

Contribution of French research teams to ADM Cal/Val

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Four coordinated actions

Short term

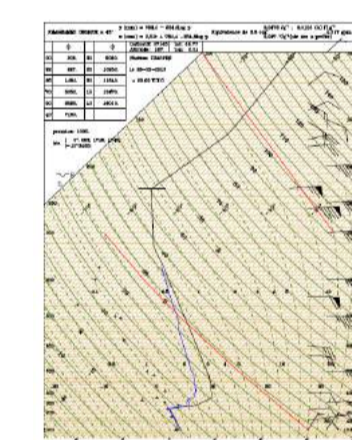
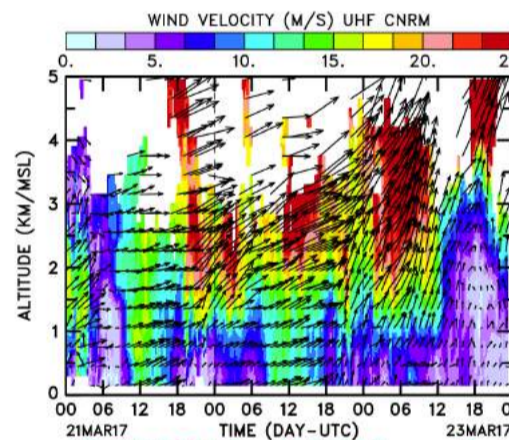
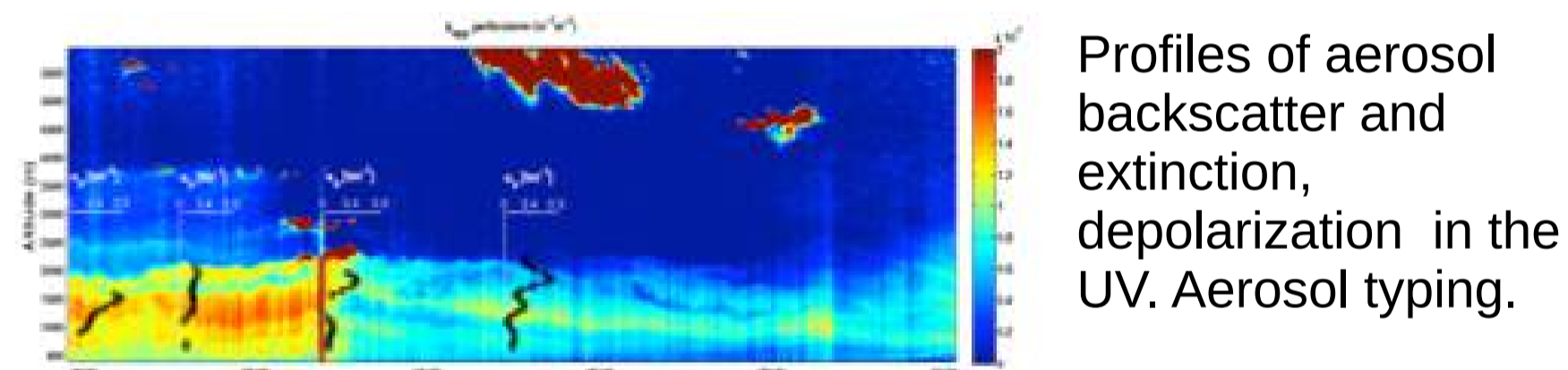
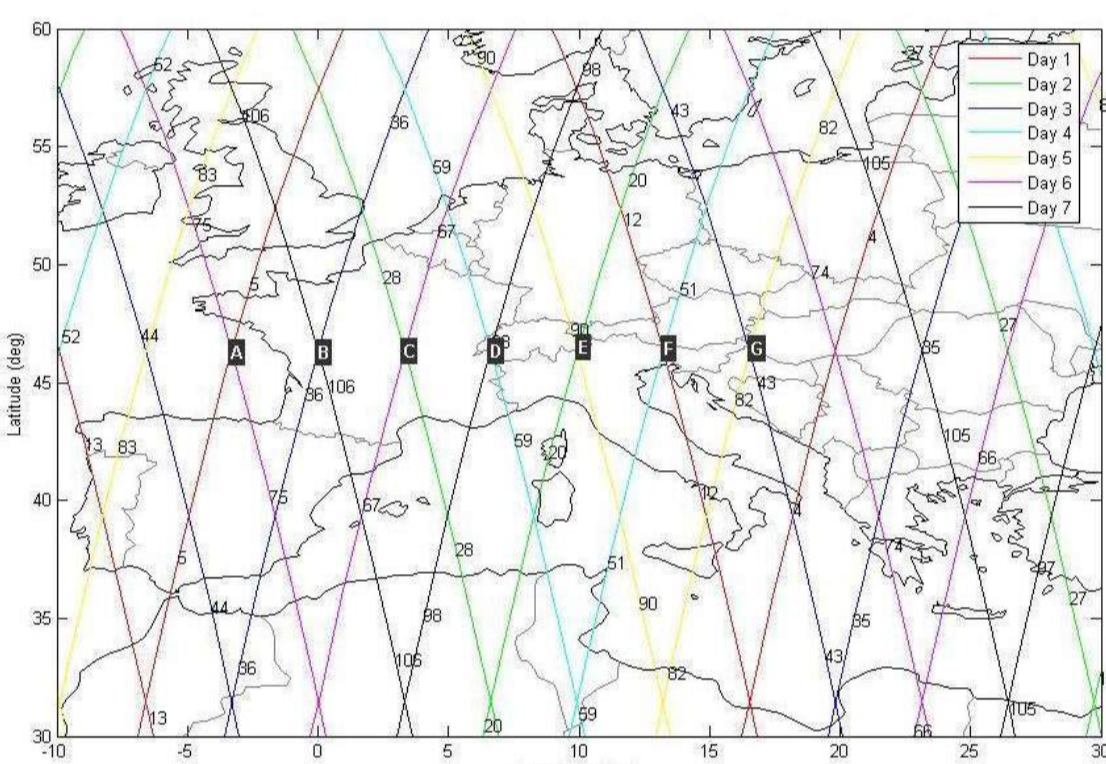
1. Mobile aerosol lidar and UHF wind profiler at a cross-point of ascending and descending orbits
2. Flights of the airborne High-Spectral-Resolution lidar LNG along the satellite observation track. Several flights above the mobile station (see point 1.).
3. Regular Mie-Rayleigh lidar and UHF wind profiler observations at La Réunion and Haute-Provence observatories.
4. Wind observations in the upper-troposphere and low-stratosphere in the equatorial band with high-altitude balloons of STRATEOLE 2 project.

