Radionuclide particles in ground level air in Sweden during 2021

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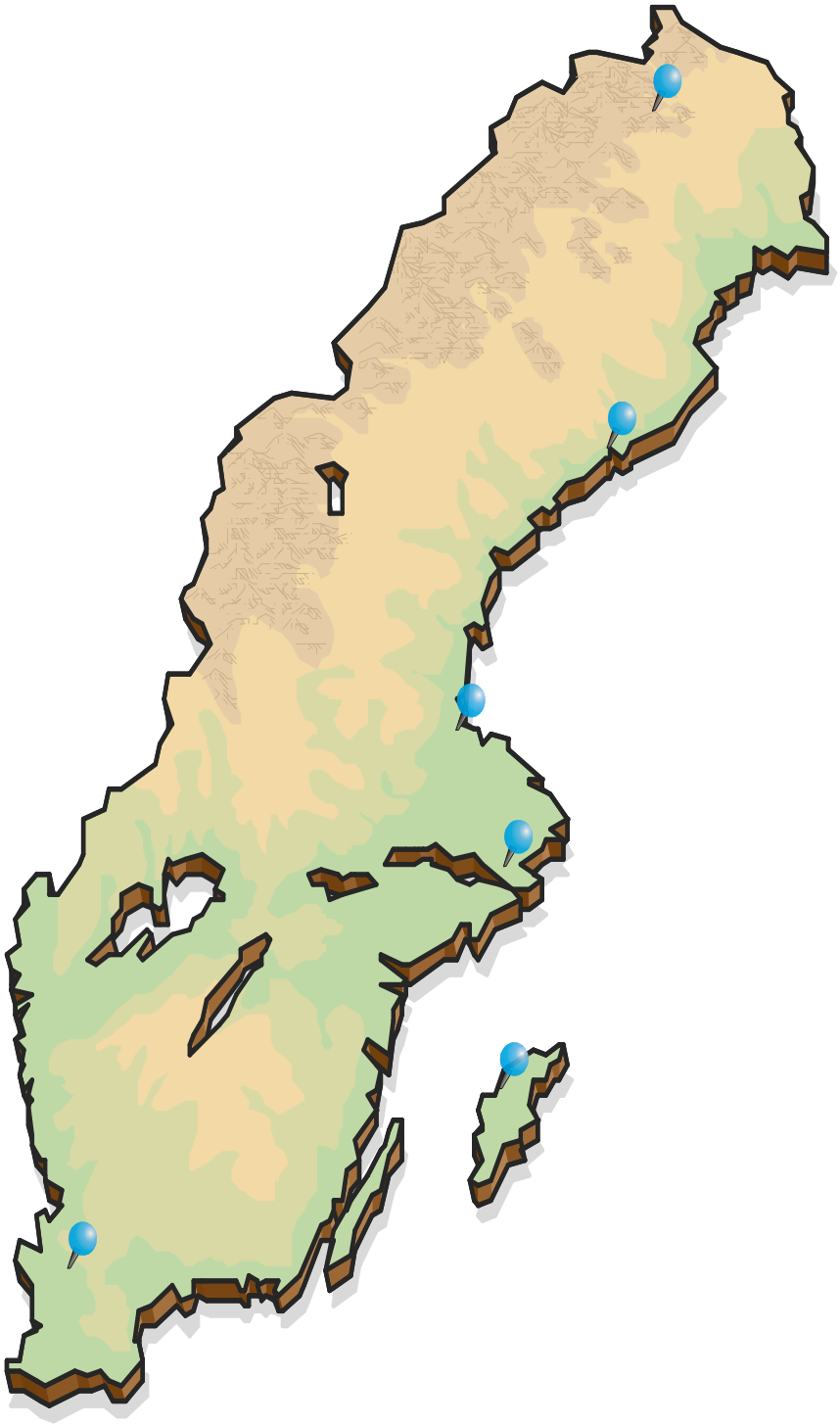

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Abstract

Filtering of ground level air is performed continuously at six different locations in Sweden: Kiruna, Umeå, Gävle, Kista, Visby and Ljungbyhed. The filters are pressed into weekly samples and the contents of different radionuclides are measured by gamma spectroscopy.
Precipitation is collected at four of the stations: Kiruna, Gävle, Kista and Ljungbyhed. The samples are ashed and the contents of radionuclides are measured.
Weekly respectively monthly activity concentrations of ^{7}Be and ^{137}Cs during 2021 in air and precipitation are presented for the different stations. Other anthropogenic radionuclides detected are also presented.

Keywords

Airborne radionuclides, deposition, ^{7}Be, ^{137}Cs, ^{131}I

Sammanfattning

Stationer för filtrering av markluft finns på sex ställen i Sverige: Kiruna, Umeå, Gävle, Kista, Visby och Ljungbyhed. Filtren pressas och analyseras veckovis med hjälp av gammaspektroskopi med germaniumdetektor.
Nederbörd samlas in på fyra av stationerna: Kiruna, Gävle, Kista och Ljungbyhed. Nederbördsproverna askas in och mäts därefter med hjälp av gammaspektroskopi.
Vecko- respektive månadsvisa aktivitetskoncentrationer av ^{7}Be och ^{137}Cs under 2021 för luft och nederbörd presenteras för de olika stationerna. I de fall andra antropogena radionuklider detekterats presenteras även dessa.

