



Statistiques des précipitations extrêmes des communes belges

Kruishoutem (INS 45017)

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 | 10.8 | 13.3 | 14.8 | 15.9 | 16.8 | 17.5 | 18.7 | 19.6 | 21.5 | 22.8 | 26.2 |
| 20 min | 10.8 | 15.5 | 19.0 | 21.1 | 22.7 | 23.9 | 24.9 | 26.6 | 28.0 | 30.5 | 32.4 | 37.3 |
| 30 min | 12.8 | 18.5 | 22.9 | 25.5 | 27.4 | 29.0 | 30.3 | 32.3 | 34.0 | 37.1 | 39.5 | 45.4 |
| 1 h | 15.8 | 22.1 | 26.8 | 29.6 | 31.7 | 33.3 | 34.7 | 36.9 | 38.7 | 42.1 | 44.6 | 51.0 |
| 2 h | 18.9 | 26.0 | 31.2 | 34.4 | 36.7 | 38.6 | 40.2 | 42.7 | 44.7 | 48.4 | 51.2 | 58.3 |
| 3 h | 21.0 | 28.8 | 34.7 | 38.2 | 40.8 | 42.8 | 44.6 | 47.3 | 49.6 | 53.7 | 56.8 | 64.6 |
| 6 h | 25.3 | 33.5 | 39.6 | 43.3 | 46.0 | 48.1 | 49.9 | 52.8 | 55.1 | 59.4 | 62.6 | 70.7 |
| 12 h | 30.7 | 40.6 | 47.9 | 52.3 | 55.5 | 58.1 | 60.2 | 63.6 | 66.4 | 71.5 | 75.3 | 84.9 |
| 1 j | 37.8 | 49.2 | 57.4 | 62.3 | 65.8 | 68.6 | 70.9 | 74.6 | 77.5 | 82.9 | 86.9 | 96.9 |
| 2 j | 47.7 | 61.2 | 70.7 | 76.3 | 80.2 | 83.4 | 85.9 | 90.0 | 93.2 | 99.2 | 103.5 | 114.2 |
| 3 j | 50.5 | 64.9 | 74.8 | 80.5 | 84.6 | 87.8 | 90.4 | 94.6 | 97.9 | 103.9 | 108.2 | 118.9 |
| 4 j | 54.8 | 70.0 | 80.5 | 86.5 | 90.8 | 94.1 | 96.8 | 101.2 | 104.5 | 110.7 | 115.1 | 126.0 |
| 5 j | 62.2 | 78.6 | 89.7 | 96.2 | 100.7 | 104.2 | 107.1 | 111.6 | 115.2 | 121.7 | 126.3 | 137.6 |
| 7 j | 71.5 | 89.2 | 101.2 | 108.0 | 112.8 | 116.5 | 119.5 | 124.3 | 128.0 | 134.8 | 139.6 | 151.3 |
| 10 j | 84.9 | 104.7 | 117.9 | 125.3 | 130.5 | 134.6 | 137.8 | 143.0 | 147.0 | 154.2 | 159.3 | 171.6 |
| 15 j | 102.8 | 125.9 | 141.1 | 149.6 | 155.5 | 160.0 | 163.7 | 169.5 | 174.0 | 182.0 | 187.7 | 201.2 |
| 20 j | 119.7 | 146.6 | 164.1 | 173.8 | 180.6 | 185.7 | 189.9 | 196.5 | 201.5 | 210.6 | 216.9 | 232.0 |
| 25 j | 127.3 | 156.0 | 174.4 | 184.7 | 191.7 | 197.1 | 201.5 | 208.3 | 213.6 | 222.9 | 229.5 | 245.0 |
| 30 j | 149.2 | 180.1 | 199.8 | 210.7 | 218.2 | 224.0 | 228.6 | 235.8 | 241.3 | 251.2 | 258.1 | 274.4 |