Long term

Mobile station

The satellite is passing over the cross-points two times every week.

Operation of a mobile station at a cross-point for 1 month in late spring, early summer.



Wind profiles up to 4 or 5 km.
 $\Delta z=150m, \Delta t=30 \text{ min.}$

PTUV profiles up to 20km.
 $\Delta z=10m$

HSR Lidar LNG

SAFIRE www.safire.fr

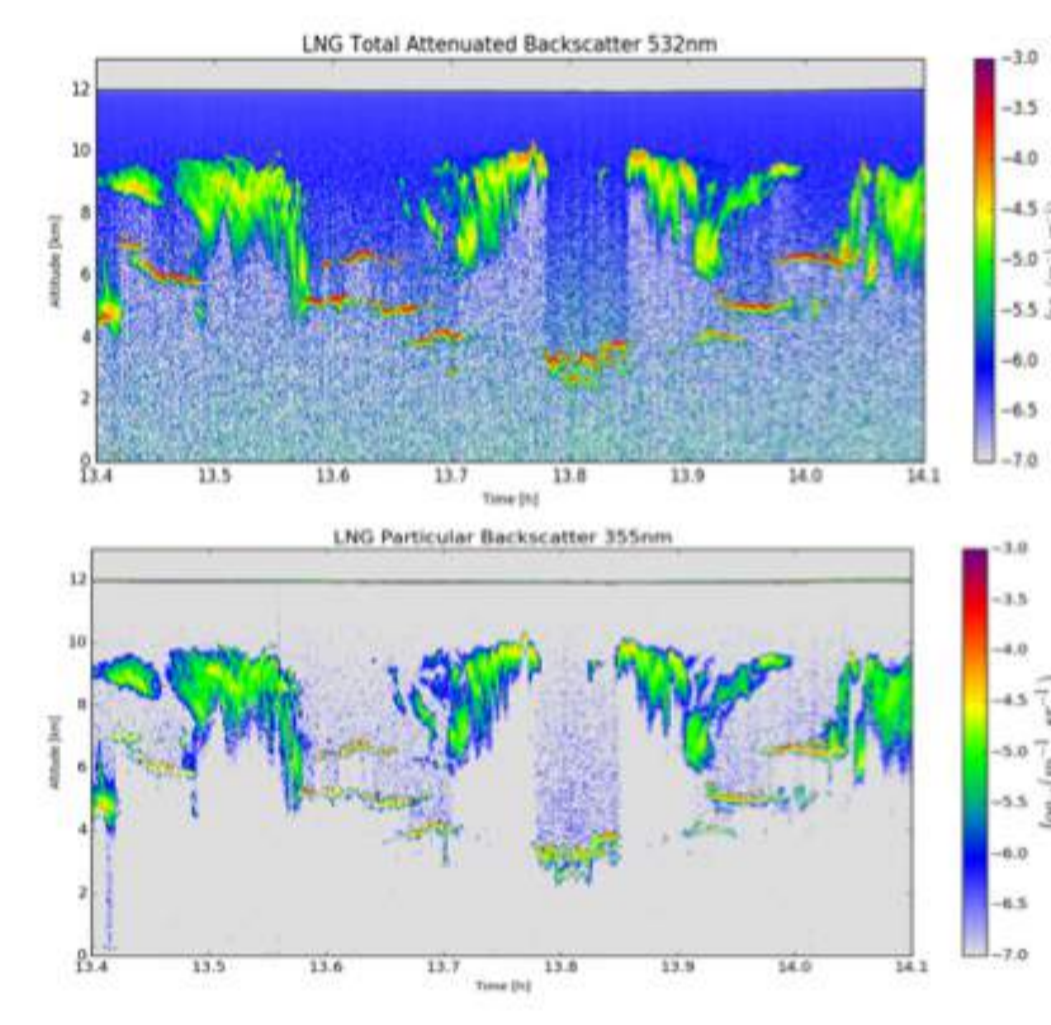


Falcon 20 research aircraft operated by SAFIRE



High-spectral resolution lidar LNG (left) and Mach-Zehnder receiver (right).

- 3 wavelengths (1064nm, 532nm and 355nm).
- HSR and depolarization at 355nm
- Attenuated backscatter at 1064nm and 532nm.
- Backscatter, extinction and depolarization at 532nm.
- Line-of-sight winds (if sufficient SNR).



