ACTRIS-ACSM intercomparison study at SIRTA

(Gif/Yvette, France)

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ACTRIS-ACSM intercomparison study

- Participants:

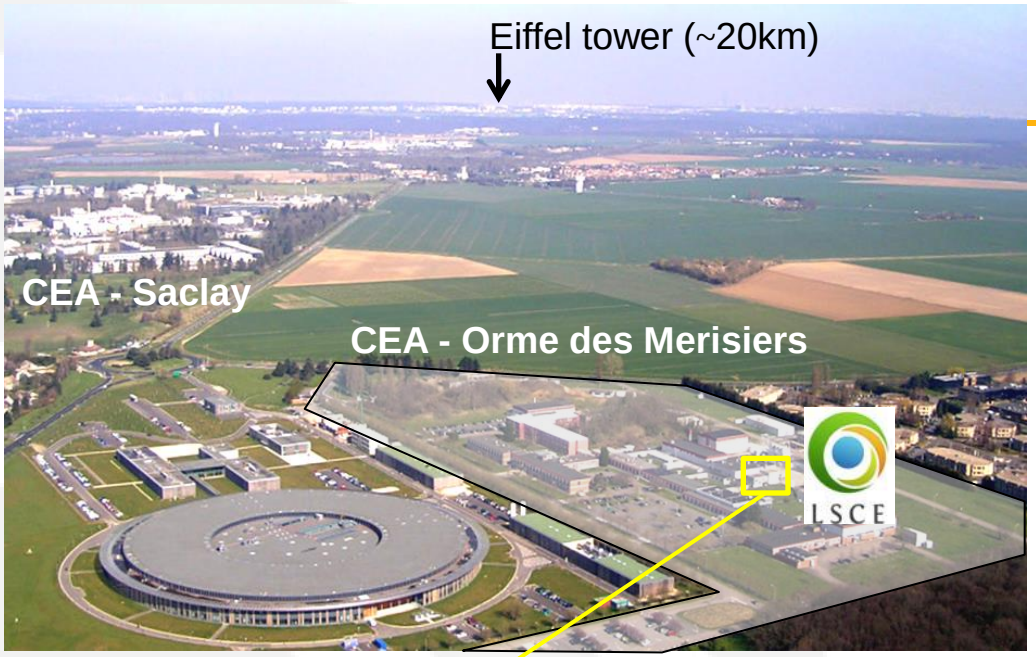
➢ ACTRIS partners (official or future ACTRIS stations):
FRANCE (LSCE),
UK (King's College London),
SPAIN (CIEMAT, IDAEA-CSIC),
IRELAND (NUIG),
SWITZERLAND (PSI),
GERMANY (TROPOS, DWD),
NORWAY (NILU),
ITALY (ISAC-CNR, ENEA)

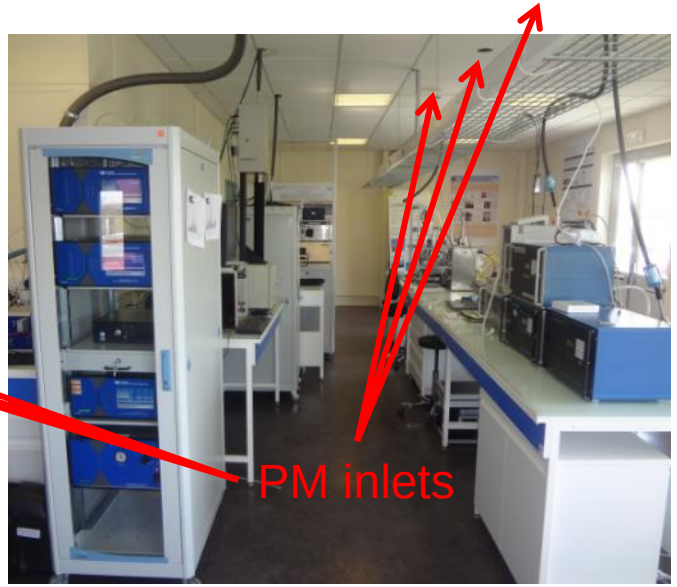
➢ AMS partner → FRA (Mines Douai)