Nyckelord

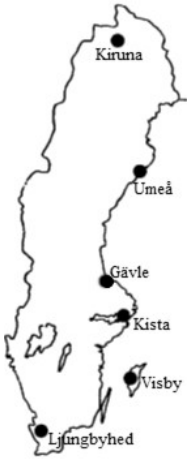
Luftburen radioaktivitet, deposition, ^{7}Be, ^{137}Cs, ^{131}I

Contents

1 Sampling and analysis procedures

Sampling of ground level air is performed at six different locations in Sweden, as follows:

Location	Latitude	Longitude	Height (asl)
Kiruna	67.84°N	20.42°E	415m
Umeå	63.85°N	20.34°E	46m
Gävle	60.67°N	17.19°E	7m
Kista	59.40°N	17.95°E	30m
Visby	57.61°N	18.32°E	59m
Ljungbyhed	56.08°N	13.22°E	45m



At five stations, 1000 $m^3\ h^{-1}$ of air is filtered through glass fibre filters (HB5773). At each station the filters are changed twice a week (Monday and Thursday or Friday) and sent by mail to FOI's laboratory in Kista for activity measurement and analysis. At the station in Kista 1600 $m^3\ h^{-1}$ of air is filtered and the filters are changed every 28th hour.

Weekly samples are made from each station by taking 3/4 of each filter (1/4 of the filter is archived) and compressing them together into a disc (60 mm diameter and 13 mm thick). These samples are measured 3-4 days after collection, on shielded High Purity Germanium (HPGe) detectors. From the station in Kista, the filters are assembled in a Marinelli-like geometry by pressing them into one circular disc (94 mm diameter, 16 mm thickness), placed on top of the detector, and into six rectangular bricks ($77 \times 48 \times 13$ mm) placed around the detector.

At five of the stations (Kiruna, Umeå, Gävle, Kista and Ljungbyhed) a small part of the air flow (12 $m^3\ h^{-1}$) downstream the filter is passed through an active charcoal cartridge in order to collect gaseous iodine. The cartridges are changed weekly but only analysed if particulate iodine has been detected in the filter.

The stations at Kiruna, Gävle, Kista and Ljungbyhed are each equipped with a stainless steel funnel (1 m radius) to collect precipitation. The precipitation is passed through a column consisting of a filter part, an an-ion exchanger part and a cat-ion exchanger part. The columns are changed weekly and sent by mail to FOI's laboratory in Kista. Four samples are combined to a monthly sample by ashing. The samples are measured on HPGe detectors. From these measurements the total deposition is calculated.

The particulate radionuclides detected in the filters are normally due to the naturally occurring radon daughters and ^{7}Be. In addition ^{137}Cs is commonly detected at most stations due to resuspension of the Chernobyl fallout. In Tables I and II and Figures I and II the activity concentrations of ^{7}Be and ^{137}Cs are presented. The precipitation measurement results are presented in Table III. Other anthropogenic radionuclides detected are presented in Table IV.

Uncertainties are given as relative combined standard uncertainty according to GUM. For a more detailed description of uncertainty estimations see FOI Report ”Implementation of uncertainty of measurement according to GUM” (FOI-D–0643–SE, internal report, in Swedish).

