



Statistiques des précipitations extrêmes des communes belges

Jodoigne (INS 25048)

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 | 7.4 | 10.7 | 13.1 | 14.6 | 15.7 | 16.6 | 17.3 | 18.5 | 19.4 | 21.2 | 22.5 | 26.0 |
| 20 min | 10.6 | 15.1 | 18.5 | 20.6 | 22.2 | 23.4 | 24.4 | 26.0 | 27.4 | 29.9 | 31.7 | 36.4 |
| 30 min | 12.5 | 18.2 | 22.5 | 25.1 | 27.0 | 28.5 | 29.7 | 31.8 | 33.4 | 36.5 | 38.8 | 44.7 |
| 1 h | 15.6 | 21.6 | 26.1 | 28.9 | 30.9 | 32.5 | 33.8 | 36.0 | 37.7 | 41.0 | 43.4 | 49.6 |
| 2 h | 18.5 | 25.4 | 30.5 | 33.6 | 35.8 | 37.6 | 39.1 | 41.5 | 43.5 | 47.1 | 49.8 | 56.7 |
| 3 h | 20.5 | 28.2 | 34.0 | 37.4 | 39.9 | 42.0 | 43.6 | 46.3 | 48.5 | 52.6 | 55.6 | 63.3 |
| 6 h | 24.8 | 32.9 | 39.0 | 42.6 | 45.3 | 47.4 | 49.2 | 52.1 | 54.3 | 58.6 | 61.8 | 69.8 |
| 12 h | 29.9 | 39.8 | 47.1 | 51.5 | 54.7 | 57.2 | 59.3 | 62.7 | 65.5 | 70.6 | 74.3 | 83.9 |
| 1 j | 36.1 | 47.4 | 55.5 | 60.3 | 63.8 | 66.6 | 68.9 | 72.5 | 75.4 | 80.8 | 84.8 | 94.6 |
| 2 j | 44.9 | 58.1 | 67.3 | 72.7 | 76.6 | 79.6 | 82.1 | 86.1 | 89.3 | 95.1 | 99.2 | 109.6 |
| 3 j | 47.2 | 61.0 | 70.5 | 76.0 | 80.0 | 83.1 | 85.6 | 89.6 | 92.8 | 98.5 | 102.7 | 112.9 |
| 4 j | 51.0 | 65.6 | 75.6 | 81.3 | 85.4 | 88.6 | 91.2 | 95.4 | 98.6 | 104.5 | 108.8 | 119.2 |
| 5 j | 57.8 | 73.3 | 83.9 | 90.0 | 94.3 | 97.6 | 100.3 | 104.7 | 108.0 | 114.2 | 118.6 | 129.3 |
| 7 j | 66.0 | 82.9 | 94.2 | 100.7 | 105.2 | 108.8 | 111.6 | 116.2 | 119.7 | 126.1 | 130.7 | 141.7 |
| 10 j | 78.0 | 96.4 | 108.5 | 115.4 | 120.2 | 124.0 | 127.0 | 131.8 | 135.4 | 142.1 | 146.8 | 158.2 |
| 15 j | 94.4 | 115.8 | 129.9 | 137.8 | 143.3 | 147.5 | 150.9 | 156.3 | 160.4 | 167.9 | 173.1 | 185.7 |
| 20 j | 109.9 | 134.7 | 150.9 | 159.8 | 166.1 | 170.8 | 174.7 | 180.8 | 185.4 | 193.8 | 199.6 | 213.6 |
| 25 j | 116.3 | 142.8 | 159.8 | 169.3 | 175.8 | 180.8 | 184.9 | 191.2 | 196.0 | 204.7 | 210.8 | 225.1 |
| 30 j | 136.9 | 165.8 | 184.2 | 194.4 | 201.4 | 206.8 | 211.1 | 217.8 | 223.0 | 232.2 | 238.6 | 253.9 |