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 | 10.8 | 13.3 | 14.8 | 15.9 | 16.8 | 17.5 | 18.7 | 19.6 | 21.5 | 22.8 | 26.2 |
| | 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 | 10.8 | 15.5 | 19.0 | 21.1 | 22.7 | 23.9 | 24.9 | 26.6 | 28.0 | 30.5 | 32.4 | 37.3 |
| | 0.3 | 0.5 | 0.7 | 0.9 | 1.1 | 1.2 | 1.3 | 1.6 | 1.8 | 2.2 | 2.5 | 3.4 |
| 30 min | 12.8 | 18.5 | 22.9 | 25.5 | 27.4 | 29.0 | 30.3 | 32.3 | 34.0 | 37.1 | 39.5 | 45.4 |
| | 0.4 | 0.6 | 0.8 | 1.0 | 1.2 | 1.3 | 1.5 | 1.7 | 1.8 | 2.2 | 2.5 | 3.3 |
| 1 h | 15.8 | 22.1 | 26.8 | 29.6 | 31.7 | 33.3 | 34.7 | 36.9 | 38.7 | 42.1 | 44.6 | 51.0 |
| | 0.4 | 0.7 | 1.0 | 1.3 | 1.5 | 1.7 | 1.9 | 2.1 | 2.4 | 2.9 | 3.3 | 4.5 |
| 2 h | 18.9 | 26.0 | 31.2 | 34.4 | 36.7 | 38.6 | 40.2 | 42.7 | 44.7 | 48.4 | 51.2 | 58.3 |
| | 0.5 | 0.8 | 1.2 | 1.5 | 1.7 | 1.9 | 2.1 | 2.4 | 2.7 | 3.3 | 3.7 | 5.1 |
| 3 h | 21.0 | 28.8 | 34.7 | 38.2 | 40.8 | 42.8 | 44.6 | 47.3 | 49.6 | 53.7 | 56.8 | 64.6 |
| | 0.6 | 0.9 | 1.3 | 1.5 | 1.7 | 1.9 | 2.1 | 2.4 | 2.7 | 3.2 | 3.6 | 4.8 |
| 6 h | 25.3 | 33.5 | 39.6 | 43.3 | 46.0 | 48.1 | 49.9 | 52.8 | 55.1 | 59.4 | 62.6 | 70.7 |
| | 0.7 | 1.0 | 1.4 | 1.7 | 2.0 | 2.3 | 2.5 | 2.9 | 3.3 | 4.0 | 4.6 | 6.4 |
| 12 h | 30.7 | 40.6 | 47.9 | 52.3 | 55.5 | 58.1 | 60.2 | 63.6 | 66.4 | 71.5 | 75.3 | 84.9 |
| | 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 j | 37.8 | 49.2 | 57.4 | 62.3 | 65.8 | 68.6 | 70.9 | 74.6 | 77.5 | 82.9 | 86.9 | 96.9 |
| | 1.0 | 1.3 | 1.6 | 1.9 | 2.1 | 2.3 | 2.5 | 2.8 | 3.0 | 3.5 | 3.9 | 5.1 |
| 2 j | 47.7 | 61.2 | 70.7 | 76.3 | 80.2 | 83.4 | 85.9 | 90.0 | 93.2 | 99.2 | 103.5 | 114.2 |
| | 1.5 | 2.1 | 2.7 | 3.3 | 3.7 | 4.0 | 4.3 | 4.9 | 5.3 | 6.2 | 6.9 | 8.8 |
| 3 j | 50.5 | 64.9 | 74.8 | 80.5 | 84.6 | 87.8 | 90.4 | 94.6 | 97.9 | 103.9 | 108.2 | 118.9 |
| | 1.8 | 2.4 | 3.2 | 3.7 | 4.1 | 4.5 | 4.8 | 5.3 | 5.7 | 6.6 | 7.3 | 9.0 |
| 4 j | 54.8 | 70.0 | 80.5 | 86.5 | 90.8 | 94.1 | 96.8 | 101.2 | 104.5 | 110.7 | 115.1 | 126.0 |
