Most important PSI contributions

Claudia Mohr, Peter DeCarlo, Mari-Cruz Minguillon, Agnes Richard, Valentin Lanz, Roberto Chirico, Maarten Heringa, Urs Baltensperger, André Prévôt

Ground sites in Barcelona : Aerosol chemical composition: Source apportionment

- AMS, BC, size distribution measurements at urban site
- Hourly-resolved elemental aerosol composition at urban site and Montseny
- ^{14}C analyses (fossil versus non-fossil carbon) of OC and EC for Hi-Vol-PM1 samples at urban site and Montseny

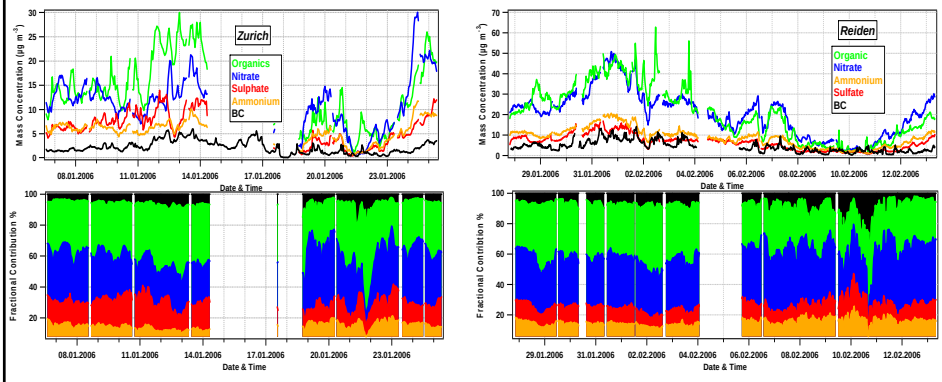
Mobile lab : Aerosol chemical composition: Source apportionment; Local versus regional aerosol; special missions: harbour, industry, traffic

- AMS, BC, size distribution measurement in mobile lab

Europe

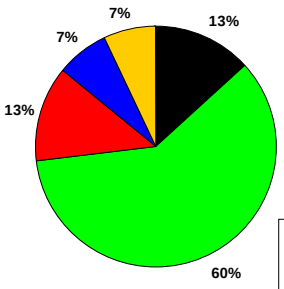
- European organic aerosol sources by using AMS data in Barcelona and all over the Europe during the on-going EMEP/EUCAARI campaigns

Example of Aerosol mass spectrometer measurements together with some black carbon measurements by an Aethalometer



Time resolution: minutes down to 6 seconds at low detection limits

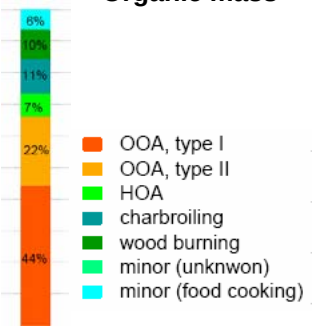
Chemical composition in Zürich summer and Positive Matrix Factorization of the organic matter



Zürich (July)

Black Carbon
Organic mass
Nitrate
Sulfate
Ammonium

Organic mass



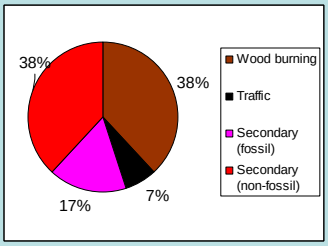
OOA: Secondary organic aerosol

HOA: mostly traffic

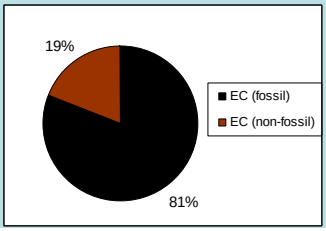
Lanz et al., ACP (2007)

Carbon apportionment using ^{14}C analysis Estimation of fossil and non-fossil SOA contribution

OM



EC



Use of AMS analysis :

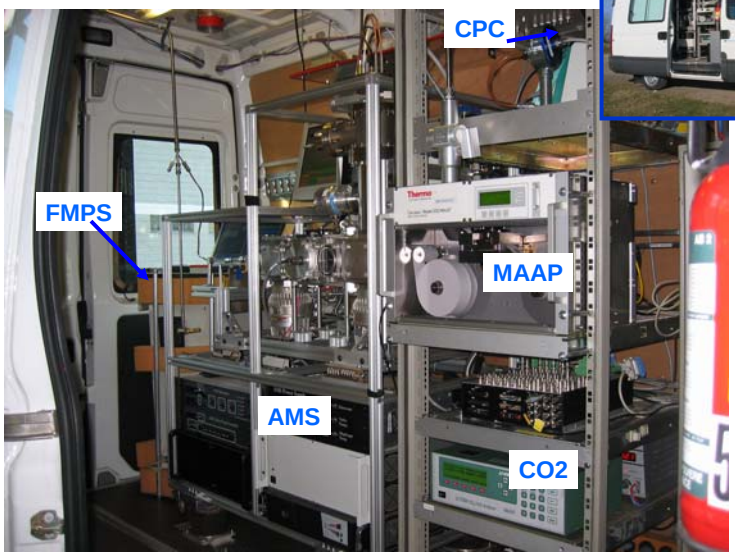
- **wood burning 38%**
- **HOA 7%**

Assumptions :