➢ ARI support (P. Croteau and J. Jayne)

12 ACSMs !!
+ 1 e-ToF-ACSM
+ 1 HR-ToF-AMS

SIRTA-LSCE atmospheric station
(French ACTRIS TNA since mid. 2011)



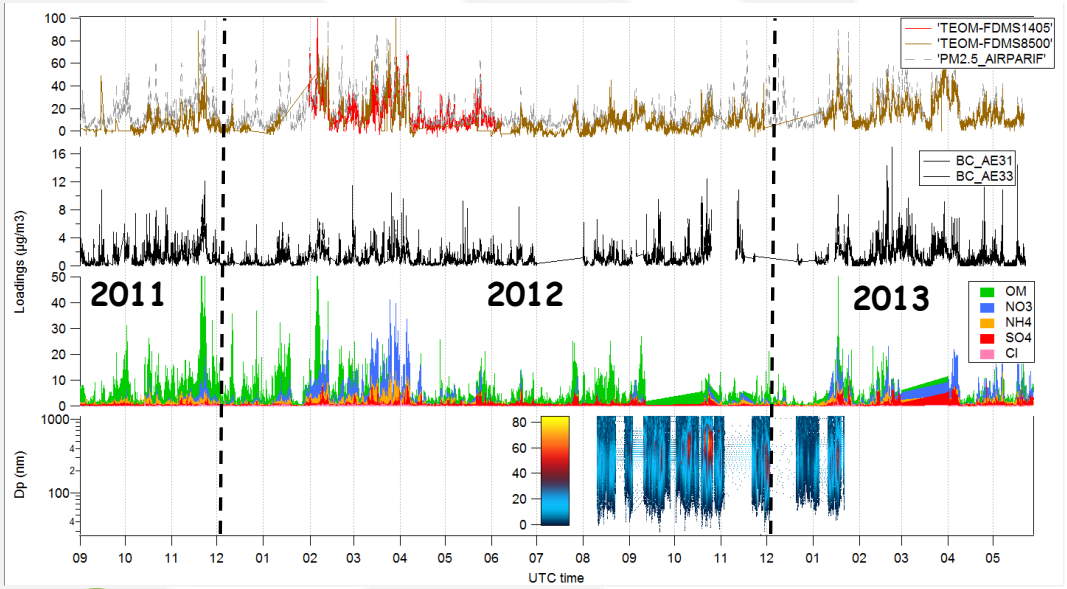


Laboratory = 70m², 2 technical rooms = 12m² each

Real-time measurements of aerosol properties (since 09/2011)





