

Monitoring of Radionuclides in the Air in the Czech Republic after the Fukushima NPP Accident

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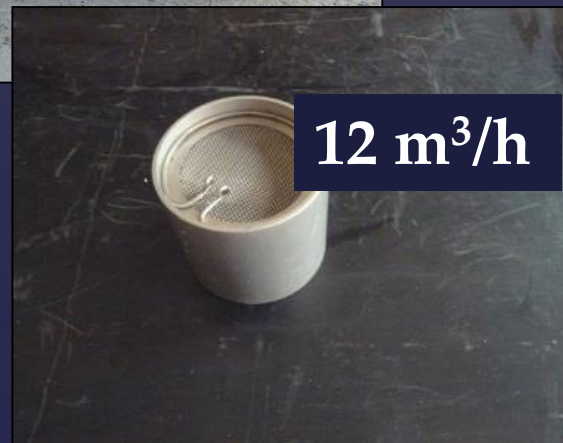
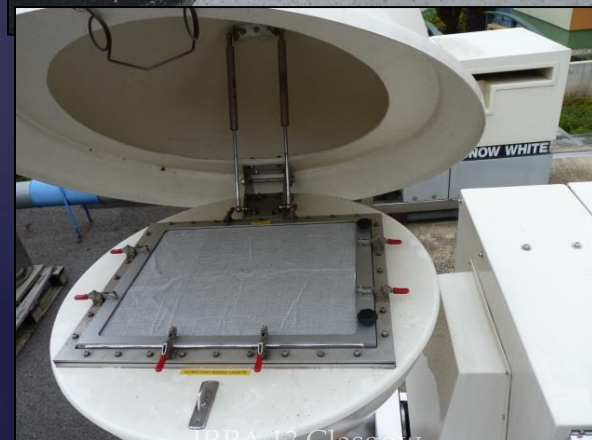
Czech Radiation Monitoring Network



