WASTEWATER-BASED EPIDEMIOLOGICAL SURVEILLANCE OF THE SARS-COV-2

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WEEKLY REPORT

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RESULTS OF 15/11/2023

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2. Summary

In the present work, the circulation of the SARS-CoV-2 virus in the environment is assessed based on three alerting indicators. The analysis of wastewater samples collected in 41 wastewater treatment plants covers 42% of the Belgian population. The results of the wastewater surveillance are a complementary source of information to the infection cases number. Indeed, the wastewater results do notably include all asymptomatic persons, and are independent of the testing strategy.

Here are the conclusions based on the latest results of November 15th 2023 (Week 46)[1]:

- At the national level: The number of areas in High Circulation has risen, with 14 areas in alert. The Increasing Trend indicator is stable, with 12 areas positive. Overall, the viral loads are at a high level compared to the 9th wave and are increasing. However, the situation differs amongst regions.
- At the regional level: The viral loads are high in Wallonia and are increasing.
- At the provincial level: The Increasing Trend indicator is in alert in 2 provinces: Hainaut and Namur, and was in 3 last week. The Fast Increase indicator is in alert in 2 provinces: Hainaut and Liège, and was in 3 last week. The High Circulation indicator is in alert in 5 provinces: Brabant Wallon, Hainaut, Liège, Luxembourg and Namur, and was in 3 last week.
- At the covered areas level: among the 37 areas covered, the number of treatment plants in alert for the different indicators are 15 for the Increasing Trend indicator, 11 for the Fast Increase indicator, and 14 for the High Circulation indicator.
- An alerting situation is evidenced for the covered areas of Amay, Antwerpen-Zuid, Basse Wavre (Dyle), Froyennes, Liege (Grosses Battes), Liege Sclessin, Marchienne-au-Pont, Montignies-sur-Sambre and Roselies as all three indicators are in alert.

The wastewater situation can be followed on a weekly basis on:

- The graphics available on the public COVID-19 dashboard
- The epidemiological update published on Fridays by the Risk Assessment Group (RAG) after validation by the Risk Management Group (RMG) in French and Dutch.
- Further details on the methodology applied for the wastewater surveillance can be found in the Appendix Methodology document (access available online).

[1] The wastewater surveillance is based on 41 areas. However, due to technical issues, the area of Brussels-North, Gent, Liedekerke, and Mornimont were not sampled this week (see Appendix A5). Hence, this week's report is only based on 37 areas.

3. Introduction

The national wastewater-based surveillance of COVID-19 started in September 2020. The present report aims to assess the wastewater-based epidemiological situation in Belgium. It is updated weekly on Tuesday based on the concentration measured in the samples during the previous week.

The SARS-CoV-2 concentrations are measured twice per week in 41 wastewater treatment plants (WWTPs). The evolution of these concentrations is assessed in the present report thanks to three wastewater-based alerting indicators. The assessment is performed at 4 different spatial levels: national, regional, provincial, and the areas covered by the treatment plants.

Finally, the remaining sources of uncertainties are discussed together with their expected impacts on the interpretation of the wastewater results.

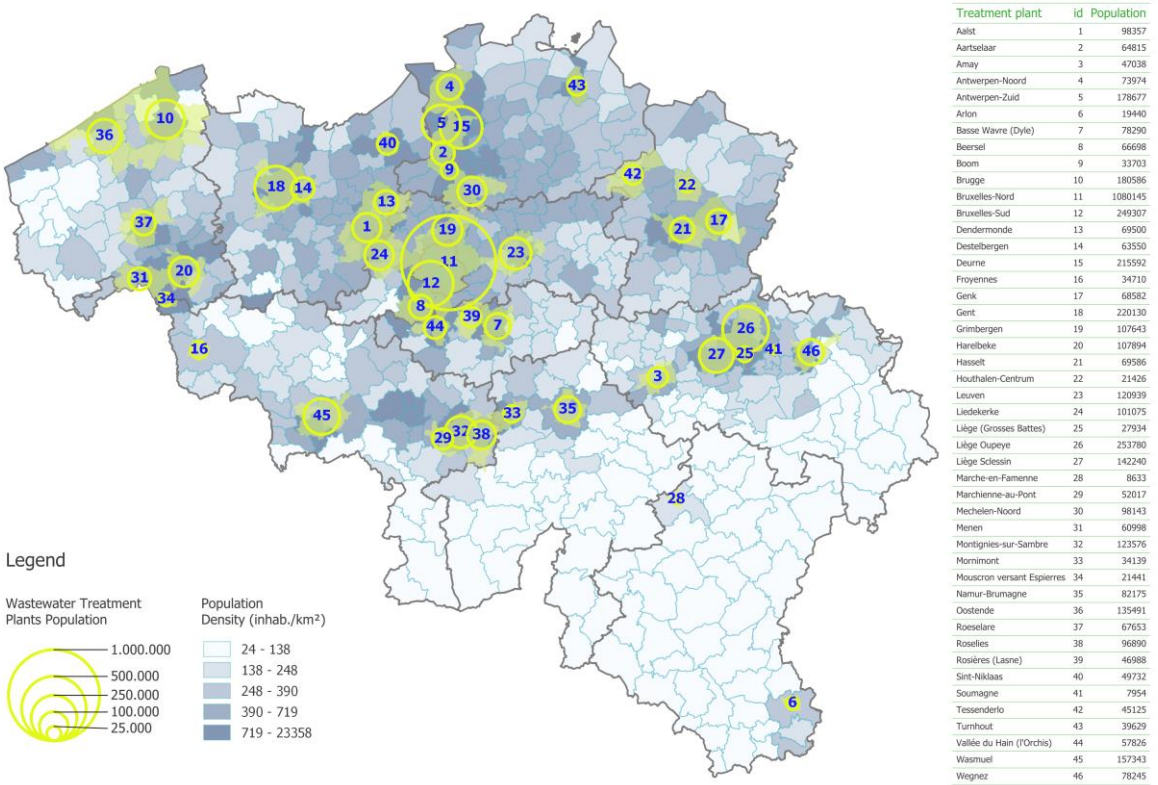
4. Methodology

4.1. SAMPLE COLLECTION AND ANALYSIS

Samples are collected twice a week in several wastewater treatment plants (WWTP) covering around 42% of the Belgian population: 36% in the Flemish region, 34% in the Walloon region, and nearly 100% in the Brussels region. Figure 1 shows the catchment areas covered by the WWTP located in areas with high population density. The catchment area of a WWTP corresponds to the geographical area from which the wastewater are collected.

