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GOVERNMENT OF ROMANIA



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OF SERBIA



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2007 - 2013



ENVIROBANAT  
Common History, Common Future

# Air quality monitoring in Banat area. Comparative results and analyses

*Francisc Popescu*

**ENVIROBANAT WORKSHOP**

*9 - 10 June 2014, Zrenjanin, Republic of Serbia*

*In the frame of the project*

***Sustainable development of an research center in Banat region and  
Danube flow area through scientific research and environmental  
simulation tools to asses and evaluate potential threats***

[www.envirobanat.ro](http://www.envirobanat.ro)



## Overview of the monitoring sites/locations/networks



The Air Quality Database was built using the data available (raw) from the Romanian Air Quality National Monitoring Network ([www.calitate aer.ro](http://www.calitate aer.ro)) and National Automatic Air Quality Monitoring System in the Republic of Serbia (<http://www.merz.gov.rs/en>)  
The validated data can be requested directly from Agencies mentioned.



- CS1 – Resita
- CS3 – Moldova Noua
- TM1 – Timisoara
- TM2 – Timisoara
- TM4 – Timisoara
- TM5 – Timisoara
- TM6 – Moravita
- ZR – Zrenjnain
- KI – Kikinda
- ST – Starcevo (Pancevo)
- VO – Vojlovica (Pancevo)