2 Concentrations of ^{7}Be in air

Table 2.1. ^{7}Be concentrations in Sweden, 2021

Week Starting	Kiruna	Umeå	Gävle	Kista	Visby	Ljungbyhed
4 Jan	960 (2.7)	980 (4.9)	890 (2.8)	1280 (2.9)	1540 (2.7)	790 (2.7)
11 Jan	1580 (2.7)	1530 (2.8)	1290 (2.8)	1670 (2.8)	3390 (2.7)	2150 (4.9)
18 Jan	1320 (2.7)	1220 (4.9)	1680 (2.7)	2560 (2.8)	3080 (2.8)	2620 (2.7)
25 Jan	1970 (2.8)	1270 (2.7)	990 (2.8)	1170 (2.8)	1420 (4.9)	1330 (4.9)
1 Feb	1550 (2.7)	1260 (4.9)	2000 (2.8)	1970 (2.8)	2550 (2.7)	2490 (2.7)
8 Feb	1690 (4.9)	1740 (2.7)	2000 (2.8)	2690 (2.8)	3550 (2.7)	3070 (2.8)
15 Feb	2120 (2.8)	1930 (2.8)	2110 (2.8)	3540[3] (2.8)	3020 (2.7)	3460 (4.9)
22 Feb	1300 (2.7)	1200 (4.9)	1310 (2.8)	1990 (2.8)	2810 (4.9)	3030 (2.8)
1 Mar	2250 (2.7)	2030 (2.8)	1820 (2.8)	2180 (2.8)	2230 (2.8)	2060 (4.9)
8 Mar	2730 (2.7)	3690 (4.9)	1620 (2.8)	2440 (2.8)	2250 (4.9)	2050 (2.8)
15 Mar	2210 (2.7)	1570 (4.9)	1460 (2.8)	2170 (2.8)	1720 (2.7)	2000 (4.9)
22 Mar	1850 (2.7)	2030 (4.9)	2870 (2.8)	3480 (2.8)	3800 (2.8)	4110 (2.7)
29 Mar	1190[1] (2.7)	2100 (4.9)	2580[1] (2.8)	2670 (2.8)	2930 (2.8)	4080 (2.8)
5 Apr	1150[2] (4.9)	1550 (2.7)	1220[2] (2.8)	1890 (2.8)	2410 (2.7)	1590 (2.8)
12 Apr	2790 (2.7)	1700 (2.8)	2050 (4.9)	2750 (2.8)	2980 (2.8)	3410 (2.7)
19 Apr	3020 (2.7)	2830 (4.9)	2540 (2.8)	3720 (2.8)	3520 (2.8)	3150 (2.7)
26 Apr	1620 (2.8)	1990 (4.9)	3030 (3.3)	3990 (2.8)	4760 (2.7)	4500 (2.8)
3 May	1370 (2.7)	2460 (4.9)	2740 (2.8)	3330 (2.8)	3160 (2.8)	2910 (2.8)
10 May	1370 (2.8)	2750 (4.9)	2550 (2.8)	6040 (2.8)	5000 (2.8)	3310 (2.8)
17 May	1780 (2.7)	660 (4.9)	1170 (2.8)	3400 (2.8)	3290 (2.7)	3050 (2.7)
24 May	5160 (2.8)	3320 (4.9)	3240 (2.8)	3370 (2.8)	4240 (2.8)	4800 (2.7)
31 May	6480 (2.7)	5440 (4.9)	5480 (2.7)	7370 (2.8)	8430 (2.7)	8480 (2.8)
7 Jun	4410 (2.7)	3510 (4.9)	3620 (2.8)	5530 (2.8)	6050 (2.8)	4310 (2.7)
14 Jun	2360 (2.7)	3050 (2.8)	2590 (2.7)	4490 (2.8)	6270 (2.7)	4340 (4.9)
21 Jun	3310 (2.8)	4230 (4.9)	3330 (2.8)	4460 (2.8)	5140 (2.8)	4520 (2.7)
28 Jun	4220 (4.9)	3750 (2.7)	3030 (2.8)	4640 (2.8)	5870 (2.7)	6010 (2.8)

Values are reported in $\mu Bq\,m^{-3}$
When ^{7}Be is not detected minimal detectable concentration (MDC) is given
Relative combined standard uncertainty (1σ%) within brackets

[1]Eight days sampling 29/3-6/4
[2]Six days sampling 6/4-12/4
[3]Four days sampling 17/2-21/2

