








## Annexe décrivant le parc instrumental SIRTA

Novembre 2016

### Instruments scientifiques

Le Tableau 1 liste les instruments de télédétection et de mesures in situ qui constituent le « noyau dur » des observations déployées au SIRTA à Palaiseau au 1<sup>er</sup> Novembre 2016.

MEASURED QUANTITY	INSTRUMENT	COMMENTS	PI (Name and affiliation)	LOCATION	LABEL INSU	AUTRE LABEL
<b>BSRN RADIATION STATIONS (two similar stations)</b>						
Downwelling direct solar irradiance	Kipp&Zonen CH1 pyrheliometer	Operating since 06/2003	M. Haeffelin (CNRS-IPSL)	SIRTA-CFZ2		ACTRIS-FR
Downwelling diffuse solar irradiance	Kipp&Zonen CMP22 pyranometer	Operating since 06/2003		SIRTA-CFZ2		ACTRIS-FR
Downwelling global solar irradiance	Kipp&Zonen CMP22 pyranometer	Operating since 10/2005		SIRTA-CFZ2		ACTRIS-FR
Upwelling global solar irradiance	Kipp&Zonen CM22 pyranometer	Operating since 11/2006		SIRTA-CFZ1		ACTRIS-FR
Downwelling infrared irradiance	Kipp&Zonen CGR4 pyrgeometer	Operating since 06/2003		SIRTA-CFZ2		ACTRIS-FR
Upwelling infrared irradiance	Kipp&Zonen CG4 pyrgeometer	Operating since 11/2006		SIRTA-CFZ1		ACTRIS-FR
All-sky Cloud fraction	SRF-02 All-sky camera	Operating since 10/2008	J-C. Dupont (UVSQ-IPSL)	SIRTA-CFZ2		ACTRIS-FR
<b>AERONET SUNPHOTOMETER</b>						
Aerosol optical depth	Cimel CE-318 sunphotometer (340-1020 nm)	Operating since 07/1999	P. Goloub (CNRS-LOA)	SIRTA-CFZ2		ACTRIS ACTRIS-FR
<b>CLOUD AND AEROSOL LIDAR and ceilometer</b>						
Vertical profiles of backscatter and depolarization: BL and troposphere	LUFT CHM15K Lidar	Routine operation since 01/2009	M. Haeffelin (CNRS-IPSL)	SIRTA-CFZ1		ACTRIS ACTRIS-FR
Vertical profiles of backscatter,	532 and 1064nm Lidar LNA	Operating since 10/2002		SIRTA-CFZ2		ACTRIS

extinction and depolarization: troposphere	Multi- $\lambda$ and Raman Lidar IPRAL	Operating since 2015		SIRTA-CFZ1		ACTRIS-FR
Vertical profiles of backscatter	Vaisala CL31 ceilometer	Operating since 10/2002		SIRTA-CFZ1		
<b>CLOUD RADAR</b>						
Vertical profile of reflectivity and Doppler velocity	94 GHz FMCW Doppler Radar	At the site since 08/2009	J. Delanoë (CNRS-LACTRIS-FR)	SIRTA-CFZ1		ACTRIS
<b>MWRNET MICROWAVE RADIOMETER</b>						
Temperature, water vapor and liquid water profiles in BL and troposphere	Radiometer Physics GmbH HATPRO 20-30 GHz and 50-60 GHz	Operating since 02/2010	J-C. Dupont (UVSQ-IPSL)	SIRTA-CFZ1		ACTRIS ACTRIS-FR
<b>GNSS WATER VAPOR</b>						
Integrated water vapor (GPS)	TRIMBLE GPS receiver	Operating since 01/2006 Changed antenna and receiver 01/2012	J-C. Dupont (UVSQ-IPSL)	SIRTA-CFZ2		ACTRIS-FR
<b>SODAR and RADAR WIND PROFILERS</b>						
Vertical profiles of CN2 and wind	Remtech PA-2 sodar Scintec SFAS	Operating since 06/2009	E. Dupont (EDF-CEREA)	SIRTA-CFZ1		
Vertical profiles of CN2 and wind Vertical profiles of wind	Degreanne UHF Radar Leosphere WLS7v2	Operating since 06/2009 Operating since 06/2009		SIRTA-CFZ1		ROSEA
<b>10-M and 30-M MAST - Zone 1</b>						
Turbulent fluxes at 10m and 30m	Gill sonic anemometers + Licor LI-7500 and LI-7200	Operating since 06/2005	J-C. Dupont (UVSQ-IPSL)	SIRTA-CFZ1		
Turbulent fluxes	Metec sonic anemometers	Operating since 11/2006	E. Dupont (EDF-CEREA)	SIRTA-CFZ1		
<b>30-M MAST - Zone 4</b>						
Turbulent fluxes at 10m and 30m	Metec sonic anemometers	Operating since 11/2006	E. Dupont (EDF-	SIRTA-CFZ4		

CEREA)