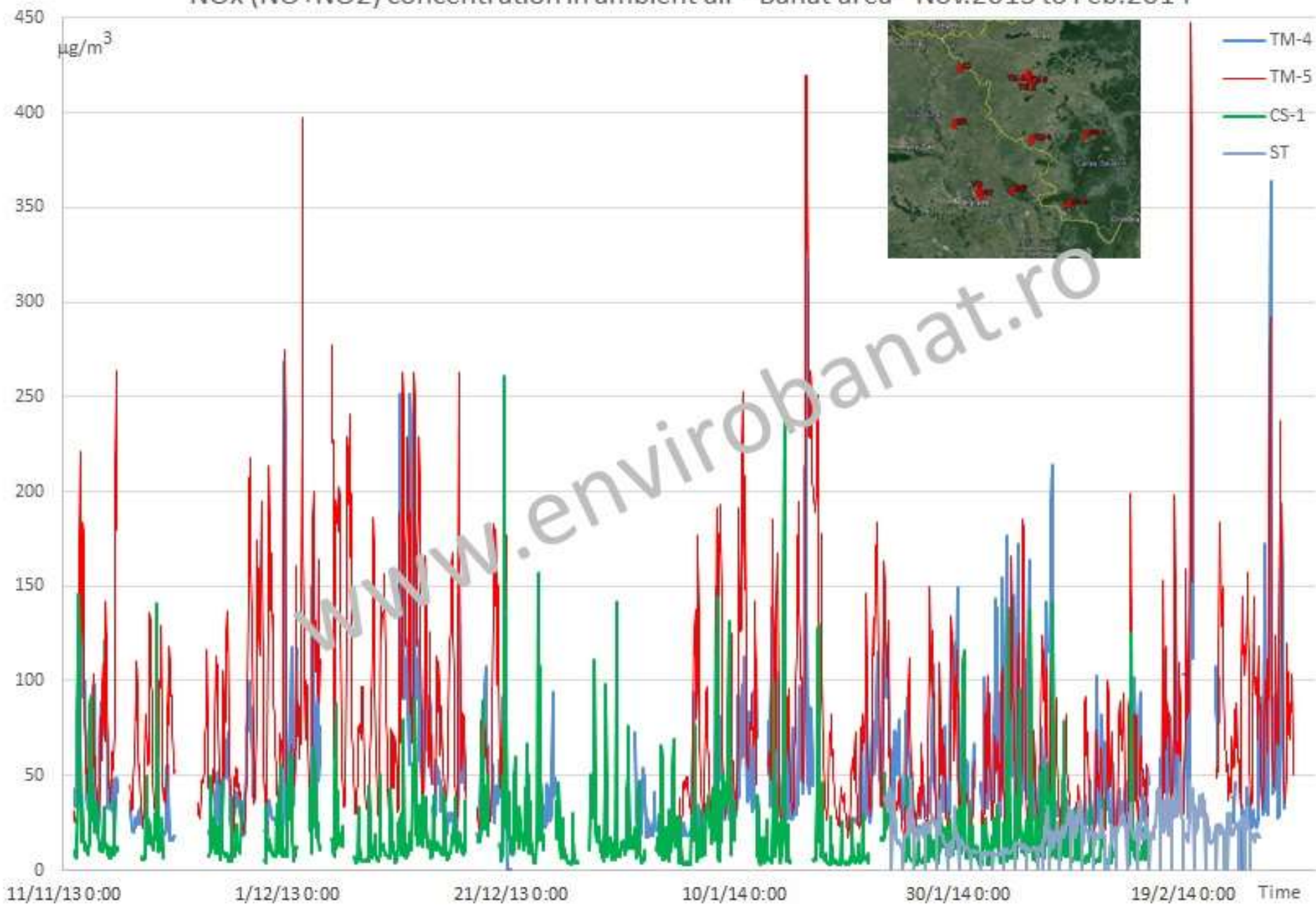


## Database printscreen

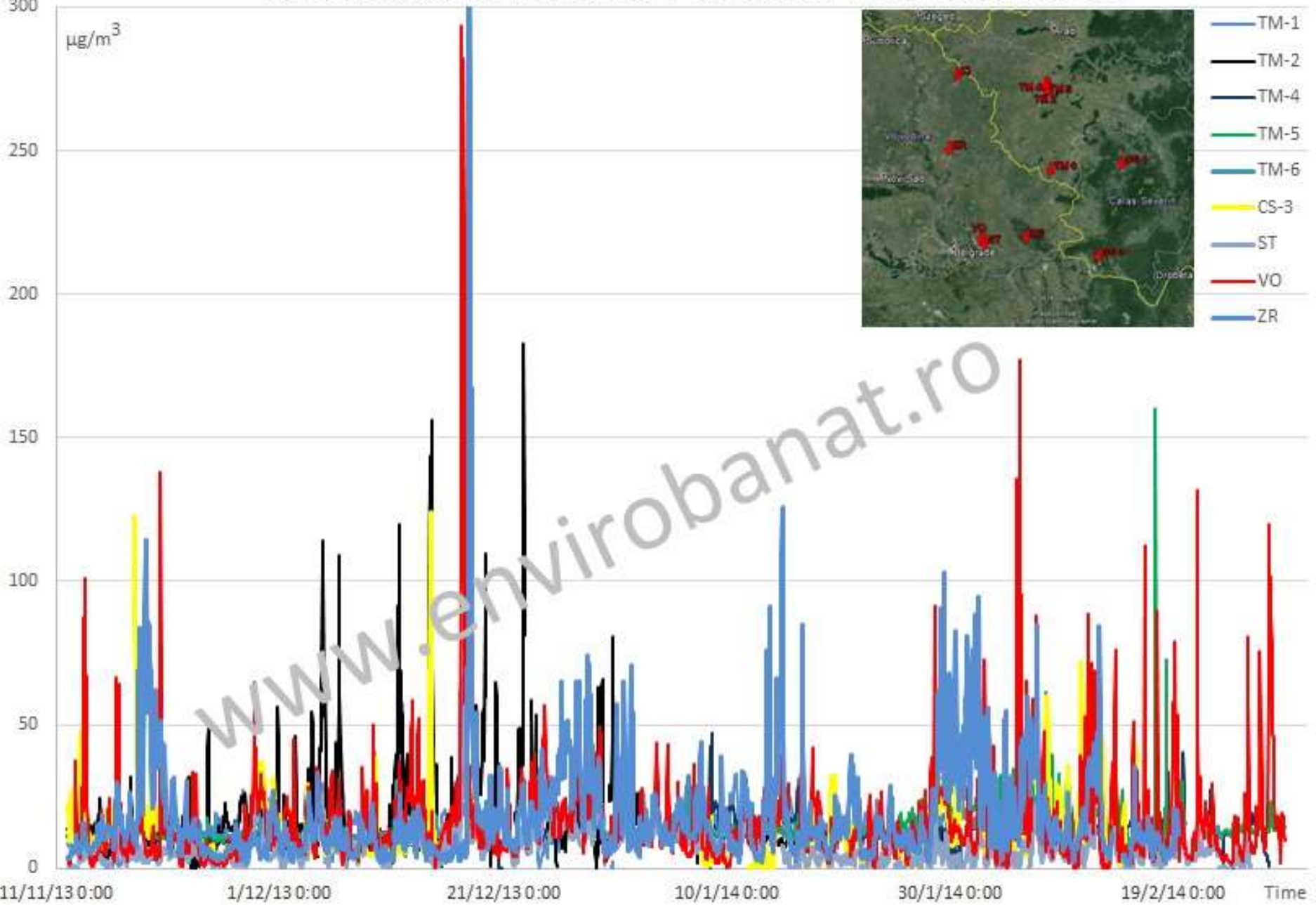
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	
1	<b>Station location:</b>	Timis county, Timisoara, Aradului Way, Bl. 34, FN					 								
2	<b>Owner:</b>	Romanian Agency for Environmental Protection													
3	<b>Station Code:</b>	TM-5													
4	<b>Data status:</b>	Not validated													
5	<b>Coordinates:</b>	45°46'39.49" N													
6		21°13'13,78" E													
7	<b>Type of data:</b>	public													
8	<b>Source:</b>	www.calitateaer.ro													
9															
10	<b>Data</b>	SO2	NO	NO2	NOx	PM10	Benzen	Toluen	O-xylen	Etilbenzen	M-xylen	P-xylen	CO	BTX	
11		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>	
835	16/12/13 8:00	11.35	46.42	70.05	141.22	22.87	0.46	0.62	0.71	0.63	0.43	0.66		2.88	
836	16/12/13 9:00	14.3	123.15	74.35	263.17	79.16	0.62	0.6	0.79	0.7	0.62	0.79		3.42	
