

OR Annual report 2021

Appendices



Atmospheric concentrations of H₂S in populated areas and regulatory limits



Table of contents

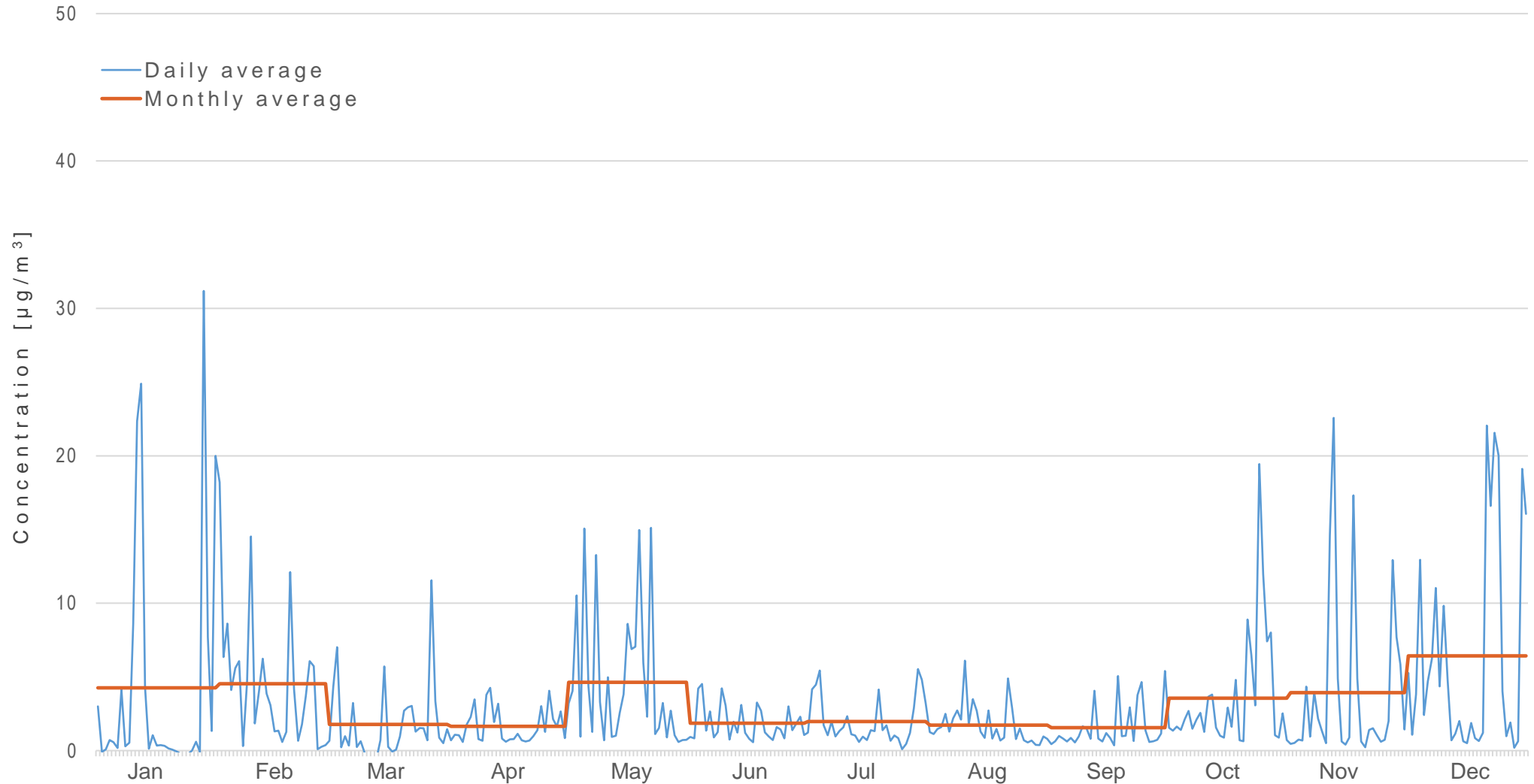
Atmospheric concentration of hydrogen sulphide (H ₂ S) in Nordlingaholt, Hveragerdi, Laekjarbotnar and Ulfarsardalur 2021	1
Nordlingaholt.....	1
Hveragerdi	2
Laekjarbotnar.....	3
Ulfarsardalur	4
Atmospheric concentration of hydrogen sulphide (H ₂ S) in Nordlingaholt, Hveragerdi, Laekjarbotnar and Ulfarsardalur 2021	5
Nordlingaholt.....	5
Hveragerdi	6
Laekjarbotnar.....	7
Ulfarsardalur	8
30 highest hourly averages for the atmospheric concentration of hydrogen sulphide in Hveragerdi, Nordlingaholt, Laekjabotnar and Ulfarsardalur.....	9
Comparison between regulatory limits of hydrogen sulphide in µg/m ³ and ppm.....	11