Samples are collected on Mondays and Wednesdays by auto-samplers (24-hour composite) at the influent of WWTP. The analysis are distributed amongst 3 different laboratories to quantify the concentration of SARS-CoV-2 RNA. The results corresponding to the samples of the Mondays and Wednesdays are made publicly available on Wednesdays and Fridays, respectively.

Further details on the coverage, sampling plan, and analytical method can be found in the Appendix Methodology document



Treatment plant	id	Population
Aalst	1	98357
Aartselaar	2	64815
Amay	3	47038
Antwerpen-Noord	4	73974
Antwerpen-Zuid	5	178677
Arlon	6	19440
Basse Wavre (Dyle)	7	78290
Beersel	8	66698
Boom	9	33703
Brugge	10	180586
Bruxelles-Nord	11	1080145
Bruxelles-Sud	12	249307
Dendermonde	13	69500
Destelbergen	14	63550
Deurne	15	215592
Froyennes	16	34710
Genk	17	68582
Gent	18	220130
Grimbergen	19	107643
Harelbeke	20	107894
Hasselt	21	69586
Houthalen-Centrum	22	21426
Leuven	23	120939
Liedekerke	24	101075
Liège (Grosses Battes)	25	27934
Liège Oupeye	26	253780
Liège Sclessin	27	142240
Marche-en-Famenne	28	8633
Marchienne-au-Pont	29	52017
Mechelen-Noord	30	98143
Menen	31	60998
Montignies-sur-Sambre	32	123576
Mornimont	33	34139
Mouscron versant Espierres	34	21441
Namur-Brumagne	35	82175
Oostende	36	135491
Roeselare	37	67653
Roselies	38	96890
Rosières (Lasne)	39	46988
Sint-Niklaas	40	49732
Soumagne	41	7954
Tessenderlo	42	45125
Turnhout	43	39629
Vallée du Hain (l'Orchis)	44	57826
Wasmuel	45	157343
Wegnez	46	78245

Figure 1: The population located in the areas covered by the wastewater treatment plants (highlighted in yellow) and the population density for each municipality (indicated by the blue scale). The sampling of Wegnez, Mouscron versant Espierres, Soumagne, Boom and Menen are discontinued .

4.2. WASTEWATER RESULTS

In order to account for possible dilution by rainy events and for the number of people living in the catchment area of each WWTP, a correction is applied on the viral concentration: the concentration is multiplied by the inlet flow and divided by the number of inhabitant of its respective WWTP and expressed by 100k inhabitant. The viral loads are expressed in copy/day/100k inhabitants.

The limit of quantification of the analytical method was estimated at 10 copies/ml.

4.3. ALERTING INDICATORS

To highlight the areas of possible concern, the three alerting indicators are assessed twice a week, based on viral loads (RNA copies/day/100k inhabitants):

1. The **Increasing Trend** indicator highlights the catchment areas where the viral loads have been increasing for more than 6 days. The indicator is computed based on the moving average on the past two weeks of the viral load.

2. The **Fast Increase** indicator highlights the catchment areas where the viral loads have rapidly increased for the last week. It corresponds to a situation where the moving average on the past 7 days of the viral load has increased faster than 70% per week if being above the estimated limit of quantification. The increasing slope is normalized for each treatment plant.

3. The **High Circulation** indicator highlights the catchment areas where the viral loads are high. It corresponds to a situation where the viral loads exceed half of the highest value recorded during the ninth wave (i.e. from 21th of November 2022 till first of January 2023).

The indicators were developed to monitor the different phases of an outbreak. the indicator Increasing Trend will be on alert first in the emerging phase. If the viral loads increase quickly, the Fast Increase indicator will then turn on alert. Finally, the viral loads may be sufficiently high to result in the High Circulation indicator to turn on alert.

4.4. CAUTION POINTS FOR THE RESULTS INTERPRETATION

The viral loads should not be directly compared between catchment areas, provinces, nor regions because analyses are conducted by three different laboratories. To mitigate this bias, the indicators are computed on normalized viral loads, allowing for comparison between the different areas. Further details are available in the methodology document (access online)).

5. Results

5.1. NATIONAL LEVEL

Table 1 shows, at the national level, the results obtained on the last sample of November 15th 2023, week 46, compared to the ones obtained on November 08th 2023. In this table, any change in indicator status (i.e. if the value for any indicator has changed from 0 to 1 or from 1 to 0) is indicated in **coloured bold text.**

None of the three indicators is in alert at the national level.

Table 1: Indicators in alert (1) or not (0) on November 15th 2023. Columns represent the population coverage of Belgium (Pop. coverage) and the three alerting indicators High Circulation (High), Fast Increase (Fast) and Increasing Trend (Incr.). The specifications of the four last columns are explained in the footnotes 1-4 below the table. Missing data is indicated with a "/".