| | 2.0 | 2.6 | 3.2 | 3.6 | 3.9 | 4.2 | 4.5 | 4.9 | 5.3 | 6.0 | 6.5 | 8.0 |
| 5 j | 62.2 | 78.6 | 89.7 | 96.2 | 100.7 | 104.2 | 107.1 | 111.6 | 115.2 | 121.7 | 126.3 | 137.6 |
| | 2.3 | 2.9 | 3.5 | 3.9 | 4.2 | 4.4 | 4.6 | 5.0 | 5.3 | 6.0 | 6.5 | 7.8 |
| 7 j | 71.5 | 89.2 | 101.2 | 108.0 | 112.8 | 116.5 | 119.5 | 124.3 | 128.0 | 134.8 | 139.6 | 151.3 |
| | 2.7 | 3.3 | 3.8 | 4.2 | 4.4 | 4.7 | 4.9 | 5.2 | 5.5 | 6.1 | 6.5 | 7.7 |
| 10 j | 84.9 | 104.7 | 117.9 | 125.3 | 130.5 | 134.6 | 137.8 | 143.0 | 147.0 | 154.2 | 159.3 | 171.6 |
| | 3.4 | 4.2 | 4.8 | 5.2 | 5.6 | 5.8 | 6.0 | 6.4 | 6.7 | 7.3 | 7.8 | 9.0 |
| 15 j | 102.8 | 125.9 | 141.1 | 149.6 | 155.5 | 160.0 | 163.7 | 169.5 | 174.0 | 182.0 | 187.7 | 201.2 |
| | 4.1 | 5.1 | 5.7 | 6.0 | 6.3 | 6.5 | 6.6 | 6.9 | 7.1 | 7.5 | 7.8 | 8.6 |
| 20 j | 119.7 | 146.6 | 164.1 | 173.8 | 180.6 | 185.7 | 189.9 | 196.5 | 201.5 | 210.6 | 216.9 | 232.0 |
| | 4.9 | 6.1 | 6.8 | 7.3 | 7.6 | 7.9 | 8.1 | 8.4 | 8.7 | 9.3 | 9.7 | 10.7 |
| 25 j | 127.3 | 156.0 | 174.4 | 184.7 | 191.7 | 197.1 | 201.5 | 208.3 | 213.6 | 222.9 | 229.5 | 245.0 |
| | 5.5 | 6.8 | 7.9 | 8.6 | 9.1 | 9.5 | 9.8 | 10.4 | 10.9 | 11.8 | 12.5 | 14.4 |
| 30 j | 149.2 | 180.1 | 199.8 | 210.7 | 218.2 | 224.0 | 228.6 | 235.8 | 241.3 | 251.2 | 258.1 | 274.4 |
| | 6.0 | 7.6 | 8.9 | 9.8 | 10.5 | 11.0 | 11.5 | 12.3 | 12.9 | 14.2 | 15.1 | 17.6 |

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 | 7.2 | 10.2 | 12.3 | 13.5 | 14.3 | 15.0 | 15.5 | 16.4 | 17.0 | 18.2 | 19.1 | 21.1 |
| | 7.9 | 11.5 | 14.3 | 16.1 | 17.4 | 18.5 | 19.5 | 21.0 | 22.3 | 24.7 | 26.5 | 31.4 |
| 20 min | 10.2 | 14.5 | 17.5 | 19.3 | 20.6 | 21.5 | 22.3 | 23.6 | 24.5 | 26.3 | 27.6 | 30.6 |
| | 11.4 | 16.4 | 20.4 | 22.9 | 24.7 | 26.3 | 27.6 | 29.7 | 31.4 | 34.8 | 37.3 | 44.0 |
| 30 min | 12.0 | 17.4 | 21.2 | 23.5 | 25.1 | 26.4 | 27.4 | 29.1 | 30.4 | 32.8 | 34.6 | 39.0 |
| | 13.5 | 19.7 | 24.5 | 27.5 | 29.8 | 31.6 | 33.1 | 35.6 | 37.6 | 41.5 | 44.4 | 51.9 |