Cover photo: Gretar Ívarsson

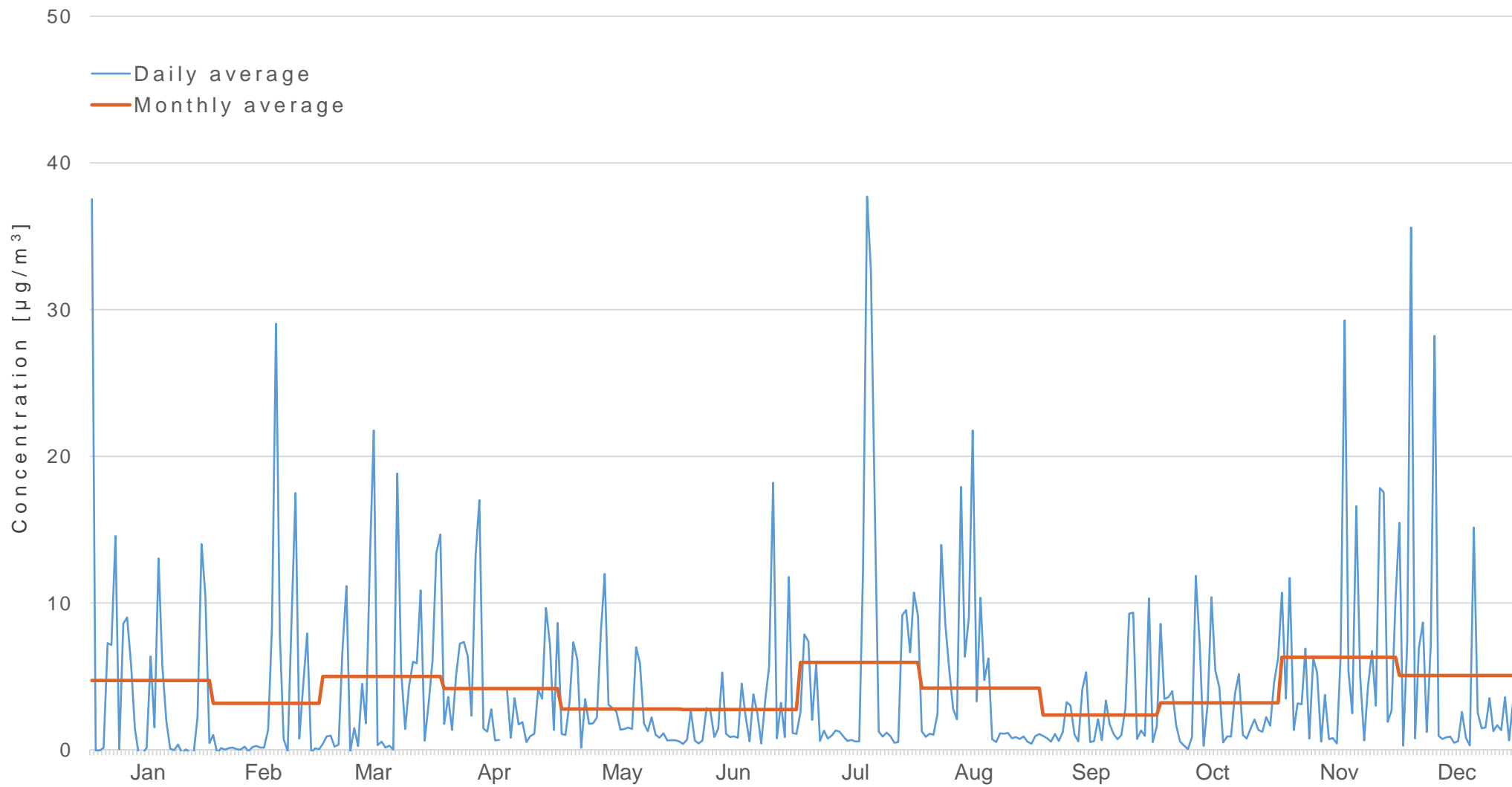
Atmospheric concentration of hydrogen sulphide (H₂S) in Nordlingaholt, Hveragerdi, Laekjarbotnar and Ulfarsardalur 2021

The figures show the daily and monthly averages of the measured concentration of hydrogen sulphide in the atmosphere.