Table 2.2. ^{7}Be concentrations in Sweden, 2021

Week Starting	Kiruna	Umeå	Gävle	Kista	Visby	Ljungbyhed
5 Jul	4460 (2.7)	10 050 (4.9)	3470 (2.8)	4440 (2.8)	4150 (2.7)	4700 (2.8)
12 Jul	1830 (2.7)	2300 (4.9)	2770 (2.7)	4300 (2.8)	5940 (2.8)	6080 (2.7)
19 Jul	1120 (2.8)	2050 (8.7)	2880 (2.8)	3130 (2.8)	3710 (2.7)	3890 (4.9)
26 Jul	4440 (2.7)	4380 (8.7)	3990 (2.8)	4820 (2.8)	4500 (2.8)	2270[9] (2.9)
2 Aug	2980 (2.8)	2700 (7.6)	3040 (2.8)	3460 (2.8)	4030 (4.9)	3490 (2.7)
9 Aug	1790 (2.8)	2340[1] (8.6)	2320 (2.7)	2970 (2.8)	3140 (2.8)	2770 (2.7)
16 Aug	930 (2.8)	1220[2] (8.6)	1280 (2.8)	2380 (2.8)	2970 (2.8)	2300[10] (2.7)
23 Aug	2430 (2.7)	1930 (7.4)	1430 (2.8)	2540 (2.8)	3050 (2.8)	2590[11] (2.7)
30 Aug	850 (2.8)	1930 (7.4)	2350 (2.8)	3080 (2.8)	3340 (2.7)	4290 (2.7)
6 Sep	1180 (2.8)	1810 (4.9)	2540 (2.8)	3690 (2.8)	5450 (2.7)	5410 (2.7)
13 Sep	2400 (2.8)	1850 (2.8)	3120 (4.9)	3490 (2.8)	3780[7] (2.7)	2860 (2.8)
20 Sep	890 (6.6)	2110 (4.9)	1560 (2.8)	3230 (2.8)	3160[8] (2.8)	3220 (2.7)
27 Sep	2380 (2.7)	2300 (4.9)	2490 (2.7)	2660 (2.8)	2680 (2.9)	4100 (2.7)
4 Oct	1010 (2.7)	1850 (4.9)	2340 (2.8)	3240 (2.8)	4870 (2.7)	3190 (2.8)
11 Oct	720 (2.7)	1140 (2.8)	1480 (2.7)	2050 (2.8)	1800 (2.7)	2390 (4.9)
18 Oct	2130 (2.7)	920 (2.8)	1610 (2.7)	2060 (2.8)	2590 (2.8)	3070 (4.9)
25 Oct	1000 (2.8)	1270 (4.9)	2470 (2.7)	3680 (2.8)	3910 (2.7)	3900 (2.7)
1 Nov	980 (2.7)	1970 (2.8)	2100 (4.9)	3230 (2.8)	1970 (2.8)	2410 (2.7)
8 Nov	1170 (2.7)	1100 (4.9)	1030 (2.8)	1220 (2.8)	2230 (2.7)	2800 (2.8)
15 Nov	800 (4.9)	1020 (2.8)	1240 (2.8)	1770 (2.8)	2810 (2.7)	2490 (2.7)
22 Nov	1660 (2.8)	1180 (2.8)	1360 (4.9)	1770 (2.8)	2150 (2.8)	1270 (2.7)
29 Nov	1980 (2.7)	2110 (4.9)	2720 (2.8)	2710 (2.8)	2920 (2.7)	1920 (2.8)
6 Dec	2630 (2.7)	2000 (4.9)	2150[3] (5.0)	4000[6] (2.8)	3750 (2.8)	2770 (2.7)
13 Dec	690 (2.7)	1040 (2.8)	820[4] (2.8)	1090 (2.8)	1430 (2.7)	1480 (2.7)
20 Dec	1690 (2.7)	1620 (4.9)	1340 (2.8)	1900 (2.8)	2130 (2.8)	1870 (2.7)
27 Dec	2070 (4.9)	1630 (4.9)	990[5] (2.8)	1350 (2.8)	1470 (2.8)	2010 (2.8)

Values are reported in $\mu Bq\,m^{-3}$
When ^{7}Be is not detected minimal detectable concentration (MDC) is given
Relative combined standard uncertainty (1σ%) within brackets

[1]Eight days sampling 9/8-17/8
[2]Six days sampling 17/8-23/8
[3]Eight days sampling 6/12-14/12
[4]Six days sampling 14/12-20/12
[5]Eight days sampling 27/12-4/1
[6]Five days sampling 7/12-12/12
[7]Eight days sampling 13/9-21/9
[8]Six days sampling 21/9-27/9
[9]Three days sampling 30/7-2/8
[10]Six days sampling 16/8-22/8
[11]Eight days sampling 22/8-30/8