| 1 h | 15.0 | 20.7 | 24.8 | 27.1 | 28.7 | 30.0 | 31.1 | 32.7 | 34.0 | 36.4 | 38.1 | 42.1 |
| | 16.7 | 23.5 | 28.8 | 32.1 | 34.6 | 36.6 | 38.3 | 41.1 | 43.4 | 47.8 | 51.1 | 59.8 |
| 2 h | 17.9 | 24.4 | 28.9 | 31.6 | 33.4 | 34.9 | 36.0 | 37.9 | 39.4 | 42.0 | 43.9 | 48.4 |
| | 19.9 | 27.6 | 33.5 | 37.3 | 40.1 | 42.3 | 44.3 | 47.4 | 49.9 | 54.8 | 58.5 | 68.2 |
| 3 h | 19.8 | 27.1 | 32.2 | 35.2 | 37.4 | 39.0 | 40.4 | 42.6 | 44.3 | 47.4 | 49.7 | 55.2 |
| | 22.2 | 30.6 | 37.1 | 41.2 | 44.2 | 46.7 | 48.7 | 52.1 | 54.8 | 60.0 | 63.9 | 74.1 |
| 6 h | 23.9 | 31.6 | 36.9 | 39.9 | 42.0 | 43.6 | 45.0 | 47.0 | 48.6 | 51.5 | 53.5 | 58.2 |
| | 26.7 | 35.5 | 42.4 | 46.7 | 50.0 | 52.6 | 54.8 | 58.5 | 61.5 | 67.3 | 71.6 | 83.1 |
| 12 h | 28.8 | 38.0 | 44.2 | 47.8 | 50.3 | 52.2 | 53.7 | 56.1 | 57.9 | 61.2 | 63.4 | 68.7 |
| | 32.6 | 43.3 | 51.6 | 56.8 | 60.8 | 64.0 | 66.7 | 71.2 | 74.8 | 81.8 | 87.1 | 101.0 |
| 1 j | 35.9 | 46.7 | 54.2 | 58.6 | 61.6 | 64.0 | 66.0 | 69.1 | 71.5 | 76.0 | 79.2 | 86.9 |
| | 39.8 | 51.7 | 60.6 | 66.0 | 69.9 | 73.1 | 75.7 | 80.0 | 83.4 | 89.9 | 94.6 | 106.8 |
| 2 j | 44.8 | 57.2 | 65.3 | 69.9 | 73.0 | 75.4 | 77.4 | 80.5 | 82.8 | 87.0 | 90.0 | 97.0 |
| | 50.5 | 65.2 | 76.1 | 82.6 | 87.4 | 91.3 | 94.4 | 99.6 | 103.7 | 111.4 | 117.0 | 131.4 |
| 3 j | 47.1 | 60.1 | 68.5 | 73.3 | 76.5 | 79.0 | 81.1 | 84.2 | 86.6 | 91.0 | 94.0 | 101.2 |
| | 54.0 | 69.6 | 81.0 | 87.8 | 92.7 | 96.6 | 99.8 | 105.0 | 109.1 | 116.8 | 122.4 | 136.6 |
| 4 j | 50.9 | 64.9 | 74.2 | 79.4 | 83.0 | 85.8 | 88.0 | 91.5 | 94.2 | 99.0 | 102.4 | 110.4 |
| | 58.8 | 75.1 | 86.7 | 93.6 | 98.5 | 102.4 | 105.6 | 110.8 | 114.8 | 122.4 | 127.9 | 141.6 |
| 5 j | 57.7 | 72.9 | 83.0 | 88.6 | 92.5 | 95.5 | 98.0 | 101.8 | 104.7 | 109.9 | 113.6 | 122.2 |
| | 66.7 | 84.3 | 96.5 | 103.7 | 108.8 | 112.9 | 116.2 | 121.5 | 125.7 | 133.4 | 139.0 | 153.0 |
| 7 j | 66.1 | 82.8 | 93.7 | 99.8 | 104.1 | 107.4 | 110.0 | 114.1 | 117.3 | 122.9 | 126.9 | 136.3 |