10 Measuring sites
4 laboratories
Aerosols, gases, fallout

- Filter 1x week
- Charcoal sorbent 1x month
- Fallout 1x month

Sampling equipment



IRFA 13 Glasgow

Charcoal sorbent cartridge

Pirrko - wet/dry fallout collection

HPGe gamma spectrometry

Marinelli, beakers, filters

detection limit for Cs137 $10E-7$ Bq/m³

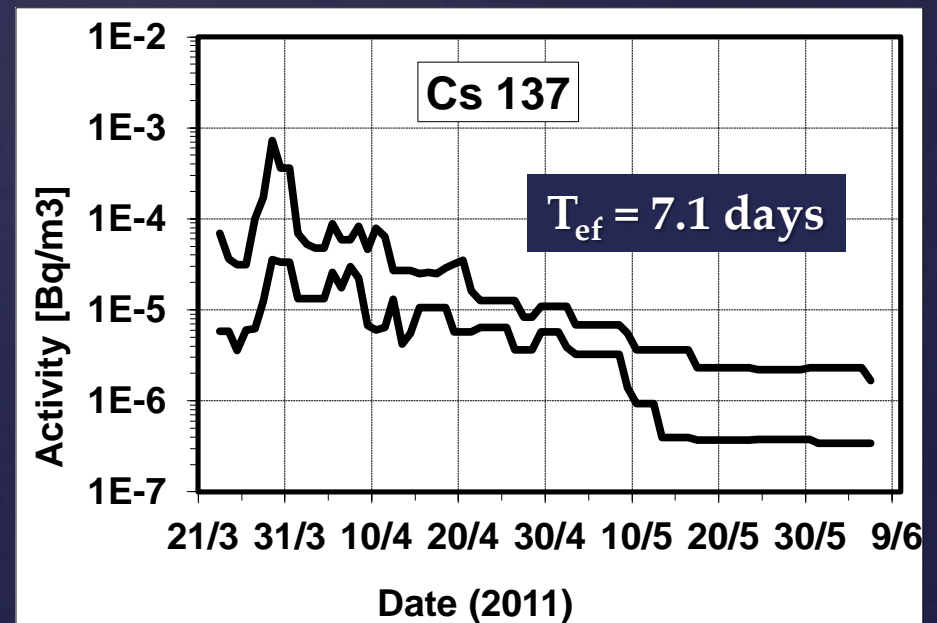
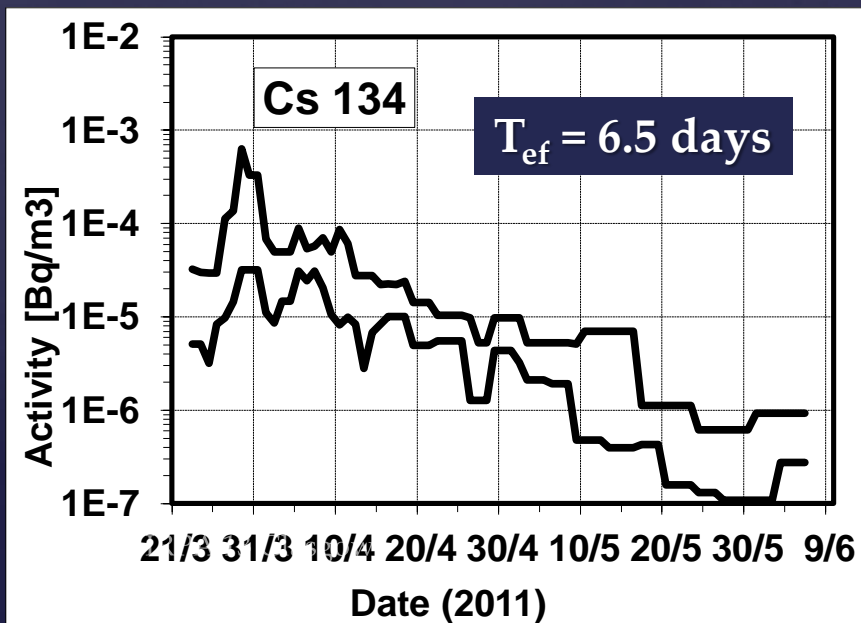
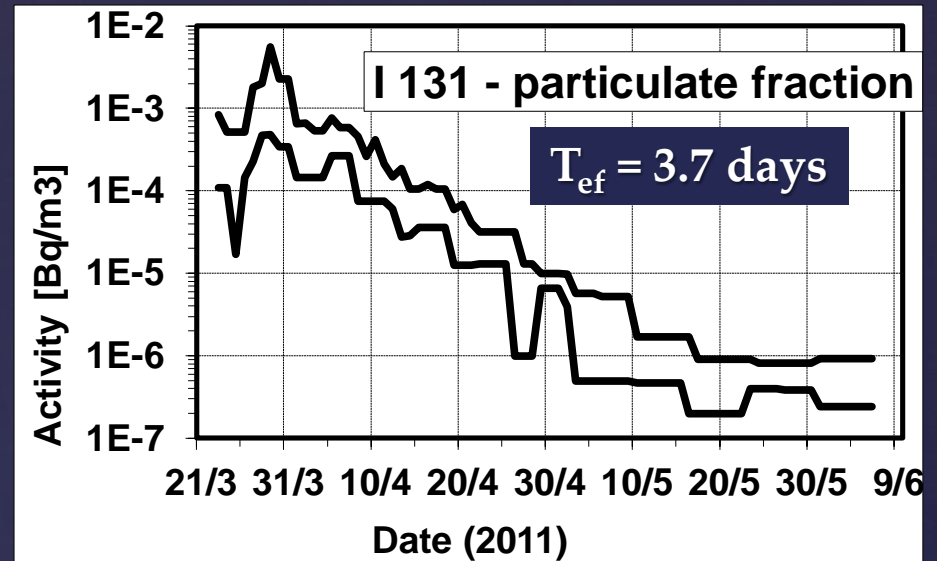
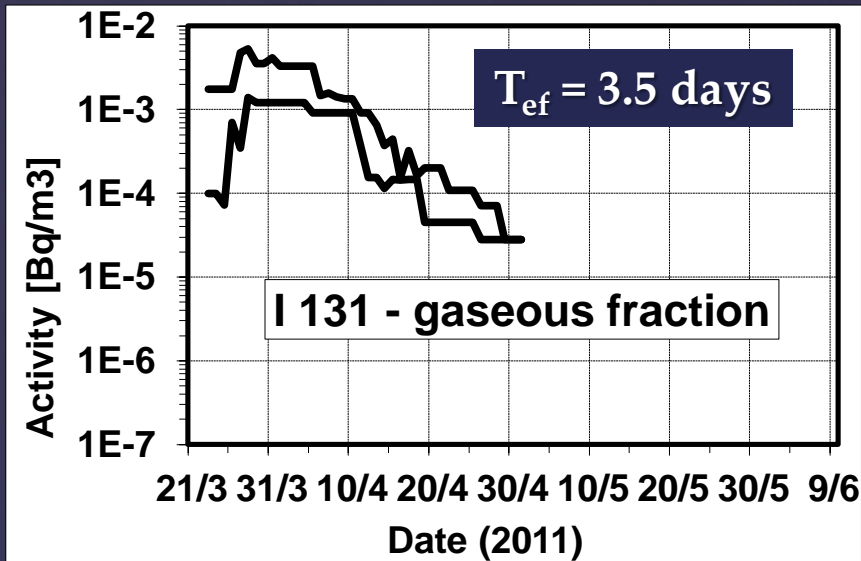
Radiochemical analysis (Pu, Sr)