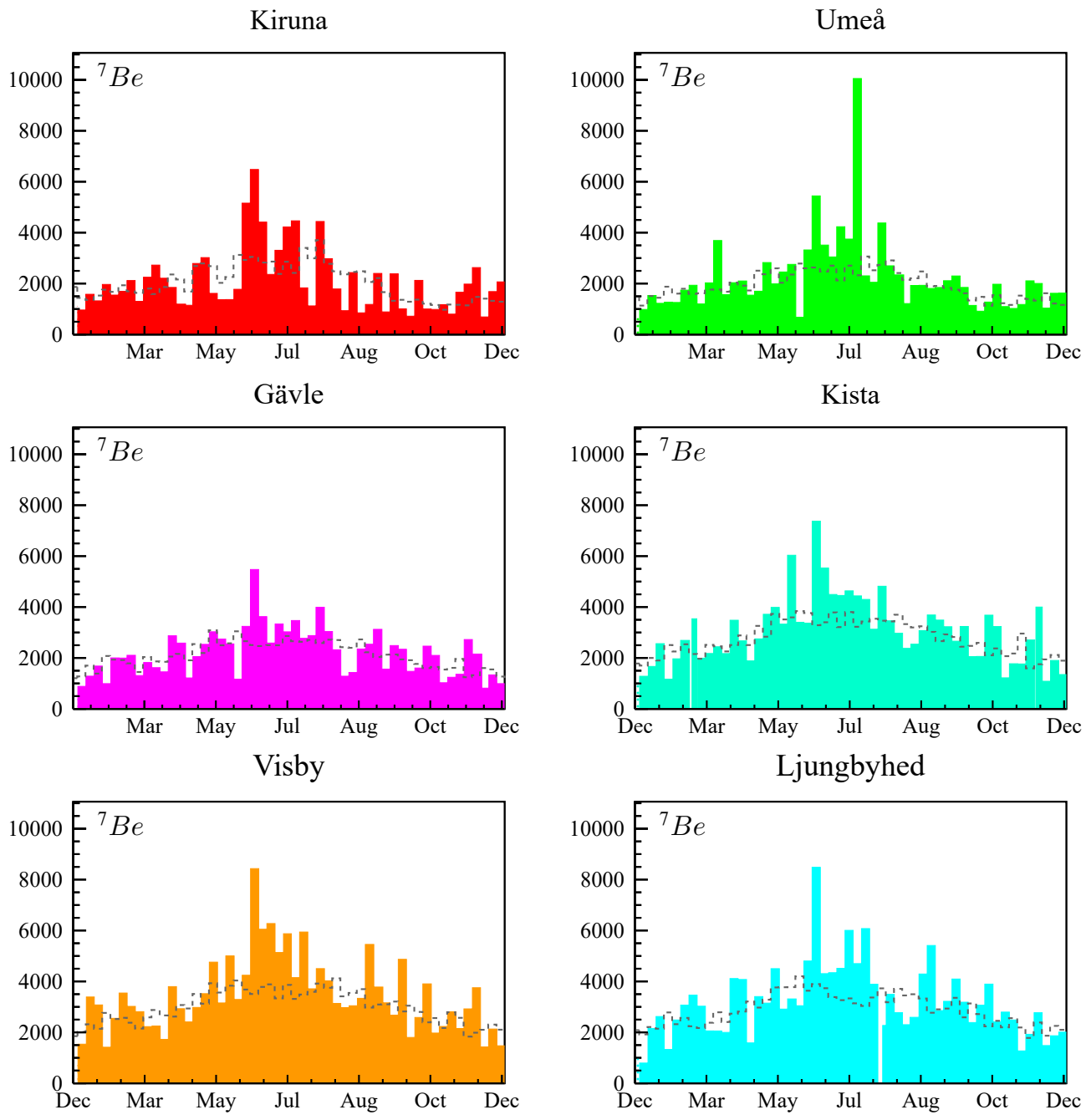


Figure 1. Activity concentrations (μBq m^{-3}) in ground level air of ^{7}Be in the Swedish network during 2021. The dotted line shows average concentration for the period 2012-2020.

3 Concentrations of ^{137}Cs in air

Table 3.1. ^{137}Cs concentrations in Sweden, 2021

Week Starting	Kiruna	Umeå	Gävle	Kista	Visby	Ljungbyhed
4 Jan	0.1 (31)	0.8 (7)	0.8 (15)	0.4 (8)	0.3 (13)	0.2 (18)
11 Jan	< 0.2	0.9 (7)	0.7 (9)	0.6 (5)	0.3 (21)	0.4 (18)
18 Jan	< 0.1	0.8 (7)	0.6 (10)	0.4 (6)	0.3 (12)	1.3 (7)
25 Jan	< 0.2	0.5 (9)	1.0 (10)	0.7 (4)	0.1 (44)	0.7 (6)
1 Feb	< 0.2	0.7 (10)	0.3 (19)	0.8 (4)	0.2 (21)	0.6 (12)
8 Feb	< 0.2	0.7 (8)	0.6 (22)	0.8 (5)	0.2 (20)	0.5 (22)
15 Feb	0.1 (57)	1.2 (6)	0.9 (8)	0.5[3] (8)	0.8 (11)	0.7 (13)
22 Feb	0.2 (25)	0.7 (9)	0.6 (10)	0.3 (8)	0.3 (20)	0.7 (14)
1 Mar	< 0.3	0.8 (15)	1.2 (12)	0.4 (5)	0.2 (36)	0.4 (27)
8 Mar	0.7 (8)	2.0 (5)	0.9 (10)	0.4 (8)	0.5 (18)	0.5 (9)
15 Mar	< 0.4	0.4 (14)	1.0 (11)	0.4 (9)	0.1 (44)	0.4 (24)
22 Mar	< 0.1	0.5 (12)	1.1 (10)	0.3 (6)	0.3 (15)	0.2 (19)
29 Mar	< 0.2[1]	0.2 (24)	0.4[1] (14)	0.2 (11)	0.1 (44)	0.4 (30)
5 Apr	< 0.3[2]	0.6 (9)	0.9[2] (16)	0.2 (9)	0.3 (19)	< 0.2
12 Apr	< 0.2	0.6 (10)	3.0 (4)	0.4 (7)	0.2 (31)	0.2 (24)
19 Apr	< 0.2	0.7 (10)	1.3 (8)	0.3 (7)	0.4 (9)	0.3 (23)
26 Apr	< 0.2	0.4 (13)	1.9 (5)	0.3 (6)	0.4 (11)	0.3 (44)
3 May	< 0.1	0.6 (9)	2.6 (5)	0.3 (7)	0.5 (10)	0.2 (24)
10 May	< 0.2	1.1 (7)	2.3 (7)	0.7 (4)	1.0 (6)	0.6 (9)
17 May	< 0.1	0.9 (8)	3.0 (6)	0.9 (4)	0.3 (16)	0.3 (9)
24 May	< 0.2	2.9 (4)	2.8 (5)	0.4 (6)	0.5 (20)	0.4 (17)
31 May	0.2 (27)	10.8 (3)	6.2 (4)	0.9 (4)	0.7 (11)	0.4 (14)
7 Jun	0.2 (31)	6.9 (3)	3.2 (6)	0.3 (9)	0.1 (75)	< 0.2
14 Jun	< 0.2	1.8 (6)	1.9 (4)	0.3 (6)	0.5 (15)	0.2 (25)
21 Jun	< 0.6	1.7 (6)	1.5 (6)	0.5 (6)	0.6 (13)	< 0.3
28 Jun	< 0.3	0.4 (32)	1.5 (9)	0.3 (8)	0.3 (19)	0.4 (16)