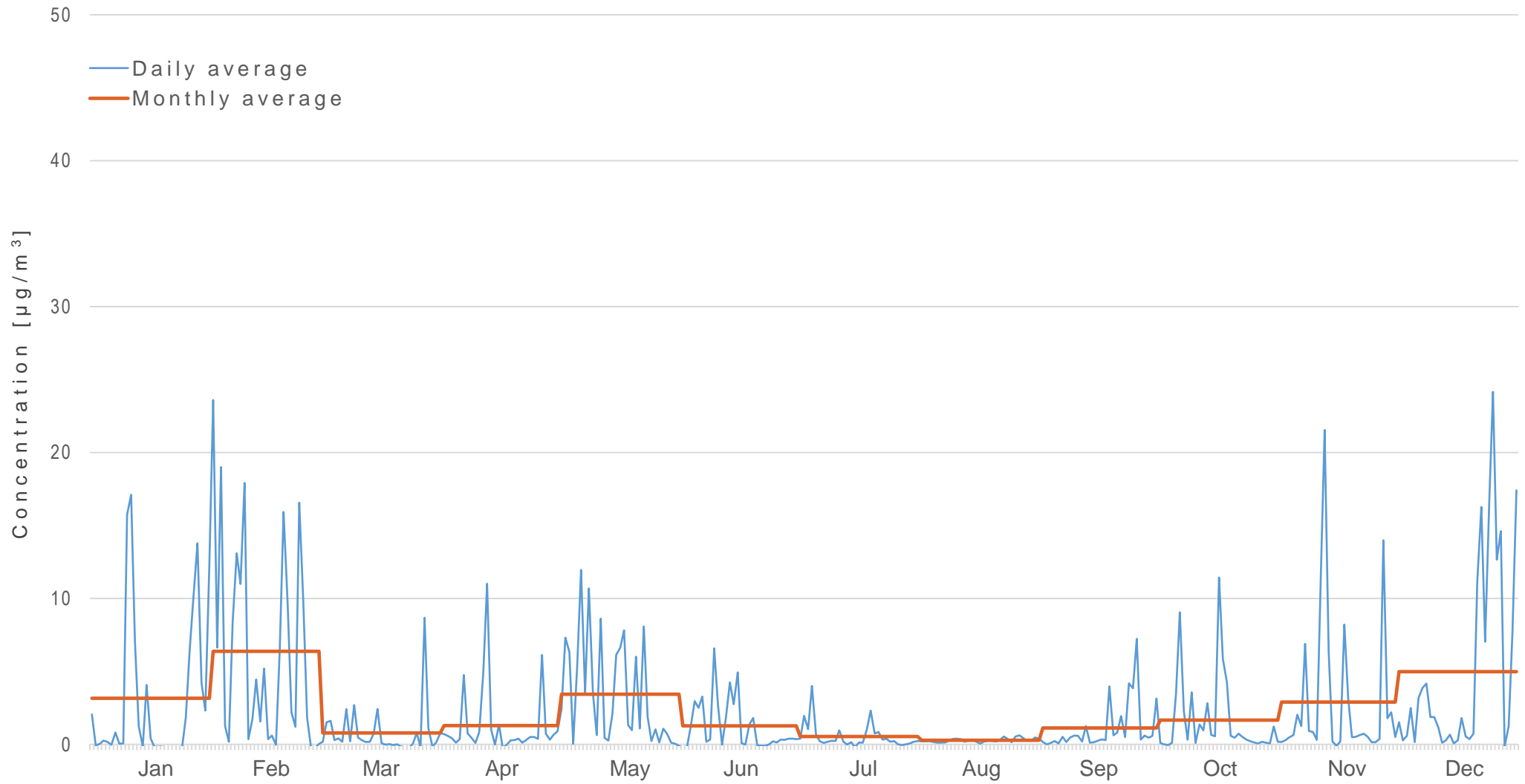
Nordlingaholt



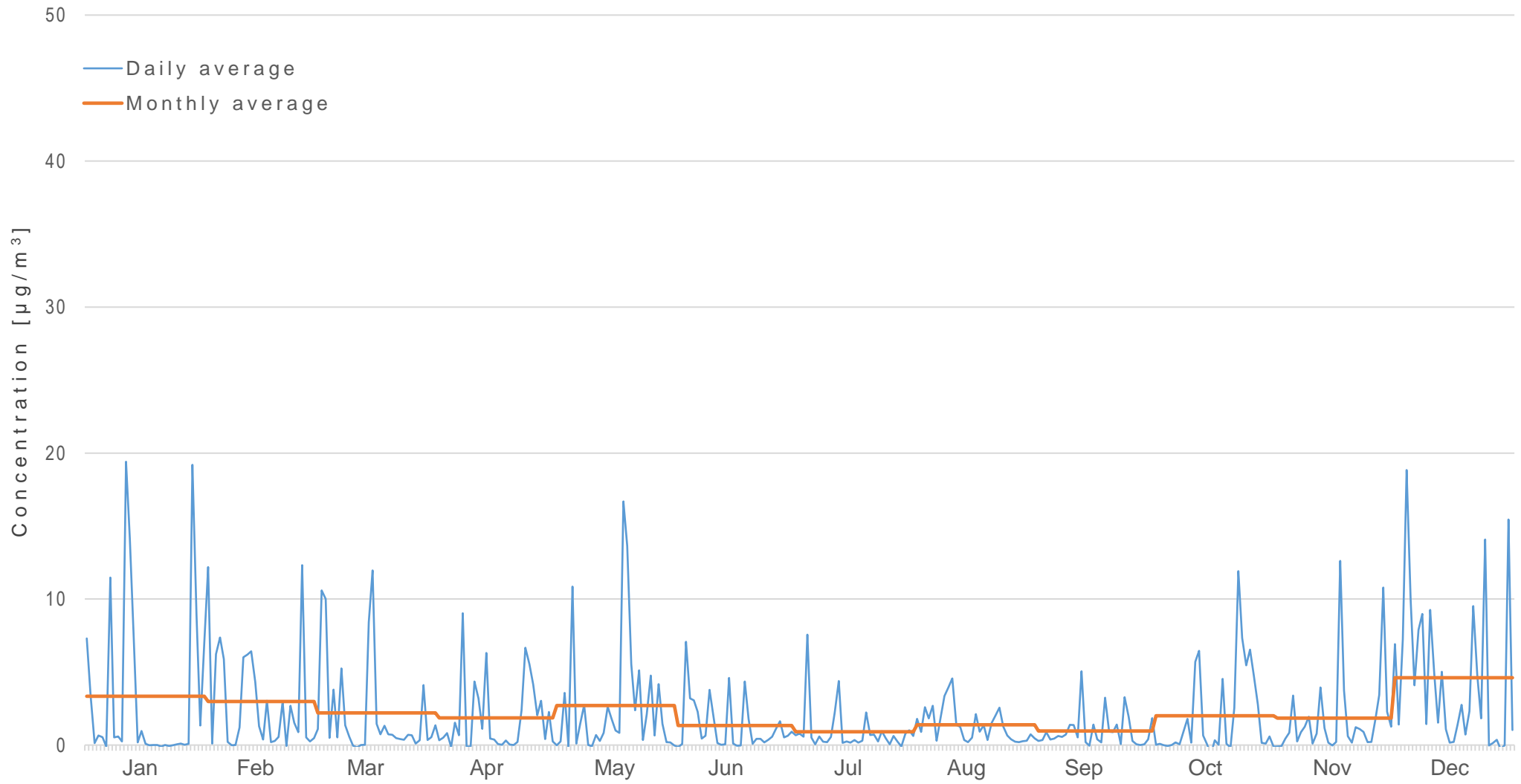
Hveragerdi



Laekjarbotnar



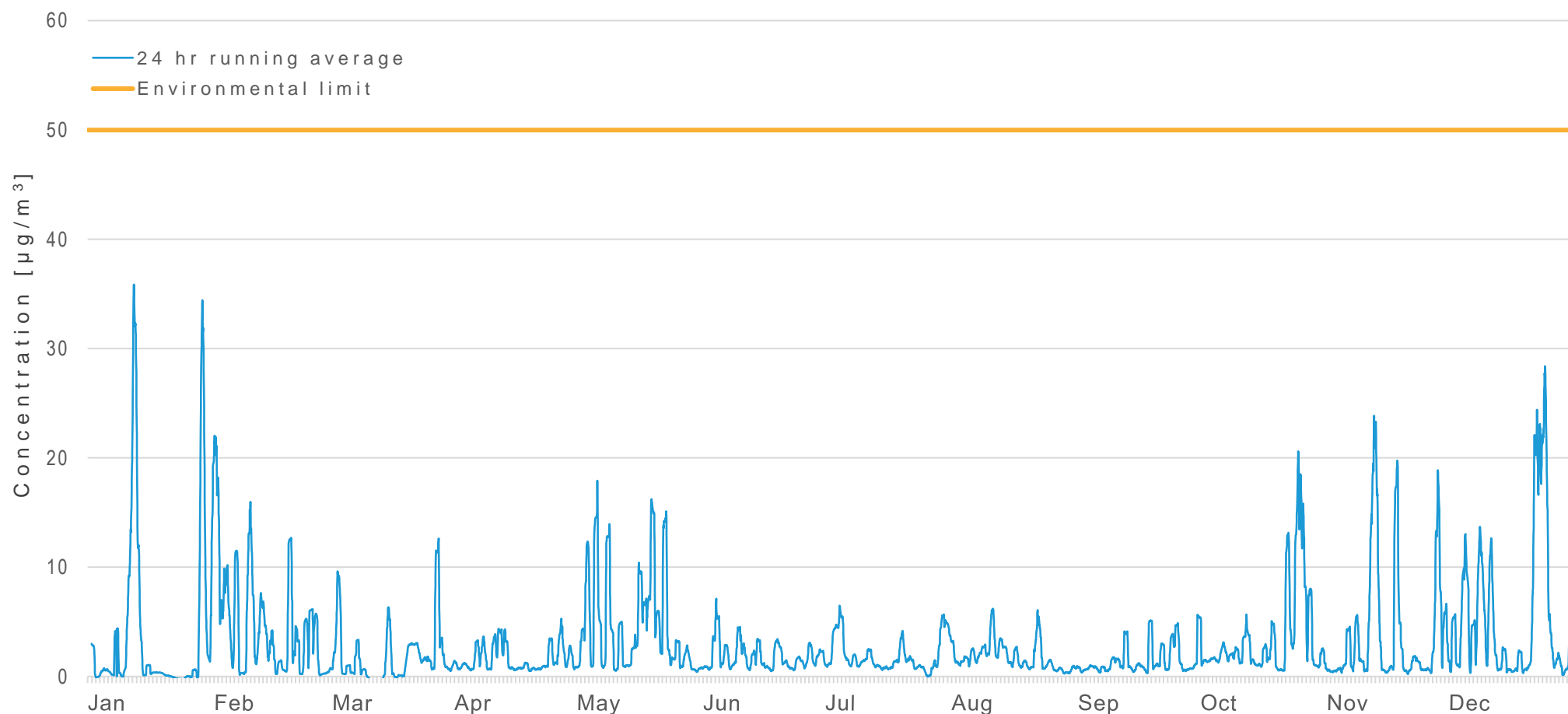
Ulfarsardalur



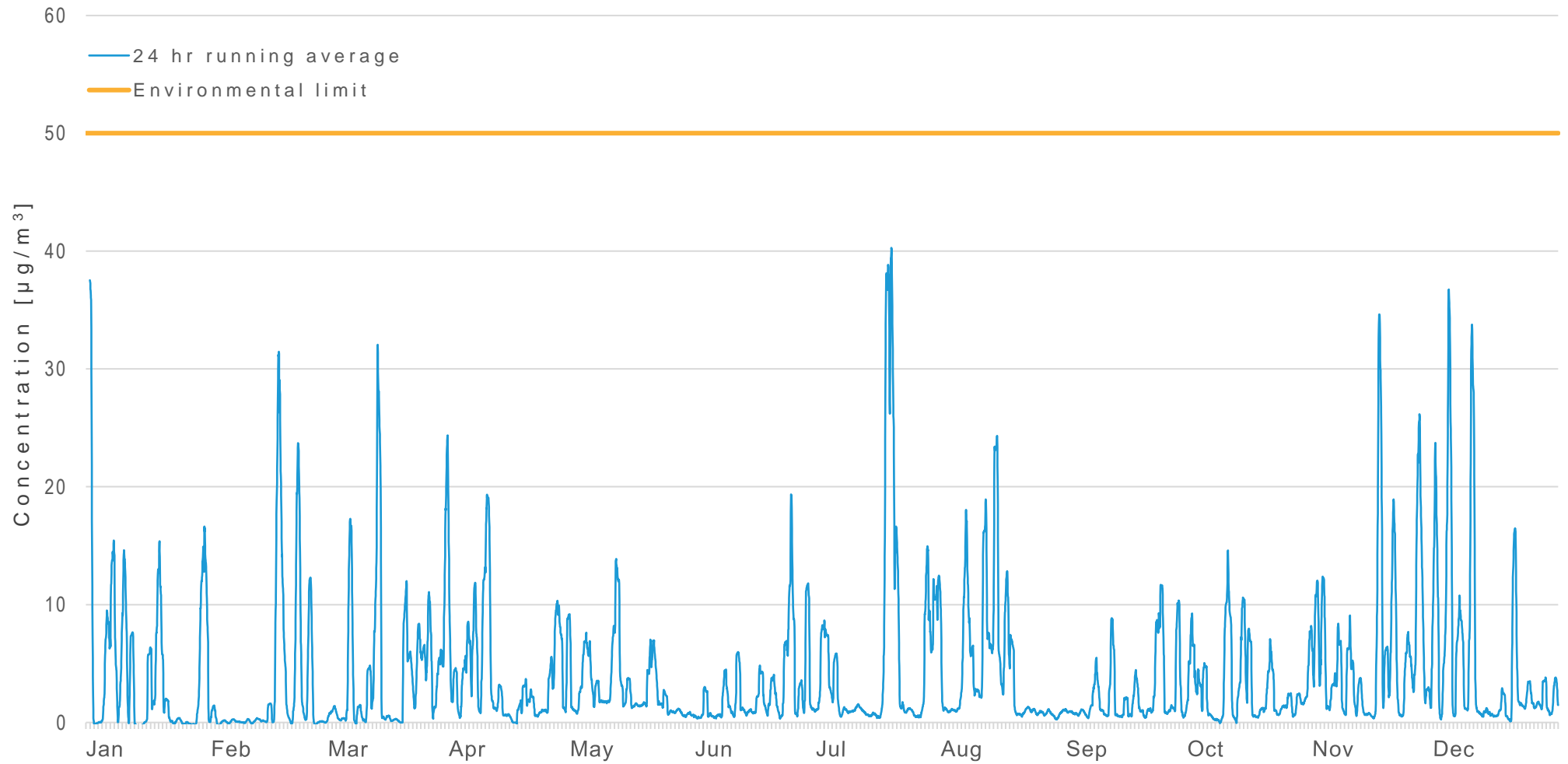
Atmospheric concentration of hydrogen sulphide (H₂S) in Nordlingaholt, Hveragerdi, Laekjarbotnar and Ulfarsardalur 2021

In 2020 the atmospheric concentrations of hydrogen sulphide (H₂S) did not exceed environmental limits in 2021. Capture and reinjection of hydrogen sulphide from Hellisheidi power plant was successful in 2021 and about 75% of all hydrogen sulphide produced at Hellisheidi was reinjected. The total amount of hydrogen sulphide emitted by the Nesjavellir and Hellisheidi power plants was 8.4 thousand tonnes in 2020.

