



Technical Report

Site-level Quantification: [REDACTED] Gas
Station

August 2025



About the report

Title: Site-level Quantification: [REDACTED] Gas Station

Version: 1.0

Date: 14.10.2025

Data collection:

[REDACTED]

[REDACTED]

Data processing:

[REDACTED]

Reporting:

[REDACTED]

Review:

[REDACTED]

The document layout, graphics, and content constitute intellectual property of [REDACTED] and [REDACTED] if not specifically indicated otherwise. Any distribution or dissemination of whole or partial content or layout of the report shall be agreed with the authors. Unauthorized reproduction of whole or part of the content shall be prosecuted within the laws concerning intellectual property and copyright.

Copyright © [REDACTED]

Company:

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Client:

[REDACTED]

Reference Person:

[REDACTED]

[REDACTED]



Executive summary

Total methane flux quantification was carried out at the [REDACTED] gas station in [REDACTED] on the 27th of August 2025.

[REDACTED] was contracted to provide site-level methane flux quantification at the [REDACTED] site in [REDACTED]. The site of [REDACTED] has two distinct elements, the main site (gas delivery station) and a flare installed outside the main area. The gas station has two compressors, where only one was working by the time of measurement, as well as a gas turbine with CO₂ exhaust. The main elements are shown in [REDACTED] below:

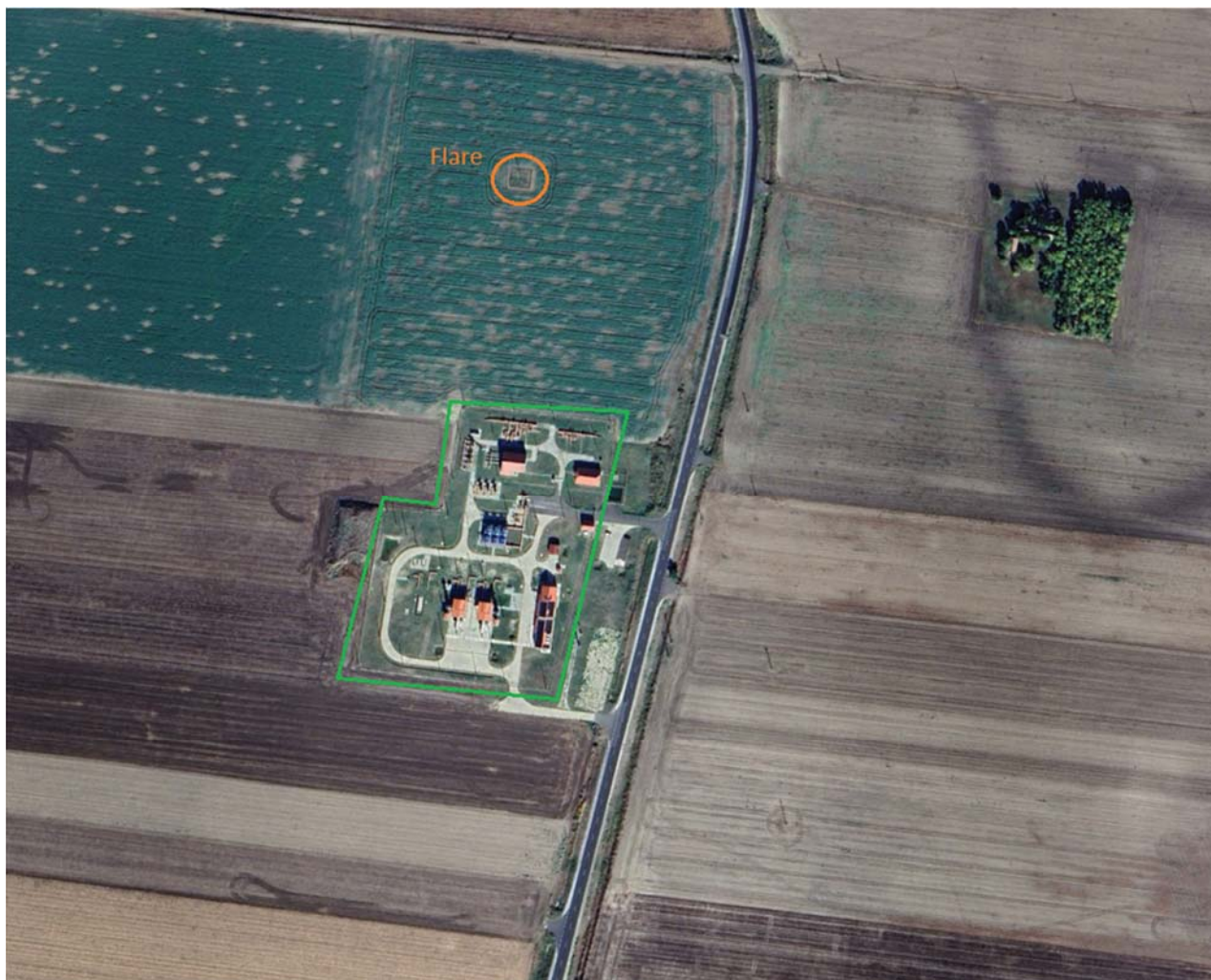


Figure 1 – Site overview of Csnadápalota gas station (green) and flare (orange).



Figure 2 shows total flux results for site-level measurements from the gas station during operating conditions, respectively on the 27th of August. Moreover, some quantification results from the flare on the 27th of August are shown in Figure 2 (measurements 10 to 13).