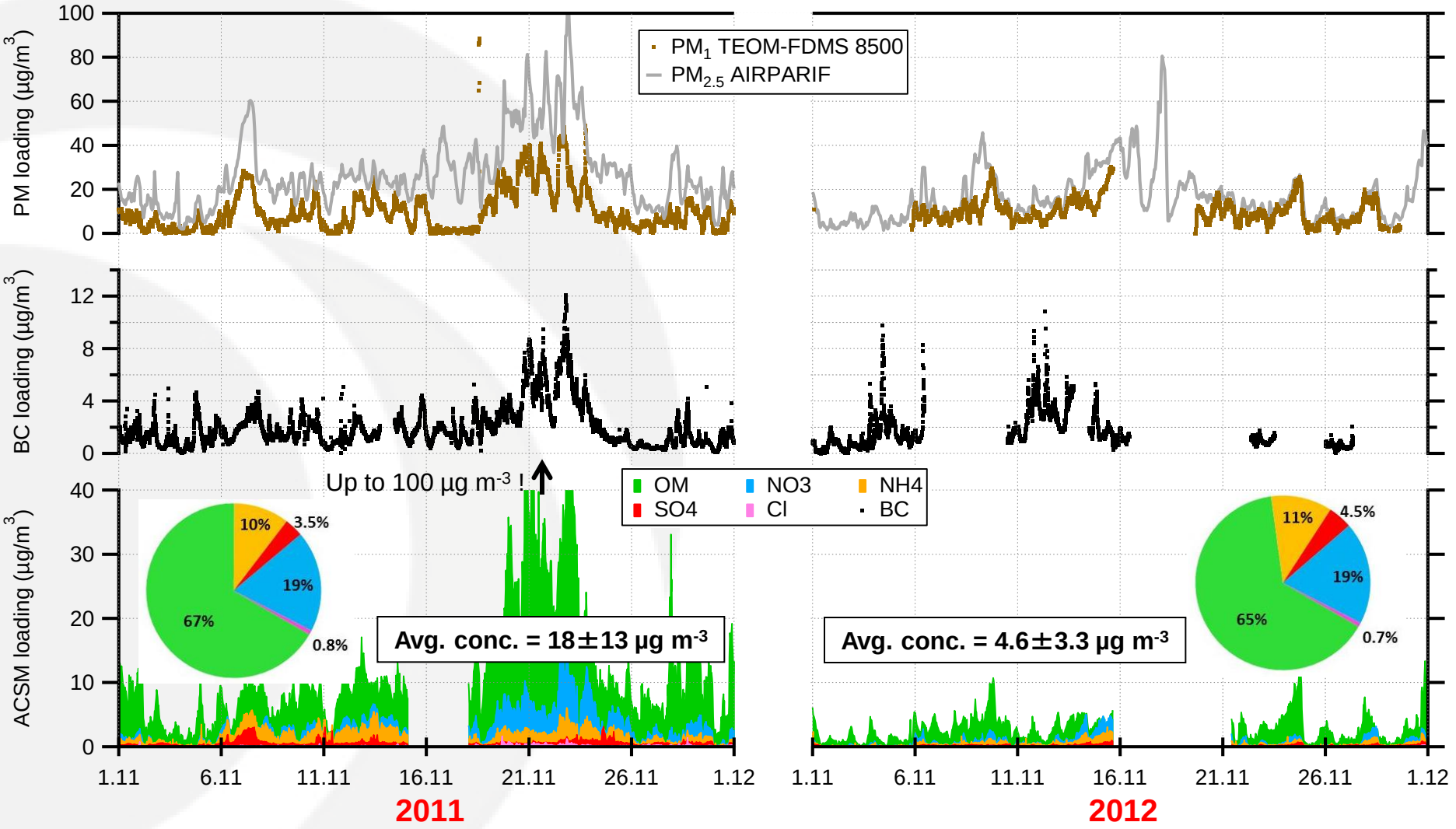



First NO/NO_2 measurements of ACTRIS program at SIRTA

+ extra monitoring gas-phase measurements (CO, CO2, H2, Radon, O3, NO, NO2)

+ PTR-MS (VOCs) during the ACSM intercomp study

Expected Concentrations in November



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- Schedule / Strategy:

October :

Implementation of an instrumental package that has been calibrated & intercompared to be used for the ACSM intercomparison

November:

WEEK 1: ACSM calibration procedures

- Calibration for each instrument (with a single SMPS)
- NH_4NO_3, $(NH_4)_2SO_4$, organic mixture (glutaric, malonic, oleic acids, MSA …)
- Other important calibrations and checking (lens alignment, flow calibration, m/z resolution, DAQ version, …)