WEATHER SENSORS						
2-m temperature in Zone 1	Guilcor PT100	Operating since 07/2005	J-C. Dupont (UVSQ-IPSL)	SIRTA-CFZ1		ACTRIS-FR
10-m temperature in Zone 4	Young 41382, 43408	Operating since 11/2006	E. Dupont (EDF-CEREA)	SIRTA-CFZ4		
30-m temperature in Zone 4	Young 41382, 43408	Operating since 11/2006	E. Dupont (EDF-CEREA)	SIRTA-CFZ4		
17-m temperature in Zone 2	Guilcor PT100	Operating since 07/2002	J-C. Dupont (UVSQ-IPSL)	SIRTA-CFZ2		
2-m relative humidity in Zone 1	Vaisala HMP110	Operating since 07/2005	J-C. Dupont (UVSQ-IPSL)	SIRTA-CFZ1		ACTRIS-FR
10-m relative humidity in Zone 4	Young 41382, 43408	Operating since 11/2006	E. Dupont (EDF-CEREA)	SIRTA-CFZ4		
30-m relative humidity in Zone 4	Young 41382, 43408	Operating since 11/2006	E. Dupont (EDF-CEREA)	SIRTA-CFZ4		
17-m relative humidity in zone 2	Vaisala HMP110	Operating since 07/2002	J-C. Dupont (UVSQ-IPSL)	SIRTA-CFZ2		
2-m agl ACTRIS-FRpheric pressure	Druck RPT410F barometric sensor	Operating since 07/2005		SIRTA-CFZ1		ACTRIS-FR
17-m agl ACTRIS-FRpheric pressure	Vaisala PTB101B barometric sensor	Operating since 07/2002		SIRTA-CFZ2		
10-m wind speed in Zone 1	Vector A100R anemometer	Operating since 07/2005		SIRTA-CFZ1		ACTRIS-FR
10-m wind direction in Zone 1	Vector W200P wind vane	Operating since 07/2002		SIRTA-CFZ1		ACTRIS-FR
25-m wind speed in Zone 2	Vector A100R anemometer	Operating since 07/2002		SIRTA-CFZ2		
25-m wind direction in Zone 2	Vector W200P wind vane	Operating since 07/2002		SIRTA-CFZ2		
Precipitation Zone 1	Precis Mecanique Raingauge Model 3030	Operating since 11/2006	E. Dupont (EDF-CEREA)	SIRTA-CFZ1		ACTRIS-FR
Precipitation 17m in Zone 2	Precis Mecanique Raingauge Model 3029	Operating since 07/2002	J-C. Dupont (UVSQ-IPSL)	SIRTA-CFZ2		
Temperature and humidity below ground	thetaprobe ML2x Model manufactured by DELTA-T Devices Ltd. And PT100	Operating since 11/2006		SIRTA-CFZ1		

sensors

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**RADIOSONDE PROFILES**

Vertical profiles of pressure, temperature, humidity, and wind	Modem M10 radiosondes launched daily at 00 & 12 UTC by Météo-France	Stored in SIRTA database since 01/2000	F. Besson (Météo-France)	MF-Trappes	ACTRIS-FR
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**AEROSOL CHEMISTRY**

Aerosol chemistry (ions, EC, OC) every 24H	R&P Partisol + VOC denuder + inlet PM2.5 + analyse EUSAAR_2	Operational (June 2012)	J. Sciare (CNRS-LSCE)	SIRTA-LFZ5	ACTRIS ACTRIS-FR
Aerosol chemistry en PM1 every 30 min	ACSM Aerodyne Research Inc.	Operational (june 2011)	J. Sciare (CNRS-LSCE)	SIRTA-LFZ5	ACTRIS ACTRIS-FR

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**AEROSOL MICROPHYSICS & OPTICAL**

Particle Number+Size (0.3-10µm) every 1 min	Grimm OPC 1.121	Operational (end of 2010)	V. Gros (CNRS-LSCE)	SIRTA-LFZ5	ACTRIS ACTRIS-FR
Particle Number+Size (10-800nm) every 30 min	SMPS GRIMM	Operational (April 2012)		SIRTA-LFZ5	ACTRIS ACTRIS-FR
PM2.5	TEOM-FDMS Thermo	Operational (end of 2010)		SIRTA-LFZ5	ACTRIS ACTRIS-FR
Absorption every 5 min in PM2.5	Magee Scientific Aethalometer	Operational (end of 2010)		SIRTA-LFZ5	ACTRIS ACTRIS-FR
Light scattering coeff. every 5 min in PM2.5	ECOTECH (mono-wavelength)	Operational (April 2012)		SIRTA-LFZ5	ACTRIS ACTRIS-FR
Particle Number+Size (0.2-50µm) every 1 min	MODEM LOAC	Operational since 2014	JB. Renard (LPC2E)	SIRTA-CFZ1	

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**TRACE GASES**

On line NO, NO2	API-TELEDYNE Chemiluminescence analyser for NO analysis with blue-light converter for NO2	Operational in September 2012	V. Gros (CNRS-LSCE)	SIRTA-LFZ5	ACTRIS
Bi-weekly VOC cartridges sampling  (aromatic and biogenic compounds)	Cartridges sampling and GC-MS analysis	Operational in September 2012	V. Gros (CNRS-LSCE)	SIRTA-LFZ5	ACTRIS

On-lineO3	API-TELEDYNE UV Thermo-Environmental analyser	Operational in September 2012	V. Gros (CNRS-LSCE)	SIRTA-LFZ5	
<b>HORIZONTAL VISIBILITY</b>					
Visibility 4m	Degreanne DF320	Operating since 11/2006	J-C. Dupont (UVSQ-IPSL)	SIRTA-CFZ1	
Visibility 20m	Vaisala PWD22	Operating since 10/2013	J-C. Dupont (UVSQ-IPSL)	SIRTA-CFZ1	
<b>ACTRIS-FRPHERIC WATER</b>					
Water vapor and rain water isotopic content	PICARRO	Currently under test	F. Vimeux (CNRS-LSCE)	SIRTA-CFZ1	ACTRIS-FR
Droplet size distribution	FM100, FM120	Operating in Winter 2010-2016	F. Burnet (CNRM), J-C. Dupont (UVSQ-IPSL)	SIRTA-CFZ1	ACTRIS-FR
Rain drop size distribution	DISDROMETER	Operating since 2010	L. Barthes (UVSQ-LACTRIS-FR)	SIRTA-CFZ1	ACTRIS-FR