837	16/12/13 10:00	14.74	123.07	72.32	261.02	50.55	0.49	0.62	0.53	0.42	0.66	0.58		2.88	
838	16/12/13 11:00	12.66	61.13	66.3	159.54	36.84	0.51	0.53	0.63	0.42	0.74	0.78		3.19	
839	16/12/13 12:00	10.74	18.43	53.15	81.4	21.35	0.55	0.59	0.64	0.5	0.87	0.7		3.35	
840	16/12/13 13:00	10.37	14.38	47.24	69.29	20.06	0.55	0.51	0.83	0.7	0.81	0.71		3.41	
841	16/12/13 14:00	10.16	12.77	44.72	64.31	20.12	0.53	0.74	0.74	0.65	0.64	0.53		3.18	
842	16/12/13 15:00	10.14	11.02	36.1	53	16.81	0.41	0.66	0.62	0.52	0.77	0.56		3.02	
843	16/12/13 16:00	9.97	12.54	42.58	61.81	17.62	0.58	0.57	0.68	0.8	0.89	0.68		3.4	
844	16/12/13 17:00	10.31	17.49	46.35	73.16	20.25	0.42	0.53	0.7	0.63	0.76	0.69		3.1	
845	16/12/13 18:00	10.73	21.37	50.78	83.55	25.32	0.57	0.74	0.69	0.69	0.83	0.65		3.48	
846	16/12/13 19:00	10.36	15.57	50.13	74.01	26.59	0.5	0.62	0.71	0.62	0.7	0.66		3.19	