Country	Pop. coverage	High	Fast	Incr.	Norm. viral load (%)[1]	Mean viral load[2]	Norm. evol. (%/week)[3]	Incr. days[4]
Belgium	42%	0	0	0	37	0.39	0	4

[1] : the viral load normalized with the maximum viral load measured in the corresponding catchment area during the ninth wave (i.e. from 21th of November 2022 till the first of January 2023).
[2] : the viral load computed on the mean of the replicate of the three targeted gene fragments as explained in section "3.2 Wastewater results". The mean viral load is expressed in 10^12 copies/day/100k inhabitants.
[3] : the slope (%/week) of the past 7 days moving average of the viral load if the corresponding concentration is above the estimated limit of quantification.
[4] : the cumulative number of days of increase of the past 14 days moving average of the viral load.

The geographical location of the areas is presented in Figure 2 together with the status of the three indicators.

The number of areas in High Circulation has risen, with 14 areas in alert. The Increasing Trend indicator is stable, with 12 areas positive. Overall, the viral loads are at a high level compared to the 9th wave. However, the situation differs amongst regions.

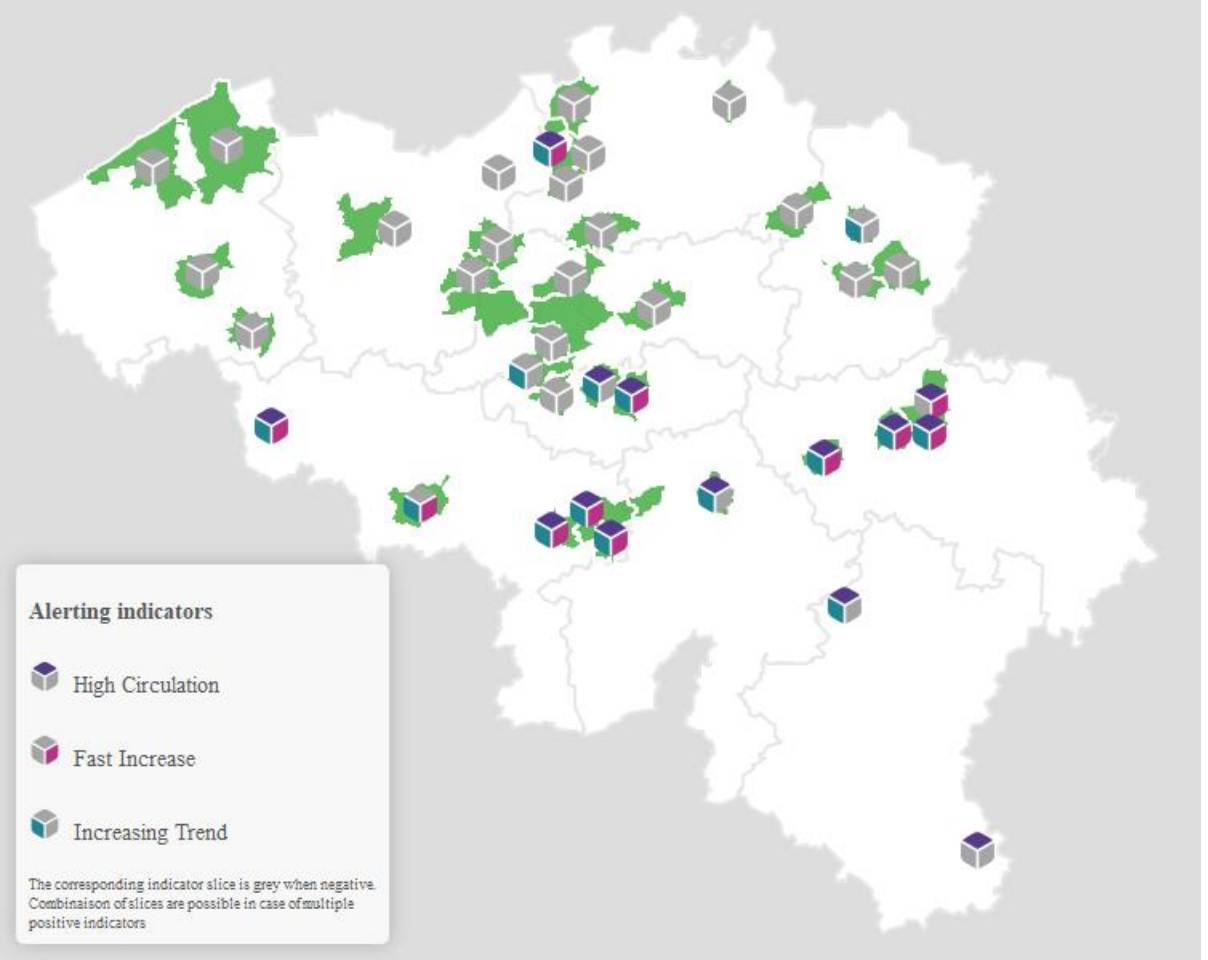


Figure 2: The geographical location of the covered areas with the corresponding status of the three alerting indicators: High circulation, Fast Increase and Increasing trend. If an indicator is in alert its corresponding slice is displayed in its colour (see legend) whereas when not in alert the same slice is greyed out. The names of the covered areas with respect of their localization can be found in Figure 1.

