

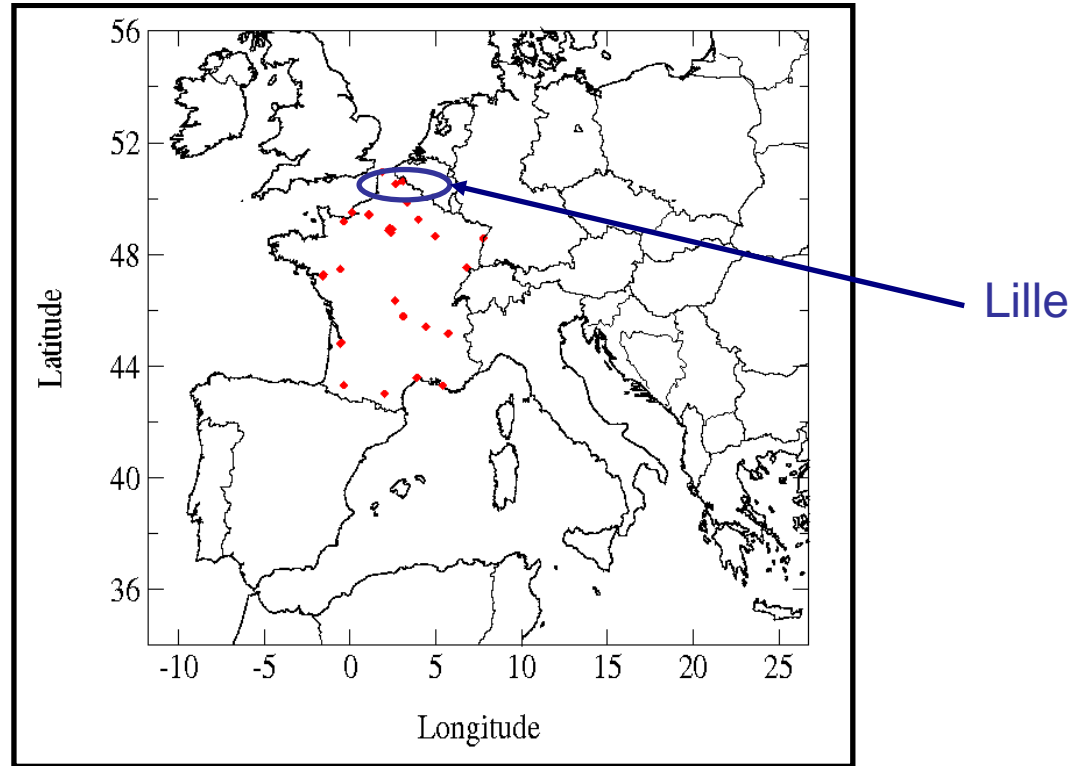
Task 4.4. Analysis of model results with respect to air quality - LOA

Objectives

Assessment of efficiency of optical measurements for the monitoring of aerosol pollution events

