



# Statistiek van de extreme neerslag voor de Belgische gemeenten

Musson (NIS 85026)

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 | 8.1                      | 11.6  | 14.2  | 15.8  | 17.0  | 17.9  | 18.7  | 20.0  | 21.0  | 22.9  | 24.4  | 28.0  |
| 20 min | 12.0                     | 17.4  | 21.4  | 23.9  | 25.7  | 27.2  | 28.4  | 30.3  | 31.9  | 34.8  | 37.0  | 42.6  |
| 30 min | 14.1                     | 20.5  | 25.3  | 28.2  | 30.3  | 32.0  | 33.4  | 35.7  | 37.5  | 41.0  | 43.6  | 50.2  |
| 1 u    | 17.6                     | 25.0  | 30.5  | 33.9  | 36.4  | 38.3  | 40.0  | 42.7  | 44.8  | 48.8  | 51.7  | 59.3  |
| 2 u    | 21.3                     | 29.7  | 36.0  | 39.8  | 42.6  | 44.8  | 46.6  | 49.6  | 52.0  | 56.5  | 59.8  | 68.3  |
| 3 u    | 23.6                     | 32.5  | 39.1  | 43.1  | 46.0  | 48.4  | 50.3  | 53.4  | 55.9  | 60.6  | 64.1  | 73.0  |
| 6 u    | 28.7                     | 37.2  | 43.6  | 47.4  | 50.2  | 52.4  | 54.3  | 57.3  | 59.6  | 64.1  | 67.4  | 75.9  |
| 12 u   | 35.5                     | 45.6  | 53.1  | 57.6  | 60.9  | 63.5  | 65.6  | 69.1  | 71.9  | 77.2  | 81.0  | 90.8  |
| 1 d    | 44.1                     | 55.8  | 64.3  | 69.3  | 72.9  | 75.8  | 78.2  | 82.0  | 85.0  | 90.6  | 94.7  | 105.0 |
| 2 d    | 57.8                     | 72.6  | 83.1  | 89.2  | 93.6  | 97.0  | 99.8  | 104.3 | 107.9 | 114.4 | 119.1 | 130.9 |
| 3 d    | 62.8                     | 79.1  | 90.4  | 96.9  | 101.6 | 105.2 | 108.2 | 113.0 | 116.7 | 123.5 | 128.4 | 140.6 |
| 4 d    | 68.9                     | 86.5  | 98.6  | 105.5 | 110.4 | 114.3 | 117.4 | 122.4 | 126.3 | 133.4 | 138.5 | 151.1 |
| 5 d    | 78.4                     | 97.9  | 111.1 | 118.7 | 124.1 | 128.3 | 131.7 | 137.1 | 141.3 | 149.1 | 154.6 | 168.0 |
| 7 d    | 91.4                     | 112.5 | 126.7 | 134.8 | 140.5 | 145.0 | 148.6 | 154.2 | 158.7 | 166.7 | 172.4 | 186.3 |
| 10 d   | 109.9                    | 135.2 | 152.0 | 161.5 | 168.2 | 173.3 | 177.5 | 184.1 | 189.2 | 198.4 | 204.9 | 220.7 |
| 15 d   | 133.6                    | 162.9 | 182.1 | 192.8 | 200.3 | 206.0 | 210.7 | 218.0 | 223.7 | 233.8 | 241.0 | 258.1 |
| 20 d   | 155.7                    | 190.2 | 212.6 | 225.0 | 233.7 | 240.3 | 245.7 | 254.1 | 260.5 | 272.1 | 280.2 | 299.6 |
| 25 d   | 167.8                    | 204.4 | 227.9 | 240.9 | 250.0 | 256.9 | 262.4 | 271.1 | 277.8 | 289.8 | 298.1 | 318.0 |
| 30 d   | 194.0                    | 232.4 | 256.9 | 270.5 | 279.9 | 287.0 | 292.8 | 301.7 | 308.6 | 320.9 | 329.5 | 349.8 |