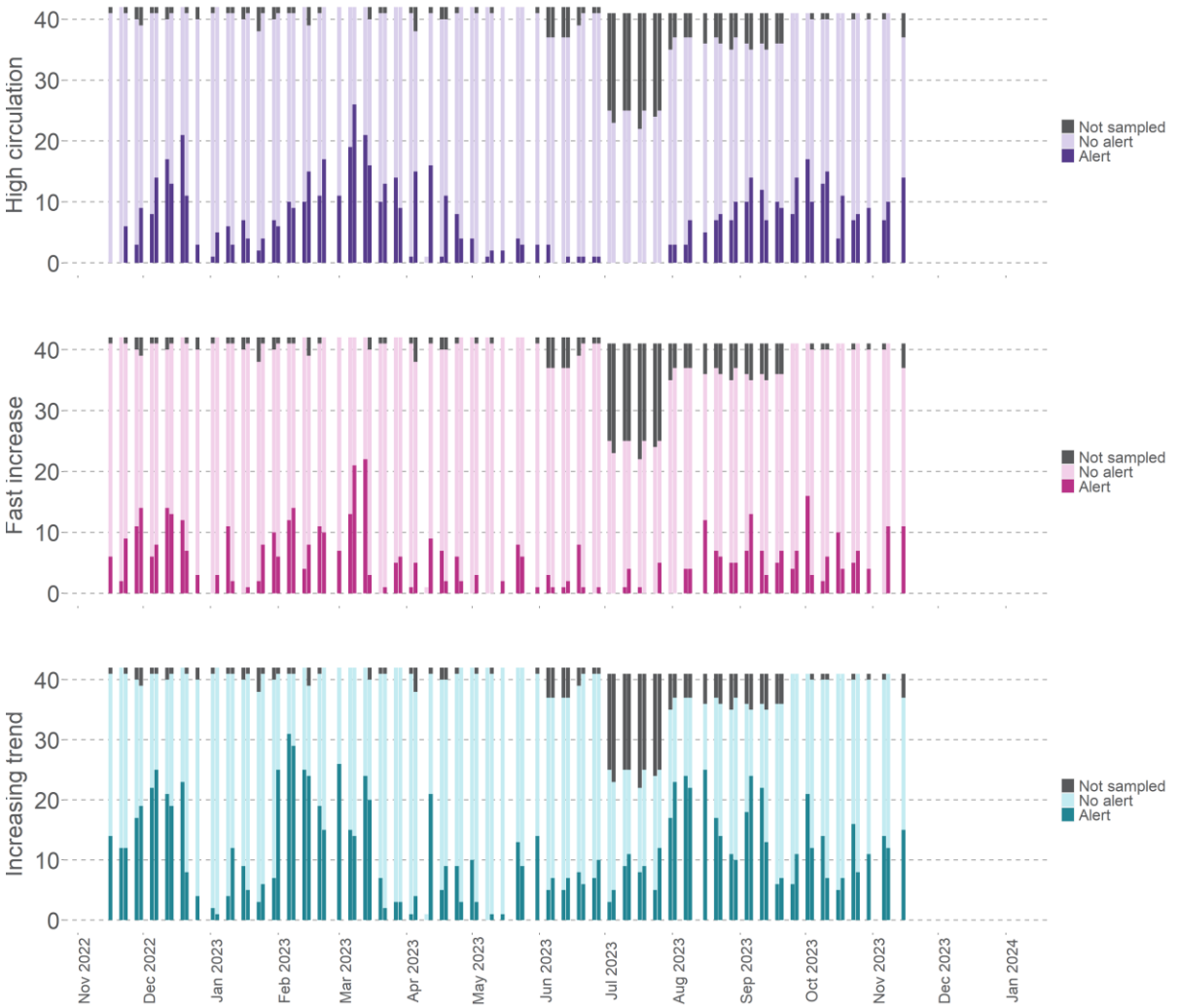


Figure 3: Number of areas having an indicator (coloured bars) in alert , number of areas having an indicator not in alert (lighter coloured bars) and number of areas not sampled (greyed out bars). Latest results correspond to November 15th 2023, week 46.

5.2. REGIONAL LEVEL

Figure 4 shows, at the regional level, the viral loads in the wastewaters.

Two waves can be seen in Figure 4:

- The 9th wave starting on 21st November 2022.
- The 10th wave starting on 23rd January 2023.