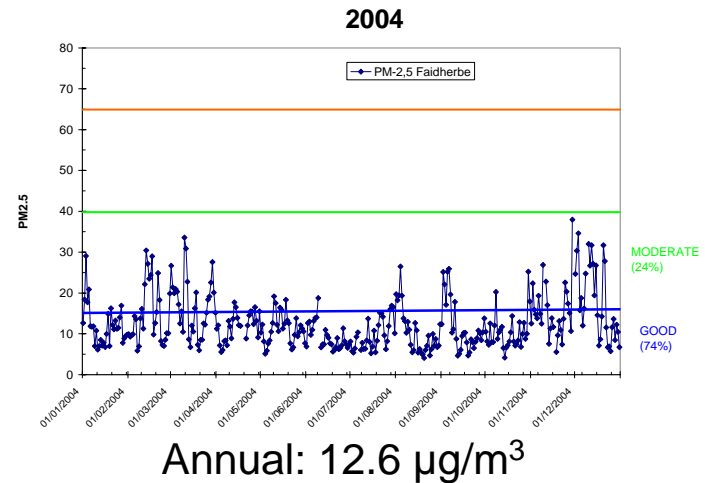
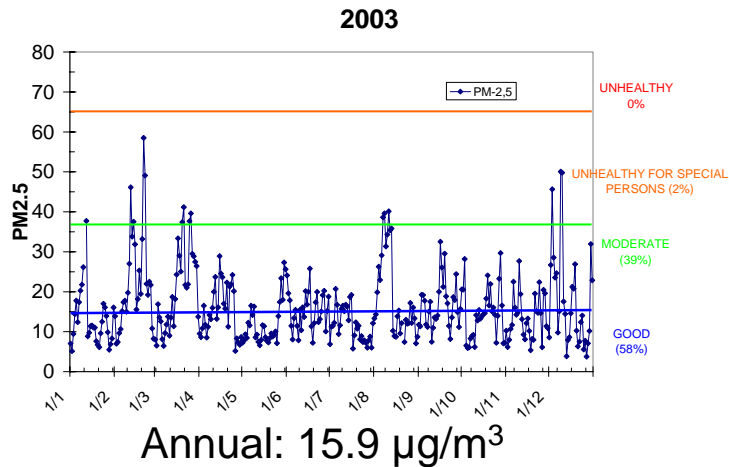
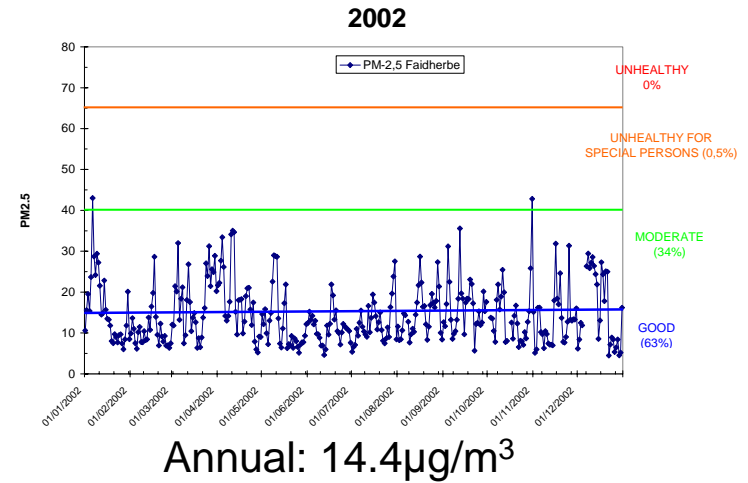
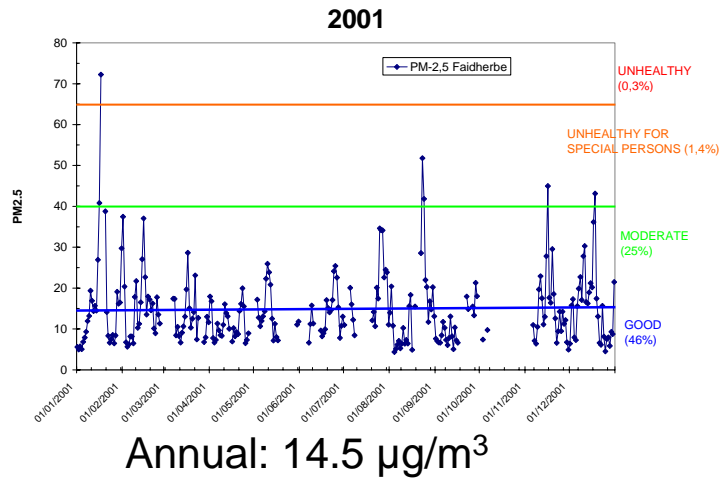
Possibility of use of satellite AOD as an indicator to discern air quality categories over Europe? Link with RAQ sub-project of GEMS