detection limit for Sr 90: $3E-8$ Bq/m³

detection limit Pu 239+240: $2E-10$ Bq/m³



Range of values



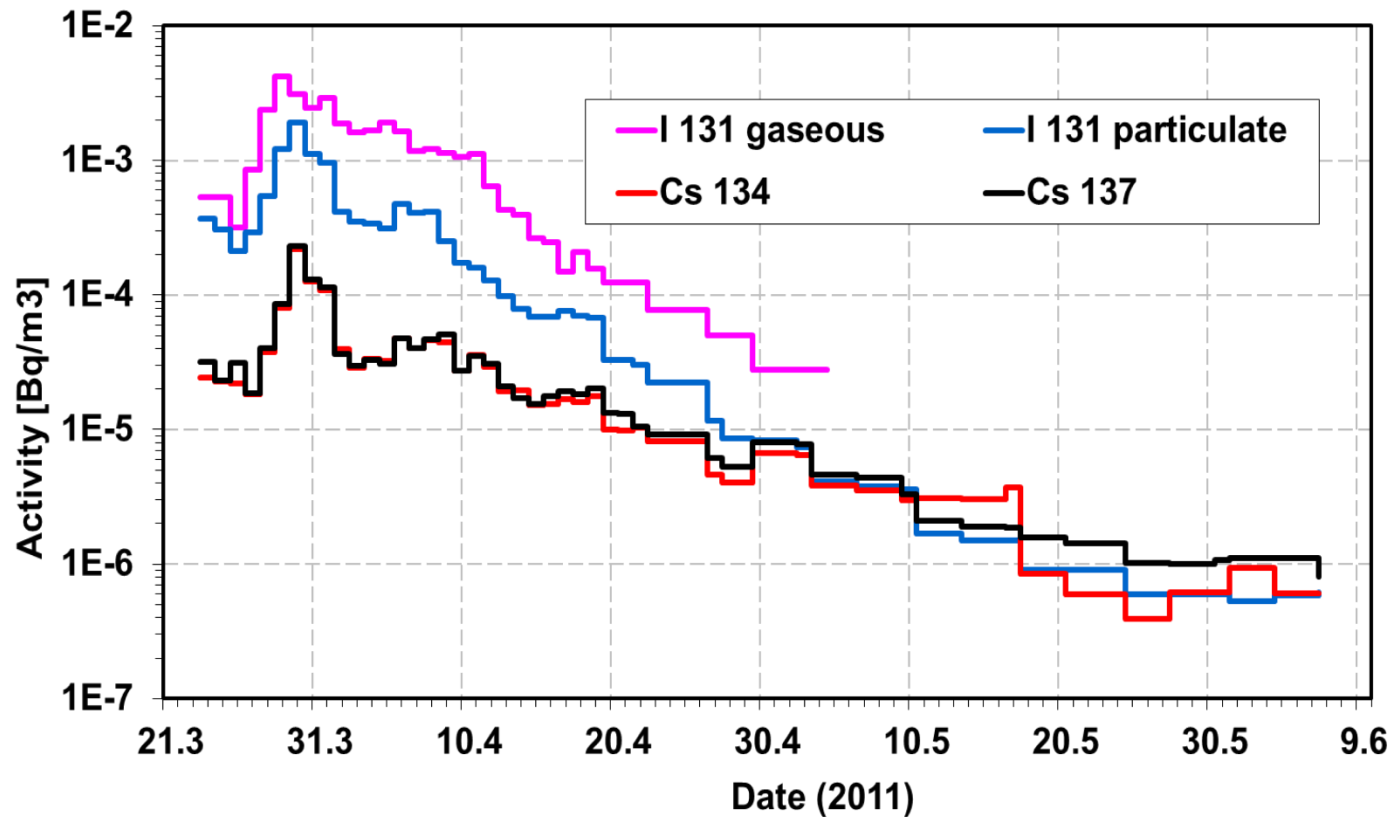
Nuclide	Max. activity [$\mu\text{Bq}/\text{m}^3$]	Date of maximum
Te 129m	70	29.3. - 1.4.
I 131 – particulate	5 600	29.3. - 30.3.
I 131 - gaseous	13 000	28.3. - 29.3.
Te 132 - I 132	250	29.3. - 30.3.
Cs 134	640	29.3. - 30.3.
Cs 136	6	29.3. - 1.4.
Cs 137	720	29.3. - 30.3.
Ba 140 - La 140	2	25.3. - 29.3.