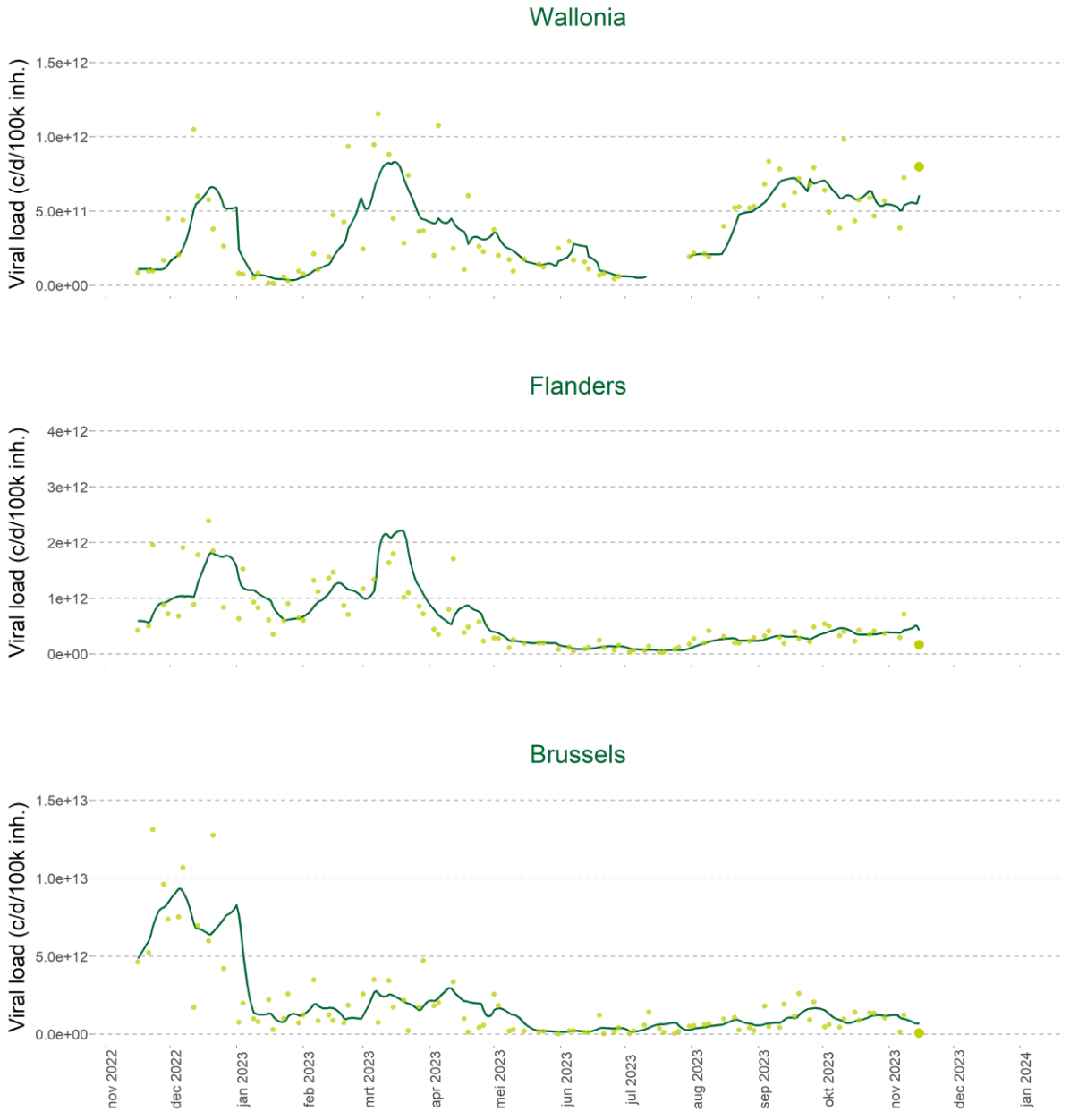


Figure 4: The SARS-CoV-2 RNA viral loads expressed as copies/days/100k inhabitants (based on the past two weeks moving average) for the three regions.

Table 2 shows, at the regional level, the results obtained on the last sample of Wednesday November 15th 2023, week 46. It allows to track the changes between the situation as of today (November 15th 2023) and the situation as of last week (November 08th 2023). Hereby, two distinct cases are taken into account:

1. If a region has at least one indicator in alert this week and it was not the case last week, its **name is displayed in bold** in the table.

2. If a region has at least one indicator in alert this week and if it also was the case last week, any change in indicator status (i.e. if the value for any indicator has changed from 0 to 1 or from 1 to 0) is indicated **in coloured bold text**.

All three indicators are in alert in Wallonia. In Flanders and Brussels, none of the three indicators are in alert.

Table 2: Indicators in alert (1) or not (0) on November 15th 2023. Columns represent the population coverage of the regions (Pop. coverage) and the three alerting indicators High Circulation (High), Fast Increase (Fast) and Increasing Trend (Incr.). The specifications of the four last columns are explained in the footnotes 1-4 below the table. Missing data is indicated with a "/".

Region	Pop. coverage	High	Fast	Incr.	Norm. viral load (%)[1]	Mean viral load[2]	Norm. evol. (%/week)[3]	Incr. days[4]
Brussels	100%	0	0	0	0.78	0.054	0	0
Flanders	36%	0	0	**0**	17.24	0.168	0	3
Wallonia	34%	1	**1**	**1**	74.32	0.798	89	7

[1] : the viral load normalized with the maximum viral load measured in the corresponding catchment area during the ninth wave (i.e. from 21th of November 2022 till the first of January 2023).
[2] : the viral load computed on the mean of the replicate of the three targeted gene fragments as explained in section "3.2 Wastewater results". The mean viral load is expressed in 10^12 copies/day/100k inhabitants.
[3] : the slope (%/week) of the past 7 days moving average of the viral load if the corresponding concentration is above the estimated limit of quantification.
[4] : the cumulative number of days of increase of the past 14 days moving average of the viral load.

5.3. PROVINCIAL LEVEL

Table 3 shows, at the provincial level, the results obtained on the last sample of Wednesday November 15th 2023, week 46. It allows to track the changes between the situation as of today (November 15th 2023) and the situation as of last week (November 08th 2023). Hereby, two distinct cases are taken into account:

1. If a province has at least one indicator in alert this week and it was not the case last week, its **name is displayed in bold** in the table.

2. If a province has at least one indicator in alert this week and if it also was the case last week, any change in indicator status (i.e. if the value for any indicator has changed from 0 to 1 or from 1 to 0) is indicated in **coloured bold text**.

Table 3 shows, for each Province, the results associated with the samples of Wednesday November 15th 2023, for the three alerting indicators:

- The Increasing Trend indicator is in alert in 2 provinces: Hainaut and Namur, and was in 3 last week.
- The Fast Increase indicator is in alert in 2 provinces: Hainaut and Liège, and was in 3 last week.
- The High Circulation indicator is in alert in 5 provinces: Brabant Wallon, Hainaut, Liège, Luxembourg and Namur, and was in 3 last week.
- The province of Hainaut is of particular concern as 3 indicators are in alert in this province.
- It should be noted that although the 50% threshold of viral load is not exceeded (in comparison to the highest level observed during the 9th wave), the viral load in the province of Antwerpen remains high (with 47.19%).

Table 3: Indicators in alert (1) or not (0) on November 15th 2023. Columns represent the population coverage of the WWTPs within the Province (Pop. coverage) and the three alerting indicators High Circulation (High), Fast Increase (Fast) and Increasing Trend (Incr.). The specifications of the four last columns are explained in the footnotes 1-4 below the table. Missing data is indicated with a "/".