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 | 8.1                      | 11.6  | 14.2  | 15.8  | 17.0  | 17.9  | 18.7  | 20.0  | 21.0  | 22.9  | 24.4  | 28.0  |
|        | 0.3                      | 0.5   | 0.7   | 0.9   | 1.0   | 1.2   | 1.3   | 1.5   | 1.6   | 2.0   | 2.3   | 3.1   |
| 20 min | 12.0                     | 17.4  | 21.4  | 23.9  | 25.7  | 27.2  | 28.4  | 30.3  | 31.9  | 34.8  | 37.0  | 42.6  |
|        | 0.5                      | 0.9   | 1.2   | 1.5   | 1.8   | 2.0   | 2.1   | 2.4   | 2.7   | 3.2   | 3.6   | 4.8   |
| 30 min | 14.1                     | 20.5  | 25.3  | 28.2  | 30.3  | 32.0  | 33.4  | 35.7  | 37.5  | 41.0  | 43.6  | 50.2  |
|        | 0.6                      | 0.9   | 1.1   | 1.3   | 1.4   | 1.6   | 1.7   | 1.9   | 2.0   | 2.4   | 2.6   | 3.4   |
| 1 u    | 17.6                     | 25.0  | 30.5  | 33.9  | 36.4  | 38.3  | 40.0  | 42.7  | 44.8  | 48.8  | 51.7  | 59.3  |
|        | 0.7                      | 1.1   | 1.5   | 1.8   | 2.1   | 2.3   | 2.5   | 2.8   | 3.1   | 3.6   | 4.1   | 5.4   |
| 2 u    | 21.3                     | 29.7  | 36.0  | 39.8  | 42.6  | 44.8  | 46.6  | 49.6  | 52.0  | 56.5  | 59.8  | 68.3  |
|        | 0.9                      | 1.3   | 1.8   | 2.1   | 2.4   | 2.6   | 2.8   | 3.2   | 3.5   | 4.1   | 4.6   | 6.1   |
| 3 u    | 23.6                     | 32.5  | 39.1  | 43.1  | 46.0  | 48.4  | 50.3  | 53.4  | 55.9  | 60.6  | 64.1  | 73.0  |
|        | 1.0                      | 1.4   | 1.8   | 2.1   | 2.3   | 2.5   | 2.7   | 3.0   | 3.2   | 3.7   | 4.2   | 5.4   |
| 6 u    | 28.7                     | 37.2  | 43.6  | 47.4  | 50.2  | 52.4  | 54.3  | 57.3  | 59.6  | 64.1  | 67.4  | 75.9  |
|        | 1.1                      | 1.4   | 1.7   | 2.0   | 2.3   | 2.5   | 2.7   | 3.1   | 3.5   | 4.2   | 4.8   | 6.5   |
| 12 u   | 35.5                     | 45.6  | 53.1  | 57.6  | 60.9  | 63.5  | 65.6  | 69.1  | 71.9  | 77.2  | 81.0  | 90.8  |
|        | 1.5                      | 1.8   | 2.3   | 2.7   | 3.1   | 3.4   | 3.7   | 4.3   | 4.8   | 5.7   | 6.5   | 8.8   |
| 1 d    | 44.1                     | 55.8  | 64.3  | 69.3  | 72.9  | 75.8  | 78.2  | 82.0  | 85.0  | 90.6  | 94.7  | 105.0 |
|        | 1.8                      | 2.0   | 2.2   | 2.4   | 2.5   | 2.6   | 2.8   | 3.0   | 3.2   | 3.6   | 3.9   | 4.8   |
| 2 d    | 57.8                     | 72.6  | 83.1  | 89.2  | 93.6  | 97.0  | 99.8  | 104.3 | 107.9 | 114.4 | 119.1 | 130.9 |
|        | 2.8                      | 3.3   | 3.8   | 4.2   | 4.5   | 4.8   | 5.0   | 5.4   | 5.8   | 6.5   | 7.1   | 8.8   |
| 3 d    | 62.8                     | 79.1  | 90.4  | 96.9  | 101.6 | 105.2 | 108.2 | 113.0 | 116.7 | 123.5 | 128.4 | 140.6 |
|        | 3.5                      | 4.3   | 4.9   | 5.4   | 5.7   | 6.0   | 6.3   | 6.7   | 7.1   | 7.9   | 8.4   | 10.1  |
| 4 d    | 68.9                     | 86.5  | 98.6  | 105.5 | 110.4 | 114.3 | 117.4 | 122.4 | 126.3 | 133.4 | 138.5 | 151.1 |
|        | 4.0                      | 4.9   | 5.5   | 6.0   | 6.3   | 6.6   | 6.8   | 7.2   | 7.5   | 8.2   | 8.7   | 10.1  |
| 5 d    | 78.4                     | 97.9  | 111.1 | 118.7 | 124.1 | 128.3 | 131.7 | 137.1 | 141.3 | 149.1 | 154.6 | 168.0 |
|        | 4.7                      | 5.7   | 6.5   | 7.0   | 7.4   | 7.7   | 8.0   | 8.4   | 8.8   | 9.5   | 10.0  | 11.4  |
| 7 d    | 91.4                     | 112.5 | 126.7 | 134.8 | 140.5 | 145.0 | 148.6 | 154.2 | 158.7 | 166.7 | 172.4 | 186.3 |
|        | 5.7                      | 6.7   | 7.5   | 8.0   | 8.4   | 8.6   | 8.9   | 9.3   | 9.6   | 10.2  | 10.6  | 11.8  |
| 10 d   | 109.9                    | 135.2 | 152.0 | 161.5 | 168.2 | 173.3 | 177.5 | 184.1 | 189.2 | 198.4 | 204.9 | 220.7 |
|        | 7.2                      | 8.8   | 10.0  | 10.7  | 11.2  | 11.6  | 11.9  | 12.5  | 12.9  | 13.7  | 14.3  | 15.8  |
| 15 d   | 133.6                    | 162.9 | 182.1 | 192.8 | 200.3 | 206.0 | 210.7 | 218.0 | 223.7 | 233.8 | 241.0 | 258.1 |
|        | 8.8                      | 10.6  | 11.9  | 12.6  | 13.1  | 13.5  | 13.8  | 14.3  | 14.7  | 15.4  | 16.0  | 17.3  |
| 20 d   | 155.7                    | 190.2 | 212.6 | 225.0 | 233.7 | 240.3 | 245.7 | 254.1 | 260.5 | 272.1 | 280.2 | 299.6 |
|        | 10.3                     | 12.6  | 14.1  | 14.9  | 15.5  | 16.0  | 16.3  | 16.9  | 17.4  | 18.2  | 18.9  | 20.4  |
| 25 d   | 167.8                    | 204.4 | 227.9 | 240.9 | 250.0 | 256.9 | 262.4 | 271.1 | 277.8 | 289.8 | 298.1 | 318.0 |
|        | 11.5                     | 14.1  | 15.8  | 16.8  | 17.6  | 18.2  | 18.6  | 19.4  | 20.1  | 21.2  | 22.1  | 24.3  |
| 30 d   | 194.0                    | 232.4 | 256.9 | 270.5 | 279.9 | 287.0 | 292.8 | 301.7 | 308.6 | 320.9 | 329.5 | 349.8 |
|        | 12.6                     | 15.1  | 16.9  | 17.9  | 18.7  | 19.3  | 19.9  | 20.7  | 21.4  | 22.7  | 23.7  | 26.2  |