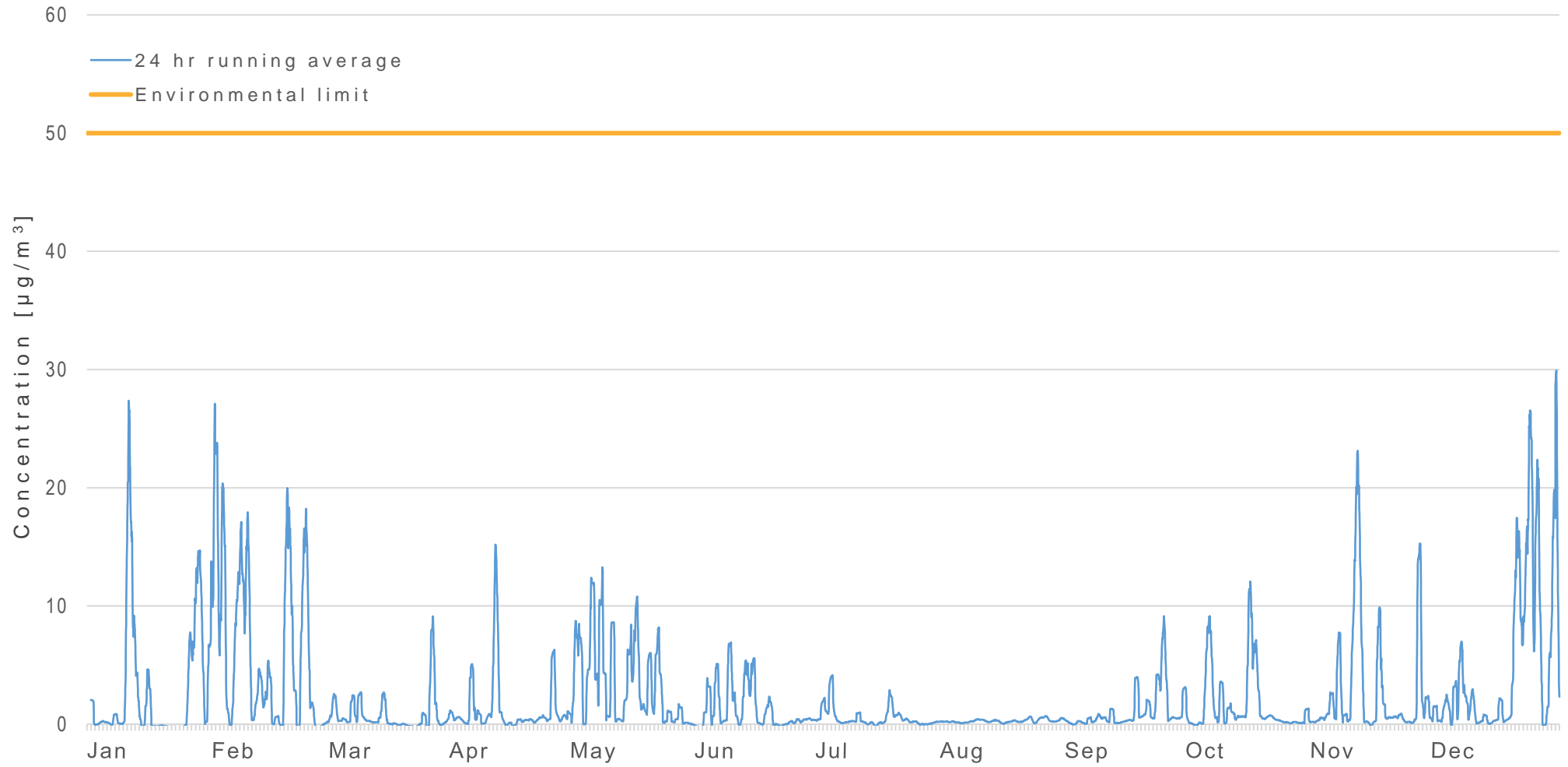
Nordlingaholt



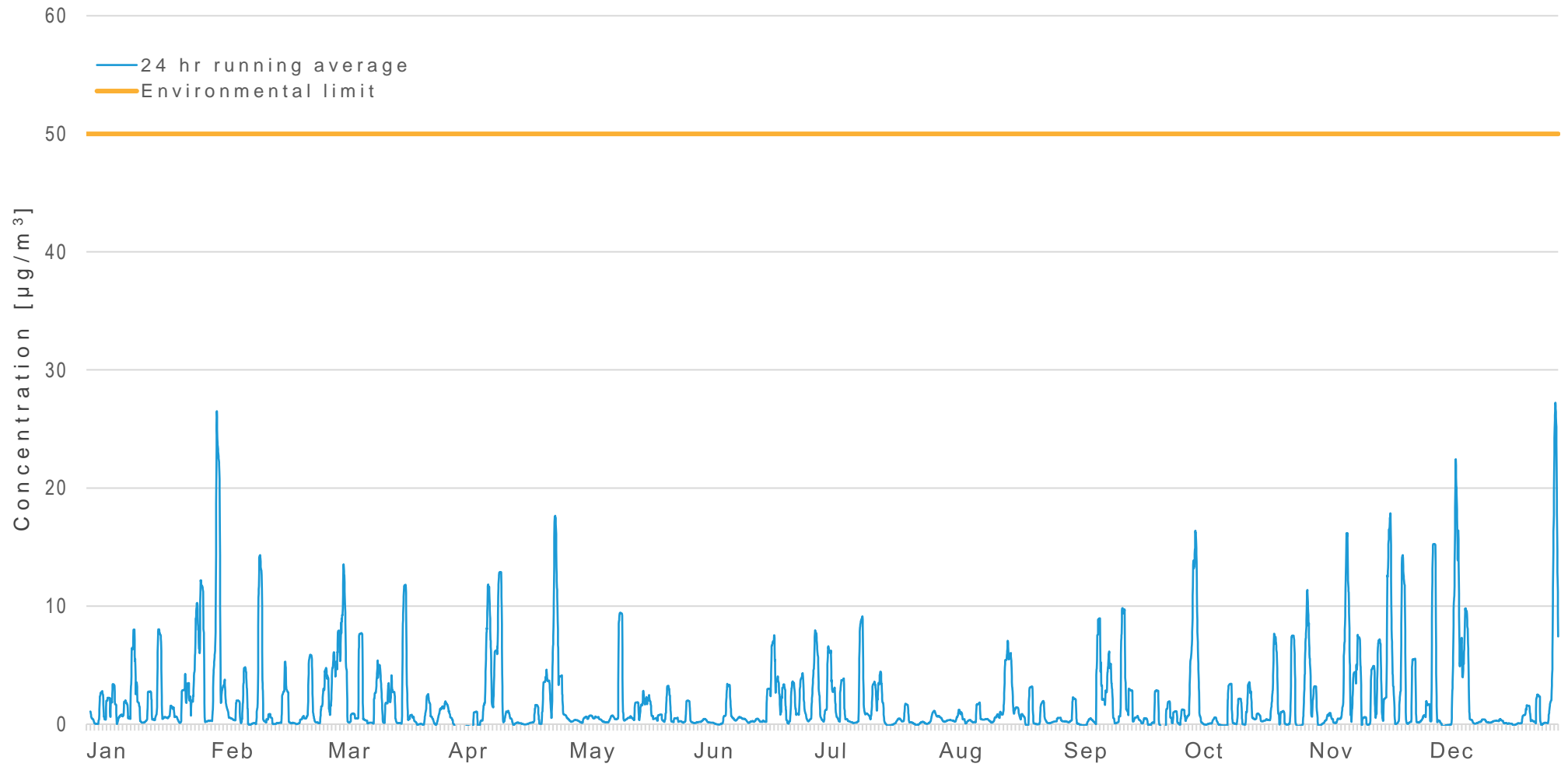
Hveragerdi



Laekjarbotnar



Ulfarsardalur



30 highest hourly averages for the atmospheric concentration of hydrogen sulphide in Hveragerdi, Nordlingaholt, Laekjabotnar and Ulfarsardalur

The table shows the 30 highest hourly averages for atmospheric concentrations of hydrogen sulphide in Hveragerdi, Nordlingaholt, Laekjabotnar and Ulfarsardalur in 2021 and their timing.