Province	Pop. coverage	High	Fast	Incr.	Norm. viral load (%)[1]	Mean viral load[2]	Norm. evol. (%/w)[3]	Incr. days[4]
Antwerpen	36%	0	0	0	47.19	0.339	0	6
Brabant Wallon	44%	1	0	0	52.95	0.381	35	6
Brussels	100%	0	0	0	0.78	0.054	0	0
Hainaut	34%	1	1	1	67.23	0.760	113	10
Liège	42%	1	1	0	90.09	1.065	107	4
Limburg	23%	0	0	0	2.96	0.054	0	2
Luxembourg	10%	1	0	0	68.95	0.967	0	2
Namur	25%	1	0	1	73.55	0.342	0	7
Oost-Vlaanderen	34%	0	0	0	1.47	0.037	0	0
Vlaams-Brabant	43%	0	0	0	1.97	0.182	0	5
West-Vlaanderen	41%	0	0	0	0.52	0.048	0	0

[1] : the viral load normalized with the maximum viral load measured in the corresponding catchment area during the ninth wave (i.e. from 21th of November 2022 till the first of January 2023).

[2] : the viral load computed on the mean of the replicates of the three targeted gene fragments as explained in section "3.2 Wastewater results". The mean viral load is expressed in 10^12 copies/day/100k inhabitants.

[3] : the slope (%/week) of the past 7 days moving average of the viral load if the corresponding concentration is above the estimated limit of quantification.

[4] : the cumulative number of days of increase of the past 14 days moving average of the viral load.

5.4. INDIVIDUAL CATCHMENT AREAS LEVEL

Table 4 shows, at the catchment area level, the results obtained on the last sample of Wednesday November 15th 2023, week 46. It allows to track the changes between the situation as of today (November 15th 2023) and the situation as of last week (November 08th 2023). Hereby, three distinct cases are taken into account:

1. If an area has at least one indicator in alert this week and it was not the case last week, its **name is displayed in bold** in the table.

2. If an area has at least one indicator in alert this week and if it also was the case last week, any change in indicator status (i.e. if the value for any indicator has changed from 0 to 1 or from 1 to 0) is indicated in **coloured bold text**.

Any area which had at least one indicator in alert last week but not this week is listed below Table 4.

Here are the results associated with the samples of November 15th 2023:

- The Increasing Trend indicator is in alert in 15 covered areas. Amongst these areas, the viral load is continually increasing since two or more weeks in 4 areas: Antwerpen-Zuid (23 days), Houthalen-Centrum (23 days), Beersel (21 days) and Montignies-sur-Sambre (16 days). Further details can be found in Appendix A3. Last week, this indicator was in alert in 12 covered areas.
- The Fast Increase indicator is in alert in 11 covered areas. Last week, this indicator was in alert in 11 covered areas.
- The High Circulation indicator is in alert in 14 covered areas. The full list of these areas can be found in Appendix A1. Last week, this indicator was in alert in 10 covered areas.
- An alerting situation is evidenced for the covered areas of Amay, Antwerpen-Zuid, Basse Wavre (Dyle), Froyennes, Liege (Grosses Battes), Liege Sclessin, Marchienne-au-Pont, Montignies-sur-Sambre and Roselies as all three indicators are in alert.

The wastewater results at the level of the local covered areas can be accessed online for each area on the COVID-19 dashboard.

Table 4: Indicators in alert (1) or not (0) on November 15th 2023. Columns represent the provinces, different WWTPs within the Provinces and the three alerting indicators High Circulation (High), Fast Increase (Fast) and Increasing Trend (Incr.). The specifications of the four last columns are explained in the footnotes 1-4 below the table. Missing data is indicated with a "/".

Province	WWTP	High	Fast	Incr.	Norm. viral load (%)[1]	Mean viral load[2]	Norm evol. (%/week)[3]	Incr. days[4]
Liège	Amay	1	1	1	255.95	1.24	125.7	9
Antwerpen	Antwerpen-Zuid	1	1	1	117.11	0.94	138.9	23
Luxembourg	**Arlon**	1	0	0	70.69	0.98	0.0	0
Brabant Wallon	Basse Wavre (Dyle)	1	1	1	65.17	0.43	80.1	9
Vlaams-Brabant	Beersel	0	0	1	4.38	0.30	0.0	21
Hainaut	**Froyennes**	1	1	1	59.30	0.67	127.9	7
Limburg	Houthalen-Centrum	0	0	1	4.30	0.15	0.0	23
Liège	**Liege (Grosses Battes)**	1	1	1	169.04	2.07	147.2	7
Liège	Liege Oupeye	1	1	0	66.26	0.78	96.2	0
Liège	**Liege Sclessin**	1	1	1	62.24	1.32	111.5	9
Luxembourg	**Marche-en-Famenne**	1	0	1	65.02	0.94	0.0	7
Hainaut	**Marchienne-au-Pont**	1	1	1	53.32	1.15	254.8	7
Hainaut	Montignies-sur-Sambre	1	1	1	87.79	0.87	87.4	16
Namur	Namur-Brumagne	1	0	1	73.55	0.34	0.0	7
Hainaut	Roselies	1	1	1	122.11	1.22	122.7	9
Brabant Wallon	**Rosieres (Lasne)**	1	0	1	62.94	0.50	3.9	7
Hainaut	Wasmuel	0	1	1	23.63	0.28	77.9	9

[1] : the viral load normalized with the maximum viral load measured in the corresponding catchment area during the ninth wave (i.e. from 21th of November 2022 till the first of January 2023).
[2] : the viral load computed on the mean of the replicates of the three targeted gene fragments as explained in section "3.2 Wastewater results"; The mean viral load is expressed in 10^12 copies/day/100k inhabitants.
[3] : the slope (%/week) of the past 7 days moving average of the viral load if the corresponding concentration is above the estimated limit of quantification.
[4] : the cumulative number of days of increase of the past 14 days moving average of the viral load.