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 | 7.5                      | 10.6  | 12.8  | 14.0  | 14.9  | 15.6  | 16.2  | 17.1  | 17.8  | 19.0  | 19.9  | 22.0  |
|        | 8.7                      | 12.6  | 15.6  | 17.6  | 19.0  | 20.2  | 21.2  | 22.9  | 24.2  | 26.8  | 28.8  | 34.0  |
| 20 min | 11.0                     | 15.7  | 19.0  | 20.9  | 22.3  | 23.3  | 24.2  | 25.5  | 26.6  | 28.5  | 29.9  | 33.1  |
|        | 13.0                     | 19.1  | 23.9  | 26.9  | 29.2  | 31.0  | 32.5  | 35.1  | 37.2  | 41.2  | 44.2  | 52.1  |
| 30 min | 12.9                     | 18.8  | 23.1  | 25.6  | 27.5  | 28.9  | 30.1  | 32.0  | 33.5  | 36.4  | 38.4  | 43.5  |
|        | 15.3                     | 22.2  | 27.4  | 30.7  | 33.1  | 35.1  | 36.7  | 39.4  | 41.5  | 45.6  | 48.7  | 56.8  |
| 1 u    | 16.2                     | 22.8  | 27.6  | 30.4  | 32.4  | 33.9  | 35.2  | 37.2  | 38.8  | 41.7  | 43.7  | 48.8  |
|        | 18.9                     | 27.2  | 33.5  | 37.5  | 40.4  | 42.8  | 44.8  | 48.1  | 50.8  | 55.9  | 59.7  | 69.9  |
| 2 u    | 19.6                     | 27.1  | 32.5  | 35.7  | 37.9  | 39.7  | 41.1  | 43.4  | 45.2  | 48.4  | 50.7  | 56.3  |
|        | 22.9                     | 32.3  | 39.4  | 43.9  | 47.2  | 49.9  | 52.1  | 55.8  | 58.8  | 64.5  | 68.9  | 80.2  |
| 3 u    | 21.7                     | 29.8  | 35.7  | 39.1  | 41.6  | 43.5  | 45.1  | 47.6  | 49.6  | 53.3  | 55.9  | 62.5  |
|        | 25.5                     | 35.2  | 42.6  | 47.1  | 50.5  | 53.2  | 55.5  | 59.2  | 62.2  | 68.0  | 72.3  | 83.5  |
| 6 u    | 26.5                     | 34.5  | 40.2  | 43.4  | 45.7  | 47.5  | 48.9  | 51.1  | 52.8  | 55.9  | 58.0  | 63.1  |
|        | 30.8                     | 39.9  | 46.9  | 51.3  | 54.7  | 57.4  | 59.6  | 63.4  | 66.5  | 72.4  | 76.8  | 88.6  |
| 12 u   | 32.6                     | 42.1  | 48.6  | 52.2  | 54.8  | 56.7  | 58.3  | 60.7  | 62.6  | 65.9  | 68.2  | 73.5  |
|        | 38.4                     | 49.2  | 57.6  | 62.9  | 66.9  | 70.2  | 73.0  | 77.5  | 81.2  | 88.4  | 93.8  | 108.1 |
| 1 d    | 40.6                     | 51.9  | 60.0  | 64.7  | 68.0  | 70.6  | 72.8  | 76.2  | 78.8  | 83.6  | 87.1  | 95.5  |
|        | 47.6                     | 59.7  | 68.6  | 73.9  | 77.9  | 81.0  | 83.6  | 87.8  | 91.2  | 97.6  | 102.3 | 114.5 |
| 2 d    | 52.3                     | 66.1  | 75.6  | 80.9  | 84.7  | 87.6  | 89.9  | 93.6  | 96.5  | 101.6 | 105.2 | 113.7 |