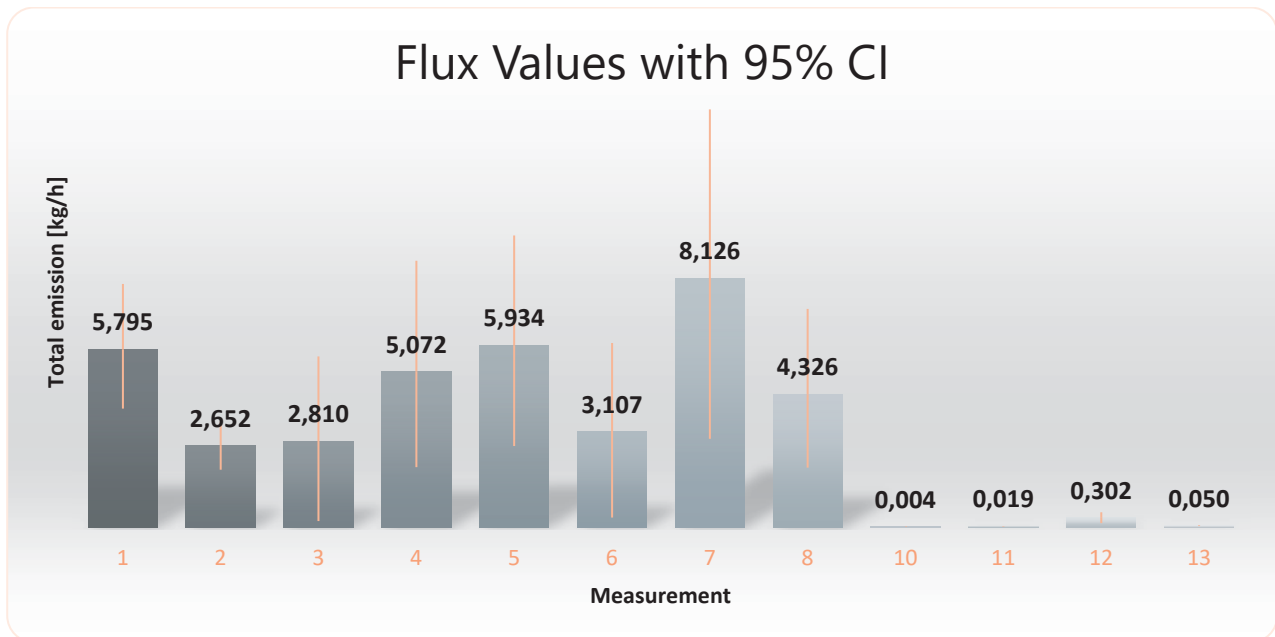


Figure 2 – Diagram showing flux results with 95% CI.

Table of contents

Executive summary	3
1. Results	1
1.1. Methodology	1
1.2. General synopsis	1
1.3. Flux results overview	1
1.4. Comments	3
2. Conclusions and recommendations	3
3. Transect reports	4
3.1. Measurement 1	4
3.2. Measurement 2	5
3.3. Measurement 3	6
3.4. Measurement 4	7
3.5. Measurement 5	8
3.6. Measurement 6	9
3.7. Measurement 7	10
3.8. Measurement 8	11
3.9. Measurement 10	12
3.10. Measurement 11	13
3.11. Measurement 12	14
3.12. Measurement 13	15



1. Results

1.1. Methodology

A complete description of the Flux quantification methodology is presented for reference in [REDACTED]

1.2. General synopsis

By means of top-down approach, methane gas emissions from the whole gas station could be successfully quantified in [REDACTED]. Description of the flights for quantification and timing is given in the results in chapters 1.3 below.

Along with quantification results, flight reports have been included at the end of this document.

1.3. Flux results overview

Measurement transects with corresponding flux results are shown in Table 1 below. A total average flux has been calculated for the site-level quantification in operating conditions, and for the flare emissions during non-operating conditions. Minimum and maximum values are also given. Figure 3 shows the total flux results from the measurements.

Table 1 – Results overview and transects' time of flight.

Measurement	Target source	Calculated CH ₄ emissions flux (Kg·h ⁻¹) at 95% CI	Time of flight (local)
1	Gas station	5.795 [3.87, 7.937]	2025-08-27 10:54:07 - 10:57:15
2	Gas station	2.652 [1.877, 3.44]	2025-08-27 11:06:42 - 11:13:03
3	Gas station	2.81 [0.202, 5.57]	2025-08-27 11:25:41 - 11:32:06
4	Gas station	5.072 [1.959, 8.693]	2025-08-27 11:42:28 - 11:47:17
5	Gas station	5.934 [2.646, 9.52]	2025-08-27 12:17:32 - 12:25:35
6	Gas station	3.107 [0.314, 6.012]	2025-08-27 12:37:22 - 12:41:49
7	Gas station	8.126 [2.885, 13.63]	2025-08-27 12:53:14 - 13:00:46
8	Gas station	4.326 [1.945, 7.122]	2025-08-27 13:09:29 - 13:15:48
Average		4.728 [1.716, 7.994]	

10	Flare	0.004 [0.003, 0.005]	2025-08-27 16:41:56 - 16:44:37
11	Flare	0.019 [0.009, 0.032]	2025-08-27 16:55:13 - 17:00:27
12	Flare	0.302 [0.132, 0.485]	2025-08-27 17:07:23 - 17:12:39
13	Flare	0.050 [0.038, 0.067]	2025-08-27 18:08:35 - 18:15:10
Average		0.094 [0.009, 0.186]	