Hveragerdi Finnmork 1a		Nordlingaholt Nordlingabraut 1	
Concentration [µg/m ³]	Date & time	Concentration [µg/m ³]	Date & time
119	14.3.2021 04:00	97	17.11.2021 14:00
110	1.1.2021 11:00	90	19.2.2021 06:00
110	10.12.2021 08:00	89	31.12.2021 00:00
109	18.7.2021 04:00	86	30.12.2021 23:00
108	14.3.2021 05:00	86	21.12.2021 22:00
106	19.7.2021 08:00	83	31.12.2021 03:00
105	18.7.2021 02:00	81	30.12.2021 22:00
105	1.1.2021 10:00	78	31.12.2021 04:00
98	18.7.2021 03:00	76	8.5.2021 03:00
97	24.6.2021 17:00	75	17.11.2021 13:00
92	14.8.2021 04:00	74	8.5.2021 04:00
92	17.11.2021 08:00	72	11.1.2021 23:00
92	17.11.2021 09:00	72	19.5.2021 05:00
88	4.12.2021 18:00	72	28.1.2021 17:00
87	1.1.2021 09:00	71	1.2.2021 10:00
87	7.1.2021 03:00	69	19.5.2021 03:00
86	4.12.2021 17:00	69	17.11.2021 13:00
84	18.7.2021 05:00	66	12.11.2021 13:00
84	19.7.2021 09:00	65	6.5.2021 00:00
83	1.1.2021 08:00	64	22.5.2021 03:00
82	19.7.2021 10:00	64	19.2.2021 02:00
82	10.12.2021 06:00	64	24.12.2021 08:00
82	19.7.2021 11:00	63	28.1.2021 14:00
81	14.3.2021 02:00	63	30.12.2021 21:00
80	14.8.2021 03:00	62	5.5.2021 06:00
79	30.1.2021 08:00	62	23.12.2021 20:00
79	10.12.2021 09:00	62	12.11.2021 03:00
74	4.12.2021 06:00	60	12.11.2021 02:00
73	17.2.2021 23:00	60	22.5.2021 04:00
73	17.11.2021 11:00	59	27.11.2021 18:00

Laekjarbotnar at Waldorfskoli		Ulfarsardalur at Lambhagi	
Concentration [µg/m ³]	Date & time	Concentration [µg/m ³]	Date & time
88	31.1.2021 20:00	103	4.12.2021 21:00
80	1.2.2021 12:00	103	28.1.2021 22:00
78	1.2.2021 11:00	91	7.1.2021 12:00
78	25.12.2021 11:00	90	17.11.2021 14:00
70	21.12.2021 13:00	89	28.1.2021 23:00
65	11.1.2021 08:00	86	18.5.2021 04:00
60	23.2.2021 00:00	77	4.12.2021 22:00
56	31.12.2021 05:00	73	28.11.2021 08:00
56	3.2.2021 10:00	71	30.12.2021 18:00
55	26.12.2021 17:00	70	5.12.2021 00:00
54	17.11.2021 13:00	67	17.11.2021 16:00
54	12.11.2021 16:00	67	14.3.2021 12:00
54	10.1.2021 16:00	64	7.1.2021 11:00
54	8.5.2021 07:00	64	30.12.2021 17:00
54	27.12.2021 00:00	63	25.2.2021 15:00
54	11.1.2021 07:00	63	11.1.2021 21:00
54	3.2.2021 09:00	59	28.1.2021 09:00
53	8.5.2021 06:00	59	5.12.2021 01:00
53	25.12.2021 09:00	57	1.2.2021 07:00
53	1.2.2021 15:00	56	19.5.2021 04:00
53	27.11.2021 15:00	55	28.1.2021 12:00
53	31.12.2021 08:00	55	25.5.2021 07:00
52	25.12.2021 10:00	53	24.12.2021 05:00
51	22.1.2021 08:00	53	29.1.2021 00:00
51	28.1.2021 03:00	52	11.1.2021 23:00
50	1.2.2021 17:00	51	5.12.2021 02:00
49	8.5.2021 05:00	51	22.12.2021 12:00
49	3.2.2021 14:00	51	31.1.2021 14:00
49	25.12.2021 03:00	50	28.1.2021 21:00
48	3.2.2021 12:00	49	18.5.2021 06:00

Comparison between regulatory limits of hydrogen sulphide in $\mu\text{g}/\text{m}^3$ and ppm

According to the regulation no. 514/2010 regarding the Concentration of Hydrogen Sulphide in the Atmosphere, environmental limits are set at $50 \mu\text{g}/\text{m}^3$, based on the maximum daily running 24-hour average. The concentrations may exceed those limits three times per annum. Other environmental limits are that the maximum annual average shall be $5 \mu\text{g}/\text{m}^3$ and the environmental authorities shall be notified when the concentration measured exceeds $150 \mu\text{g}/\text{m}^3$ for three consecutive hours. Regulation no. 514/2010 does not apply to the industrial areas of the Hellisheidi and Nesjavellir geothermal power plants. There Regulation no. 390/2009 on Pollution Limits and Methods to Reduce Pollution in Workplaces applies. The pollution limit in a work environment is $7,000 \mu\text{g}/\text{m}^3$ and depends on the average of an eight-hour workday, and $14,000 \mu\text{g}/\text{m}^3$ when based on the average over a 15-minute period.

$\mu\text{g}/\text{m}^3$	ppm	Comments
5	0.0039	Maximum annual average
7-15	0.0054 – 0.012	Odour threshold
50	0.039	Maximum daily average
150	0.12	Notification limits (three continuous hours)
7,000	5.41	Limit in a work environment for an eight-hour workday
14,000	10.8	Limit in a work environment for a fifteen-minute period
>14,000	>10.8	Irritation in airway, sense of smell fades and other symptoms. GET OUT OF THE SITUATION.