|        | 63.2                     | 79.1  | 90.6  | 97.4  | 102.4 | 106.4 | 109.7 | 115.0 | 119.2 | 127.2 | 133.1 | 148.1 |
| 3 d    | 55.9                     | 70.7  | 80.7  | 86.4  | 90.4  | 93.4  | 95.9  | 99.8  | 102.7 | 108.1 | 111.9 | 120.8 |
|        | 69.7                     | 87.4  | 100.0 | 107.4 | 112.8 | 117.0 | 120.5 | 126.1 | 130.6 | 138.9 | 145.0 | 160.3 |
| 4 d    | 61.0                     | 77.0  | 87.7  | 93.8  | 98.1  | 101.4 | 104.1 | 108.3 | 111.5 | 117.4 | 121.5 | 131.3 |
|        | 76.9                     | 96.1  | 109.4 | 117.2 | 122.8 | 127.1 | 130.8 | 136.5 | 141.0 | 149.5 | 155.6 | 170.8 |
| 5 d    | 69.3                     | 86.7  | 98.4  | 105.0 | 109.6 | 113.2 | 116.1 | 120.7 | 124.2 | 130.5 | 135.0 | 145.6 |
|        | 87.5                     | 109.1 | 123.9 | 132.5 | 138.6 | 143.4 | 147.3 | 153.6 | 158.5 | 167.6 | 174.1 | 190.4 |
| 7 d    | 80.3                     | 99.3  | 112.0 | 119.2 | 124.2 | 128.0 | 131.2 | 136.1 | 139.9 | 146.8 | 151.6 | 163.1 |
|        | 102.5                    | 125.7 | 141.5 | 150.5 | 156.9 | 161.9 | 165.9 | 172.4 | 177.4 | 186.6 | 193.2 | 209.4 |
| 10 d   | 95.9                     | 117.9 | 132.4 | 140.6 | 146.3 | 150.6 | 154.1 | 159.7 | 163.9 | 171.6 | 176.9 | 189.6 |
|        | 124.0                    | 152.6 | 171.7 | 182.5 | 190.2 | 196.1 | 200.9 | 208.5 | 214.4 | 225.2 | 232.9 | 251.7 |
| 15 d   | 116.4                    | 142.1 | 158.8 | 168.1 | 174.6 | 179.6 | 183.7 | 190.0 | 194.9 | 203.6 | 209.7 | 224.3 |
|        | 150.8                    | 183.7 | 205.3 | 217.5 | 225.9 | 232.5 | 237.7 | 246.1 | 252.5 | 264.1 | 272.3 | 292.0 |
| 20 d   | 135.5                    | 165.6 | 185.0 | 195.8 | 203.3 | 209.1 | 213.7 | 220.9 | 226.4 | 236.3 | 243.2 | 259.5 |
|        | 175.9                    | 214.8 | 240.1 | 254.2 | 264.1 | 271.6 | 277.7 | 287.2 | 294.6 | 307.9 | 317.2 | 339.6 |
| 25 d   | 145.2                    | 176.8 | 196.9 | 208.0 | 215.5 | 221.3 | 225.9 | 233.0 | 238.5 | 248.1 | 254.8 | 270.3 |
|        | 190.4                    | 231.9 | 258.9 | 273.9 | 284.4 | 292.5 | 299.0 | 309.2 | 317.1 | 331.4 | 341.5 | 365.7 |
| 30 d   | 169.2                    | 202.8 | 223.9 | 235.3 | 243.2 | 249.1 | 253.8 | 261.1 | 266.6 | 276.4 | 283.0 | 298.3 |
|        | 218.7                    | 262.0 | 290.0 | 305.6 | 316.5 | 324.9 | 331.7 | 342.4 | 350.6 | 365.4 | 376.0 | 401.2 |