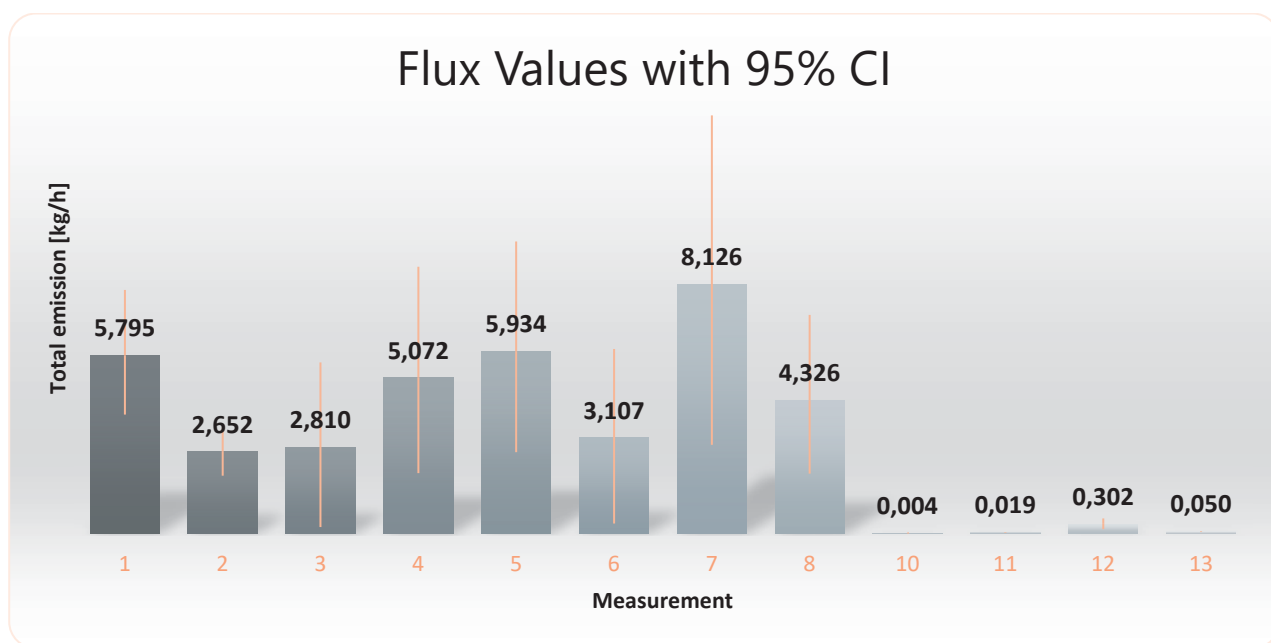


Figure 3 – Results overview and measurement transects.

1.4. Comments

For the site-level transects at the gas station measurements were carried out on the 27th of August 2025.

On the 27th of August, measurements of emissions from the flare were also carried out to quantify possible leaks. No flare efficiencies were calculated as this was outside of the scope of the assignment.

The uncertainties quantified are mainly due to wind variations in speed and direction during the measurements, particularly for the flights conducted by the gas station on the 27th of August during the afternoon where mean wind speed was quite low and wind was turning. Some of these flights, with no stable wind directions, were therefore excluded.

On the 27th of August, the wind varied from north-east-east to south-west directions during the measurement day. The mean wind speed during the transects ranged from 0,7 – 5,1 m/s.

2. Conclusions and recommendations

Methane emissions could be detected and measured from the gas station in [REDACTED]. Diffused site-level emission of methane from the station was measured and quantified. A total average emission of 4,728 kg CH₄/h [1,716 kg CH₄/h; 7,994 kg CH₄/h] could be calculated with 95% confidence for the gas station on the 27th of August. No artificial leak from the station was created.

Whilst a total average emission of 0,094 kg CH₄/h [0,009 kg CH₄/h; 0,186 kg CH₄/h] could be calculated with 95% confidence for the flare unit during non-operating conditions.

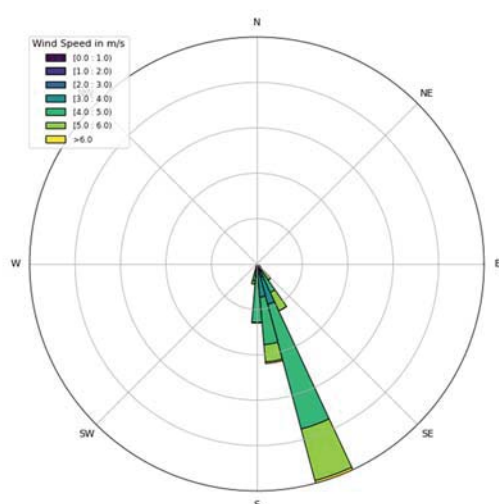
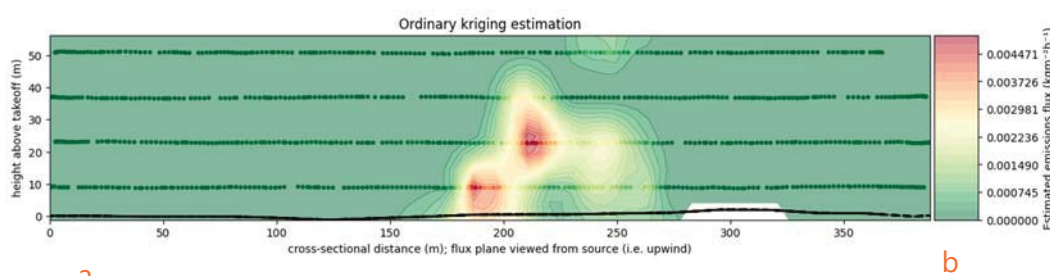
The following actions are recommended:

1. Check regularly for and improve insulation levels of pipelines, gas fittings (valves, flanges, etc) and other potential sources of emissions in the western part of the site.
2. Regular site-level flux measurements to build up historical data and further mitigation strategy for this and other sites.