| | 76.8 | 95.7 | 108.7 | 116.2 | 121.5 | 125.7 | 129.1 | 134.5 | 138.8 | 146.7 | 152.3 | 166.3 |
| 10 j | 78.3 | 96.5 | 108.4 | 115.0 | 119.6 | 123.2 | 126.0 | 130.4 | 133.8 | 139.8 | 144.0 | 153.9 |
| | 91.5 | 112.9 | 127.3 | 135.6 | 141.4 | 145.9 | 149.7 | 155.5 | 160.1 | 168.5 | 174.6 | 189.3 |
| 15 j | 94.7 | 116.0 | 130.0 | 137.8 | 143.2 | 147.4 | 150.7 | 156.0 | 160.0 | 167.3 | 172.4 | 184.4 |
| | 110.9 | 135.8 | 152.2 | 161.4 | 167.8 | 172.7 | 176.7 | 183.0 | 187.9 | 196.7 | 203.0 | 218.0 |
| 20 j | 110.1 | 134.7 | 150.7 | 159.5 | 165.6 | 170.3 | 174.1 | 179.9 | 184.4 | 192.4 | 198.0 | 211.0 |
| | 129.3 | 158.5 | 177.5 | 188.1 | 195.5 | 201.2 | 205.8 | 213.0 | 218.6 | 228.7 | 235.8 | 253.0 |
| 25 j | 116.6 | 142.6 | 159.0 | 167.9 | 174.0 | 178.6 | 182.2 | 187.9 | 192.2 | 199.8 | 205.0 | 216.9 |
| | 138.0 | 169.4 | 189.9 | 201.4 | 209.5 | 215.7 | 220.8 | 228.7 | 234.9 | 246.1 | 254.0 | 273.2 |
| 30 j | 137.3 | 165.2 | 182.3 | 191.5 | 197.7 | 202.4 | 206.1 | 211.7 | 216.0 | 223.4 | 228.5 | 239.9 |
| | 161.0 | 194.9 | 217.3 | 229.9 | 238.7 | 245.5 | 251.1 | 259.9 | 266.7 | 279.0 | 287.8 | 308.9 |

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 | 134.7 | 0.4749 | 297.5 | 0.7210 | 53.0 | 0.5227 |
| 5 | 194.0 | 0.4763 | 458.8 | 0.7438 | 80.9 | 0.5444 |
| 10 | 236.9 | 0.4744 | 588.0 | 0.7567 | 106.0 | 0.5598 |
| 15 | 262.6 | 0.4726 | 669.9 | 0.7636 | 123.1 | 0.5688 |
| 20 | 281.1 | 0.4711 | 731.6 | 0.7682 | 136.5 | 0.5752 |
| 25 | 295.8 | 0.4698 | 781.6 | 0.7717 | 147.7 | 0.5802 |
| 30 | 308.0 | 0.4688 | 824.1 | 0.7745 | 157.4 | 0.5842 |
| 40 | 327.6 | 0.4670 | 894.0 | 0.7789 | 173.9 | 0.5907 |
| 50 | 343.1 | 0.4655 | 950.9 | 0.7822 | 187.7 | 0.5957 |
| 75 | 372.1 | 0.4626 | 1060.7 | 0.7881 | 215.3 | 0.6048 |
| 100 | 393.3 | 0.4605 | 1143.9 | 0.7922 | 237.0 | 0.6113 |
| 200 | 446.8 | 0.4551 | 1364.7 | 0.8020 | 297.8 | 0.6270 |

Références

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