PM2.5 data over France in 2003



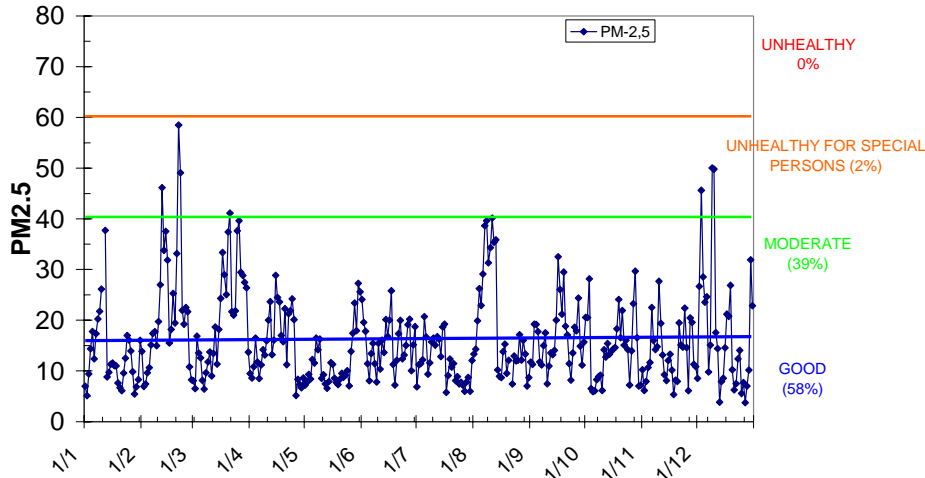
Banque de Données de la Qualité de l'Air (BDQA/ADEME)

Fine particles in Lille 2001-2004



Comparison PM2.5/ AOT from AERONET/PHOTONS: Lille, 2003

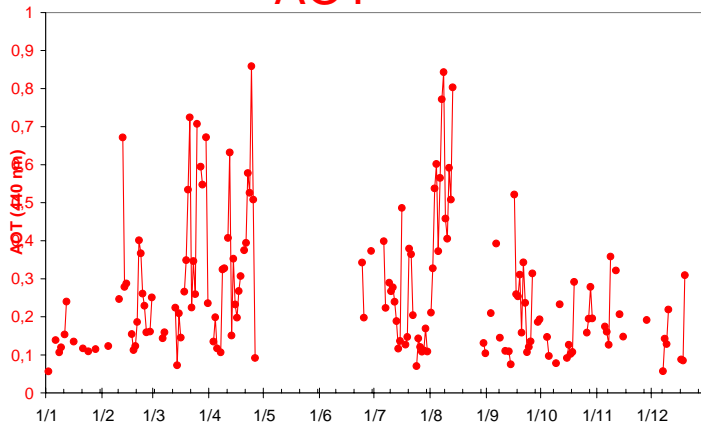
PM2.5



➡ Air quality generally good or moderate

➡ PM2.5 peaks most frequent and intense in winter

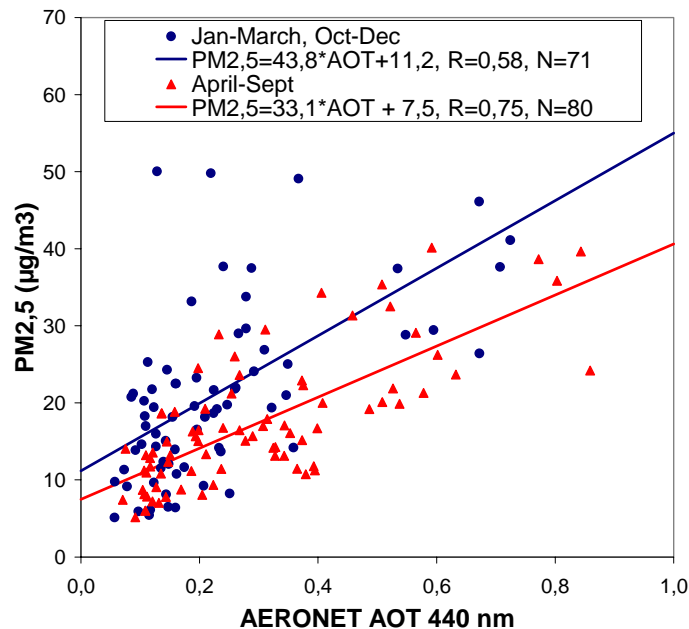
AOT



➡ Less AOT data than PM2.5 (42%) due to restriction to clear-sky conditions

➡ Generally there is a correspondance between AOT and PM2.5 peaks but intensity differs