3. Transect reports

3.1. Measurement 1

Results	
Start/end of data [Local time]	2025-08-27 10:54:07-10:57:15
Transect start/end co-ordinates	46.206166°, 20.712570° 46.206402°, 20.717590°
Transect altitude range	9m - 51m (AGL)
Mean wind speed (9.0m) and direction (2m)	$4.5\text{ms}^{-1} \pm 1.5\text{ms}^{-1}$ at $163^\circ \pm 22^\circ$
Estimated total methane flux [95% C.I.]	5.795kg h^{-1} [3.87kg h^{-1} , 7.937kg h^{-1}]
Peak flux location	46.206293°, 20.715331°, 23m (AGL)



Wind speed and direction

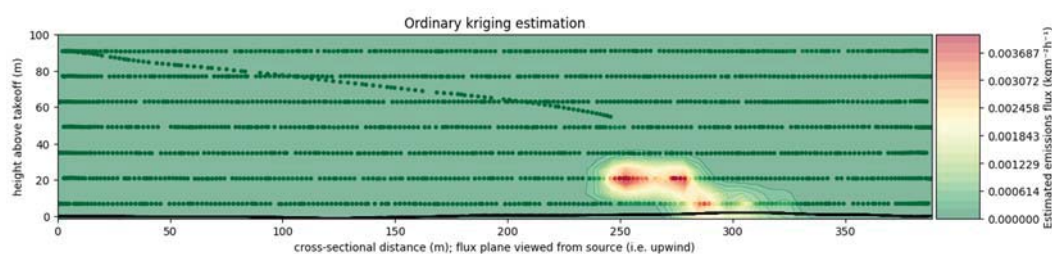


Flight path and average wind arrow

Comment:

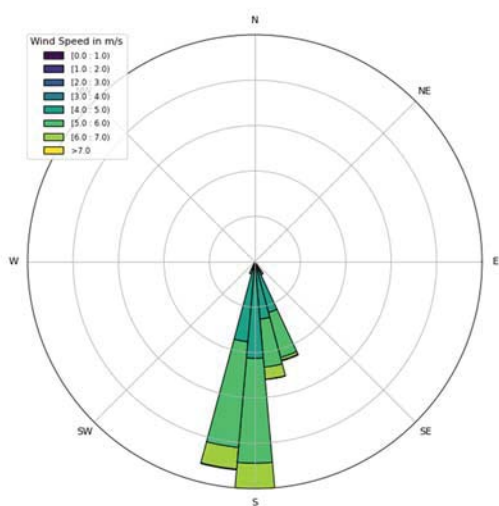
3.2. Measurement 2

Results	
Start/end of data [Local time]	2025-08-27 11:06:42-11:13:03
Transect start/end co-ordinates	46.206166°, 20.712571° 46.206407°, 20.717594°
Transect altitude range	7m - 91m (AGL)
Mean wind speed (9.0m) and direction (2m)	$5.1\text{ms}^{-1} \pm 1.4\text{ms}^{-1}$ at $178^\circ \pm 23^\circ$
Estimated total methane flux [95% C.I.]	2.652kg h^{-1} [1.877kg h^{-1} , 3.44kg h^{-1}]
Peak flux location	46.206337°, 20.716150°, 21m (AGL)



a

b



Wind speed and direction

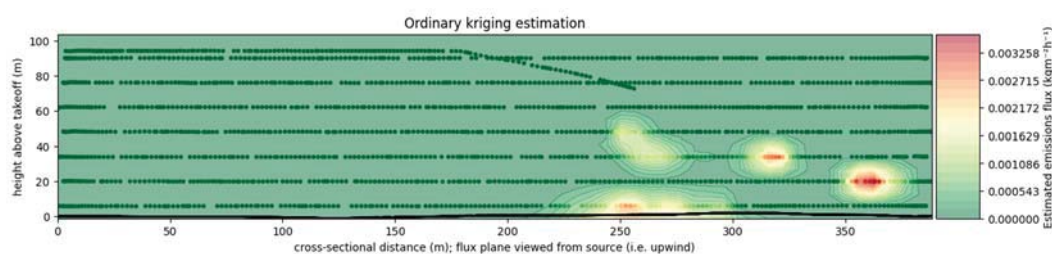


Flight path and average wind arrow

Comment:

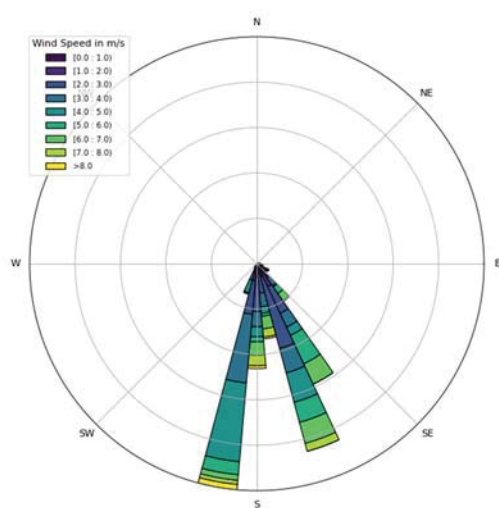
3.3. Measurement 3

Results	
Start/end of data [Local time]	2025-08-27 11:25:41-11:32:06
Transect start/end co-ordinates	46.206162°, 20.712571° 46.206408°, 20.717594°
Transect altitude range	6m - 94m (AGL)
Mean wind speed (9.0m) and direction (2m)	$3.8\text{ms}^{-1} \pm 3.5\text{ms}^{-1}$ at $168^\circ \pm 43^\circ$
Estimated total methane flux [95% C.I.]	2.81kg h^{-1} [0.2023kg h^{-1} , 5.57kg h^{-1}]
Peak flux location	46.206390°, 20.717265°, 20m (AGL)



