



Η αντιμετώπιση της ατμοσφαιρικής ρύπανσης εξαιτίας της πυρκαγιάς στις εγκαταστάσεις του εργοστασίου ανακύκλωσης στον Ασπρόπυργο

Dr. Evangelos Gerasopoulos
Head and Quality Manager of the Atmospheric Chemistry Lab

National Observatory of Athens
GREECE



The case ...

On June 6, 2015, a fire was ignited at a private Sorting Center for Recyclables Garbage/Material



Location ...



**“Aspropirgos” Industrial Zone,
20 km E from Athens’ city center**

End-User ...

The Region of Attica, second level local authority, together with Civil Protection, requested support from NOA for specialized measurements and timely public information



Response

NOA responded immediately deploying two of its already tightly collaborating infrastructures



&



<http://www.meteo.noa.gr/aclab/>

<http://beyond-eocenter.eu/>

**Evangelos Gerasopoulos
Vassilis Psiloglou
Eleni Liakakou
Maria Lianou
et al.**

**Harris Kontoes
Stavros Solomos
Eleni Marinou
Vassilis Amiridis
et al.**



**Argyro Paraskevopoulou
Alexandros Tsoupras
Stratos Davakis
et al.**



FP7-Regpot-2012-23-1



Mapping



ΧΑΡΤΟΓΡΑΦΗΣΗ ΜΕΤΡΗΣΕΩΝ ΣΥΓΚΕΝΤΡΩΣΗΣ ΑΙΩΡΟΥΜΕΝΩΝ ΣΩΜΑΤΙΔΙΩΝ (μg/m3)



ΕΘΝΙΚΟ ΑΣΤΕΡΟΣΚΟΠΕΙΟ ΑΘΗΝΩΝ
 ΙΝΣΤΙΤΟΥΤΟ ΕΡΕΥΝΩΝ ΠΕΡΙΒΑΛΛΟΝΤΟΣ
 & ΒΙΩΣΙΜΗΣ ΑΝΑΠΤΥΞΗΣ (ΙΕΠΒΑ)

ΠΕΡΙΦΕΡΕΙΑ ΑΤΤΙΚΗΣ
 ΓΕΝΙΚΗ ΔΙΕΥΘΥΝΣΗ ΠΟΙΟΤΗΤΑΣ ΖΩΗΣ
 ΔΙΕΥΘΥΝΣΗ ΠΕΡΙΒΑΛΛΟΝΤΟΣ



BEYOND

Building a Centre of Excellence for EO-based monitoring of Natural Disasters



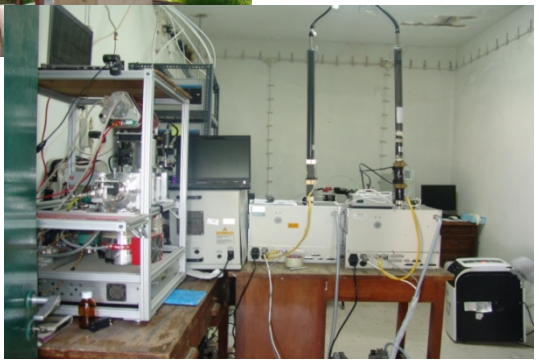
Monitoring



Additional monitoring site set up 1.2 km north from the fire



NOA's routine monitoring facilities in its premises at Thission – city center



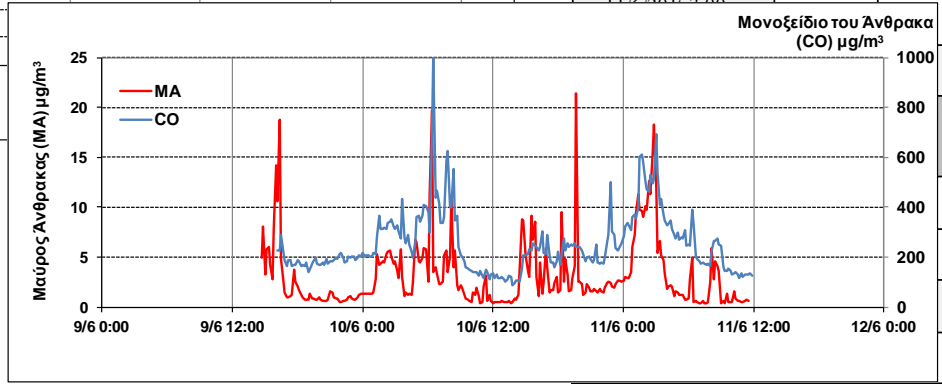
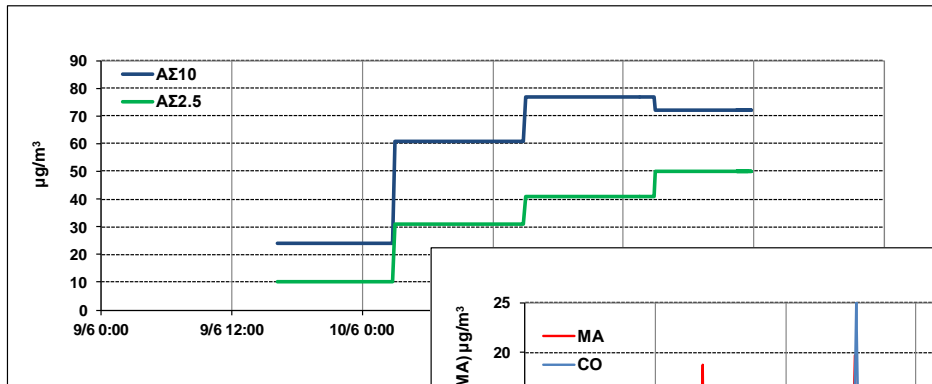


BEYOND

Building a Centre of Excellence for EO-based monitoring of Natural Disasters



Monitoring



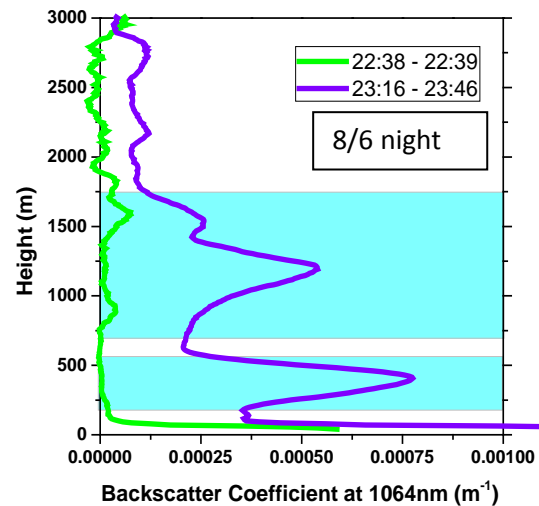
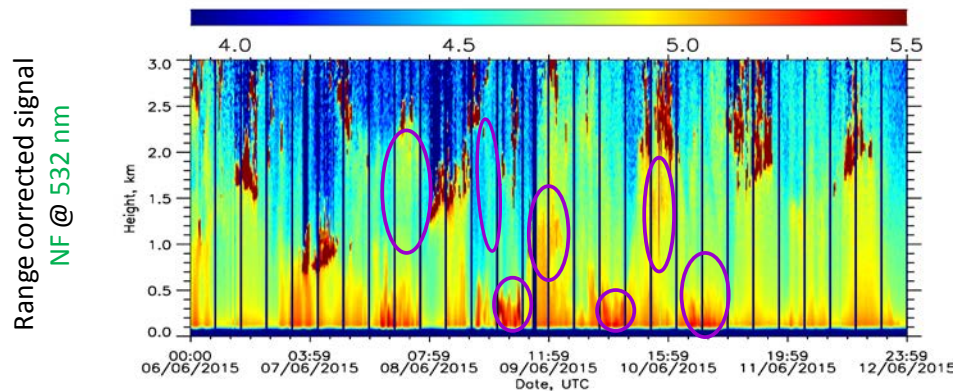
Date (Start – End)	Sampling	% infl.	Pb ng/m ³	V ng/m ³	As ng/m ³	Cr ng/m ³	Ni ng/m ³
9/6/2015 15:05 – 10/6/2015 3:00	A	30	11.7	3.03	4.2	1.2	9.4
10/6/2015 3:00 – 10/6/2015 15:00	B	37	32	1.02	1.6	0.3	4.5
9/6/2015 15:05 – 10/6/2015 15:00	A+B	34	21.9	2.02	2.9	0.7	6.9
10/6/2015 15:00 – 11/6/2015 3:00	Γ	43	15.9	3.8	4.2	-	2
11/6/2015 3:00 – 11/6/2015 11:52	Δ	21	19.7	0.4	2.6	2.8	11.5
10/6/2015 15:00 – 11/6/2015 11:52	Γ+Δ	32	17.8	2.1	3.4	-	6.7
			Cd ng/m ³	Sb ng/m ³	Al ng/m ³	Zn ng/m ³	
			0.5	18.2	200	1486	
			0.9	6.8	493	1345	
			0.7	12.5	347	1415	
			0.6	9.7	163	1335	

Continuous monitoring of PM₁₀, PM_{2.5}, CO, BC and sampling for heavy metals and PAHs





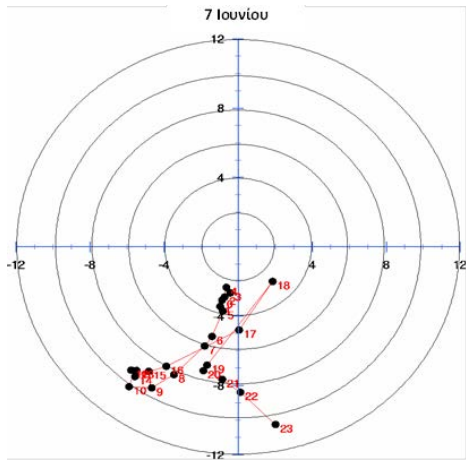
Profiling



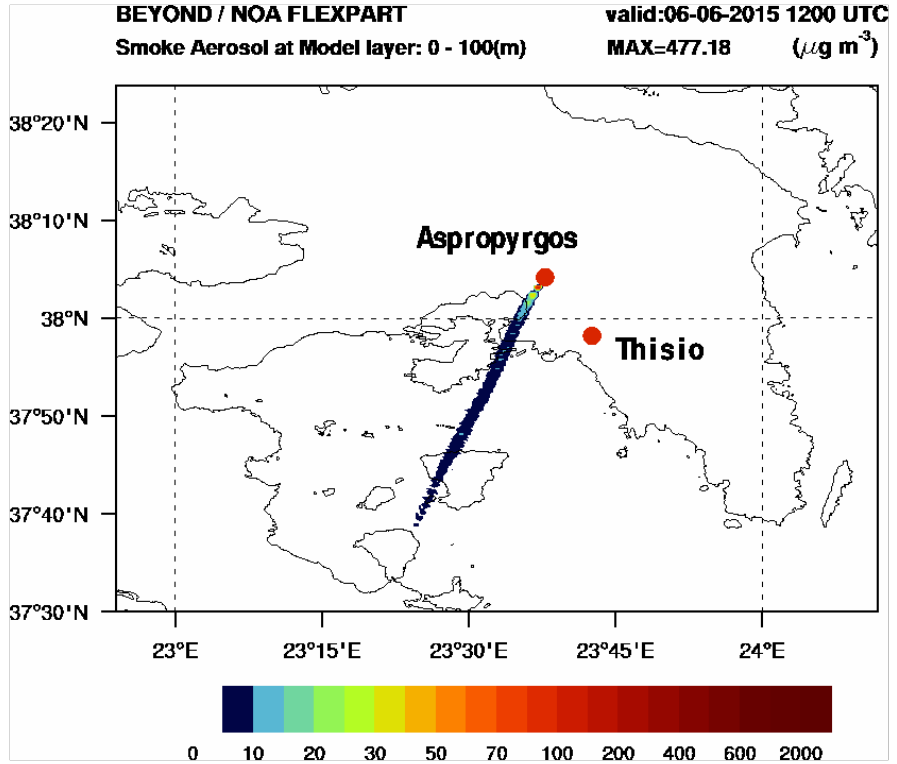
Prediction



Coupled FLEXPART-WRF, 10,000 particles per hour, 500 m max injection height, 0.5x0.5 res, 50 vertical points 0-5 km.



24h hodograph –
vector start: fire
vector end: direction of smoke

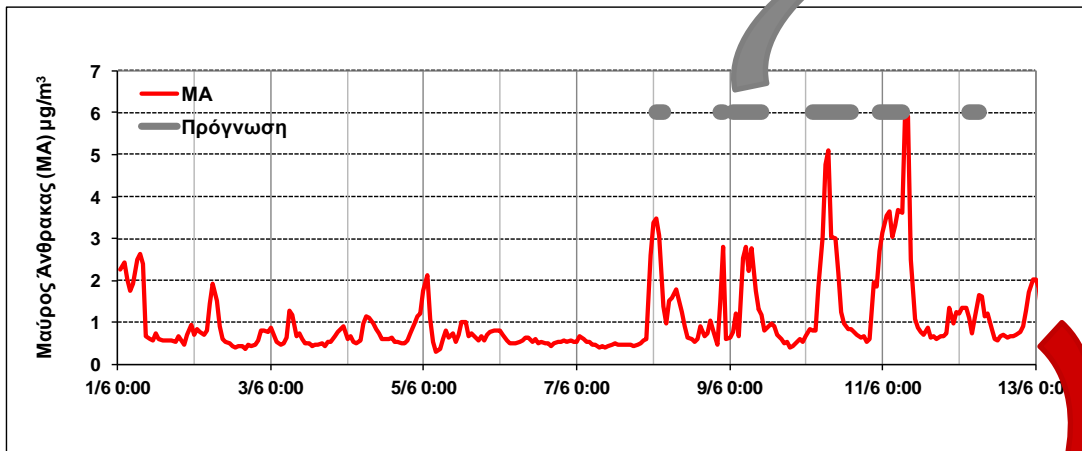




Prediction



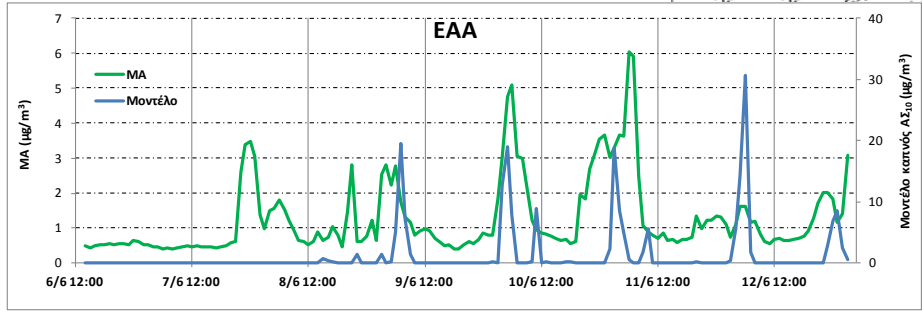
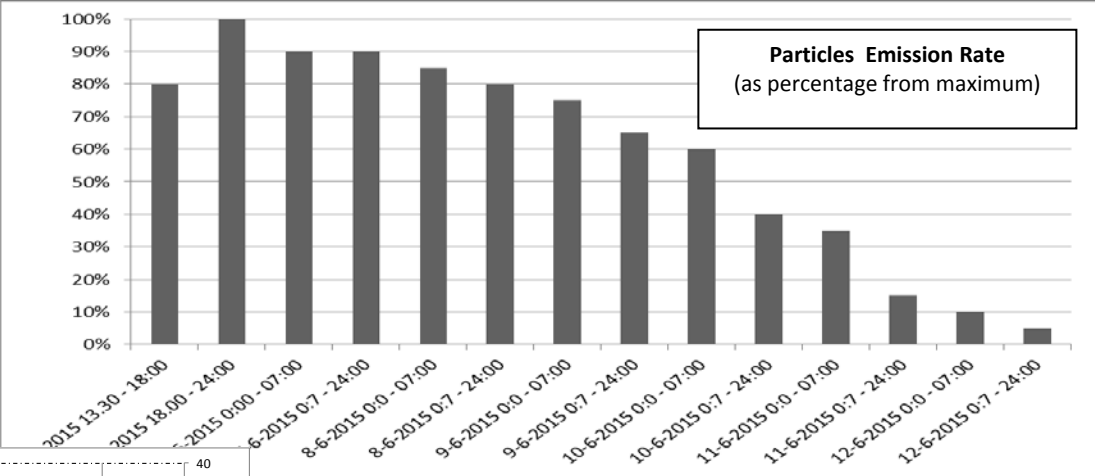
Coupled FLEXPART-WRF, 10,000 particles per hour, 500 m max injection height, 0.5x0.5 res, 50 vertical points 0-5 km.



Prediction of timing of smoke appearance over Athens center

Verification from online measurements

Assessment

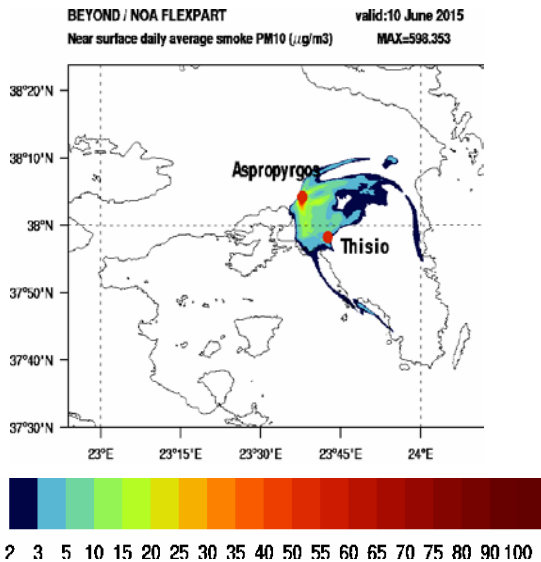


NOA's site

First evaluation from ...

the ministerial regulatory AQ network

Assessment



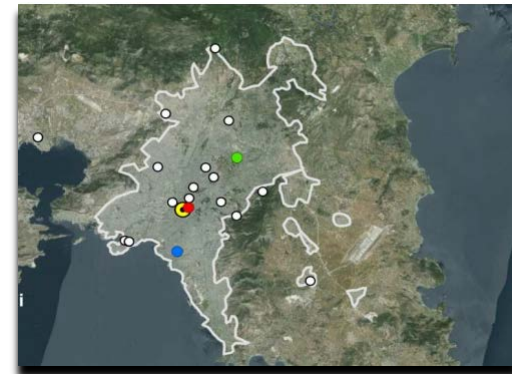
Mean diurnal concentration of smoke near surface ($\mu\text{g}/\text{m}^3$) 6-12 June 2015.

	Άγ Δημήτριος	Ηλιούπολη	Πειραιάς (Κ)	Νέα Σμύρνη	Καλλιθέα	Μοσχάτο	Δάφνη	Σαλαμίνα	Πέραμα	Κερατσίνι	Άγιος Ιωάννης Ρέντης
6/6/2015	0	0	0	0	0	0	0	0	9	10	0
7/6/2015	0	0	6	0	0	6	0	3	6	4	9
8/6/2015	0	0	12	2	5	7	0	0	4	14	12
9/6/2015	3	8	0	6	11	18	7	0	0	0	2
10/6/2015	8	17	25	16	14	14	11	0	0	38	22
11/6/2015	8	3	21	12	26	18	10	0	2	23	12
12/6/2015	1	1	4	18	12	10	6	0	0	13	9

	Βύρωνας	Νίκαια	Θησείο	Κορυδαλλός	Μέγαρα	Σκαρामαγκάς	Περιστέρι	ΕΛΠΕ	Ελευσίνα	Ασπρ-Νεόκτιστα	Πετρούπολη
6/6/2015	0	0	0	0	0	12	0	31	0	8	0
7/6/2015	0	10	0	8	0	11	0	19	0	17	0
8/6/2015	0	12	1	13	1	10	20	32	0	65	49
9/6/2015	10	0	20	6	0	0	183	6	0	199	61
10/6/2015	10	41	19	99	0	32	36	46	0	99	28
11/6/2015	5	33	19	22	0	23	8	47	0	71	25
12/6/2015	1	7	31	9	0	0	17	0	0	41	9

	Ασπρόπυργος	Μάνδρα	Δεγμ. ΕΑΑ	Άνω Λιόσια	Μαγούλα	Νέα Ζωή	Χαϊδάρι	Αιγάλεω	Πυρκαγιά
6/6/2015	0	0	0	0	0	0	0	0	235
7/6/2015	0	0	1	0	0	0	1	2	244
8/6/2015	13	0	223	90	0	176	9	9	1224
9/6/2015	2	3	161	63	2	179	38	65	774
10/6/2015	1	0	127	53	0	116	42	43	500
11/6/2015	7	0	124	15	0	50	25	13	410
12/6/2015	0	0	15	0	0	3	7	6	157

Max hourly concentration of PM_{10} from FLEXPART-WRF, for several location in Athens





Mission accomplished !



Immediate report on toxic pollutants and smoke dispersion



Assessment report on population exposure



Direct public information via mass media





thank you!