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                        | 144.1 | 0.4704 | 298.4  | 0.6965 | 49.9  | 0.4909 |
| 5                        | 201.2 | 0.4592 | 474.0  | 0.7254 | 67.6  | 0.5014 |
| 10                       | 242.6 | 0.4518 | 615.6  | 0.7411 | 83.6  | 0.5116 |
| 15                       | 267.3 | 0.4475 | 705.8  | 0.7492 | 94.5  | 0.5181 |
| 20                       | 285.2 | 0.4445 | 773.7  | 0.7546 | 103.0 | 0.5229 |
| 25                       | 299.3 | 0.4422 | 828.9  | 0.7587 | 110.1 | 0.5267 |
| 30                       | 311.0 | 0.4403 | 875.7  | 0.7619 | 116.3 | 0.5299 |
| 40                       | 329.8 | 0.4373 | 953.0  | 0.7669 | 126.7 | 0.5350 |
| 50                       | 344.7 | 0.4350 | 1015.9 | 0.7707 | 135.4 | 0.5391 |
| 75                       | 372.6 | 0.4308 | 1137.3 | 0.7774 | 152.7 | 0.5466 |
| 100                      | 393.0 | 0.4277 | 1229.5 | 0.7821 | 166.3 | 0.5521 |
| 200                      | 444.4 | 0.4204 | 1474.2 | 0.7929 | 204.1 | 0.5656 |

## 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.

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Het KMI zal in geen geval aansprakelijk gesteld kunnen worden voor de eventuele schade die uit het gebruik van de gegevens zou kunnen voortvloeien.

In geval van een geschil betreffende de interpretatie of de uitvoering van deze algemene voorwaarden, zullen het KMI en de Gebruiker trachten het geschil zo spoedig mogelijk in der minne te regelen.

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