Example : results of a flight carried out on 8 December 2015

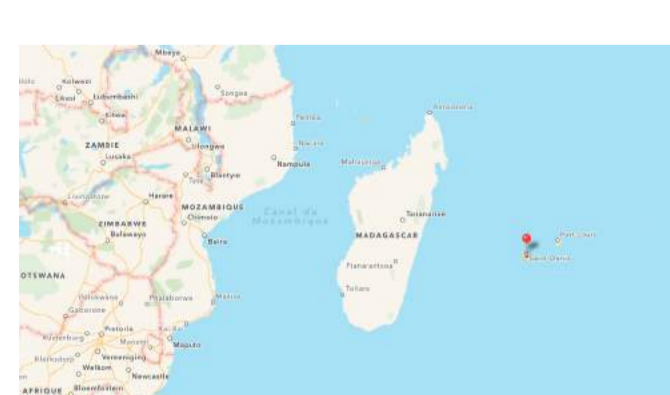
Observatories

Haute-Provence



Longitude 5°42'44"E - Latitude 43°55'54"N

La Réunion



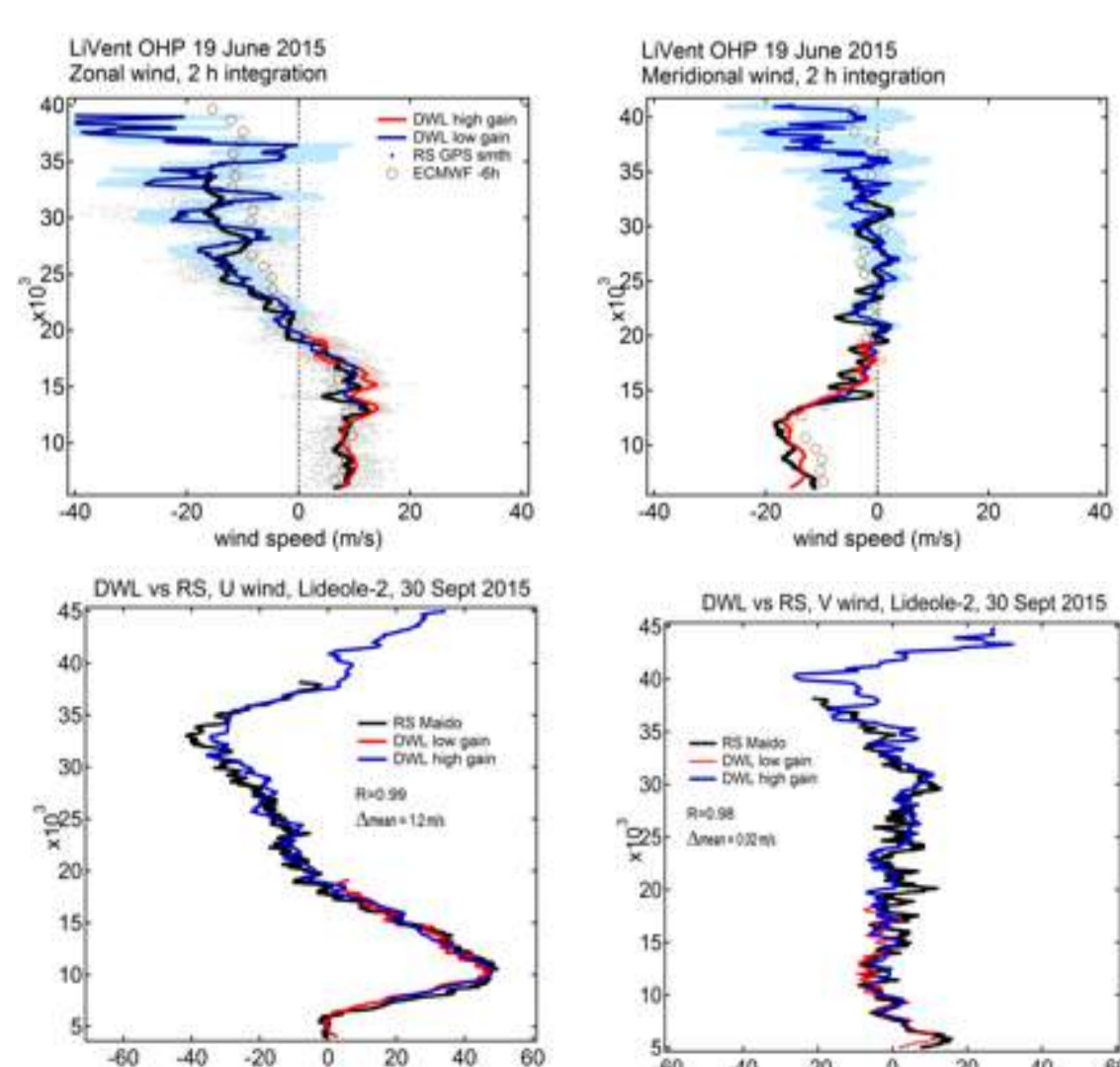
Longitude 21°03'41"E - Latitude 55°23'21"N

Both observatories are equipped with powerful Mie-Rayleigh lidars and operate them on a regular basis.

Winds up to 40km can be measured (in 2 hours).

The lidars will be activated everytime AEOLUS is passing by.

Operations could start as early as spring 2018.



Stratospheric balloons



Once fully inflated (at float level), advected by the wind on constant-density surfaces at about 50-70 hPa (18.5 - 21 km).

Balloons can typically fly for 2-3 months

Data transmitted to the ground via satellite.

Balloons flying in the equatorial band.

First test campaign planned end of 2018 (5 flights – about 300 wind measurements collocated with ADM), then campaign (20 flights) in 2020.

