REŞIŢA AIR QUALITY MONITORING REPORT

TO:

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Results of the Air Quality Monitoring Campaign in RESITA

Location: Resita ("Eftimie Murgu" University)
Coordinates of the AQM stations:

- UPT Mobile laboratory: 45°173331 N, 21°530285 E, altitude 224m

Start on: 4 November 2011 and ended in 9 November 2011
Team Experts: Francisc Popescu, Nicolae Lontiş, Gavrilă Trif-Tordai, Gavril Brăteanu

1. Overview of the Resita monitoring sites:

Spatial location of the AQM stations

When you think about Resita, the first thing that comes to mind is: "industrial town". However, as you will see in the description below, there's more to this old capital town of the Caras-Severin district. I should probably start by mentioning that Resita is located in the S-W of Romania, surrounded by the hills leading to the many touristic attractions of the Semenic

Mountain, among which the three splendid lakes are: Secu, Valiug, Trei Ape. The town is crossed from South to North by the river Barzava, which flows in its artificial course, parallel to the boulevard that connects the Old Town with the New Town. (myresitainfo.com)

First locomotive built in Romania, in Resita

The core industry of the town has been for many decades within the metallurgic and the industrial machinery sectors. This past is still part of the town's present due to the industrial halls and warehouses scattered all over town, units that belonged to the factories that used to employ the majority of the town's work force. In the past years however, the town's industry diversified, welcoming companies from the meat processing industry, pasta industry, or clothing manufacturers. Nowadays the town and its inhabitants are faced with the fairly common economic challenges while trying to adapt to the regional market's course required by the transition into the EU (which the country is now a member of). Regarding transportation, Resita's traffic is quite diverse engaging cars, taxies, buses, trams, trains and should it be necessary, one can hop on plane at one of the two airports in the area: Caransebes ~40km; Timisoara ~100km. (myresitainfo.com)

Aside from the Art Museum (with an interesting architectural design, when compared to its surroundings), the art galery nearby the museum, the "G.A.Petculescu" Teatre Hall, the Civic Center, the "Eftimie Murgu" University, the City Hall, the Old Town as a whole, the suspended coal rail (crossing the Civic Center area), the Zoo in the Muncitoresc neighbourhood, one should also consider visiting the Locomotives Museum. On September 4th 1872 the Resita subsidiary of the STEG company built the the first locomotive in the European area. Resita's first railroad had been built since 1846 to serve the metalurgic industry's locations in the area and it measured 610m. Between 1868-1870 another railroad was built for industrial purposes, which measured 948m. At first the wagons were pulled by horses, and only later the railroad was modified for steam locomotives. The first locomotive to run on this railway was a STEG-52 called *Szekul*, built in Vienna after John Haswell's project. The outdoor Locomotives Museum includes 16 of the most important locomotives that used to function in the area. One can see the first locomotive made in Romania, and one of the two locomotives built in 1925 for the Forrest Department of the Metalurgic Factory (the first to use over heated steam). On site there is also one of the two locomotives of the 142.000 series - the only one of its kind in the country, one of the famous 150.000 series locomotives, as well as the 1000th locomotive built in Resita. Also, it wouldn't hurt to mention some of the nearby area's attractions: Valiug, Crivaia, Garana (the set of the annual Garana Jazz Festival in August), Secu, Semenic, the Comarnic Cave, and the Popovat Cave a.o. (myresitainfo.com)

Today the town's population is now close to 75000, decreasing if compared to 1989 when the town's population reached 110260.

Industry in Resita, iron and steel production

Today, the most relevant air quality pollution sources are represented by the TMK company (former state owned siderurgy plant CSR) and the city landfill, with occasionally severe episodes of air pollution over the city, as recorded in local/national media.

Source: http://www.myresitainfo.com, http://www.mediafax.ro/stiri-utilizatori/resita-poluare-zi-zi-894240, http://www.adevarul.ro/locale/resita/Carasenii_respira_aer_otravit_ca_sa_nu_ramana_pe_drumuri_0_538746151.html

View of the site location in Resita, at the "Eftimie Murgu" University

2. Results obtained during RESITA air quality monitoring campaigns:

The UPT Mobile Laboratory was located in the perimeter of the "Eftimie Murgu" University. Instruments characteristics, performances and principles of operations were described in previous reports. In the next figures the concentrations measured for relevant air pollutants are presented.

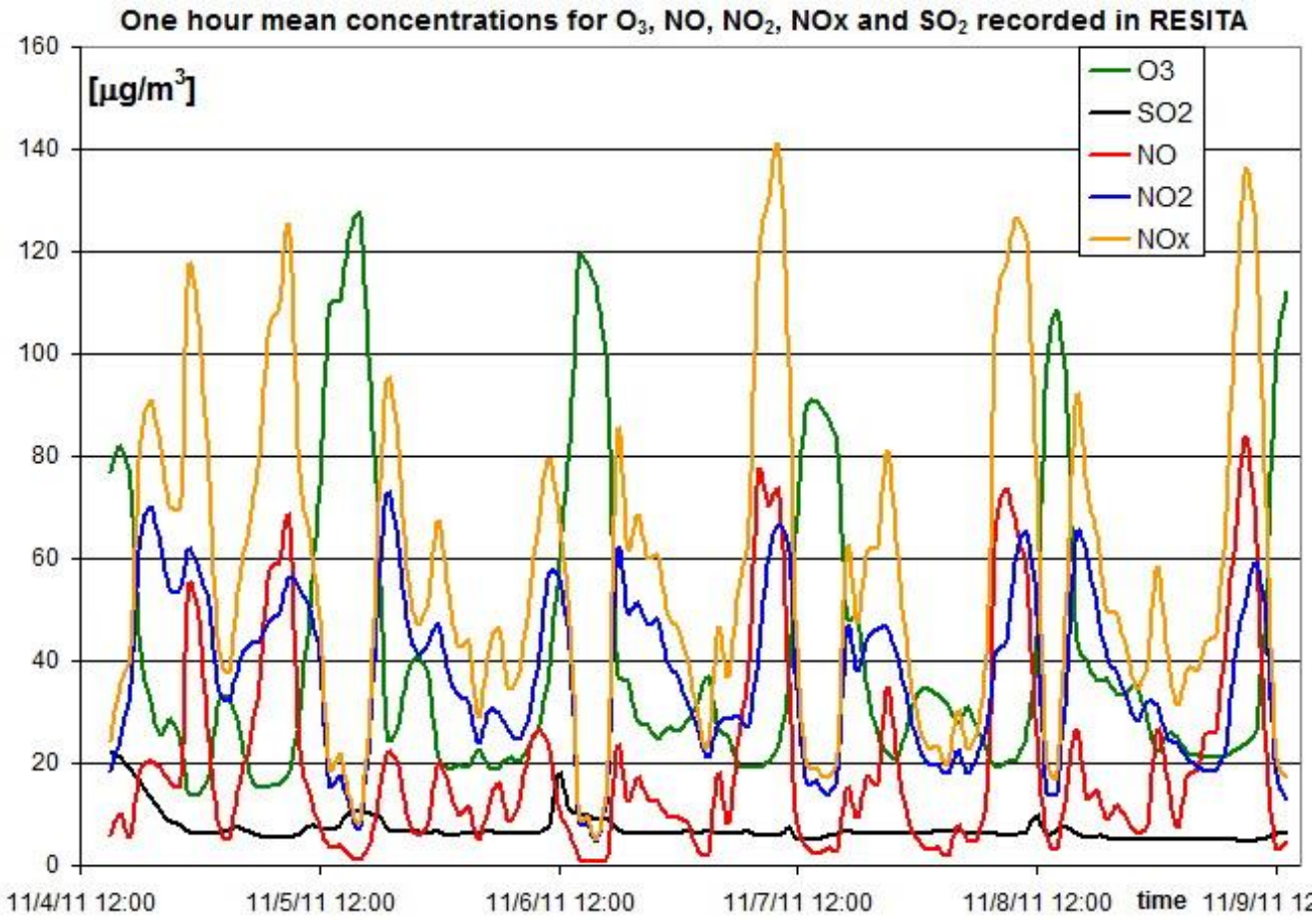

Fig 1. Hourly mean values recorded for SO_2 NO, NO_2, NOx and O_3 in Resita, with UPT Mobile Laboratory

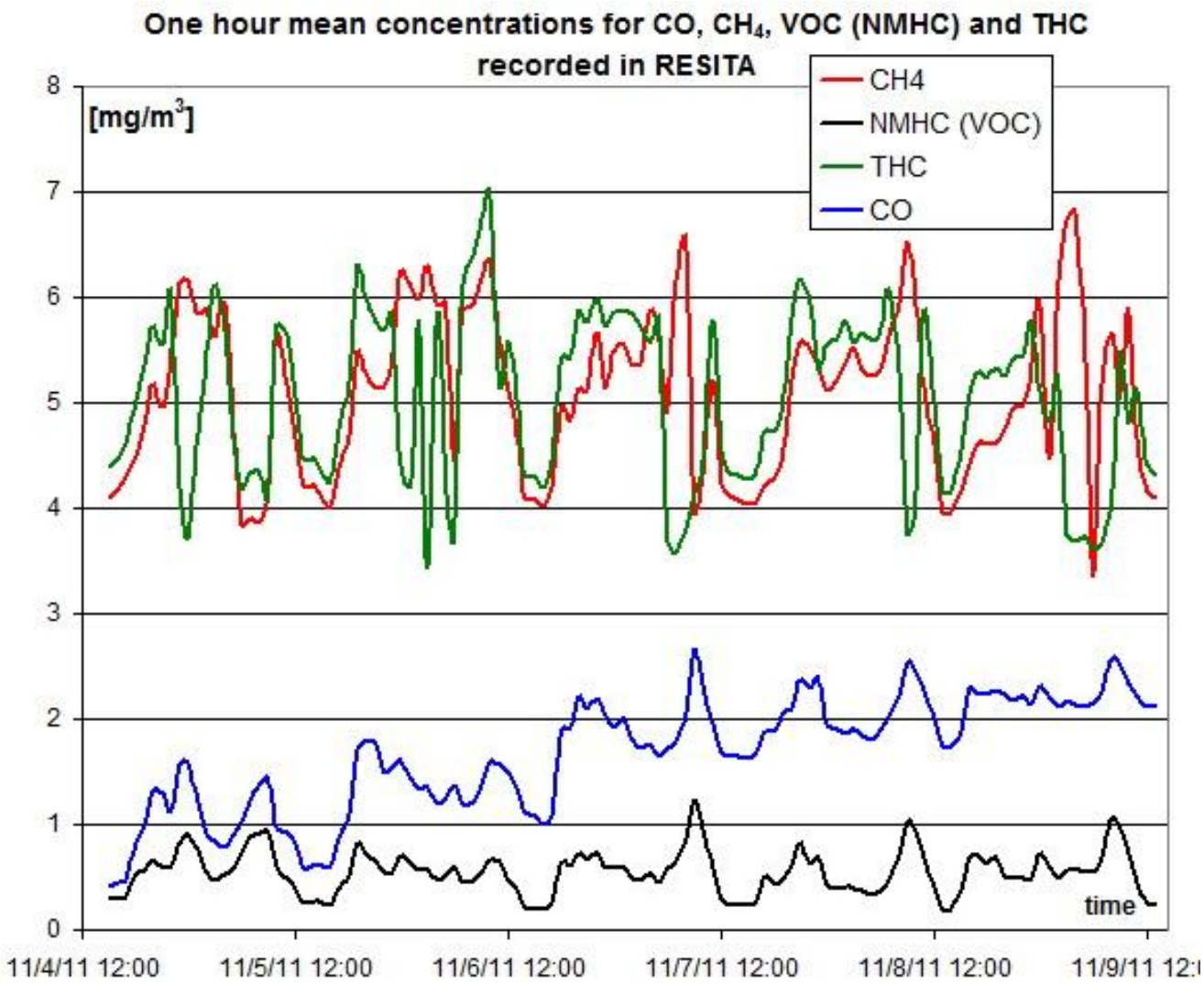

Fig 2. Hourly mean values recorded for CH4, NMHC, THC and CO in Resita, with UPT Mobile Laboratory

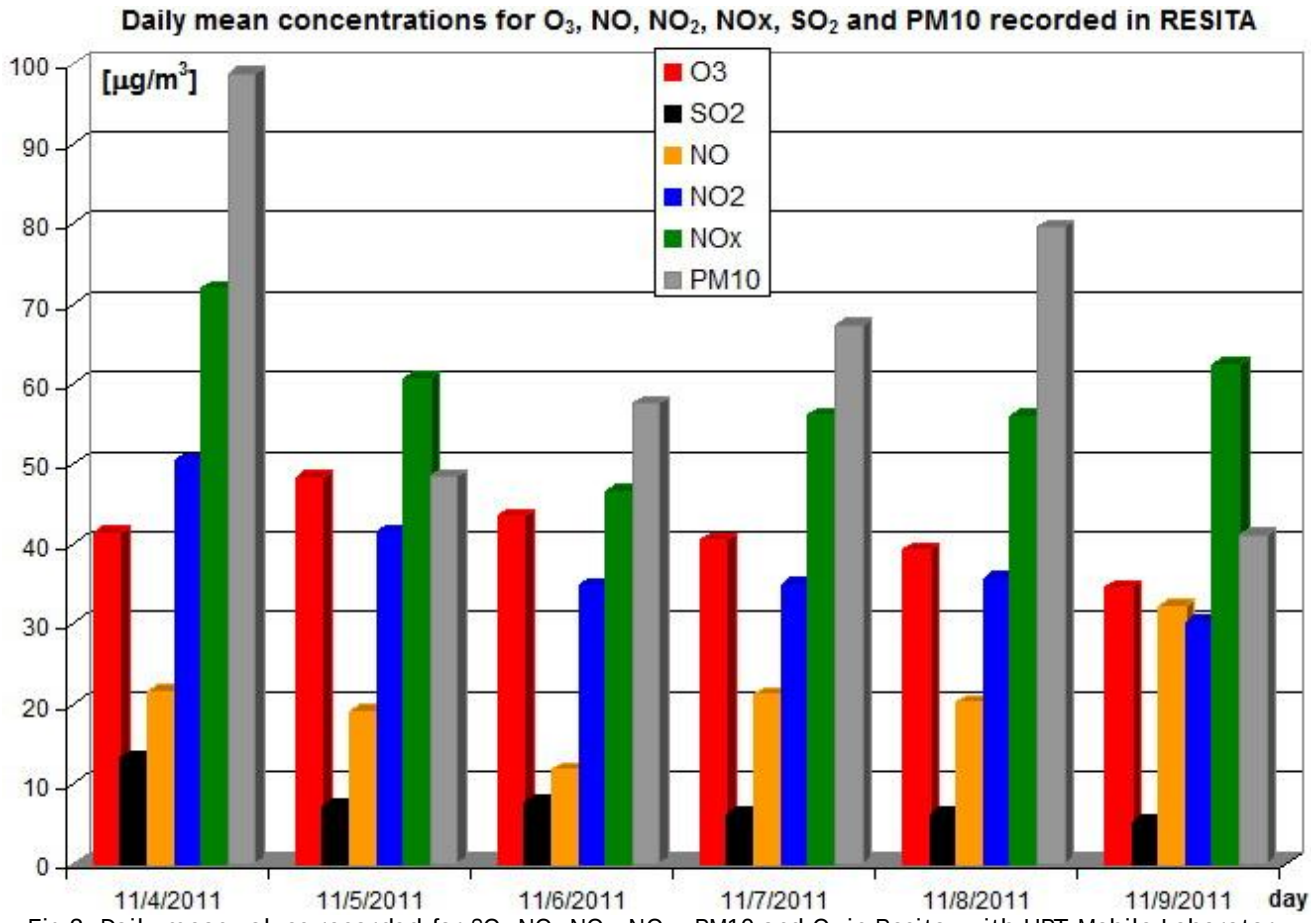

Fig 3. Daily mean values recorded for SO_2 NO, NO_2, NOx, PM10 and O_3 in Resita, with UPT Mobile Laboratory

Table1. Daily mean values recorded for Resita site

Day	O_3	SO_2	NO	NO_2	NO_x	CH_4	NMHC	THC	CO	PM10
	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	µg/m^3
11/04/11	41.40	13.28	21.54	50.35	71.89	4.97	0.56	4.90	1.00	98.77
11/05/11	48.22	7.21	19.08	41.50	60.58	4.90	0.57	5.06	1.11	48.41
11/06/11	43.45	7.65	11.78	34.78	46.56	5.30	0.52	5.28	1.51	57.56
11/07/11	40.49	6.22	21.16	34.95	56.11	4.96	0.55	4.97	1.94	67.33
11/08/11	39.22	6.22	20.18	35.71	55.89	5.09	0.53	5.20	2.09	79.62
11/09/11	34.55	5.20	32.21	30.18	62.39	5.26	0.61	4.37	2.24	41.05

3. Conclusions for Resita AQM campaigns:

For the values recorded at Resita site we can draw following conclusions:

1. the PM10 concentration are high, above the EU limits
2. all other pollutants measured are under the EU admissible limits

Due to a limited time of the monitoring period and the choice of location by availability criteria the result obtained are to be considered to have educational and informal value only. Road traffic is in general an major source of air pollution, however Resita is crossed by two major large (2 or 3 lanes per direction) boulevards, relatively reduced number of vehicles and no vehicle transit due to its geographical isolated position. So that urban road traffic is not of major concern.

On the other hand, observing local and national media, TMK plant and local landfill are major source local pollution, in severe short episodes considered "accidents". Considering the characteristics of those two pollution sources the continuous monitoring of heavy metals (Hg, Pb, Cd, a.o) and dioxins should be considered instead (or in addition) of "classical" air pollutants like NOx, SO_2 or CO.

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