



université PARIS-SACLAY

SPACE

The Observatory's commitment to the study of space is through the LATMOS laboratory:

Atmospheres, Environments, Space Observations

This is a joint research unit under the auspices of

- » The OVSQ.
- » The French National Centre for Scientific Research (CNRS)
- » The University of Versailles Saint-Quentin-en-Yvelines (UVSQ)
- » The Sorbonne University in Paris

It was created in January 2009, following the merger of the Aeronomy Service (SA) and part of the CETP (see the history).

LATMOS is part of the Institute Pierre Simon Laplace (IPSL) which brings together 9 laboratories whose research themes relate to the global environment, a field that covers the surface of the Earth, the Sun and the other planets of the solar system.

The laboratory is located on 2 sites (Guyancourt, Paris) and encompasses around 150 permanent staff (researchers, lecturer-researchers, engineers, technicians and administrators) and more than 230 people in total.

Main research themes

- » The physical and chemical processes in the Earth's atmosphere (from the lower atmosphere to the stratosphere and the mesosphere) and exchanges between the atmosphere and the Earth's surface (ocean / continents);
- » The study of the planets and small bodies of the solar system (atmospheres, surfaces, sub-surfaces);
- » The physics of the heliosphere, the exosphere of the planets, and plasmas of the solar system.

The laboratory promotes its work through numerous publications in specialised scientific journals and maintains strong collaborations with other French laboratories in the field and various other partners such as foreign laboratories but also industrial partners.

Strengths of LATMOS

LATMOS, as a laboratory, has a strong instrumental component and is deeply involved in the design and production of innovative instruments deployed from ground stations, from planes or balloons and from satellites.

The techniques that LATMOS specialises in are:

- » optical instruments (optical spectrometers, lidar) for the study of the composition of terrestrial and planetary atmospheres (gas, aerosols), characterisation of the thermal structure and dynamics of the Earth's upper atmosphere, the study of the properties of sun (diameter, irradiance);
- » microwave instruments (radars, radiometers), for the study of precipitating meteorological systems, clouds, atmospheric dynamics and surface (ocean / continent) and subsurface characteristics (stratifications and composition of the deep layers of the planet Mars);

- » gas chromatography, to study the chemical composition of the atmosphere and soil of earthly planets; time-of-flight mass spectrometry for measuring the molecular composition of neutral planetary atmospheres;
- » chemical ionisation mass spectrometry to study atmospheric pollutants;
- » the measurement of electrical fields in the atmosphere of the Earth or planets;

as well as

- » acknowledged presence and expertise in the field of analysis of observations of the Earth, other planets and the heliosphere from space (involvement in space missions such as ENVISAT / GOMOS, ENVISAT / SAR, METOP / IASI , TRMM, CLOUDSAT / CALIPSO, MEGHA-TROPIQUES, SMOS, CFOSAT, SOLSPEC, SPICAM, SPICAV, PICARD, SOHO, etc.);
- » activities based on ground observation networks and systems (international measurement networks, in particular, the NDACC network for monitoring the atmospheric composition of the upper atmosphere, European GEOMON project);
- » active participation in international field campaigns (AMMA, SCOUT-O3, POLARCAT, etc.) through the deployment of ground and airborne instrumentation;
- » studies of planetary atmospheres in a simulation chamber (PAMPRE).

LATMOS is an international laboratory involved in numerous space missions such as SAM installed on board Curiosity, launched by NASA in 2012, as well as instruments installed on Rosetta in collaboration with the European Space Agency (ESA).

Space in videos

Some NASA videos (in English)

Curiosity, the first five years of science

LATMOS developed SAM - Sample Analysis on Mars