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 | 7.4 | 10.7 | 13.1 | 14.6 | 15.7 | 16.6 | 17.3 | 18.5 | 19.4 | 21.2 | 22.5 | 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 | 15.1 | 18.5 | 20.6 | 22.2 | 23.4 | 24.4 | 26.0 | 27.4 | 29.9 | 31.7 | 36.4 |
| | 0.3 | 0.5 | 0.7 | 0.9 | 1.1 | 1.2 | 1.3 | 1.5 | 1.7 | 2.1 | 2.4 | 3.3 |
| 30 min | 12.5 | 18.2 | 22.5 | 25.1 | 27.0 | 28.5 | 29.7 | 31.8 | 33.4 | 36.5 | 38.8 | 44.7 |
| | 0.4 | 0.6 | 0.9 | 1.1 | 1.3 | 1.4 | 1.5 | 1.8 | 2.0 | 2.3 | 2.6 | 3.5 |
| 1 h | 15.6 | 21.6 | 26.1 | 28.9 | 30.9 | 32.5 | 33.8 | 36.0 | 37.7 | 41.0 | 43.4 | 49.6 |
| | 0.4 | 0.7 | 1.1 | 1.4 | 1.6 | 1.8 | 1.9 | 2.2 | 2.5 | 3.0 | 3.4 | 4.6 |
| 2 h | 18.5 | 25.4 | 30.5 | 33.6 | 35.8 | 37.6 | 39.1 | 41.5 | 43.5 | 47.1 | 49.8 | 56.7 |
| | 0.5 | 0.9 | 1.3 | 1.5 | 1.8 | 2.0 | 2.2 | 2.5 | 2.8 | 3.4 | 3.8 | 5.1 |
| 3 h | 20.5 | 28.2 | 34.0 | 37.4 | 39.9 | 42.0 | 43.6 | 46.3 | 48.5 | 52.6 | 55.6 | 63.3 |
| | 0.6 | 1.0 | 1.3 | 1.6 | 1.9 | 2.1 | 2.2 | 2.6 | 2.8 | 3.4 | 3.8 | 5.0 |
| 6 h | 24.8 | 32.9 | 39.0 | 42.6 | 45.3 | 47.4 | 49.2 | 52.1 | 54.3 | 58.6 | 61.8 | 69.8 |
| | 0.8 | 1.1 | 1.5 | 1.9 | 2.2 | 2.4 | 2.7 | 3.1 | 3.4 | 4.2 | 4.8 | 6.5 |
| 12 h | 29.9 | 39.8 | 47.1 | 51.5 | 54.7 | 57.2 | 59.3 | 62.7 | 65.5 | 70.6 | 74.3 | 83.9 |
| | 1.0 | 1.5 | 2.0 | 2.4 | 2.8 | 3.1 | 3.4 | 4.0 | 4.4 | 5.3 | 6.1 | 8.3 |
| 1 j | 36.1 | 47.4 | 55.5 | 60.3 | 63.8 | 66.6 | 68.9 | 72.5 | 75.4 | 80.8 | 84.8 | 94.6 |
| | 1.1 | 1.4 | 1.8 | 2.1 | 2.4 | 2.6 | 2.7 | 3.0 | 3.3 | 3.8 | 4.2 | 5.4 |
| 2 j | 44.9 | 58.1 | 67.3 | 72.7 | 76.6 | 79.6 | 82.1 | 86.1 | 89.3 | 95.1 | 99.2 | 109.6 |
| | 1.6 | 2.3 | 3.1 | 3.6 | 4.1 | 4.4 | 4.8 | 5.3 | 5.8 | 6.7 | 7.4 | 9.3 |
| 3 j | 47.2 | 61.0 | 70.5 | 76.0 | 80.0 | 83.1 | 85.6 | 89.6 | 92.8 | 98.5 | 102.7 | 112.9 |
| | 1.9 | 2.7 | 3.5 | 4.1 | 4.5 | 4.9 | 5.2 | 5.7 | 6.2 | 7.1 | 7.7 | 9.5 |
| 4 j | 51.0 | 65.6 | 75.6 | 81.3 | 85.4 | 88.6 | 91.2 | 95.4 | 98.6 | 104.5 | 108.8 | 119.2 |
