Interuniversity Laboratory of Atmospheric Systems (LISA)

UMR 7583 - UPEC/CNRS/Paris Diderot University

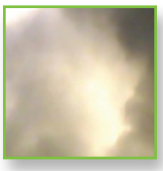
Key words
Atmospheric chemistry • Air quality • Aerosols • Desert dust • In situ measurement • Experimental simulation • Modelling • Spectroscopy • Space observation • Impact of pollution on health and cultural heritage

The laboratory LISA is a member of the laboratories of excellence ("Labex") Pierre Simon Laplace Institute (IPSL), a research institute in environmental science, Urban Futures, OSU-EFLUVE (Observatory of Sciences of the Universe – Fluid Envelopes: from cities to exobiology), and ESEP (Space Exploration of Planetary Environments).

Objectives and research topics

The team mainly works on atmosphere: terrestrial troposphere and associated environmental problems, planetary and cometary atmospheres particularly related to exobiology issues.

There are five research topics:



Atmospheric oxidizing and particulate pollution

- Estimation of emissions and dry deposition of gaseous and particulate pollutants
- Chemical transformation
- Pollution numerical simulation on regional and continental levels
- POLSAT: pollution and satellite observation
- Impacts of air pollution on health and materials from cultural heritage

The fate of organic carbon

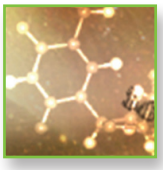
- Production and evolution of secondary organic aerosol
- Report on photo-oxidants
- Transport of nitrogen oxides
- Experiment in simulation chambers
- Numerical simulation of chemical processes

Cycle of desert aerosol

- Modelling mineral aerosol emissions in arid and semi-arid areas
- Long-term variability of atmospheric content in mineral dust
- Studies of inorganic aerosols physicochemical and optical properties
- Impacts of mineral dust atmospheric deposition on marine ecosystems

Spectroscopy and atmospheres

- Laboratory spectroscopy and instrumental developments for laboratory measurements of ray setting (position, absolute intensity, spectral profiles, and efficient sections): Fourier-transform spectrometer, tuneable lasers and synchrotron radiation
- Theoretical modelling and spectral analysis
- Laboratory spectroscopy for the study of the Universe
- Study of planetary atmospheres



Exobiology and astrochemistry

- Study of organic matter reactivity and molecular evolution
- Planetary atmosphere experimental simulation
- In situ and remote space observation

Technical department

- Development of original instruments
- Field surveys combining ground and airbone measuring
- Digital models development and management

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