



SpaceObs

WP3 - Next generation instrumentation

WP3.4 - Ground assessment of lidars for space



retour sur innovation

Partenaires

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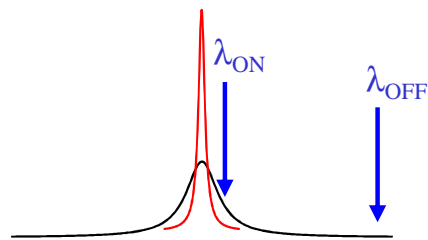
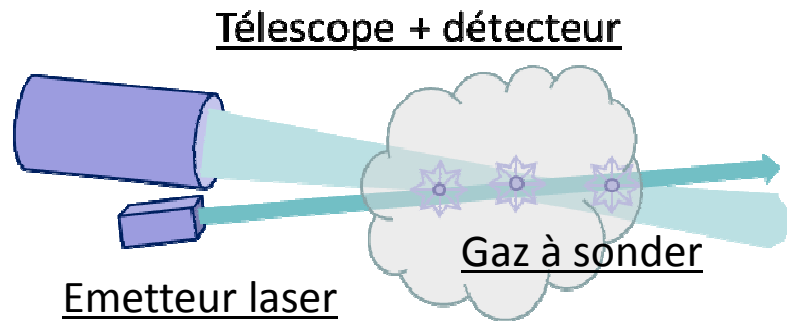
Involved Laboratories: LATMOS, LMD, ONERA/DMPH, ONERA/DOA

Proposed budget: 135 k€ (30 k€ < 2017 and 105 k€ > 2017)

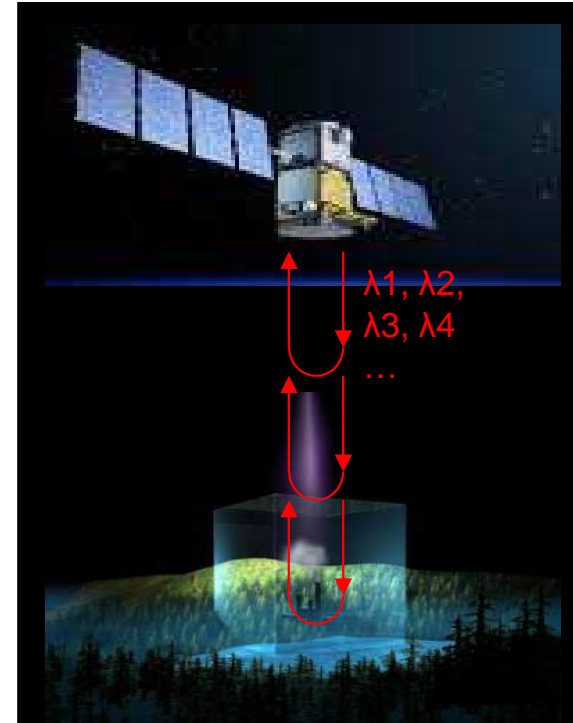


Téledétection LIDAR : Applications spatiales – changement climatique

Principe

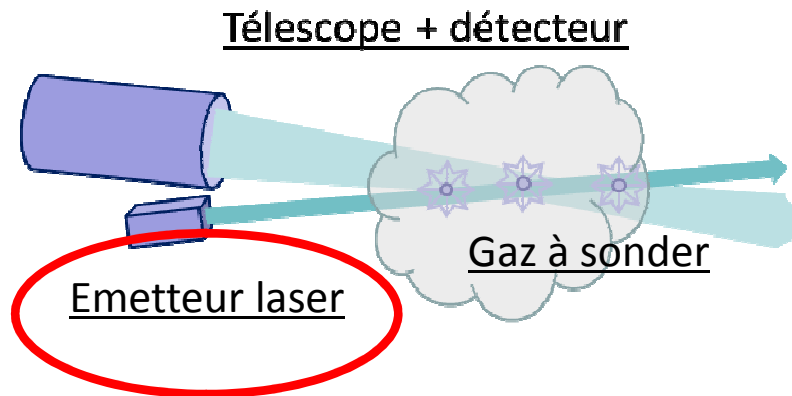


2- λ IP-DIAL for probing the lower troposphere



Téledétection LIDAR : Applications spatiales – changement climatique

Principe



Different possible solutions for the emitter => several instruments in development

- (i) solid-state lasers (Nasa Godard, National Institute of Information and Communications Technology in Japan, LMD and LATMOS in France),
- (ii) fiber lasers (Nasa Langley, Mitsubitchi, ONERA/DOTA)
- (iii) parametric converters (DLR, ONERA/DMPH).

WP3.4 Objectives

General objective : to progress in the evaluation of future lidars for space through two ground campaigns of measurements in which various innovative lidar systems will be implemented by three partners of SPU.

More precisely, the objectives of this action will be:

- support lidar and key components developments for future space missions (satellite and airborne payloads as well as ground truth instruments);
- provide input for calibration and data retrieval for next space missions Microcarb and Merlin, in synergy with
workpackage 2, action 2.2 or in preparation to airborne validations (action 3.2);
- federate the activity on lidars for space in France and reinforce the visibility of UPSay's high tech labs.

The WP3.4 will benefit from the use of existing or in development instruments

SpaceObs will support :

mechanical adaptation of lidar systems and optics (steering mirrors)

deployment of lidar systems

ground campaigns.



WP3.4 Planning

Planning:

Two campaigns of measurements will be conducted in Palaiseau (Ecole Polytechnique) which is close for each partner according to the following planning:

- 2017: Instrumental developments and preparation of measurement campaigns
- 2018 : First campaign of measurements for cross comparison and instrumental validations; data analysis
- 2019: Final campaign dedicated to the measurement of CO₂, CH₄ and H₂O as well as atmospheric parameters (wind, temperature), data analysis, lidar measurement exploitation.
- 2020 : Dissemination of obtained results, proposal for participation in future space mission.

Expected outcomes :

The outcomes of these campaigns are:

- Assessment of the level of maturity of different technologies and their benchmarking on a common set of experimental conditions. (Also a cost saver by pooling campaign support instrumentations and means);
- identify potential complementarity, including with in situ sensors that will also be deployed during the campaigns;
- identify technology gaps and provide roadmaps for maturation in line with current and future space programs

