

- **Objective:** Development of an operational module describing **forest fires** in the **Chernobyl exclusion zone (ChEZ)**, providing an **upper bound estimation** of the potential **dose** burden to the population
- Dispersion model LASAT was expanded to deal with **area sources**
- Four classes of wildfire are used: weak, modest, strong and very strong
- **Contamination pattern for Sr and Cs were collected by colleagues from Ukraine for the ChEZ**
- Simple model for the emission rates
 - 20% of labile radionuclides will be redistributed in the atmosphere, no matter whether they are in the soil or biomass; no fire class considered
 - 10% of the other radionuclides will be redistributed in the atmosphere
- Complex model for the emission rates
 - The emission strength of the radionuclides **depends on the fire class** reflecting the different fire temperatures
 - Emission depends further on the **surface properties** in the fire area (14 classes of land use/forest type)

Operation of the forest fire module

User interface and contamination maps

Country | Site | Unit: MOBILE | WILDFIRE
Countermeasures for country: Germany
Run: Earliest start of release [CEST] 05.04.2018 14:46
Latest end of release [UTC] 05.04.2018 12:46

Source term: Weather | Countermeasures | Food chain | Run | Summary

Source term user input - UserDefined

Type of release data input: Wildfire with manually defined nuclides

Noble gases | Iodines | Aerosols

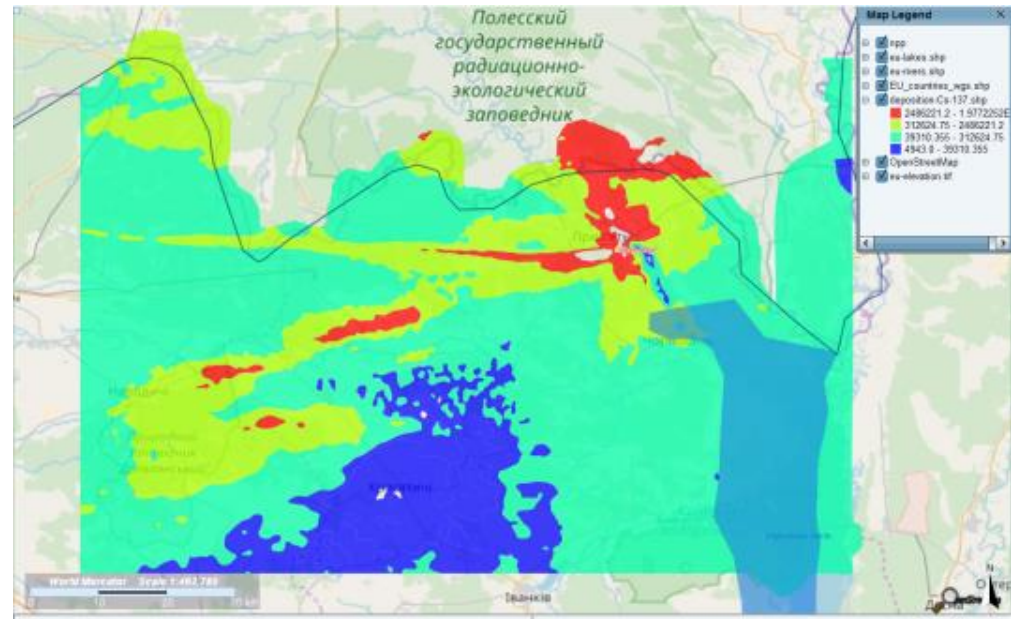
	Interval 1	Interval 2	Interval 3
Begin of release [CEST]	05.04.2018 14:46	05.04.2018 17:46	05.04.2018 20:46
End of release [CEST]	05.04.2018 17:46	05.04.2018 20:46	06.04.2018 02:46
Duration of release [h]	3	3	6
Area			
Fractions of iodine	def. [100/0/0]	def. [100/0/0]	def. [100/0/0]
Fire intensity [m/s]	1.2 (Moderate)	1.2 (Moderate)	1.2 (Moderate)
Am-241 [Bq/m³]	0.00E0	0.00E0	0.00E0
Cs-134 [Bq/m³]	1.50E6	1.40E6	1.20E6
Pu-238 [Bq/m³]	0.00E0	0.00E0	0.00E0
Pu-239 [Bq/m³]	0.00E0	0.00E0	0.00E0