Sr 90, Pu 238 a Pu 239, 240 – background level
Am 241 a Cm 242 – not found

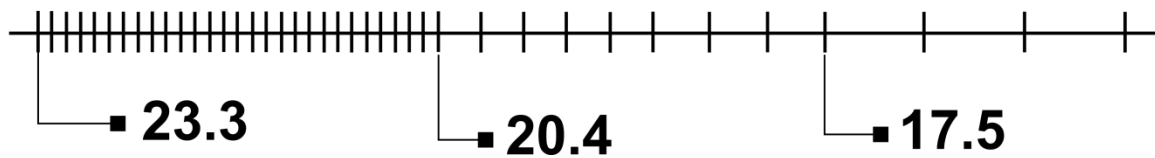
Natural radionuclides:

Be 7 : max 10 000 $\mu\text{Bq}/\text{m}^3$ (average - 3000 $\mu\text{Bq}/\text{m}^3$)

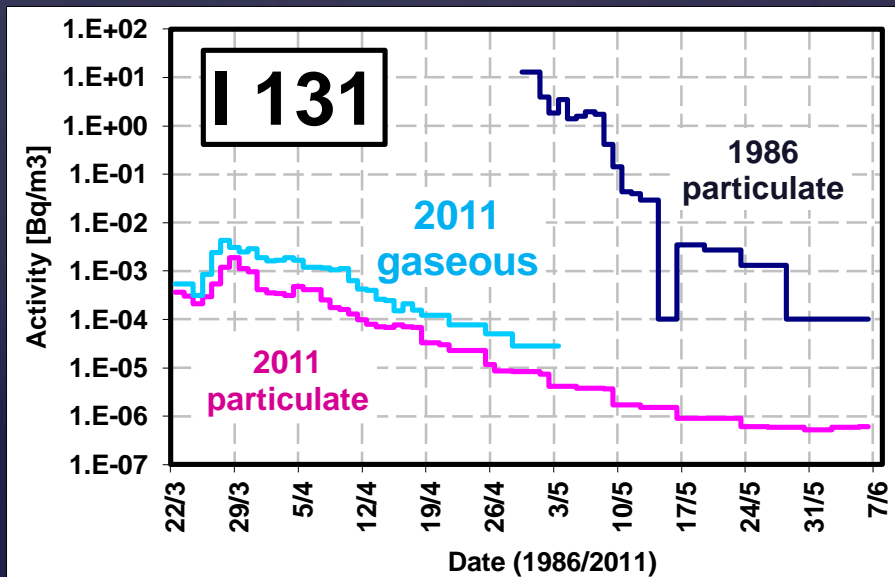
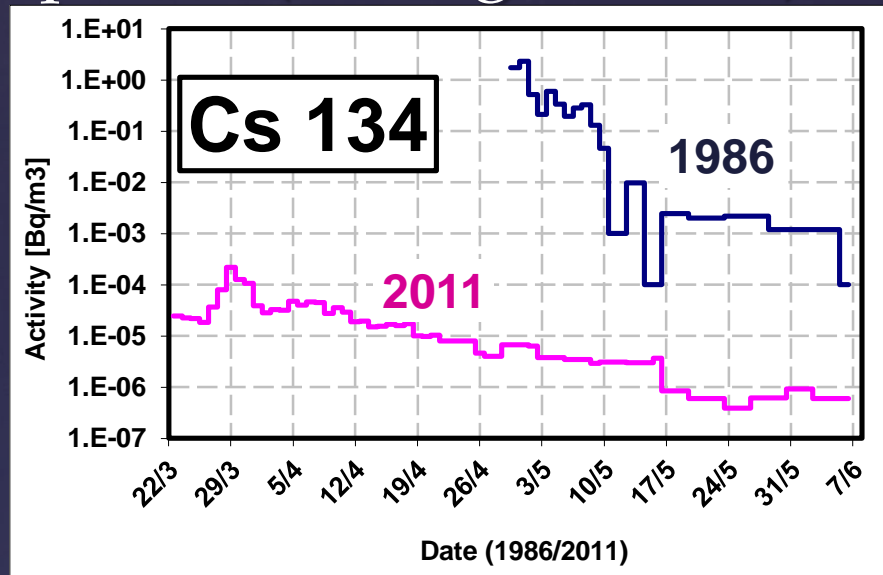
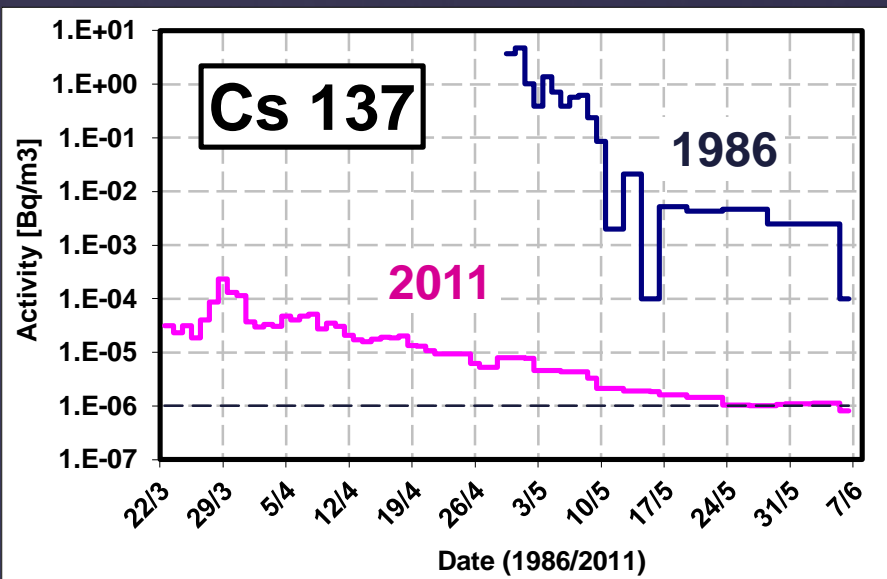
Pb 210 : max 2000 $\mu\text{Bq}/\text{m}^3$ (average - 500 $\mu\text{Bq}/\text{m}^3$)



