 | 66.3 | 70.7 | 74.4 | 81.3 | 86.6 | 100.5 |
| 1 d | 34.1 | 44.8 | 52.2 | 56.5 | 59.5 | 61.9 | 63.8 | 66.9 | 69.3 | 73.7 | 76.8 | 84.5 |
| | 38.6 | 50.6 | 59.4 | 64.8 | 68.8 | 71.9 | 74.5 | 78.8 | 82.2 | 88.6 | 93.4 | 105.5 |
| 2 d | 41.9 | 53.9 | 61.7 | 66.1 | 69.1 | 71.5 | 73.3 | 76.3 | 78.5 | 82.6 | 85.4 | 92.2 |
| | 48.7 | 63.2 | 74.0 | 80.4 | 85.2 | 89.0 | 92.1 | 97.2 | 101.2 | 108.8 | 114.4 | 128.5 |
| 3 d | 43.6 | 56.0 | 64.1 | 68.6 | 71.7 | 74.1 | 76.0 | 79.0 | 81.3 | 85.4 | 88.3 | 95.1 |
| | 51.8 | 67.1 | 78.2 | 84.9 | 89.7 | 93.5 | 96.7 | 101.7 | 105.8 | 113.3 | 118.8 | 132.6 |
| 4 d | 46.9 | 60.3 | 69.1 | 74.0 | 77.5 | 80.1 | 82.2 | 85.6 | 88.1 | 92.7 | 95.9 | 103.5 |
| | 56.2 | 72.2 | 83.5 | 90.2 | 95.0 | 98.8 | 101.9 | 106.9 | 110.9 | 118.2 | 123.6 | 136.9 |
| 5 d | 53.1 | 67.4 | 76.9 | 82.3 | 86.0 | 88.8 | 91.1 | 94.7 | 97.5 | 102.4 | 105.9 | 114.1 |
| | 63.8 | 80.8 | 92.7 | 99.6 | 104.6 | 108.4 | 111.6 | 116.8 | 120.8 | 128.3 | 133.7 | 147.1 |
| 7 d | 60.5 | 76.1 | 86.4 | 92.2 | 96.2 | 99.2 | 101.7 | 105.6 | 108.5 | 113.8 | 117.6 | 126.4 |
| | 73.2 | 91.6 | 104.2 | 111.5 | 116.6 | 120.7 | 124.0 | 129.3 | 133.4 | 141.0 | 146.5 | 160.0 |
| 10 d | 71.3 | 87.9 | 98.8 | 104.8 | 109.0 | 112.2 | 114.8 | 118.8 | 121.9 | 127.5 | 131.3 | 140.4 |
| | 86.9 | 107.4 | 121.2 | 129.1 | 134.6 | 139.0 | 142.5 | 148.1 | 152.5 | 160.5 | 166.2 | 180.2 |
| 15 d | 86.0 | 105.6 | 118.4 | 125.6 | 130.6 | 134.4 | 137.5 | 142.3 | 146.0 | 152.7 | 157.4 | 168.4 |
| | 105.3 | 129.1 | 144.8 | 153.6 | 159.7 | 164.4 | 168.3 | 174.3 | 178.9 | 187.4 | 193.3 | 207.7 |
| 20 d | 100.0 | 122.5 | 137.0 | 145.1 | 150.7 | 154.9 | 158.3 | 163.7 | 167.7 | 175.0 | 180.1 | 192.0 |
| | 122.7 | 150.6 | 168.7 | 178.9 | 185.9 | 191.4 | 195.8 | 202.7 | 208.0 | 217.6 | 224.4 | 240.8 |
| 25 d | 105.3 | 129.1 | 144.1 | 152.3 | 157.9 | 162.1 | 165.5 | 170.7 | 174.6 | 181.6 | 186.4 | 197.4 |
| | 130.6 | 160.5 | 180.1 | 191.0 | 198.7 | 204.6 | 209.4 | 216.9 | 222.8 | 233.4 | 240.9 | 259.0 |
| 30 d | 124.7 | 150.6 | 166.5 | 175.0 | 180.8 | 185.1 | 188.5 | 193.8 | 197.7 | 204.7 | 209.3 | 220.0 |
| | 152.9 | 185.4 | 206.7 | 218.7 | 227.2 | 233.7 | 239.0 | 247.3 | 253.8 | 265.6 | 273.9 | 294.0 |

4. Schatting van de coëfficiënten van Montana.

Formule van Montana : intensiteit[mm/h] = $a \cdot \text{duur}[\text{min}]^{-b}$ 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 | 129.8 | 0.4633 | 307.7 | 0.7313 | 54.9 | 0.5333 |
| 5 | 188.0 | 0.4672 | 471.4 | 0.7527 | 86.3 | 0.5576 |
| 10 | 230.3 | 0.4663 | 602.2 | 0.7650 | 114.6 | 0.5743 |
| 15 | 255.5 | 0.4651 | 685.2 | 0.7715 | 133.9 | 0.5838 |
| 20 | 273.8 | 0.4639 | 747.6 | 0.7760 | 149.0 | 0.5906 |
| 25 | 288.3 | 0.4629 | 798.3 | 0.7793 | 161.7 | 0.5958 |
| 30 | 300.3 | 0.4620 | 841.2 | 0.7820 | 172.7 | 0.6000 |
| 40 | 319.6 | 0.4604 | 911.9 | 0.7862 | 191.4 | 0.6068 |
| 50 | 334.9 | 0.4592 | 969.5 | 0.7894 | 207.1 | 0.6120 |
| 75 | 363.4 | 0.4566 | 1080.5 | 0.7951 | 238.4 | 0.6214 |
| 100 | 384.3 | 0.4547 | 1164.6 | 0.7991 | 263.1 | 0.6281 |
| 200 | 437.0 | 0.4497 | 1387.7 | 0.8086 | 332.4 | 0.6444 |

Referenties

Van de Vyver, H. (2012). Spatial regression models for extreme precipitation in Belgium, *Water Resour. Res.*, 48, W09549, doi :10.1029/2011WR011707.

Van de Vyver, H. (2013). Practical return level mapping for extreme precipitation in Belgium, RMI scientific and technical publication 062, 30 pages.

Disclaimer

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Zo niet, dan zijn de rechtbanken van het arrondissement Brussel bevoegd.