Selection of calculation nuclides (2 of 342)

Help Cancel Ok

User interface with all relevant parameters

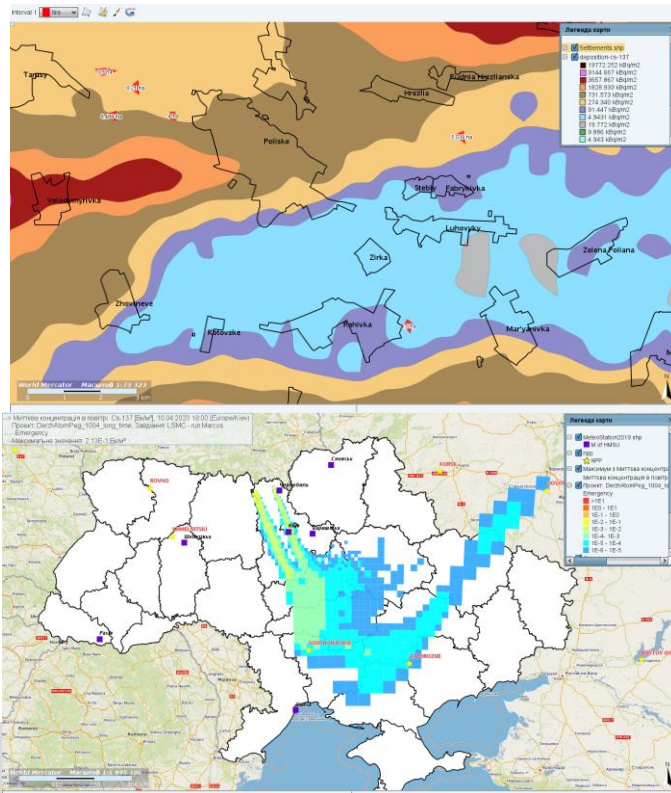
Contamination map Cs-137



Area
source

Application

- **State Scientific and Technical Center for Nuclear and Radiation Safety (SSTC NRS)**
<https://sstc.ua/news/prognoz-peremishennya-potencijno-zabrudnenogo-atmosfernogo-povitrya-zumovlenogo-pozhezhami-v-chzv-na-10-11-kvitnya>
- **Ukrainian Hydrometeorological Center** has performed assessments for the event from 09.04.20 21:00(Kiev time)
 - **Wildfire duration: 36 h, Prognosis duration: 96h**
 - **Total area of wildfire : approximately 60 ha**



Comparison of measured and calculated values the Cs-137 ambient air activity concentrations in the surface layer of the atmosphere that appeared due to a fire in the Chornobyl Exclusion Zone. April 2020.

Measuring point	Start of sampling	End of sampling	Volumetric activity,	
			$\mu\text{Bq}\cdot\text{m}^{-3}$ <i>calculated</i>	$\mu\text{Bq}\cdot\text{m}^{-3}$ <i>measured</i>
<i>National Hydrometeorological Service of Ukraine</i>				
Kyiv 50.39N, 30.53E	10.04.2020	11.04.2020	726	700
	11.04.2020	12.04.2020	261	170
	12.04.2020	13.04.2020	0	<180
Baryshivka 50.35N, 31.34E	11.04.2020	14.04.2020	26	45
Odesa 46.44N, 30.77E	09.04.2020	12.04.2020	42	48
Snovsk 51.80N, 31.95E	09.04.2020	12.04.2020	49	52
Chornobyl 51.27, 30.23E	07.04.2020	10.04.2020	518	380
	10.04.2020	13.04.2020	454	290
South-Ukraine NPP, Yuzhnoukrainsk				
47.81N, 31.22E	07.04.2020	13.04.2020	36	49
Zaporizhzhia NPP, Enerhodar. 47.51N. 34.58E				
	06.04.2020	13.04.2020	2	8