Values are reported in $\mu Bq\,m^{-3}$
When ^{137}Cs is not detected minimal detectable concentration (MDC) is given
Relative combined standard uncertainty (1σ%) within brackets

[1]Eight days sampling 29/3-6/4
[2]Six days sampling 6/4-12/4
[3]Four days sampling 17/2-21/2

Table 3.2. ^{137}Cs concentrations in Sweden, 2021

Week Starting	Kiruna	Umeå	Gävle	Kista	Visby	Ljungbyhed
5 Jul	0.2 (21)	2.1 (12)	1.3 (11)	0.1 (15)	0.6 (6)	< 0.2
12 Jul	0.1 (61)	1.0 (9)	1.3 (7)	0.3 (8)	0.4 (9)	0.1 (36)
19 Jul	0.1 (48)	0.9 (13)	1.4 (6)	0.2 (12)	< 0.5	< 0.4
26 Jul	< 0.5	1.3 (9)	1.5 (10)	0.3 (9)	0.3 (18)	< 0.7[9]
2 Aug	< 0.1	1.1 (9)	0.8 (9)	0.2 (12)	0.2 (27)	0.2 (36)
9 Aug	0.2 (23)	1.5[1] (9)	1.0 (7)	0.1 (18)	0.1 (20)	0.1 (65)
16 Aug	< 0.5	1.9[2] (9)	0.7 (19)	0.1 (17)	0.2 (42)	0.1[10](55)
23 Aug	< 0.2	1.9 (7)	1.4 (9)	0.5 (4)	0.4 (9)	< 0.5[11]
30 Aug	< 0.2	2.5 (7)	1.6 (8)	0.7 (5)	0.2 (73)	0.2 (20)
6 Sep	< 0.2	3.5 (3)	1.9 (7)	0.3 (10)	0.4 (13)	0.2 (10)
13 Sep	< 0.5	3.0 (6)	2.0 (6)	0.5 (6)	0.2[7] (25)	0.1 (59)
20 Sep	0.1 (37)	2.0 (5)	2.6 (7)	0.4 (6)	0.3[8] (19)	0.2 (16)
27 Sep	0.4 (16)	2.7 (4)	3.1 (4)	0.8 (4)	0.7 (7)	0.1 (31)
4 Oct	< 0.2	1.6 (6)	1.5 (9)	0.3 (8)	0.8 (10)	0.7 (6)
11 Oct	< 0.2	1.1 (6)	0.7 (10)	0.3 (9)	0.1 (37)	0.2 (47)
18 Oct	< 0.2	0.7 (13)	0.9 (7)	0.3 (8)	0.4 (15)	0.4 (27)
25 Oct	< 0.4	1.0 (9)	0.6 (10)	0.3 (8)	0.5 (13)	0.5 (14)
1 Nov	< 0.2	0.9 (12)	0.9 (11)	0.5 (5)	0.2 (25)	0.3 (18)
8 Nov	< 0.2	0.7 (11)	1.4 (6)	0.3 (7)	0.1 (38)	0.5 (12)
15 Nov	< 0.2	0.3 (43)	0.9 (15)	0.3 (10)	0.2 (26)	0.3 (26)
22 Nov	< 0.2	0.3 (26)	1.4 (7)	0.4 (7)	0.4 (17)	0.2 (28)
29 Nov	< 0.2	0.5 (13)	1.0 (13)	0.9 (4)	0.4 (13)	0.5 (14)
6 Dec	0.2 (20)	0.6 (8)	1.1[3] (7)	1.1[6] (4)	1.0 (4)	0.4 (11)
13 Dec	< 0.2	0.6 (15)	0.5[4] (32)	0.2 (11)	0.2 (30)	< 0.2
20 Dec	< 0.2	0.9 (7)	1.0 (14)	0.5 (5)	0.2 (35)	0.8 (9)
27 Dec	< 0.3	0.7 (11)	0.8[5] (15)	0.5 (6)	0.4 (15)	0.3 (13)

Values are reported in μBq m^{-3}
When ^{137}Cs is not detected minimal detectable concentration (MDC) is given
Relative combined standard uncertainty (1σ%) within brackets