a

b



Wind speed and direction

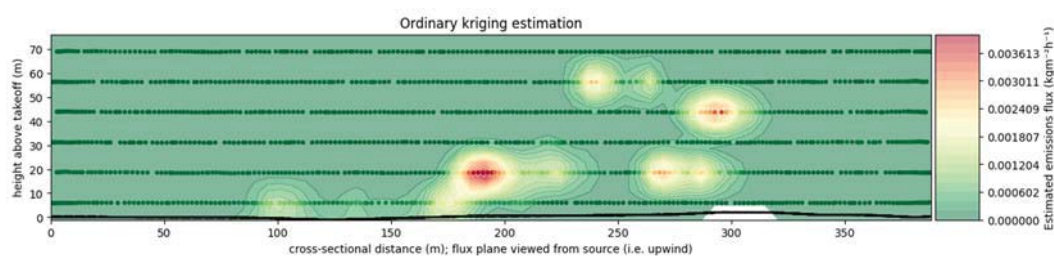


Flight path and average wind arrow

Comment:

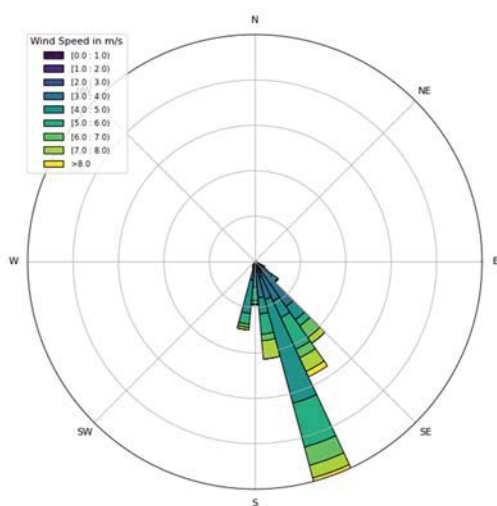
3.4. Measurement 4

Results	
Start/end of data [Local time]	2025-08-27 11:42:28-11:47:17
Transect start/end co-ordinates	46.206167°, 20.712570° 46.206407°, 20.717589°
Transect altitude range	6m - 69m (AGL)
Mean wind speed (9.0m) and direction (2m)	$4.7\text{ms}^{-1} \pm 2.9\text{ms}^{-1}$ at $158^\circ \pm 35^\circ$
Estimated total methane flux [95% C.I.]	5.072kg h^{-1} [1.959kg h^{-1} , 8.693kg h^{-1}]
Peak flux location	46.206284°, 20.715061°, 19m (AGL)



a

b



Wind speed and direction

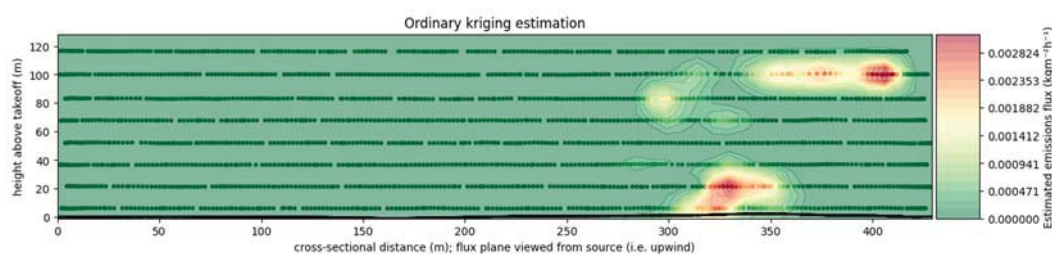


Flight path and average wind arrow

Comment:

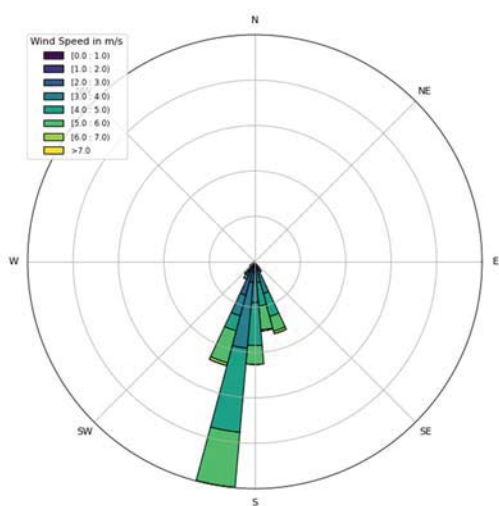
3.5. Measurement 5

Results	
Start/end of data [Local time]	2025-08-27 12:17:32-12:25:35
Transect start/end co-ordinates	46.206120°, 20.712047° 46.206407°, 20.717593°
Transect altitude range	6m - 117m (AGL)
Mean wind speed (9.0m) and direction (2m)	$4.1\text{ms}^{-1} \pm 2.3\text{ms}^{-1}$ at $185^\circ \pm 33^\circ$
Estimated total methane flux [95% C.I.]	5.934kg h^{-1} [2.646kg h^{-1} , 9.52kg h^{-1}]
Peak flux location	46.206405°, 20.717242°, 100m (AGL)



a

b



Wind speed and direction

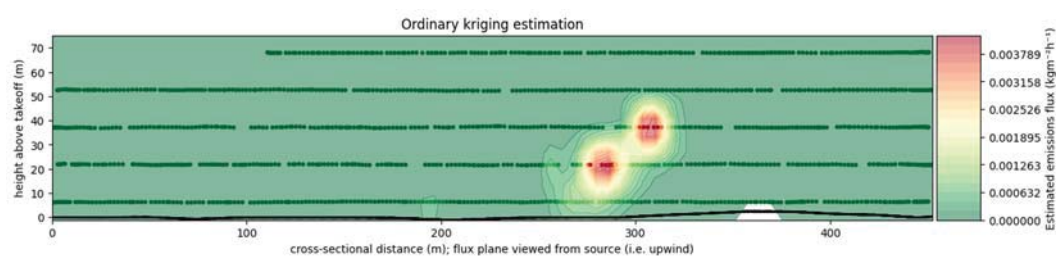


Flight path and average wind arrow

Comment:

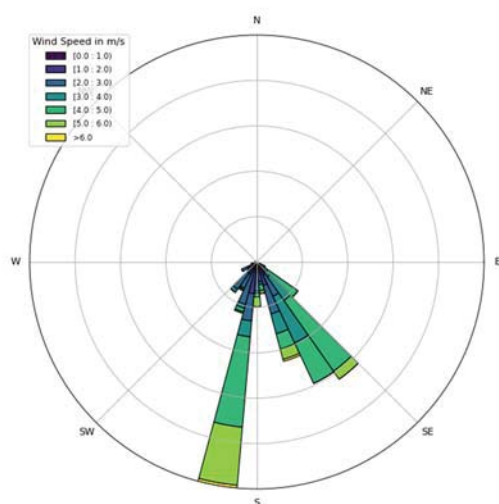
3.6. Measurement 6

Results	
Start/end of data [Local time]	2025-08-27 12:37:22-12:41:49
Transect start/end co-ordinates	46.205580°, 20.711846° 46.206410°, 20.717591°
Transect altitude range	6m - 68m (AGL)
Mean wind speed (9.0m) and direction (2m)	3.4ms ⁻¹ ± 2.7ms ⁻¹ at 171° ± 58°
Estimated total methane flux [95% C.I.]	3.107kg h ⁻¹ [0.3142kg h ⁻¹ , 6.012kg h ⁻¹]
Peak flux location	46.206138°, 20.715733°, 37m (AGL)



a

b



Wind speed and direction



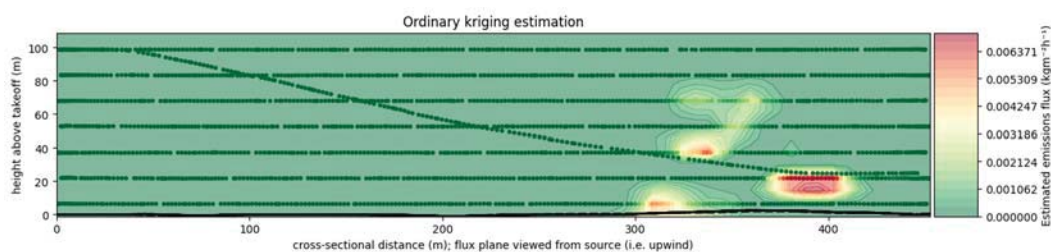
Flight path and average wind arrow

Comment:



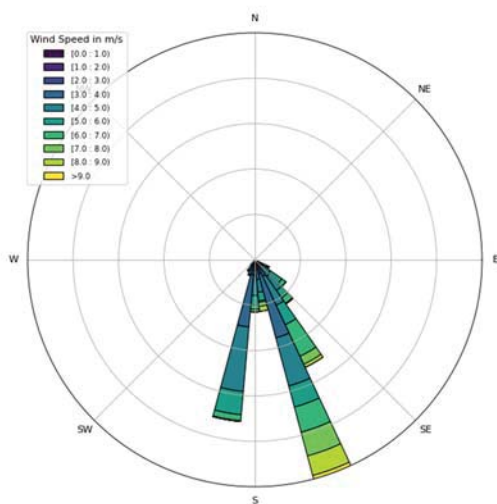
3.7. Measurement 7

Results	
Start/end of data [Local time]	2025-08-27 12:53:14-13:00:46
Transect start/end co-ordinates	46.205580°, 20.711848° 46.206410°, 20.717593°
Transect altitude range	6m - 99m (AGL)
Mean wind speed (9.0m) and direction (2m)	4.8ms ⁻¹ ± 2.9ms ⁻¹ at 165° ± 42°
Estimated total methane flux [95% C.I.]	8.126kg ⁻¹ [2.885kg ⁻¹ , 13.63kg ⁻¹]
Peak flux location	46.206316°, 20.716957°, 22m (AGL)



a

b



Wind speed and direction

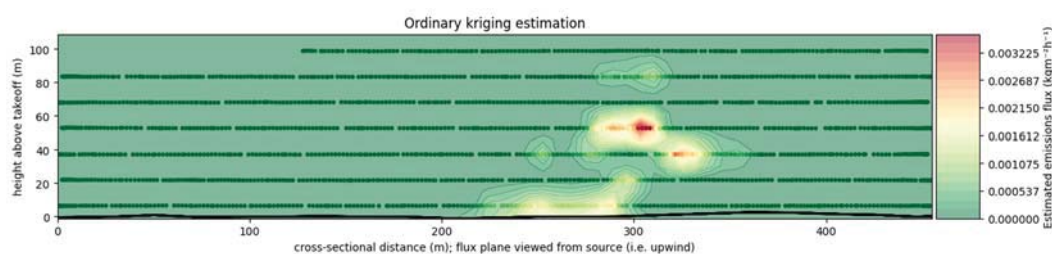


Flight path and average wind arrow

Comment:

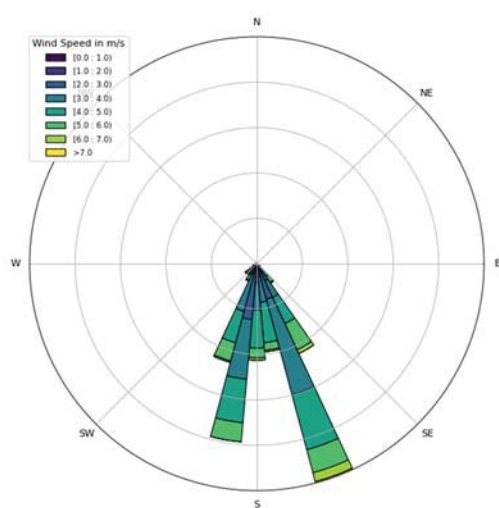
3.8. Measurement 8

Results	
Start/end of data [Local time]	2025-08-27 13:09:29-13:15:48
Transect start/end co-ordinates	46.205450°, 20.711861° 46.206411°, 20.717595°
Transect altitude range	6m - 99m (AGL)
Mean wind speed (9.0m) and direction (2m)	$3.9\text{ms}^{-1} \pm 2.1\text{ms}^{-1}$ at $176^\circ \pm 43^\circ$
Estimated total methane flux [95% C.I.]	4.326kg h^{-1} [1.945kg h^{-1} , 7.122kg h^{-1}]
Peak flux location	46.206097°, 20.715721°, 53m (AGL)



a

b



Wind speed and direction

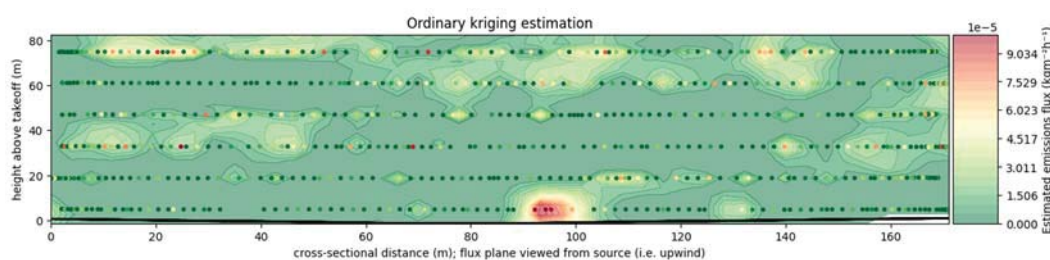


Flight path and average wind arrow

Comment:

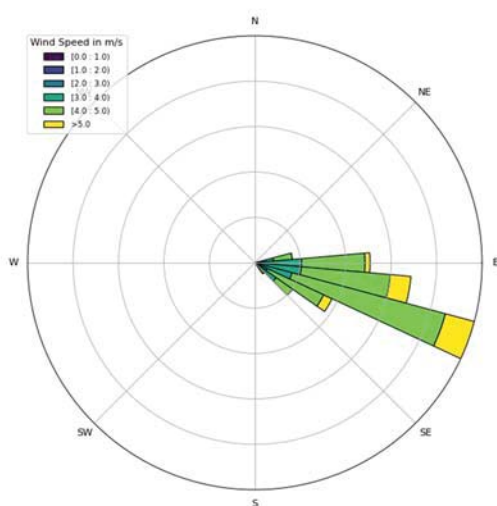
3.9. Measurement 10

Results	
Start/end of data [Local time]	2025-08-27 16:41:56-16:44:37
Transect start/end co-ordinates	46.206694°, 20.715135° 46.208131°, 20.715928°
Transect altitude range	5m - 75m (AGL)
Mean wind speed (9.0m) and direction (2m)	4.3ms ⁻¹ ± 1.2ms ⁻¹ at 105° ± 27°
Estimated total methane flux [95% C.I.]	0.0042kg h ⁻¹ [0.003003kg h ⁻¹ , 0.005526kg h ⁻¹]
Peak flux location	46.207494°, 20.715580°, 5m (AGL)



a

b



Wind speed and direction

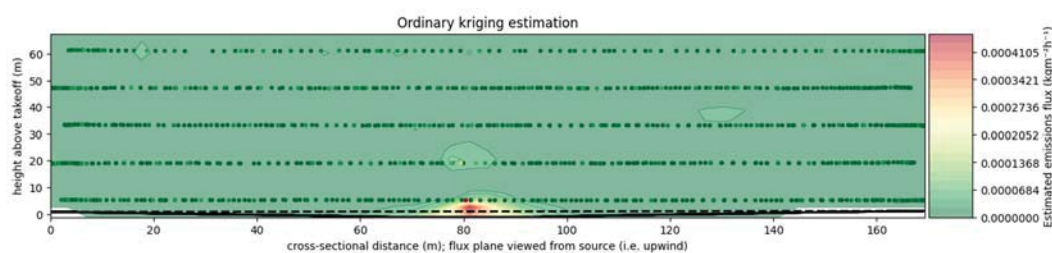


Flight path and average wind arrow

Comment:

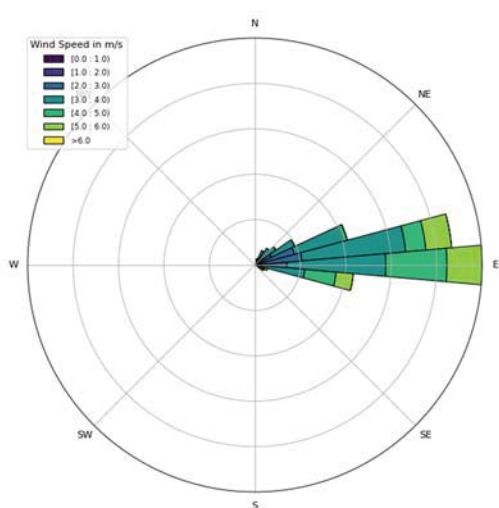
3.10. Measurement 11

Results	
Start/end of data [Local time]	2025-08-27 16:55:13-17:00:27
Transect start/end co-ordinates	46.206691°, 20.715133° 46.208127°, 20.715871°
Transect altitude range	5m - 61m (AGL)
Mean wind speed (9.0m) and direction (2m)	$3.7\text{ms}^{-1} \pm 1.7\text{ms}^{-1}$ at $80^\circ \pm 34^\circ$
Estimated total methane flux [95% C.I.]	0.01937kg h^{-1} [0.009999kg h^{-1} , 0.03246kg h^{-1}]
Peak flux location	46.207378°, 20.715497°, 5m (AGL)