The following areas had the corresponding indicator in alert last week but not this week:

- Increasing Trend indicator: Aalst, Aartselaar, Antwerpen-Noord, Grimbergen, Hasselt, Mechelen-Noord, Sint-Niklaas and Tessenderlo.
- Fast Increase indicator: Aalst, Genk, Grimbergen, Mechelen-Noord, Sint-Niklaas and Tessenderlo.
- High Circulation indicator: Antwerpen-Noord, Deurne, Genk and Tessenderlo.

Further details on covered area without indicators in alert can be found in Table A4.

6. Appendix – Areas classified by indicator

Table A1: Areas for which the High Circulation indicator is in alert (14 out of 41 on November 15th 2023).

Province	WWTP	High	Fast	Incr.	Norm. viral load (%)[1]	Mean viral load[2]	Norm evol. (%/week)[3]	Incr. days[4]	Date Max cc[5]
Liège	Amay	1	1	1	255.95	1.24	125.7	9	15/03/2023
Liège	Liege (Grosses Battes)	1	1	1	169.04	2.07	147.2	7	25/09/2023
Hainaut	Roselies	1	1	1	122.11	1.22	122.7	9	06/09/2023
Antwerpen	Antwerpen-Zuid	1	1	1	117.11	0.94	138.9	23	15/03/2023
Hainaut	Montignies-sur-Sambre	1	1	1	87.79	0.87	87.4	16	22/03/2023
Namur	Namur-Brumagne	1	0	1	73.55	0.34	0.0	7	27/09/2023
Luxembourg	Arlon	1	0	0	70.69	0.98	0.0	0	30/08/2023
Liège	Liege Oupeye	1	1	0	66.26	0.78	96.2	0	08/03/2023
Brabant Wallon	Basse Wavre (Dyle)	1	1	1	65.17	0.43	80.1	9	11/10/2023
Luxembourg	Marche-en-Famenne	1	0	1	65.02	0.94	0.0	7	27/09/2023
Brabant Wallon	Rosieres (Lasne)	1	0	1	62.94	0.50	3.9	7	06/09/2023
Liège	Liege Sclessin	1	1	1	62.24	1.32	111.5	9	08/03/2023
Hainaut	Froyennes	1	1	1	59.30	0.67	127.9	7	11/10/2023
Hainaut	Marchienne-au-Pont	1	1	1	53.32	1.15	254.8	7	9th wave

[1] : the viral load normalized with the maximum viral load measured in the corresponding catchment area during the ninth wave (i.e. from 21th of November 2022 till the first of January 2023).

[2] : the viral load computed on the mean of the replicates of the three targeted gene fragments as explained in section "3.2 Wastewater results". The mean viral load is expressed in 10^12 copies/day/100k inhabitants.

[3] : the slope (%/week) of the past 7 days moving average of the viral load if the corresponding concentration is above the estimated limit of quantification.

[4] : the cumulative number of days of increase of the past 14 days moving average of the viral load.

[5] : date at which the measured viral load was the highest since the beginning of the ninth wave. If the date was between the 21th of November 2022 and the first of January 2023, the date is considered to be during the ninth wave and mentioned as such.

Table A2: Areas for which the Fast Increase indicator is in alert (11 out of 41 on the November 15th 2023).

Province	WWTP	High	Fast	Incr.	Norm. viral load (%)[1]	Mean viral load[2]	Norm evol. (%/week)[3]	Incr. days[4]	Date Max cc[5]
Hainaut	Marchienne-au-Pont	1	1	1	53.32	1.15	254.8	7	9th wave
Liège	Liege (Grosses Battes)	1	1	1	169.04	2.07	147.2	7	25/09/2023
Antwerpen	Antwerpen-Zuid	1	1	1	117.11	0.94	138.9	23	15/03/2023
Hainaut	Froyennes	1	1	1	59.30	0.67	127.9	7	11/10/2023
Liège	Amay	1	1	1	255.95	1.24	125.7	9	15/03/2023
Hainaut	Roselies	1	1	1	122.11	1.22	122.7	9	06/09/2023
Liège	Liege Sclessin	1	1	1	62.24	1.32	111.5	9	08/03/2023
Liège	Liege Oupeye	1	1	0	66.26	0.78	96.2	0	08/03/2023
Hainaut	Montignies-sur-Sambre	1	1	1	87.79	0.87	87.4	16	22/03/2023
Brabant Wallon	Basse Wavre (Dyle)	1	1	1	65.17	0.43	80.1	9	11/10/2023
Hainaut	Wasmuel	0	1	1	23.63	0.28	77.9	9	9th wave

[1] : the viral load normalized with the maximum viral load measured in the corresponding catchment area during the ninth wave (i.e. from 21th of November 2022 till the first of January 2023).

[2] : the viral load computed on the mean of the replicates of the three targeted gene fragments as explained in section "3.2 Wastewater results". The mean viral load is expressed in 10^12 copies/day/100k inhabitants.

[3] : the slope (%/week) of the past 7 days moving average of the viral load if the corresponding concentration is above the estimated limit of quantification.

[4] : the cumulative number of days of increase of the past 14 days moving average of the viral load.

[5] : date at which the measured viral load was the highest since the beginning of the ninth wave. If the date was between the 21th of November 2022 and the first of January 2023, the date is considered to be during the ninth wave and mentioned as such.

Table A3: Areas for which the Increasing Trend indicator is in alert (15 out of 41 on the November 15th 2023).