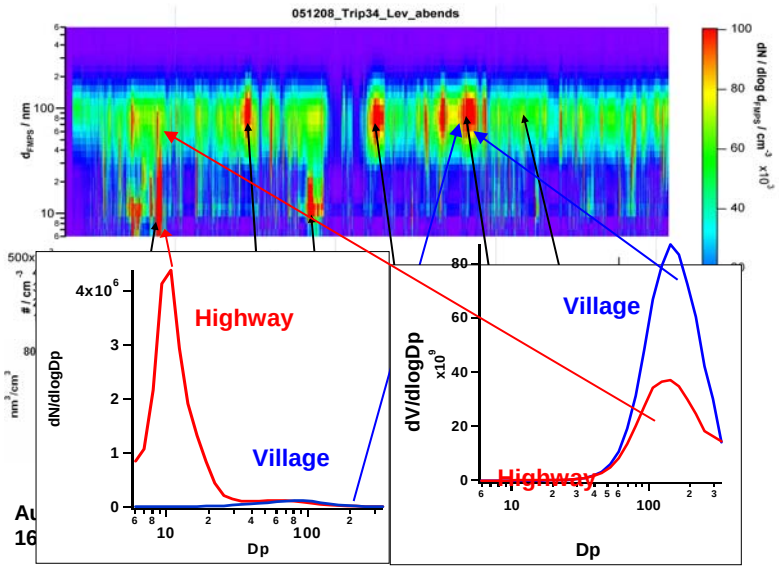
- **only SOA, HOA and wood burning present**
- **OM/OC=2 for wood burning and SOA and OM/OC=1.2 for HOA**

Lanz et al., ES&T, 2008; Szidat et al., 2004-2008

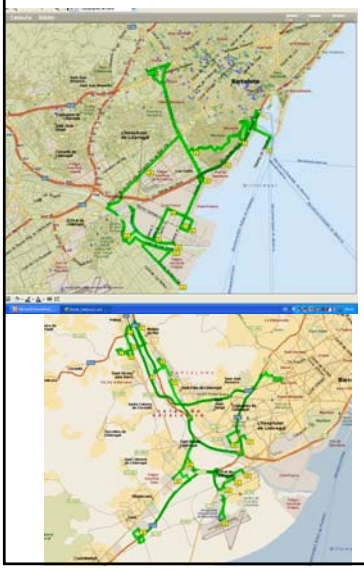
The PSI mobile laboratory



Leventina 8. December 2005

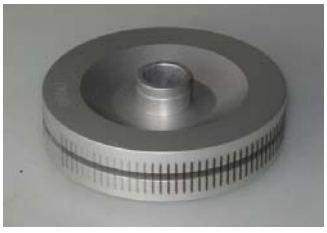


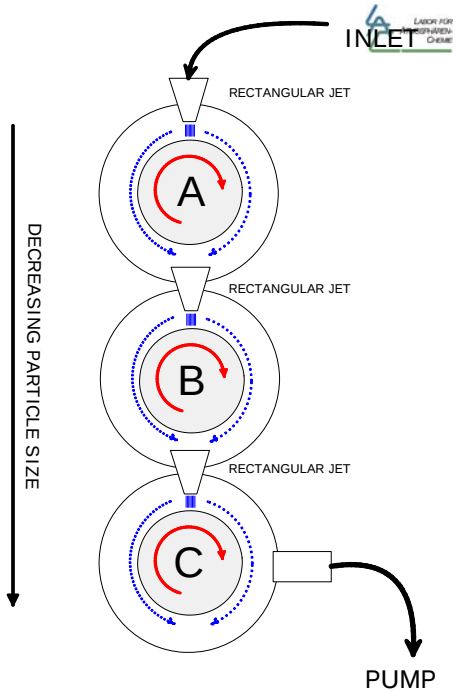
Examples of routes
Harbour, local Eixample, Diagonal; Transect Barcelona to Montserrat, industry chasing



RDI SAMPLING

RDI = Rotating Drum Impactor





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LABOR FÜR ATMOSPHÄREN-CHEMIE

High resolution iron concentrations for PM10-PM2.5; PM2.5-PM1; PM1