Comparison PM_{2.5}/ AOT from AERONET/PHOTONS: Lille, 2003

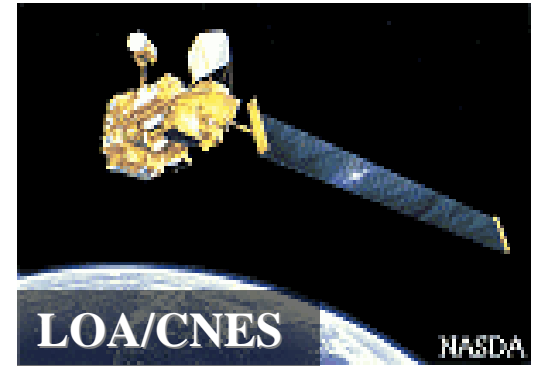


- ➡ PM_{2.5} and AOT are correlated but a lot of dispersion ($N=151$, $R=0.58$)
- ➡ Better correlation PM/AOT in summer
- ➡ Slope PM/AOT lower in summer (~-25%)

First analysis of microphysical and optical properties of the aerosol derived from AERONET measurements: seems not sufficient to explain the observed change

We will use LIDAR measurements to evaluate the impact of the vertical distribution of the aerosol

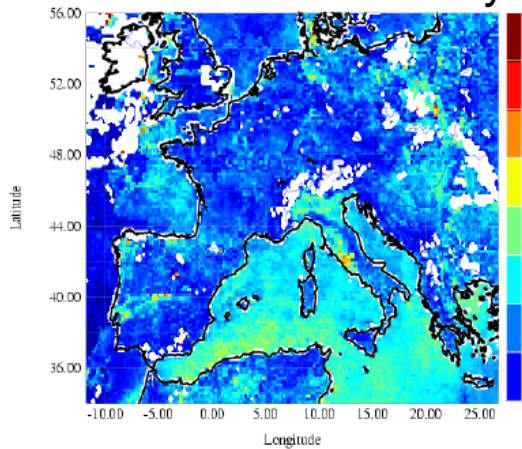
Satellite observations from POLDER-2



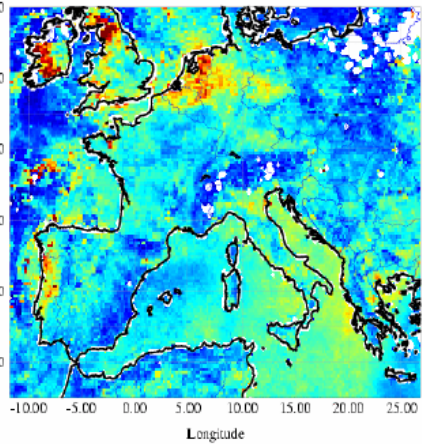
- POLDER-2/ADEOS-2 in operation from April to October 2003
- Product over land: Aerosol Optical Thickness of fine particles derived from polarization at 670 and 865 nm [*Deuzé et al., 2001*]
- Spatial resolution: 20 km x 20 km