Province	WWTP	High	Fast	Incr.	Norm. viral load (%)[1]	Mean viral load[2]	Norm evol. (%/week)[3]	Incr. days[4]	Date Max cc[5]
Antwerpen	Antwerpen-Zuid	1	1	1	117.11	0.94	138.9	23	15/03/2023
Limburg	Houthalen-Centrum	0	0	1	4.30	0.15	0.0	23	9th wave
Vlaams-Brabant	Beersel	0	0	1	4.38	0.30	0.0	21	9th wave
Hainaut	Montignies-sur-Sambre	1	1	1	87.79	0.87	87.4	16	22/03/2023
Liège	Amay	1	1	1	255.95	1.24	125.7	9	15/03/2023
Brabant Wallon	Basse Wavre (Dyle)	1	1	1	65.17	0.43	80.1	9	11/10/2023
Liège	Liege Sclessin	1	1	1	62.24	1.32	111.5	9	08/03/2023
Hainaut	Roselies	1	1	1	122.11	1.22	122.7	9	06/09/2023
Hainaut	Wasmuel	0	1	1	23.63	0.28	77.9	9	9th wave
Hainaut	Froyennes	1	1	1	59.30	0.67	127.9	7	11/10/2023
Liège	Liege (Grosses Battes)	1	1	1	169.04	2.07	147.2	7	25/09/2023
Luxembourg	Marche-en-Famenne	1	0	1	65.02	0.94	0.0	7	27/09/2023
Hainaut	Marchienne-au-Pont	1	1	1	53.32	1.15	254.8	7	9th wave
Namur	Namur-Brumagne	1	0	1	73.55	0.34	0.0	7	27/09/2023
Brabant Wallon	Rosieres (Lasne)	1	0	1	62.94	0.50	3.9	7	06/09/2023

[1] : the viral load normalized with the maximum viral load measured in the corresponding catchment area during the ninth wave (i.e. from 21th of November 2022 till the first of January 2023).

[2] : the viral load computed on the mean of the replicates of the three targeted gene fragments as explained in section "3.2 Wastewater results". The mean viral load is expressed in 10^12 copies/day/100k inhabitants.

[3] : the slope (%/week) of the past 7 days moving average of the viral load if the corresponding concentration is above the estimated limit of quantification.

[4] : the cumulative number of days of increase of the past 14 days moving average of the viral load.

[5] : date at which the measured viral load was the highest since the beginning of the ninth wave. If the date was between the 21th of November 2022 and the first of January 2023, the date is considered to be during the ninth wave and mentioned as such.

Table A4: Areas for which none of the three indicators is in alert (20 out of 41 on the November 15th 2023).

Province	WWTP	High	Fast	Incr.	Norm. viral load (%)[1]	Mean viral load[2]	Norm evol. (%/week)[3]	Incr. days[4]	Date Max cc[5]
Oost-Vlaanderen	Aalst	0	0	0	1.6	0.04	0	0	08/03/2023
Antwerpen	Aartselaar	0	0	0	10.21	0.05	0	0	08/03/2023
Antwerpen	Antwerpen-Noord	0	0	0	11.72	0.06	0	0	08/03/2023
West-Vlaanderen	Brugge	0	0	0	0	0	0	0	04/01/2023
Brussels	Brussels-South	0	0	0	0.78	0.05	0	0	03/10/2022
Oost-Vlaanderen	Dendermonde	0	0	0	0	0	0	0	06/02/2023
Oost-Vlaanderen	Destelbergen	0	0	0	0	0	0	0	17/10/2022
Antwerpen	Deurne	0	0	0	42.69	0.24	0	0	08/03/2023
Limburg	Genk	0	0	0	7.49	0.11	0	0	08/03/2023
Vlaams-Brabant	Grimbergen	0	0	0	1.56	0.23	0	0	9th wave
West-Vlaanderen	Harelbeke	0	0	0	0.48	0.04	0	0	9th wave
Limburg	Hasselt	0	0	0	0	0	0	0	08/03/2023
Vlaams-Brabant	Leuven	0	0	0	1	0.08	0	0	9th wave
Antwerpen	Mechelen-Noord	0	0	0	0	0	0	0	08/03/2023
West-Vlaanderen	Oostende	0	0	0	1.49	0.14	0	0	9th wave
West-Vlaanderen	Roeselare	0	0	0	0	0	0	0	05/10/2022
Oost-Vlaanderen	Sint-Niklaas	0	0	0	5.13	0.13	0	0	9th wave
Limburg	Tessenderlo	0	0	0	0	0	0	0	15/03/2023
Antwerpen	Turnhout	0	0	0	0	0	0	0	01/03/2023
Brabant Wallon	Vallee du Hain (L'Orchis)	0	0	0	28.28	0.22	0	0	30/10/2023

[1] : the viral load normalized with the maximum viral load measured in the corresponding catchment area during the ninth wave (i.e. from 21th of November 2022 till the first of January 2023).

[2] : the viral load computed on the mean of the replicates of the three targeted gene fragments as explained in section "3.2 Wastewater results". The mean viral load is expressed in 10^12 copies/day/100k inhabitants.

[3] : the slope (%/week) of the past 7 days moving average of the viral load if the corresponding concentration is above the estimated limit of quantification.

[4] : the cumulative number of days of increase of the past 14 days moving average of the viral load.

[5] : date at which the measured viral load was the highest since the beginning of the ninth wave. If the date was between the 21th of November 2022 and the first of January 2023, the date is considered to be during the ninth wave and mentioned as such.

Table A5: Areas for which the data are missing on November 15th 2023.

Province	WWTP
Brussels	Brussels-North
Oost-Vlaanderen	Gent
Vlaams-Brabant	Liedekerke
Namur	Mornimont