NOx (NO+NO2) concentration in ambient air - Banat area - Nov.2013 to Feb.2014

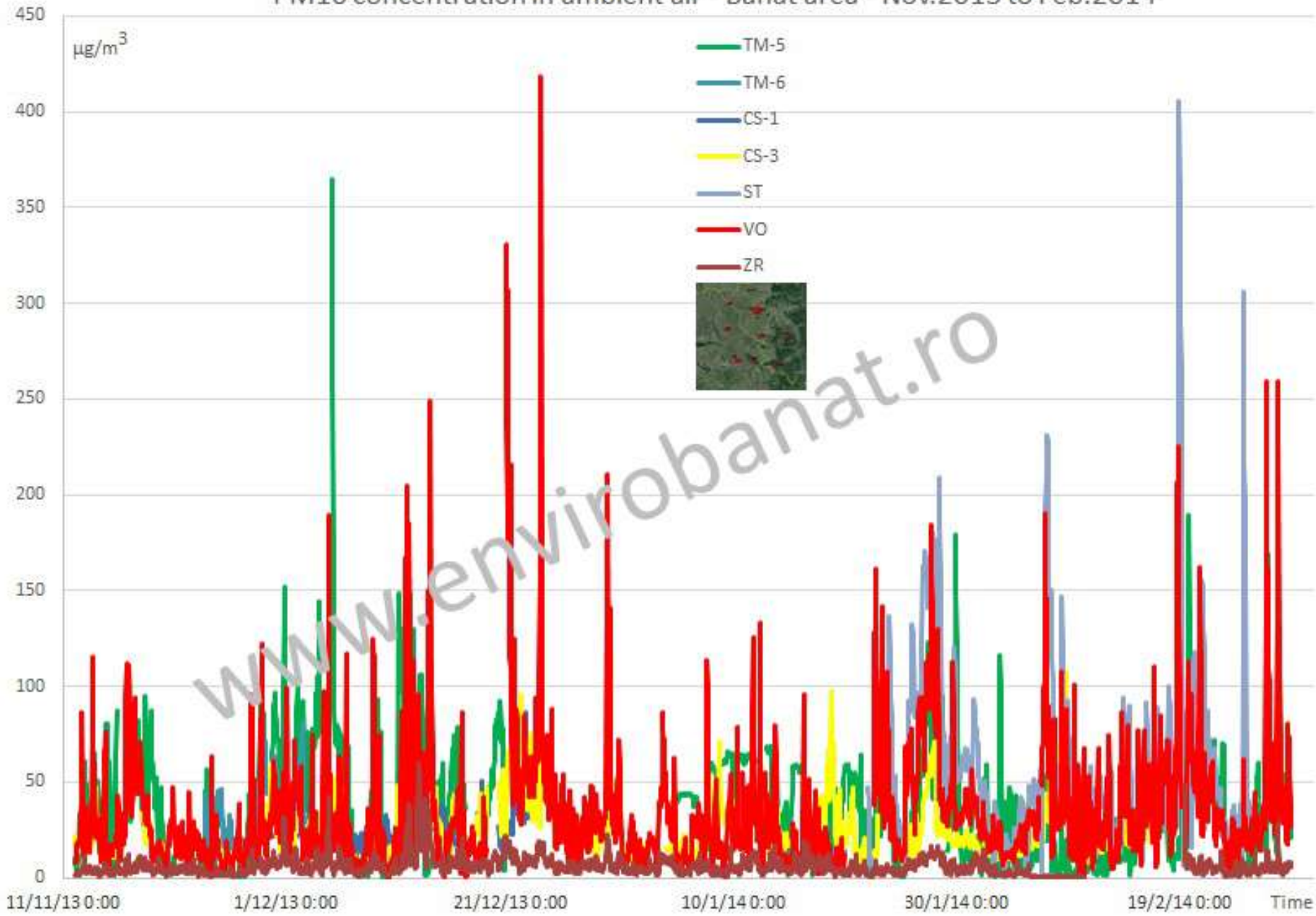


SO2 concentration in ambient air - Banat area - Nov.2013 to Feb.2014



- TM-1
- TM-2
- TM-4
- TM-5
- TM-6
- CS-3
- ST
- VO
- ZR

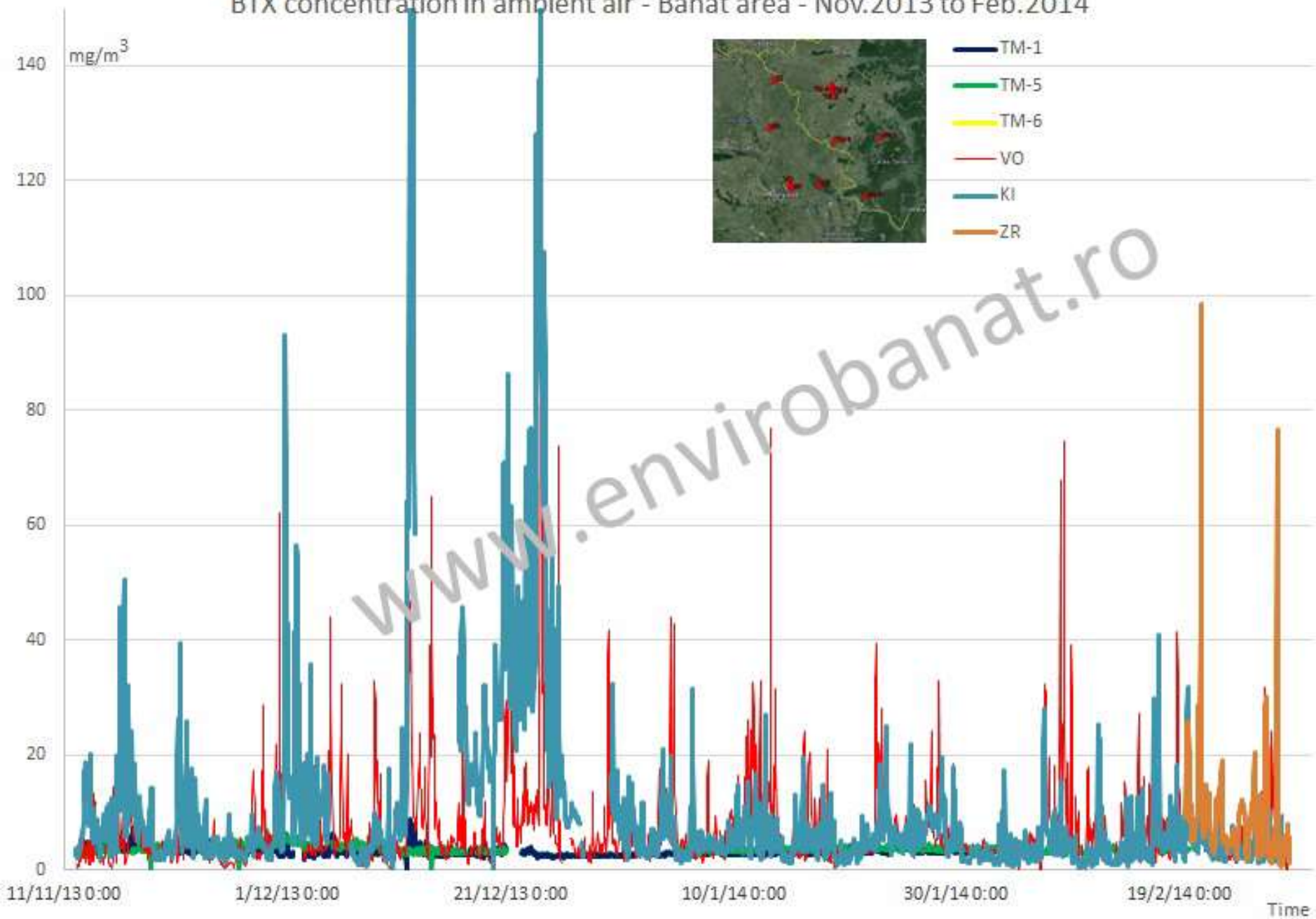
PM10 concentration in ambient air - Banat area - Nov.2013 to Feb.2014



www.envirobanat.ro

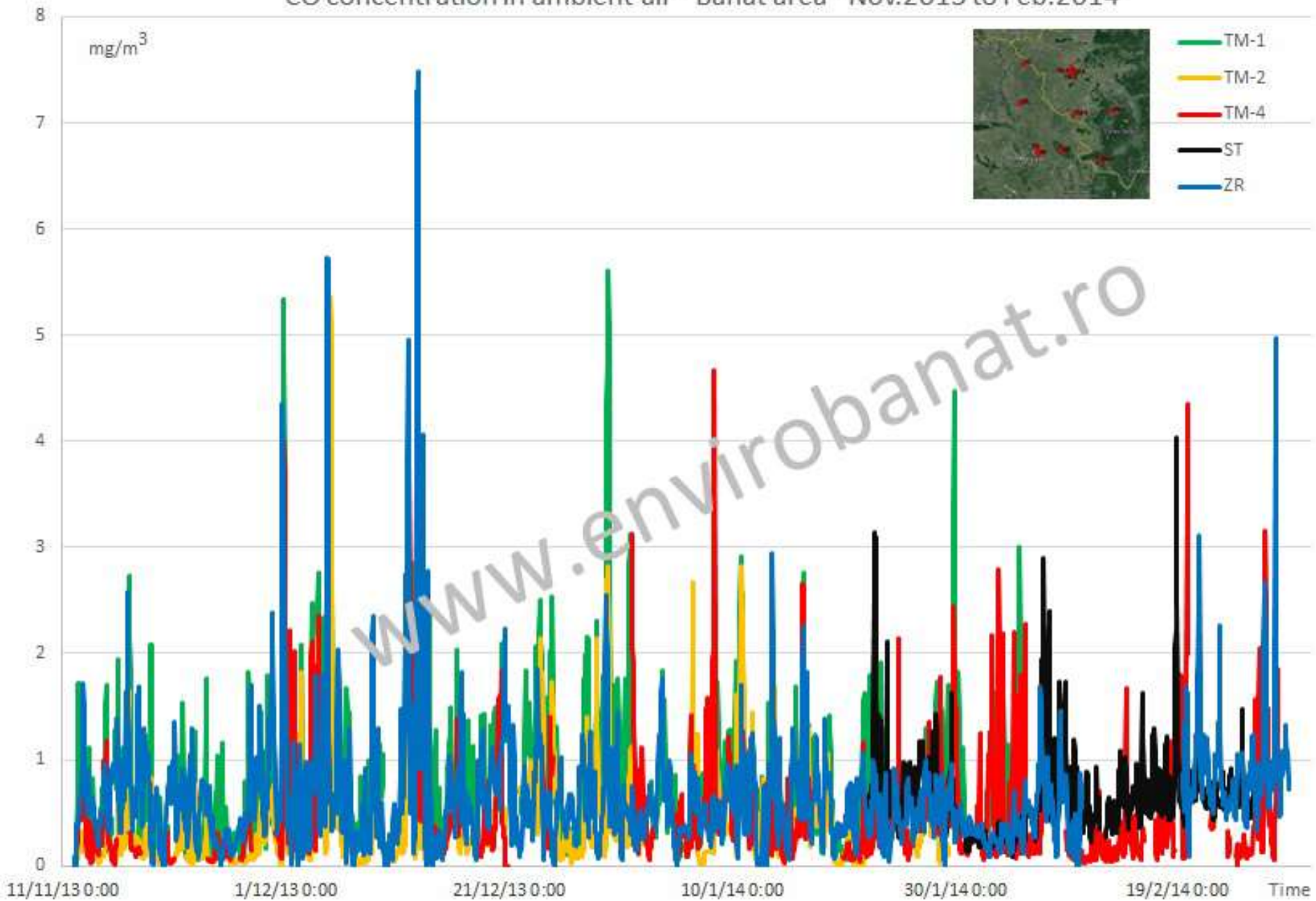


BTX concentration in ambient air - Banat area - Nov.2013 to Feb.2014



Time

CO concentration in ambient air - Banat area - Nov.2013 to Feb.2014

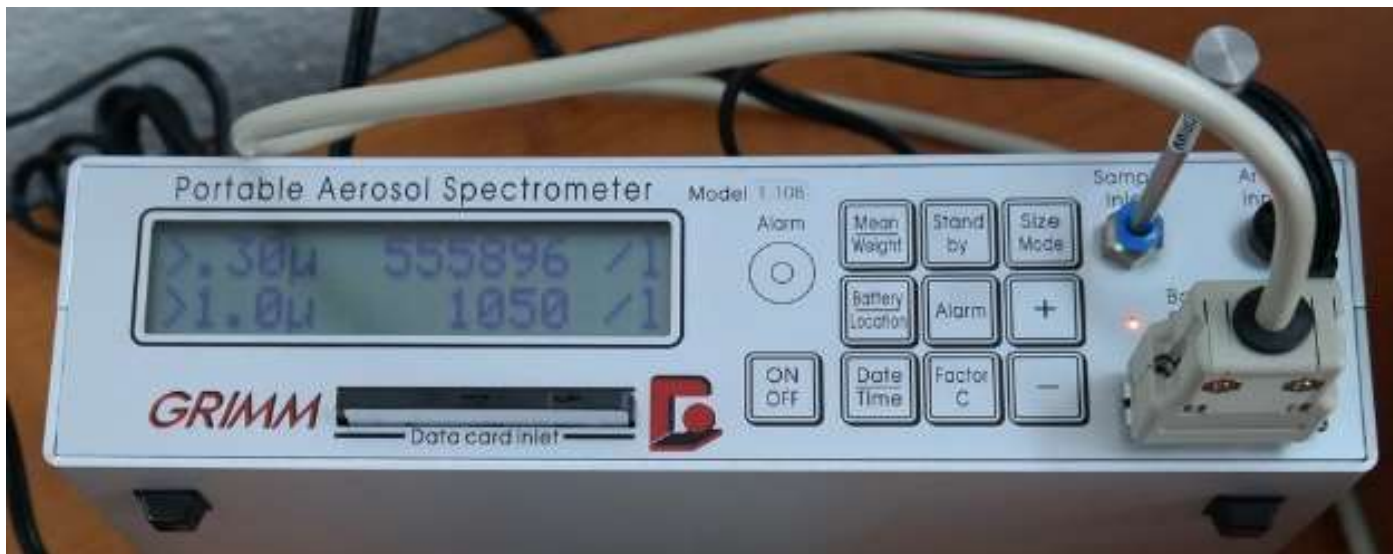


11/11/13 0:00 1/12/13 0:00 21/12/13 0:00 10/1/14 0:00 30/1/14 0:00 19/2/14 0:00 Time



# OPTICAL PARTICLE COUNTER

## Advanced Aerosol Spectrometer, Model 11-A (1108)



Size channels: 15 channels 0.3/0.4/0.5/0.65/0.8/1.0/1.6/2/2.5/3/4/5/7.5/10/15/20  $\mu\text{m}$

Particle concentration: 1 to 2,000,000 particles/liter

Particle mass: from 0.1  $\mu\text{g}/\text{m}^3$  to 100  $\text{mg}/\text{m}^3$

Reproducibility:  $\pm 3\%$  over the total measuring range

**Sample collection: 47mm PTFE filter**

Power supply: battery 12V/2.1Ah, continuous operation up to 8 hours

<Header>  
 User name: Francisc Popescu  
 Location: Timisoara  
 Model: 1.108  
 Serial No.: 8F130019  
 Software revision: Version 2.5.4  
 Unit: **counts/liter (differential)**  
 C-factor: 1.00  
 Comment: OPC masurement

[12/31/2035 11:50:55 AM]

	0.350 µm	0.450 µm	0.575 µm	0.725 µm	0.900 µm	1.300 µm	1.800 µm	2.500 µm	3.500 µm	4.500 µm	6.250 µm	8.750 µm	12.500 µm	17.500 µm	22.500 µm
5/6/2014 8:23	73260	16360	5500	900	350	500	210	310	130	60	60	20	10	0	0
5/6/2014 8:23	71760	17410	4300	850	450	150	30	280	120	40	80	30	20	0	0
5/6/2014 8:23	69880	16210	4650	1150	550	350	250	310	80	60	40	0	10	0	0
5/6/2014 8:23	72280	19220	5050	1250	650	250	50	250	90	60	50	20	20	10	0
5/6/2014 8:23	75770	17460	5100	1100	200	300	430	450	100	70	30	10	10	0	0
5/6/2014 8:23	70920	17260	5050	800	700	350	110	270	90	60	30	20	20	0	0
5/6/2014 8:23	70220	17110	4900	1150	500	350	210	440	160	60	90	20	20	0	0

**Unit: dM [µg/m³]**  
 C-factor: 1.00  
 Comment: OPC masurement

[12/31/2035 11:50:55 AM]

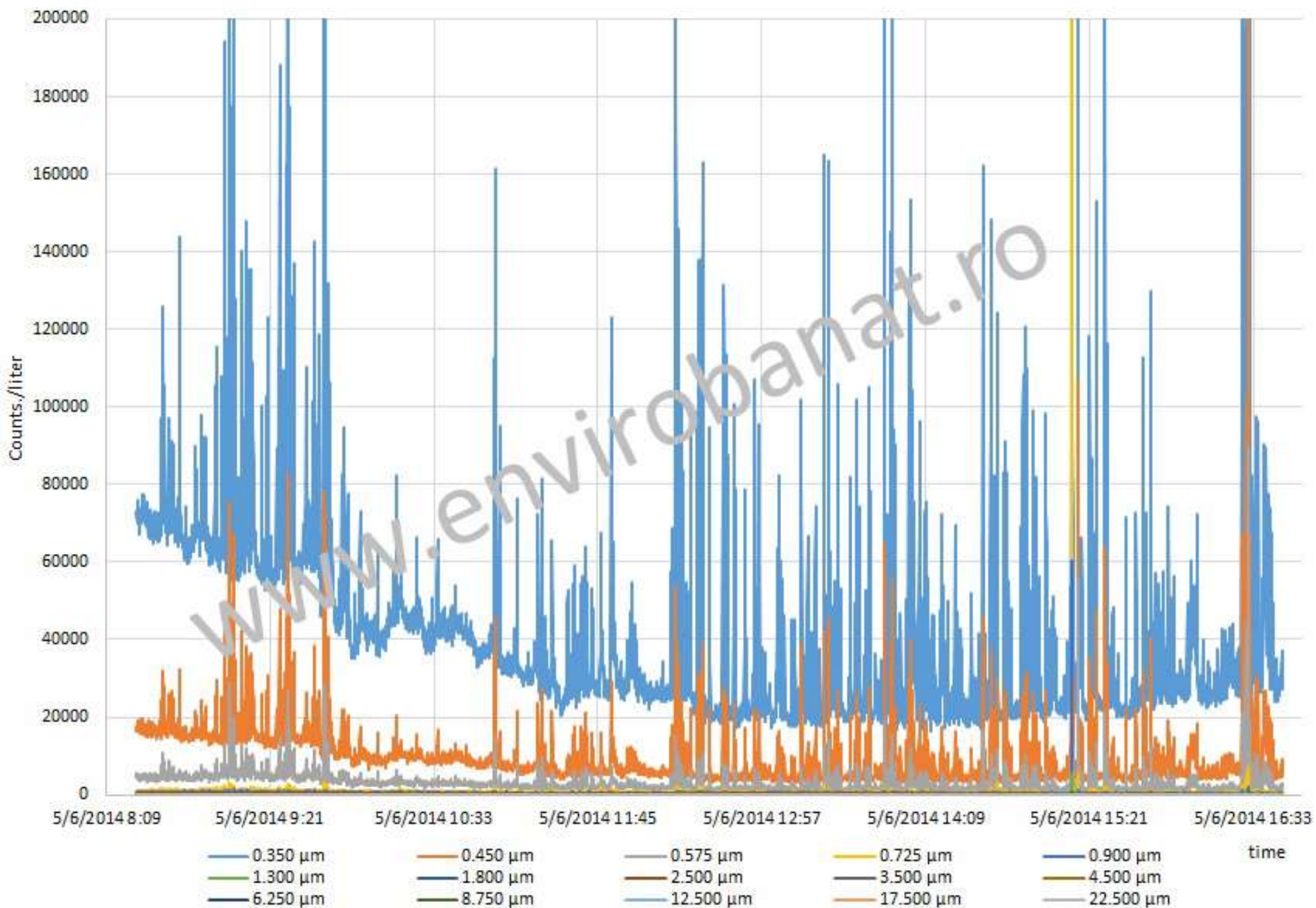
	0.265 µm	0.350 µm	0.450 µm	0.575 µm	0.725 µm	0.900 µm	1.300 µm	1.800 µm	2.500 µm	3.500 µm	4.500 µm	6.250 µm	8.750 µm	12.500 µm	17.500 µm	22.500 µm
5/6/2014 8:23	0	4.28	2.03	1.42	0.47	0.35	1.5	1.67	6.59	7.59	7.44	19.94	18.24	26.6	0	0
5/6/2014 8:23	0	4.19	2.16	1.11	0.44	0.45	0.45	0.24	5.96	7	4.96	26.58	27.36	53.2	0	0
5/6/2014 8:23	0	4.08	2.01	1.2	0.6	0.55	1.05	1.99	6.59	4.67	7.44	13.29	0	26.6	0	0
5/6/2014 8:23	0	4.22	2.38	1.31	0.65	0.65	0.75	0.4	5.32	5.25	7.44	16.61	18.24	53.2	72.96	0

**Unit: µg/m³**  
 C-factor: 1.00  
 Comment: OPC masurement

[12/31/2035 11:50:55 AM]

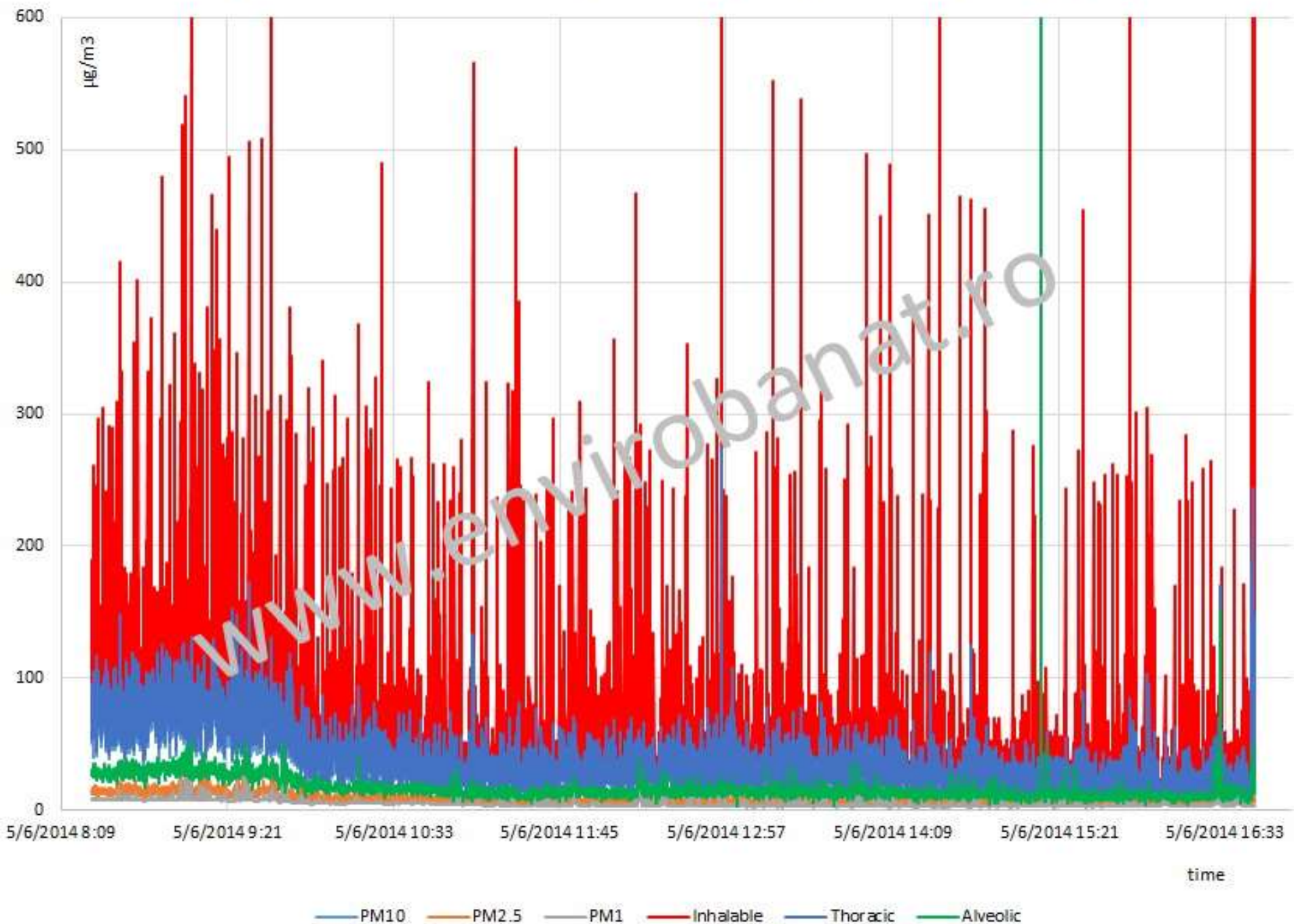
	PM10	PM2.5	PM1	Inhalable	Thoracic	Alveolic
5/6/2014 8:23	70.5	15.5	8.8	98.1	77.2	30.1
5/6/2014 8:23	86.7	12.6	8.1	134.1	95.5	27
5/6/2014 8:23	50.1	15	8.5	70.1	54	26.1
5/6/2014 8:23	77.4	13.4	8.8	189.4	92.1	25.6
5/6/2014 8:23	59.8	18	9	82.8	64.7	31.4