| | 2.2 | 2.9 | 3.5 | 4.0 | 4.3 | 4.6 | 4.9 | 5.3 | 5.7 | 6.4 | 7.0 | 8.4 |
| 5 j | 57.8 | 73.3 | 83.9 | 90.0 | 94.3 | 97.6 | 100.3 | 104.7 | 108.0 | 114.2 | 118.6 | 129.3 |
| | 2.5 | 3.2 | 3.8 | 4.2 | 4.5 | 4.8 | 5.0 | 5.4 | 5.8 | 6.4 | 6.9 | 8.3 |
| 7 j | 66.0 | 82.9 | 94.2 | 100.7 | 105.2 | 108.8 | 111.6 | 116.2 | 119.7 | 126.1 | 130.7 | 141.7 |
| | 3.0 | 3.7 | 4.3 | 4.7 | 5.0 | 5.2 | 5.5 | 5.8 | 6.1 | 6.7 | 7.2 | 8.4 |
| 10 j | 78.0 | 96.4 | 108.5 | 115.4 | 120.2 | 124.0 | 127.0 | 131.8 | 135.4 | 142.1 | 146.8 | 158.2 |
| | 3.7 | 4.6 | 5.3 | 5.8 | 6.1 | 6.4 | 6.7 | 7.0 | 7.4 | 8.0 | 8.5 | 9.7 |
| 15 j | 94.4 | 115.8 | 129.9 | 137.8 | 143.3 | 147.5 | 150.9 | 156.3 | 160.4 | 167.9 | 173.1 | 185.7 |
| | 4.5 | 5.5 | 6.2 | 6.6 | 6.9 | 7.1 | 7.3 | 7.6 | 7.8 | 8.3 | 8.6 | 9.4 |
| 20 j | 109.9 | 134.7 | 150.9 | 159.8 | 166.1 | 170.8 | 174.7 | 180.8 | 185.4 | 193.8 | 199.6 | 213.6 |
| | 5.3 | 6.6 | 7.5 | 8.0 | 8.4 | 8.7 | 8.9 | 9.3 | 9.6 | 10.2 | 10.7 | 11.8 |
| 25 j | 116.3 | 142.8 | 159.8 | 169.3 | 175.8 | 180.8 | 184.9 | 191.2 | 196.0 | 204.7 | 210.8 | 225.1 |
| | 5.9 | 7.4 | 8.6 | 9.3 | 9.8 | 10.2 | 10.6 | 11.2 | 11.6 | 12.6 | 13.2 | 15.1 |
| 30 j | 136.9 | 165.8 | 184.2 | 194.4 | 201.4 | 206.8 | 211.1 | 217.8 | 223.0 | 232.2 | 238.6 | 253.9 |
| | 6.6 | 8.3 | 9.6 | 10.5 | 11.2 | 11.8 | 12.3 | 13.1 | 13.7 | 15.0 | 15.9 | 18.3 |

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 | 10.0 | 12.1 | 13.3 | 14.1 | 14.8 | 15.3 | 16.1 | 16.8 | 18.0 | 18.8 | 20.8 |
| | 7.8 | 11.3 | 14.1 | 15.9 | 17.3 | 18.4 | 19.3 | 20.8 | 22.0 | 24.4 | 26.3 | 31.1 |
| 20 min | 10.0 | 14.1 | 17.1 | 18.9 | 20.1 | 21.0 | 21.8 | 23.0 | 24.0 | 25.7 | 27.0 | 29.9 |
| | 11.2 | 16.1 | 20.0 | 22.4 | 24.2 | 25.7 | 27.0 | 29.0 | 30.7 | 34.0 | 36.4 | 42.9 |
| 30 min | 11.8 | 17.0 | 20.7 | 22.9 | 24.5 | 25.7 | 26.7 | 28.3 | 29.6 | 32.0 | 33.7 | 37.9 |
| | 13.3 | 19.5 | 24.3 | 27.2 | 29.5 | 31.3 | 32.8 | 35.3 | 37.3 | 41.1 | 44.0 | 51.5 |
| 1 h | 14.7 | 20.2 | 24.0 | 26.2 | 27.8 | 29.0 | 30.0 | 31.6 | 32.9 | 35.1 | 36.7 | 40.6 |
| | 16.4 | 23.1 | 28.3 | 31.6 | 34.0 | 36.0 | 37.6 | 40.4 | 42.6 | 46.9 | 50.1 | 58.6 |
| 2 h | 17.5 | 23.7 | 28.0 | 30.5 | 32.3 | 33.7 | 34.8 | 36.6 | 38.0 | 40.5 | 42.3 | 46.6 |
| | 19.6 | 27.1 | 32.9 | 36.6 | 39.3 | 41.5 | 43.4 | 46.4 | 48.9 | 53.7 | 57.3 | 66.7 |
| 3 h | 19.3 | 26.3 | 31.3 | 34.2 | 36.3 | 37.9 | 39.2 | 41.3 | 43.0 | 46.0 | 48.2 | 53.5 |
| | 21.8 | 30.1 | 36.6 | 40.6 | 43.6 | 46.0 | 48.0 | 51.4 | 54.0 | 59.2 | 63.0 | 73.1 |
| 6 h | 23.3 | 30.8 | 36.0 | 39.0 | 41.1 | 42.7 | 44.0 | 46.0 | 47.6 | 50.4 | 52.4 | 57.1 |
| | 26.3 | 35.1 | 41.9 | 46.3 | 49.5 | 52.2 | 54.4 | 58.1 | 61.1 | 66.8 | 71.1 | 82.5 |
| 12 h | 27.9 | 36.9 | 43.2 | 46.7 | 49.2 | 51.1 | 52.6 | 55.0 | 56.8 | 60.1 | 62.4 | 67.7 |
| | 32.0 | 42.7 | 51.0 | 56.2 | 60.1 | 63.3 | 66.0 | 70.5 | 74.1 | 81.1 | 86.3 | 100.1 |
| 1 j | 34.0 | 44.6 | 51.9 | 56.2 | 59.2 | 61.6 | 63.5 | 66.6 | 68.9 | 73.3 | 76.4 | 84.1 |
| | 38.3 | 50.2 | 59.1 | 64.5 | 68.4 | 71.6 | 74.2 | 78.5 | 81.9 | 88.3 | 93.1 | 105.2 |
| 2 j | 41.7 | 53.5 | 61.3 | 65.6 | 68.6 | 70.9 | 72.8 | 75.7 | 77.9 | 82.0 | 84.8 | 91.4 |
| | 48.1 | 62.6 | 73.4 | 79.8 | 84.6 | 88.3 | 91.5 | 96.5 | 100.6 | 108.2 | 113.7 | 127.9 |
| 3 j | 43.4 | 55.6 | 63.6 | 68.1 | 71.1 | 73.5 | 75.4 | 78.3 | 80.6 | 84.7 | 87.5 | 94.3 |
| | 51.0 | 66.3 | 77.4 | 84.0 | 88.8 | 92.6 | 95.8 | 100.9 | 104.9 | 112.4 | 117.9 | 131.6 |
| 4 j | 46.6 | 59.9 | 68.6 | 73.5 | 76.9 | 79.5 | 81.6 | 84.9 | 87.4 | 91.9 | 95.1 | 102.6 |
| | 55.3 | 71.2 | 82.5 | 89.1 | 93.9 | 97.7 | 100.8 | 105.8 | 109.8 | 117.1 | 122.4 | 135.7 |
| 5 j | 52.8 | 67.0 | 76.4 | 81.7 | 85.4 | 88.2 | 90.5 | 94.0 | 96.7 | 101.6 | 105.0 | 113.1 |
| | 62.7 | 79.6 | 91.4 | 98.3 | 103.2 | 107.0 | 110.2 | 115.3 | 119.3 | 126.7 | 132.1 | 145.5 |
| 7 j | 60.2 | 75.7 | 85.8 | 91.5 | 95.5 | 98.5 | 100.9 | 104.8 | 107.7 | 112.9 | 116.6 | 125.3 |
| | 71.9 | 90.1 | 102.6 | 109.8 | 115.0 | 119.0 | 122.3 | 127.6 | 131.7 | 139.2 | 144.7 | 158.1 |
| 10 j | 70.8 | 87.3 | 98.1 | 104.1 | 108.2 | 111.4 | 113.9 | 117.9 | 121.0 | 126.4 | 130.2 | 139.1 |
| | 85.2 | 105.4 | 119.0 | 126.8 | 132.3 | 136.5 | 140.0 | 145.6 | 149.9 | 157.8 | 163.5 | 177.3 |
| 15 j | 85.5 | 105.0 | 117.7 | 124.8 | 129.7 | 133.5 | 136.6 | 141.4 | 145.1 | 151.7 | 156.3 | 167.2 |
| | 103.2 | 126.7 | 142.1 | 150.8 | 156.8 | 161.4 | 165.2 | 171.2 | 175.8 | 184.1 | 190.0 | 204.2 |
| 20 j | 99.4 | 121.7 | 136.1 | 144.1 | 149.6 | 153.8 | 157.2 | 162.5 | 166.5 | 173.7 | 178.7 | 190.4 |
| | 120.3 | 147.7 | 165.6 | 175.6 | 182.5 | 187.9 | 192.2 | 199.0 | 204.3 | 213.8 | 220.5 | 236.7 |
| 25 j | 104.6 | 128.2 | 143.1 | 151.1 | 156.7 | 160.8 | 164.2 | 169.3 | 173.2 | 180.1 | 184.8 | 195.6 |
| | 127.9 | 157.4 | 176.6 | 187.4 | 195.0 | 200.9 | 205.6 | 213.1 | 218.8 | 229.3 | 236.7 | 254.7 |
| 30 j | 124.0 | 149.6 | 165.3 | 173.7 | 179.4 | 183.6 | 187.0 | 192.2 | 196.1 | 202.9 | 207.5 | 217.9 |
| | 149.9 | 182.0 | 203.1 | 215.0 | 223.4 | 229.9 | 235.1 | 243.4 | 249.8 | 261.5 | 269.8 | 289.8 |

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 | 129.6 | 0.4644 | 307.0 | 0.7323 | 55.2 | 0.5352 |
| 5 | 188.0 | 0.4691 | 469.5 | 0.7534 | 87.4 | 0.5601 |
| 10 | 230.5 | 0.4686 | 599.3 | 0.7655 | 116.4 | 0.5771 |
| 15 | 255.8 | 0.4675 | 681.7 | 0.7719 | 136.2 | 0.5868 |
| 20 | 274.2 | 0.4664 | 743.6 | 0.7763 | 151.8 | 0.5936 |
| 25 | 288.7 | 0.4654 | 793.8 | 0.7796 | 164.8 | 0.5989 |
| 30 | 300.8 | 0.4646 | 836.4 | 0.7823 | 176.1 | 0.6032 |
| 40 | 320.2 | 0.4631 | 906.6 | 0.7864 | 195.3 | 0.6100 |
| 50 | 335.5 | 0.4619 | 963.6 | 0.7896 | 211.4 | 0.6152 |
| 75 | 364.2 | 0.4594 | 1073.8 | 0.7953 | 243.6 | 0.6248 |
| 100 | 385.2 | 0.4576 | 1157.2 | 0.7993 | 269.0 | 0.6316 |
| 200 | 438.2 | 0.4527 | 1378.5 | 0.8087 | 340.3 | 0.6479 |

Références

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