a

b



Wind speed and direction

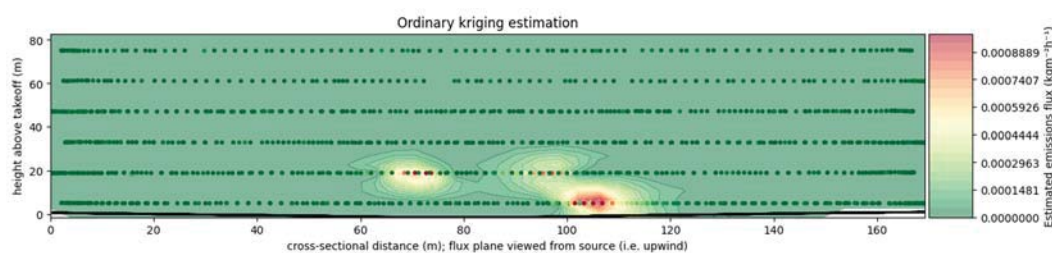


Flight path and average wind arrow

Comment:

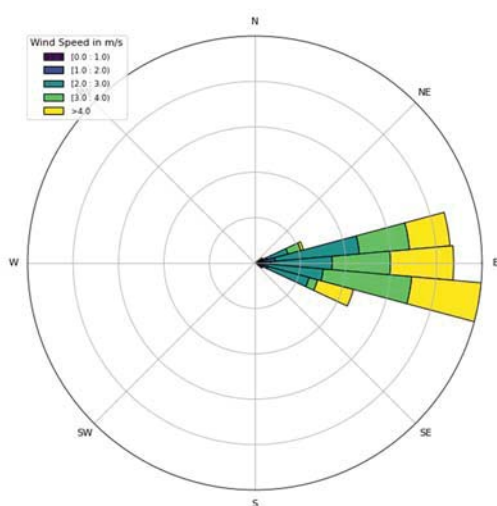
3.11. Measurement 12

Results	
Start/end of data [Local time]	2025-08-27 17:07:23-17:12:39
Transect start/end co-ordinates	46.206691°, 20.715133° 46.208126°, 20.715869°
Transect altitude range	5m - 75m (AGL)
Mean wind speed (9.0m) and direction (2m)	$3.2\text{ms}^{-1} \pm 1.8\text{ms}^{-1}$ at $91^\circ \pm 24^\circ$
Estimated total methane flux [95% C.I.]	0.3024kg h^{-1} [0.1326kg h^{-1} , 0.485kg h^{-1}]
Peak flux location	46.207567°, 20.715580°, 5m (AGL)



a

b



Wind speed and direction

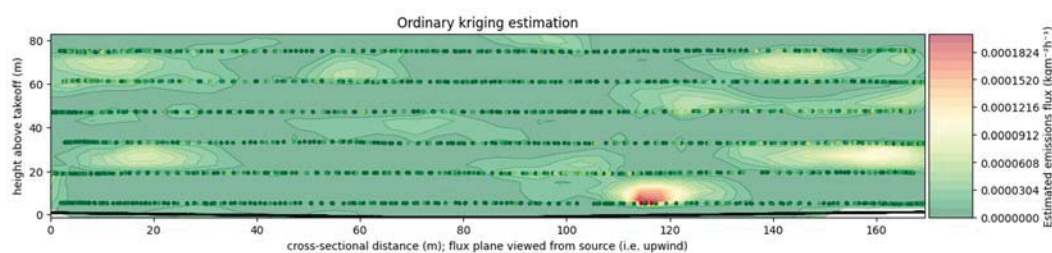


Flight path and average wind arrow

Comment:

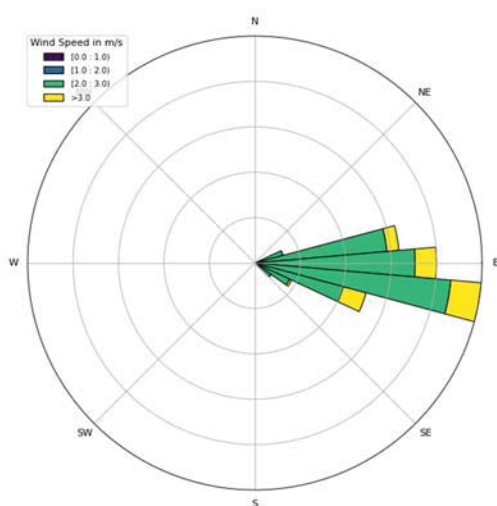
3.12. Measurement 13

Results	
Start/end of data [Local time]	2025-08-27 18:08:35-18:15:10
Transect start/end co-ordinates	46.206690°, 20.715131° 46.208128°, 20.715863°
Transect altitude range	5m - 76m (AGL)
Mean wind speed (9.0m) and direction (2m)	2.6ms ⁻¹ ± 0.7ms ⁻¹ at 95° ± 26°
Estimated total methane flux [95% C.I.]	0.0505kg ⁻¹ [0.03794kg ⁻¹ , 0.06711kg ⁻¹]
Peak flux location	46.207678°, 20.715637°, 5m (AGL)



a

b



Wind speed and direction



Flight path and average wind arrow

Comment: