



# INVESTIGATION OF UNCERTAINTY RELATED TO MEASUREMENTS OF PARTICULATE ORGANIC POLLUTANTS

COMBINING AND REPORTING ANALYTICAL RESULTS

Rome 6 - 8 March 2006



# Particulate Organic Matter composition

## Basic Compounds

aza-etherocyclic

ammines

## Neutral compounds

alifatic

alkanes, alkenes

alcohol

aldehydes and

ketones

esters

nitriles

aromatic

polycyclic aromatic  
hydrocarbons (PAH)

Nitro-PAH

Oxygenated and  
sulphurated

phthalates and  
esters

halogenated

(PCB, PCDD/F)

## Acid compounds

alifatic

monocarboxylic

Dicarboxylic

phosphonic and  
sulphonic acids

aromatic

phenols,  
nitrophenols

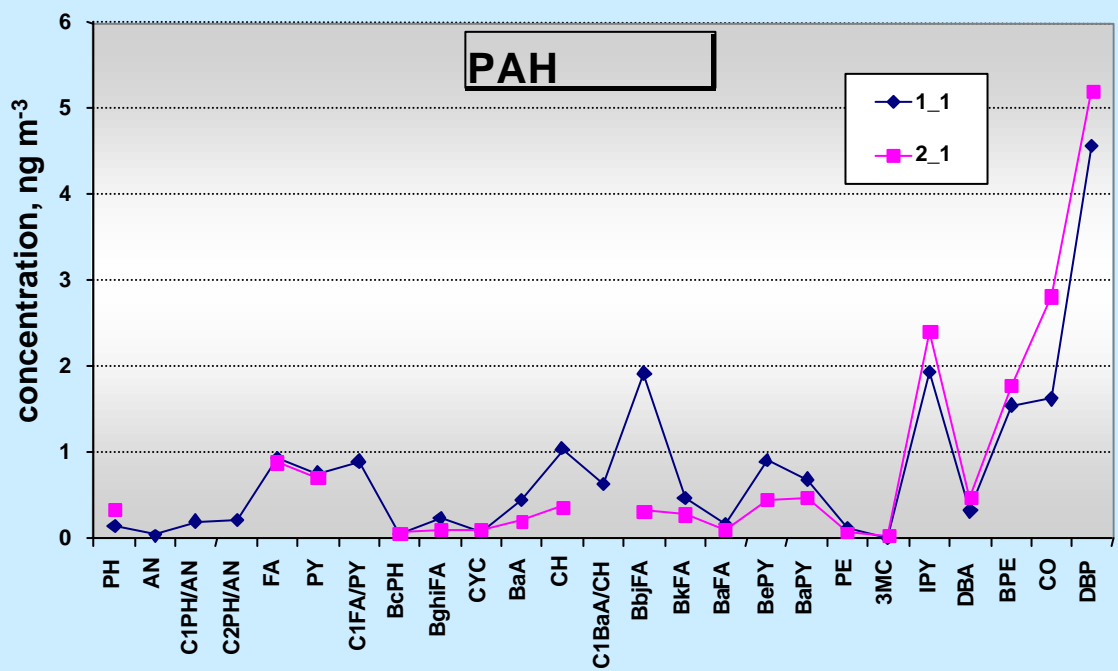
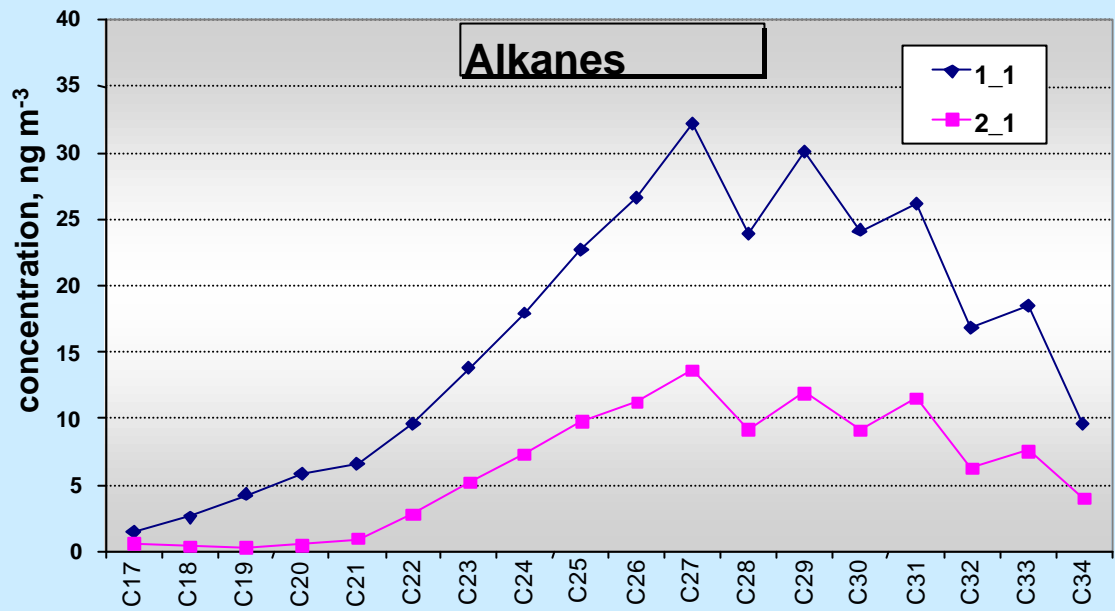
Phthalic acids

Polycarboxylic acids

# Repeatability

ALKANES				
	PM <sub>10</sub>		PM <sub>2,5</sub>	
	ng m <sup>-3</sup>	% st. dev.	ng m <sup>-3</sup>	% st. dev.
C <sub>18</sub>	2,32	3,4	1,03	2,7
C <sub>19</sub>	3,73	0,6	1,77	0,7
C <sub>20</sub>	3,75	1,1	1,88	3,8
C <sub>21</sub>	3,69	2,4	1,84	0,5
C <sub>22</sub>	3,88	5,0	1,69	2,1
C <sub>23</sub>	3,21	7,1	1,32	3,9
C <sub>24</sub>	2,79	4,5	1,07	1,2
C <sub>25</sub>	1,89	1,7	0,80	1,5
C <sub>26</sub>	1,35	1,2	0,74	1,8
C <sub>27</sub>	2,03	3,1	1,27	8,4
C <sub>28</sub>	2,19	2,0	1,33	2,2
C <sub>29</sub>	3,93	2,1	2,47	1,1
C <sub>30</sub>	2,54	8,7	1,73	4,5
C <sub>31</sub>	3,03	1,5	1,78	5,2
C <sub>32</sub>	1,37	2,8	0,84	2,9
C <sub>33</sub>	0,89	6,8	0,45	9,5

POLICYCLIC AROMATIC HIDROCARBON				
	PM <sub>10</sub>		PM <sub>2,5</sub>	
	ng m <sup>-3</sup>	% st. dev.	ng m <sup>-3</sup>	% st. dev.
Fluoranthene	0,07	0,7	0,09	0,9
Pyrene	0,06	1,1	0,07	0,8
Benzo(c)phenanthrene	0,01	1,7	0,00	n.d.
Benzo(a)anthracene	0,03	1,8	0,03	2,1
Chrysene	0,09	2,4	0,07	3,2
Benzo(b)fluoranthene	0,09	1,7	0,08	1,2
Benzo(k+J)fluoranthene	0,1	2,10	0,1	1,8
Benzo(e)pyrene	0,22	0,5	0,17	0,4
Benzo(a)pyrene	0,05	3,5	0,07	3,2
Perylene	0,02	2,7	0,01	4,8
Indeno(1,2,3,-cd)fluoranthene	0,02	4,7	0,01	2,8
Dibenzo(a,h)anthracene	0,05	4,5	0,06	1,2
Indeno(1,2,3,-cd)pirene	0,1	5,6	0,09	5,7
Benzo(ghi)perylene	0,11	6,2	0,08	5,8
Dibenzo(a,l)pyrene	0,05	4,4	0,00	3,8
Coronene	0,05	7,6	0,04	5,8



# Montelibretti Monitoring Station “Arnaldo Liberti”



# HYDRA DUAL SAMPLER



Dual channel  
sampler of  
particulate  
matter

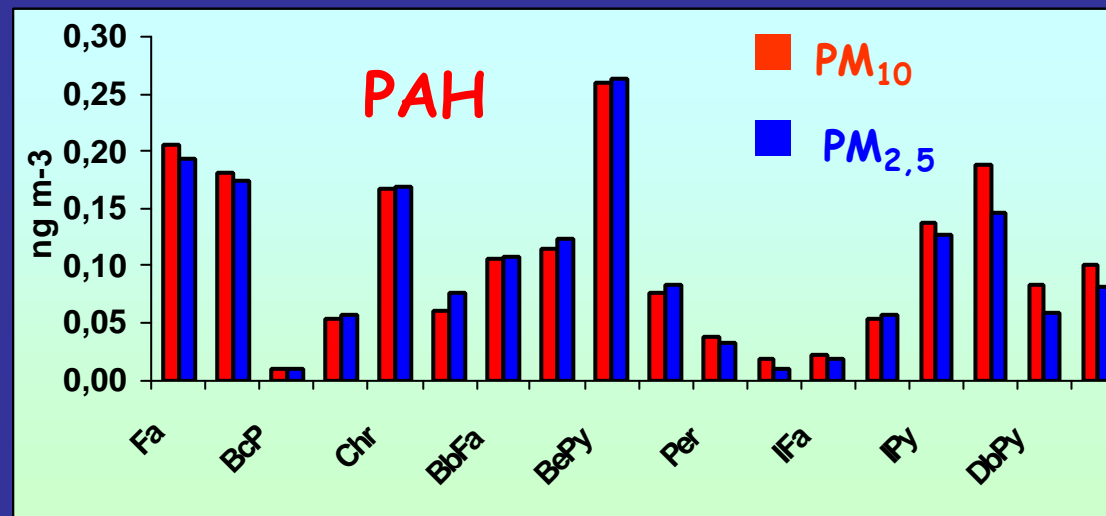
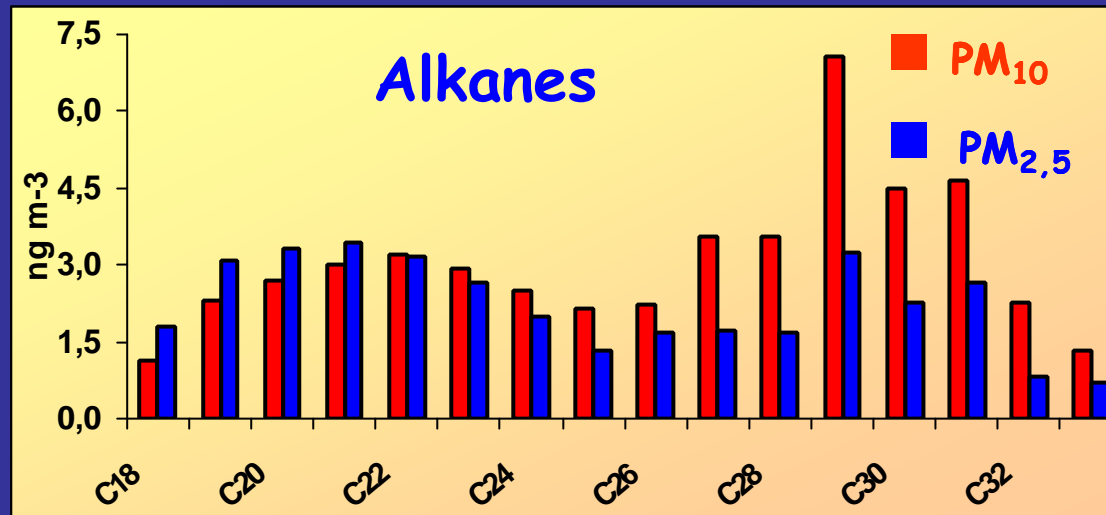
PM<sub>2,5</sub>

PM<sub>10</sub>

operating flow rate: 38 L min<sup>-1</sup>



# Distribution Patterns of the Alkanes and PAH



dust transport event from the Saharian desert

# Procedure adopted for the analysis of the Organic Fraction