Sampling frequency



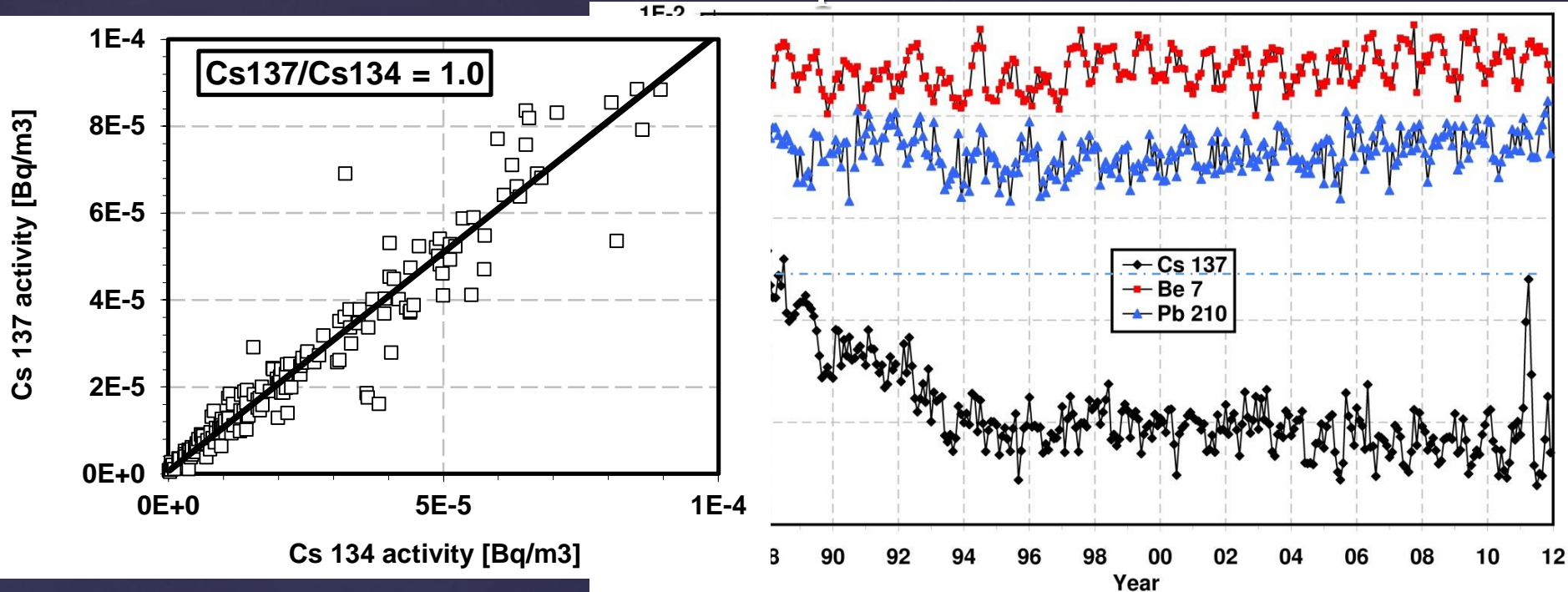
1986 vs. 2011 in the Czech Republic (average values)



Maximal observed values

Nuclide	1986	2011
I 131	70 Bq/m ³	0.013 Bq/m ³
Cs 137	23 Bq/m ³	0.00072 Bq/m ³

1986 vs. 2011 in the Czech Republic



	1986	2011
Effective dose	0.5 mSv	3.4E-5 mSv (88% I 131)
Fallout Cs 137	5000 Bq/m ²	0.5 – 3 Bq/m ²
I 131 gas/total ratio	Cca 0.8	0.6 – 0.9
Cs 137/ Cs 134	1.8	1



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Thank you for your attention