POLDER-2 aerosol observations over Western Europe

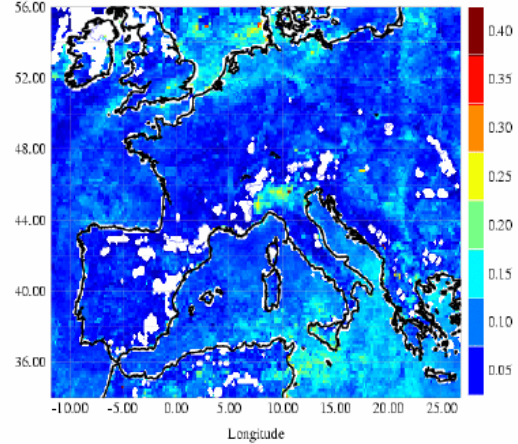
Monthly mean AOT fine mode 550 nm



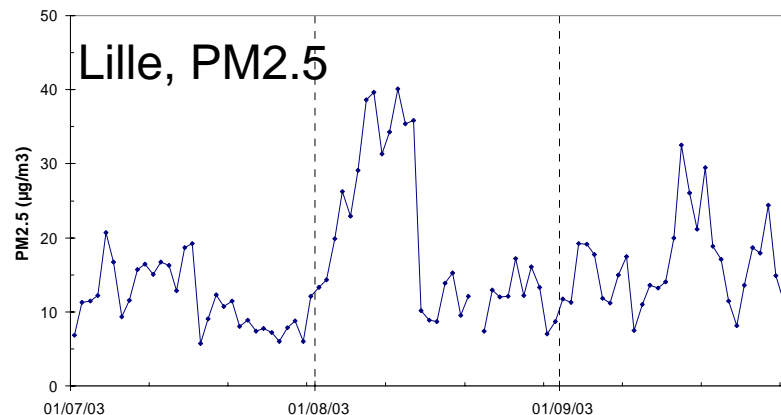
July 2003



August 2003

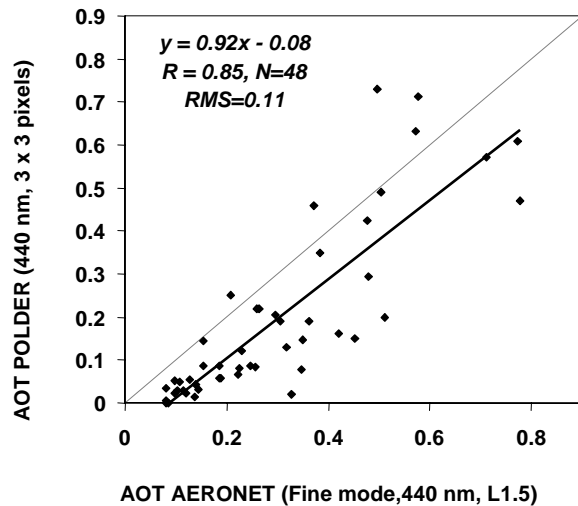


September 2003

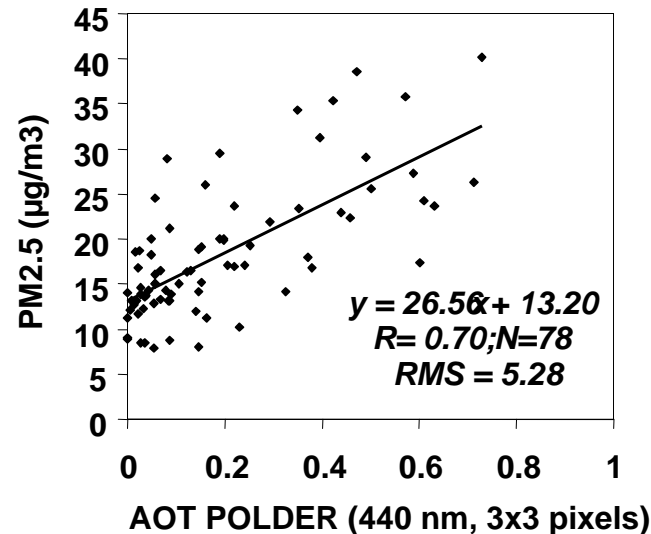


Comparison POLDER/ground-based measurements Lille 2003

- AOT AERONET



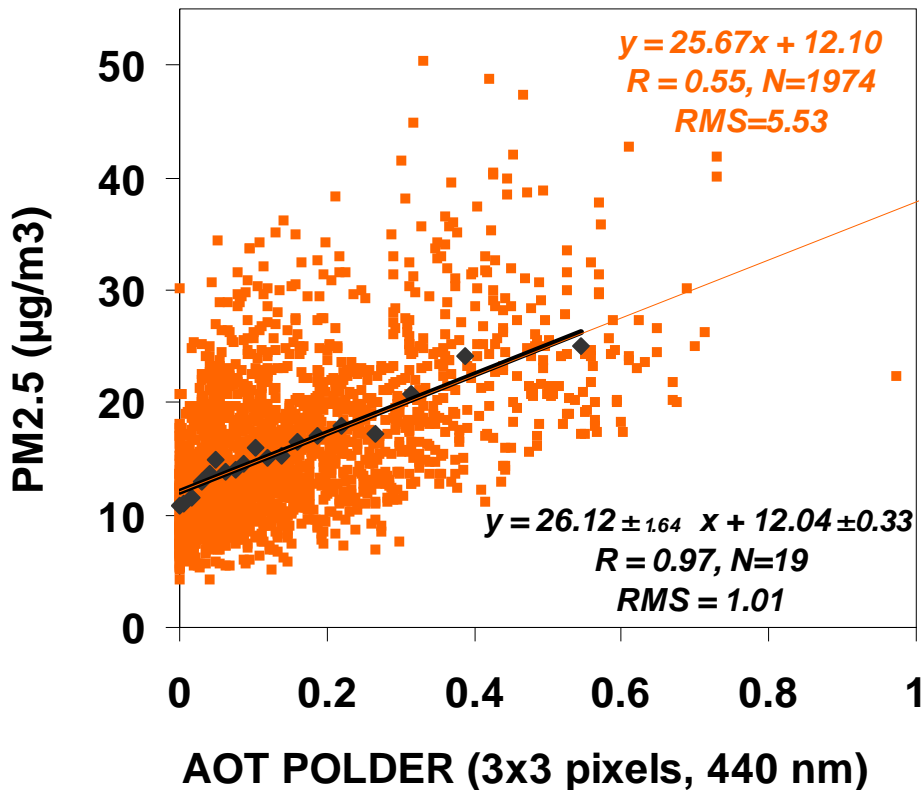
- PM2.5



➡ Good correlations between POLDER and ground-based measurements