WEEKS 2 and 3: Ambient measurements

Data analysis intercomparison -PMF & ME-E analyses

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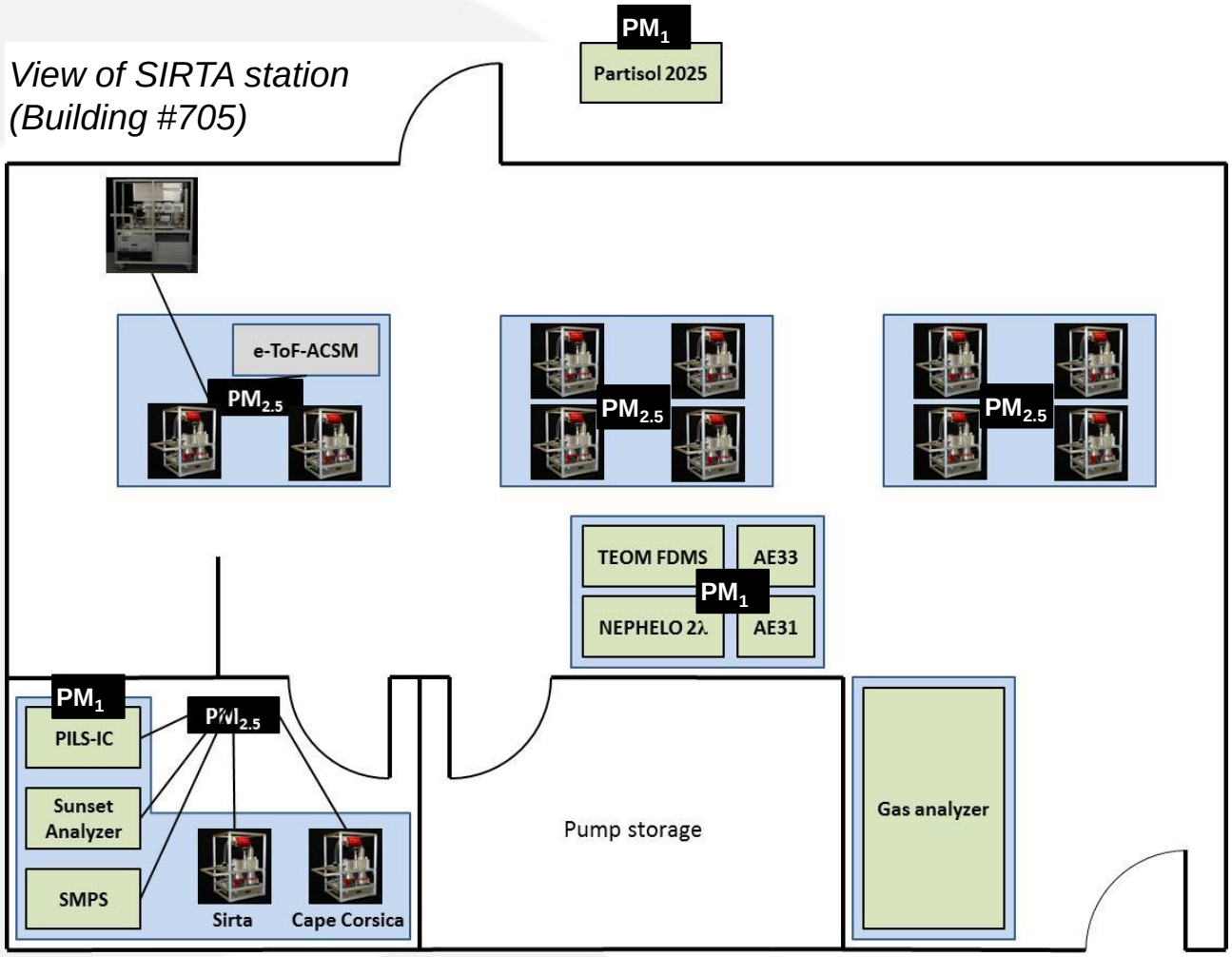
View of SIRTA station (Building #705)



- Logistics:

3 groups of 4 ACSMs

common $PM_{2.5}$ inlet / group

One dryer / ACSM

1SMPS (INERIS) qualified by TROPOS (ACTRIS intercomparison Sept. 2013)

➢ Co-located instruments
TEOM-FDMS (PM1)
SMPS (PM1)
PILS-IC (PM1)
PILS-MS (PM1)
OCEC Sunset Inst. (PM1)
PARTISOL (PM1)
NEPHELOMETER (PM1)
AETHALOMETER (PM1)
PTR-MS

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COMPARISON WITH OTHER AEROSOL INSTRUMENTS

PM closure studies:

SMPS ACTRIS (in PM1)
TEOM-FDMS (in PM1)
Nephelometer ACTRIS (in PM1)