[1]Eight days sampling 9/8-17/8
[2]Six days sampling 17/8-23/8
[3]Eight days sampling 6/12-14/12
[4]Six days sampling 14/12-20/12
[5]Eight days sampling 27/12-4/1
[6]Five days sampling 7/12-12/12
[7]Eight days sampling 13/9-21/9
[8]Six days sampling 21/9-27/9
[9]Three days sampling 30/7-2/8
[10]Six days sampling 16/8-22/8
[11]Eight days sampling 22/8-30/8

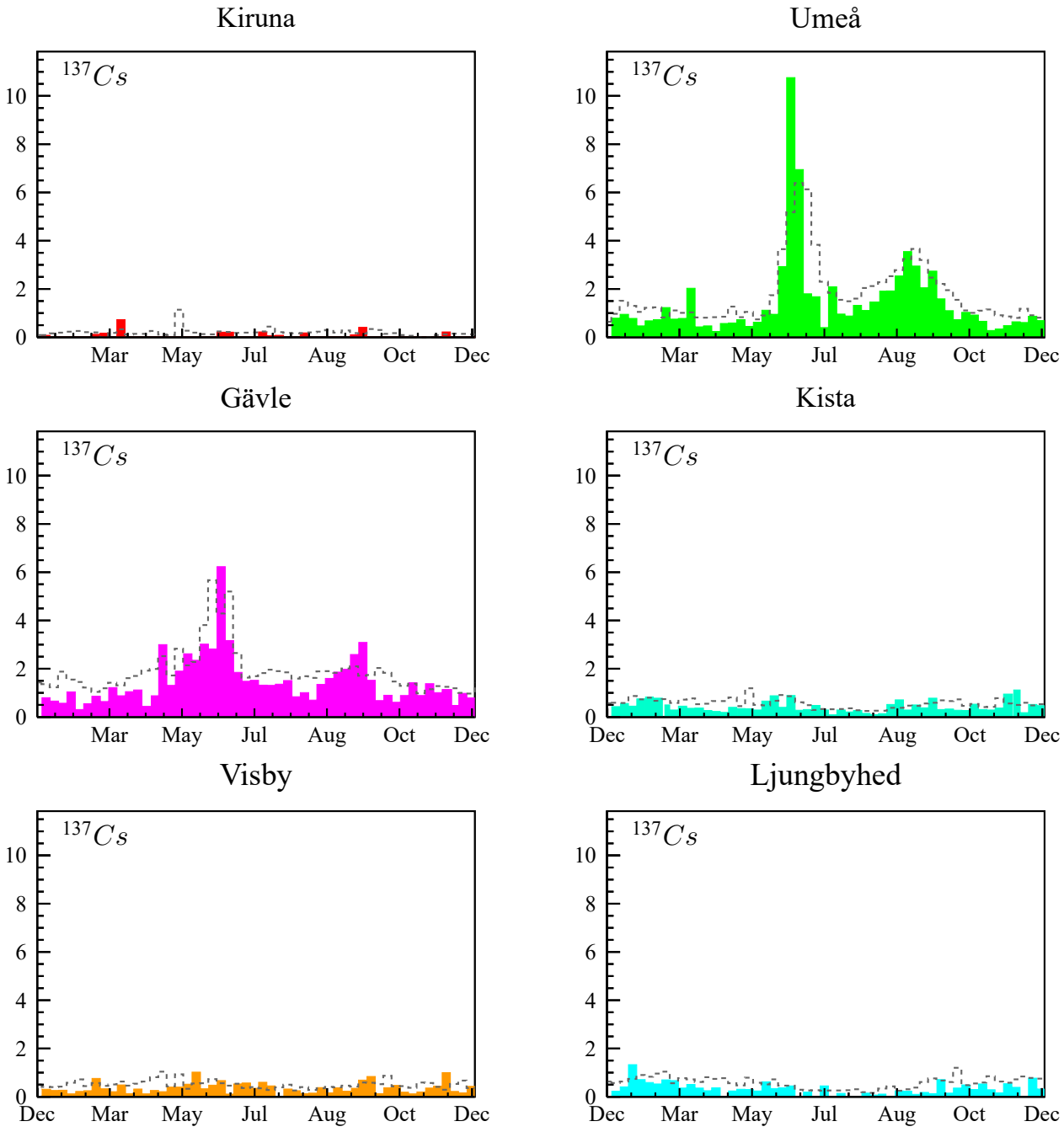


Figure 2. Activity concentrations (µBq m^{-3}) in ground level air of ^{137}Cs in the Swedish network during 2021. The dotted line shows average concentration for the period 2012-2020.