Comparison POLDER/PM2.5 France 2003

28 « non traffic » stations PM2.5

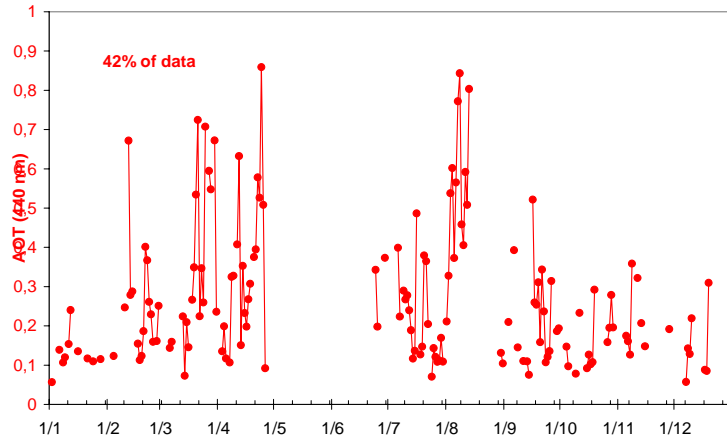


➡ Correlation is significant and relation between PM2.5 and POLDER AOT very similar to that of Lille

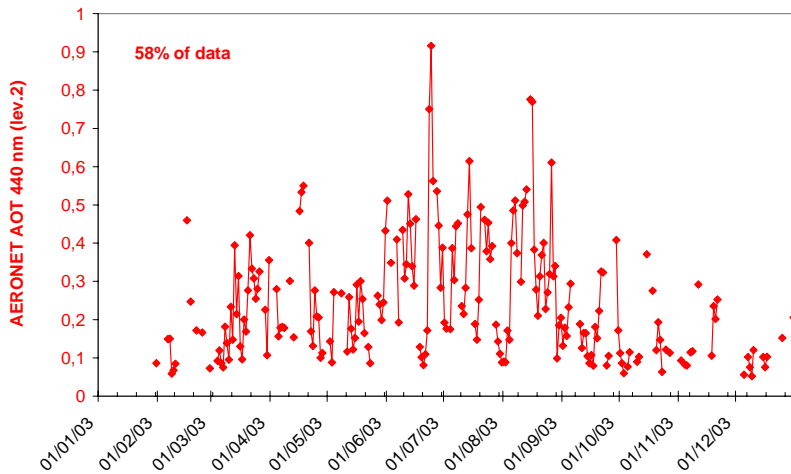
➡ First results are encouraging in terms of the use of POLDER AOT retrievals to provide useful information on air quality

AERONET LEV.2 AOT 2003

Lille, 2003



Toulouse, 2003



Cape verde, 2003