Counts. Location: Faculty of Mechanical Engineering - park side / Timisoara

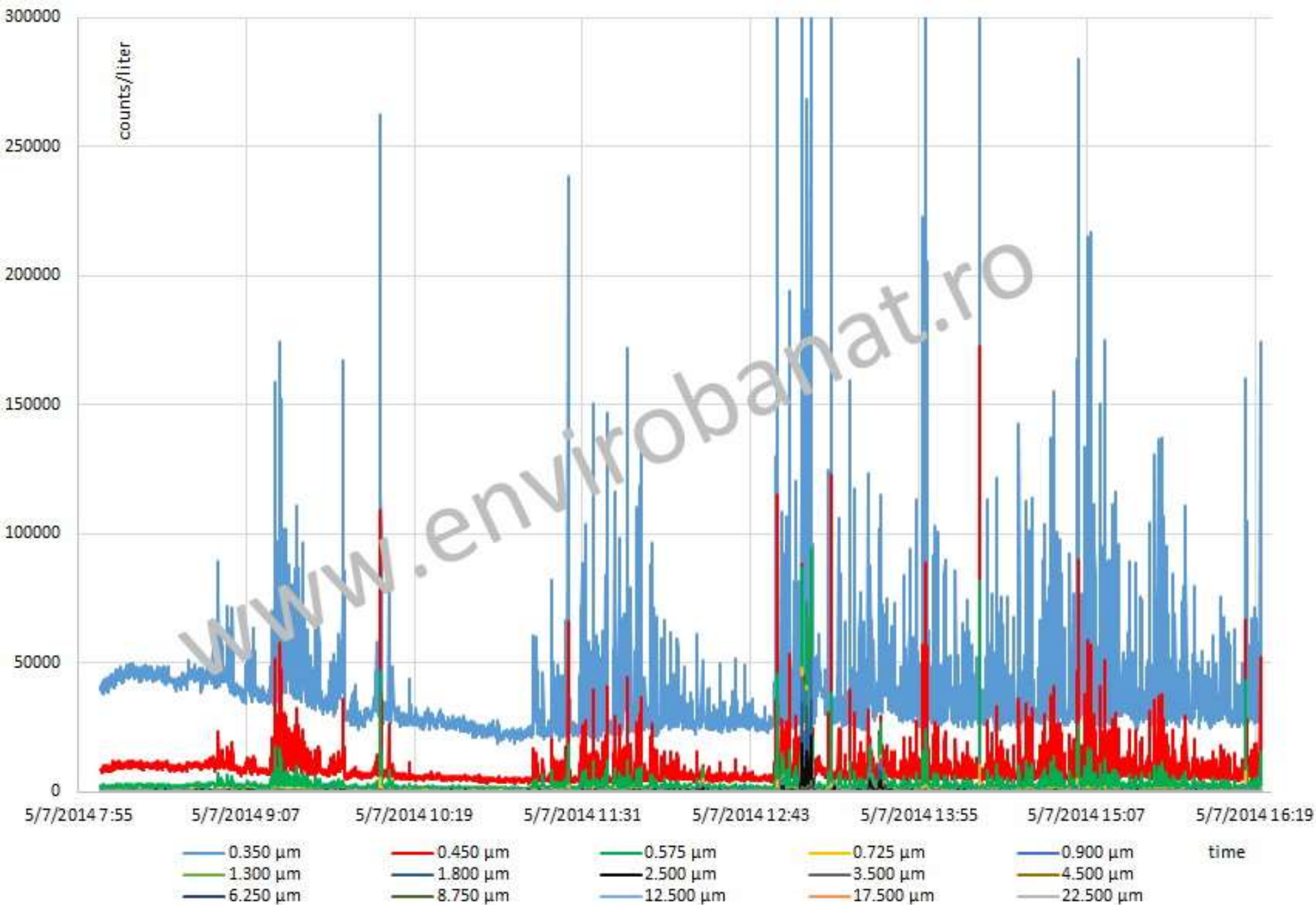




Concentrations. Location: Faculty of Mechanical Engineering - park side / Timisoara



# Counts. Location: Faculty of Mechanical Engineering - park side / Timisoara



**More data are available to download from**  
**[envirobanat.ro/Database.php](http://envirobanat.ro/Database.php)**



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