4 Deposition measurements

Table 4.1. Kiruna

Period	^{7}Be	^{137}Cs	Precipitation (mm)
21 Dec - 25 Jan	29 200 (5)	< 9	34
25 Jan - 22 Feb	8300 (5)	< 7	8
22 Feb - 22 Mar	6500 (5)	< 8	22
22 Mar - 19 Apr	11 700 (5)	3 (43)	40
19 Apr - 17 May	52 500 (5)	5 (42)	37
17 May - 14 Jun	69 200 (5)	8 (25)	59
14 Jun - 12 Jul	24 500 (5)	< 8	15
12 Jul - 9 Aug	41 800 (5)	3 (60)	29
9 Aug - 6 Sep	62 800 (5)	< 8	104
6 Sep - 4 Oct	28 100 (5)	10 (12)	72
4 Oct - 1 Nov	28 100 (5)	4 (52)	104
1 Nov - 29 Nov	18 300 (5)	< 6	27
29 Nov - 27 Dec	7200 (5)	8 (53)	12

Values are reported in mBq m^{-2}
Relative combined standard uncertainty (1σ%) within brackets

Table 4.2. Gävle

Period	^{7}Be	^{137}Cs	Precipitation (mm)
21 Dec - 18 Jan	5700 (5)	17 (27)	46
18 Jan - 15 Feb	11 800 (5)	19 (10)	75
15 Feb - 15 Mar	5400 (5)	11 (20)	13
15 Mar - 12 Apr	32 500 (5)	23 (10)	32
12 Apr - 10 May	25 700 (5)	21 (7)	25
10 May - 7 Jun	35 900 (5)	91 (6)	48
7 Jun - 5 Jul	47 100 (5)	82 (6)	37
5 Jul - 2 Aug	91 300 (5)	52 (11)	70
2 Aug - 30 Aug	89 600 (5)	46 (9)	218
30 Aug - 27 Sep	9400 (5)	13 (10)	30
27 Sep - 25 Oct	24 400 (5)	22 (11)	49
25 Oct - 22 Nov	5900 (5)	9 (18)	29
22 Nov - 20 Dec	3700 (5)	4 (48)	75

Values are reported in mBq m^{-2}
Relative combined standard uncertainty (1σ%) within brackets

Table 4.3. Kista

Period	^{7}Be	^{137}Cs	Precipitation (mm)
14 Dec - 11 Jan	64 900 (5)	7 (15)	54
11 Jan - 8 Feb	34 400 (5)	10 (49)	61
8 Feb - 8 Mar	7200 (5)	4 (33)	4
8 Mar - 6 Apr	19 000 (5)	6 (33)	14
6 Apr - 3 May	25 200 (5)	< 5	20
3 May - 31 May	66 100 (5)	41 (9)	89
31 May - 28 Jun	47 900 (5)	11 (20)	43
31 May - 28 Jun	47 900 (5)	11 (20)	43
28 Jun - 26 Jul	47 000 (5)	7 (37)	22
26 Jul - 23 Aug	102 700 (5)	8 (24)	89
23 Aug - 20 Sep	52 100 (5)	3 (59)	32
20 Sep - 18 Oct	47 500 (5)	4 (40)	33
18 Oct - 15 Nov	42 000 (5)	< 8	52
15 Nov - 13 Dec	26 500 (5)	< 8	9

Values are reported in mBq m^{-2}
Relative combined standard uncertainty (1σ%) within brackets

Table 4.4. Ljungbyhed

Period	^{7}Be	^{137}Cs	Precipitation (mm)
4 Jan - 1 Feb	52 200 (5)	< 11	78
1 Feb - 1 Mar	16 200 (5)	< 16	13
1 Mar - 29 Mar	21 900 (5)	7 (56)	49
29 Mar - 26 Apr	23 700 (5)	4 (33)	24
26 Apr - 24 May	66 300 (5)	12 (20)	48
24 May - 21 Jun	32 800 (5)	< 9	0
21 Jun - 19 Jul	89 600 (5)	5 (34)	70
19 Jul - 16 Aug	56 600 (5)	4 (51)	51
16 Aug - 13 Sep	43 000 (5)	< 8	67
13 Sep - 11 Oct	142 300 (5)	< 15	115
11 Oct - 8 Nov	113 900 (5)	< 8	84
8 Nov - 6 Dec	64 900 (5)	< 9	78
6 Dec - 3 Jan	56 400 (5)	4 (24)	47

Values are reported in mBq m^{-2}
Relative combined standard uncertainty (1σ%) within brackets

5 Other detections

5.1 Detections of ^{131}I in the network during 2021

At a few occasions during the year ^{131}I was detected at some of the stations in the network, see Table 5.1. Detections of ^{131}I are common in the network and for some of the occasions ^{131}I was also detected in neighbouring countries. No sources for the detections have been estabished.

Table 5.1. Detections of ^{131}I during 2021.

Station	Sampling Period	^{7}Be	^{137}Cs	^{131}I
Kista	3 Jan - 11 Jan	1280 (2.9)	0.4 (8)	0.9 (17)
Kista	11 Jan - 18 Jan	1670 (2.8)	0.6 (5)	0.3 (37)
Kista	1 Feb - 2 Feb	970 (2.1)	2.1 (21)	6.1 (37)
Gävle	8 Mar - 15 Mar	1620 (2.8)	0.9 (10)	0.6 (38)

Values are reported in $\mu Bq\,m^{-3}$
When the nuclide is not detected minimal detectable concentration (MDC) is given
Relative combined standard uncertainty (1σ%) within brackets

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