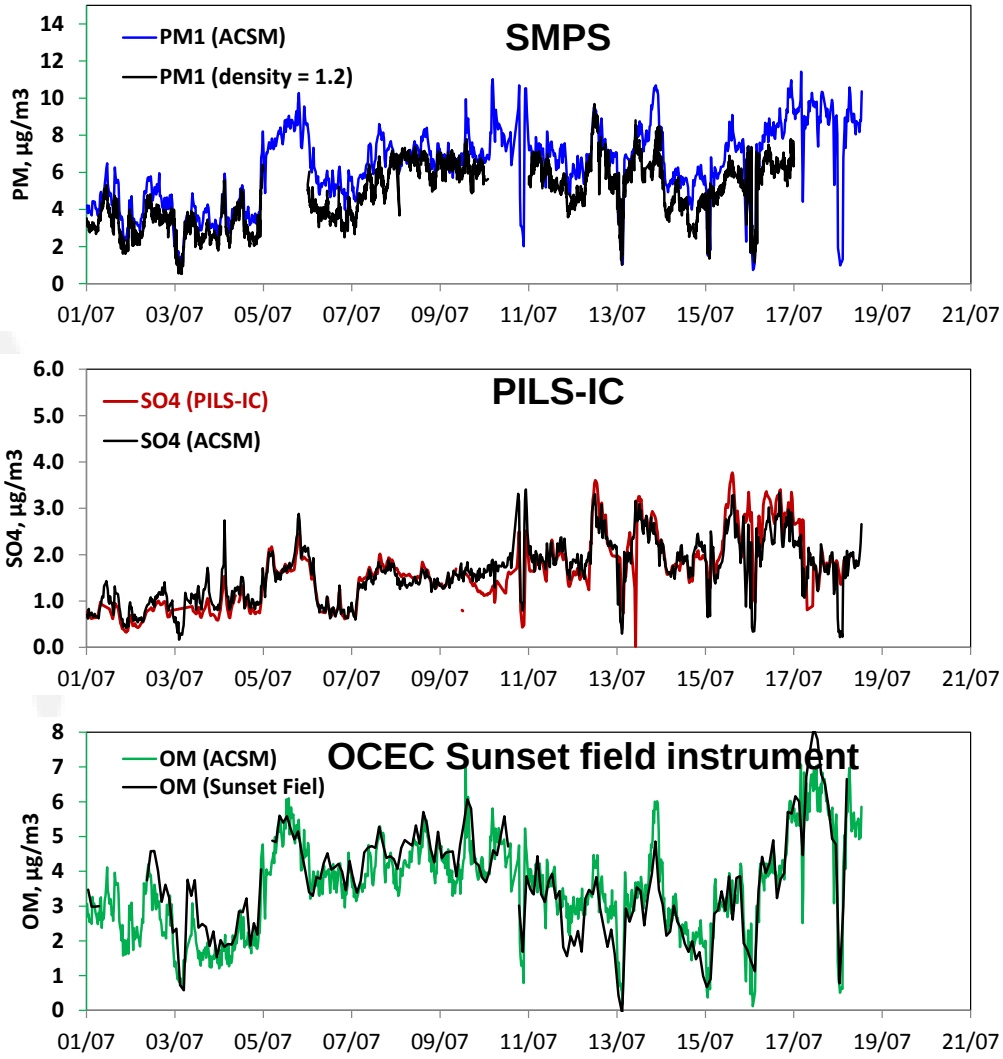
Chemical compounds comparison:

OCEC Sunset Field Inst. – OC/OM in PM1
PILS-IC – NO3, SO4, NH4 in PM1
Filter sampling in PM1

EXTRA INSTRUMENTS FOR FURTHER DATA ANALYSIS (PMF/ME-2)

PILS-IC (on-line Na, K, Mg, Oxalate, …)
PILS-MS/MS (on-line levoglucosan)
Aethalometer 7- (BCff, BCwb)
PTR-MS (VOCs)
Other trace gases (CO, CO2, H2, NO, NO2, O3…°)

ChArMEx field campaign, Cape Corsica station (July 2013):



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Thanks for your attention !