Paris Region Atmospheric Observatory

Activities Overview 2021-2022

Status April 2021

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Réseau de recherche
Qualité de l'air
en Ile-de-France

Context

- Multiple projects: observing and modelling the atmosphere of the **Paris Region**
- **IPSL objective**: advance research of the Paris urban atmosphere through enhanced collaborations
- Discussion has started on how to link various activities efficiently given no “official” framework has yet been formulated

Projects overview

ANR projects

- ANR *Heat and Health in Cities (H2C)* – lead by CNRM
- ANR *ACROSS* – lead by LISA-IPSL
- ANR *sTREEt* – lead by iEES Paris
- ANR MOSAI

Additional measurements (1year)

- Impact of urban greening – AgroParisTech
- ERC Synergy *URBISPHERE* – Uni Reading/ Freiburg/ Stuttgart, FORTH

Opportunities for international collaborations:

- EU COST action PROBE on ABL profiling
- WMO/WWRP&GAW RDP *Olympic Games 2024*

ICOS & ACTRIS RIs

Paris pilot study for urban observations:

- H2020 RI-URBANS - Paris Pilot (IPSL)
- H2020 PAUL - Paris Pilot (LSCE)

New investments for ICOS and ACTRIS

- Equipex+ *OBS4CLIM* (new measurements by ACTRIS/ICOS/IAGOS)

Series of individual projects are modelling and observing the Paris atmosphere

Demonstrators of long-term sustained measurements in urban setting

Timing

- AgroParisTech: 3 Surface Energy Balance sites in central Paris (different green fraction) to be operated ~ summer 2021-summer2022 (1 year)

- MOSAI: Additional Surface energy balance stations in vicinity of SIRTA (potentially: agric, suburban residential) to be operated autumn 2021 – autumn 2022

- URBISPHERE: Multiple additional sensors (incl. Doppler lidars, Ceilometers, Scintillometers, Surface Energy Balance, BSRN radiation) to be operated summer 2022 – summer 2023

- ANR sTREET, H2C, ACROSS / WMO RDP: IOP in summer 2022

- Long-term platforms (e.g. SIRTA, QUALAIR, OASIS) are strengthened continuously
- Add. observations by ACTRIS and ICOS according to success of H2020 proposals

Observational working groups

- Turbulent fluxes and radiation
- Atmospheric boundary layer height profiling
- Air quality and atmospheric composition (~ Composair)
- Microscale processes (e.g. within urban canopy)
- Satellite observations of the urban environment

Coordination of data processing and handling

Implementing procedures for high-quality measurements and data products

- Calibration requirements (before / during / after deployment)
- Sensor selection (manufacturers, models)
- Intercomparison before deployment to characterise instruments against common reference (could be done at SIRTA)
- Standard operating procedures: set-up (incl. temporal resolution), file/data nomenclature/format, maintenance, measurements
    - Important: measurement height (for EC in relation to blending height)
- Harmonized processing (e.g. EddyPro) and quality control
- Harmonised source area analysis (tools/auxilliary data s.a. building heights)

Data policy and data base management

Sustainable & integrated data management

- Secure data transfer protocols
- Data and metadata standards (e.g. ncdf format)
- **Data policies and access**
- **Clear strategy for acknowledgements and data usage**

- IPSL + AERIS/ESPRI are working towards a sustainable database for long-term observations in the Paris Region
- Could also be a possible strategy for campaign data

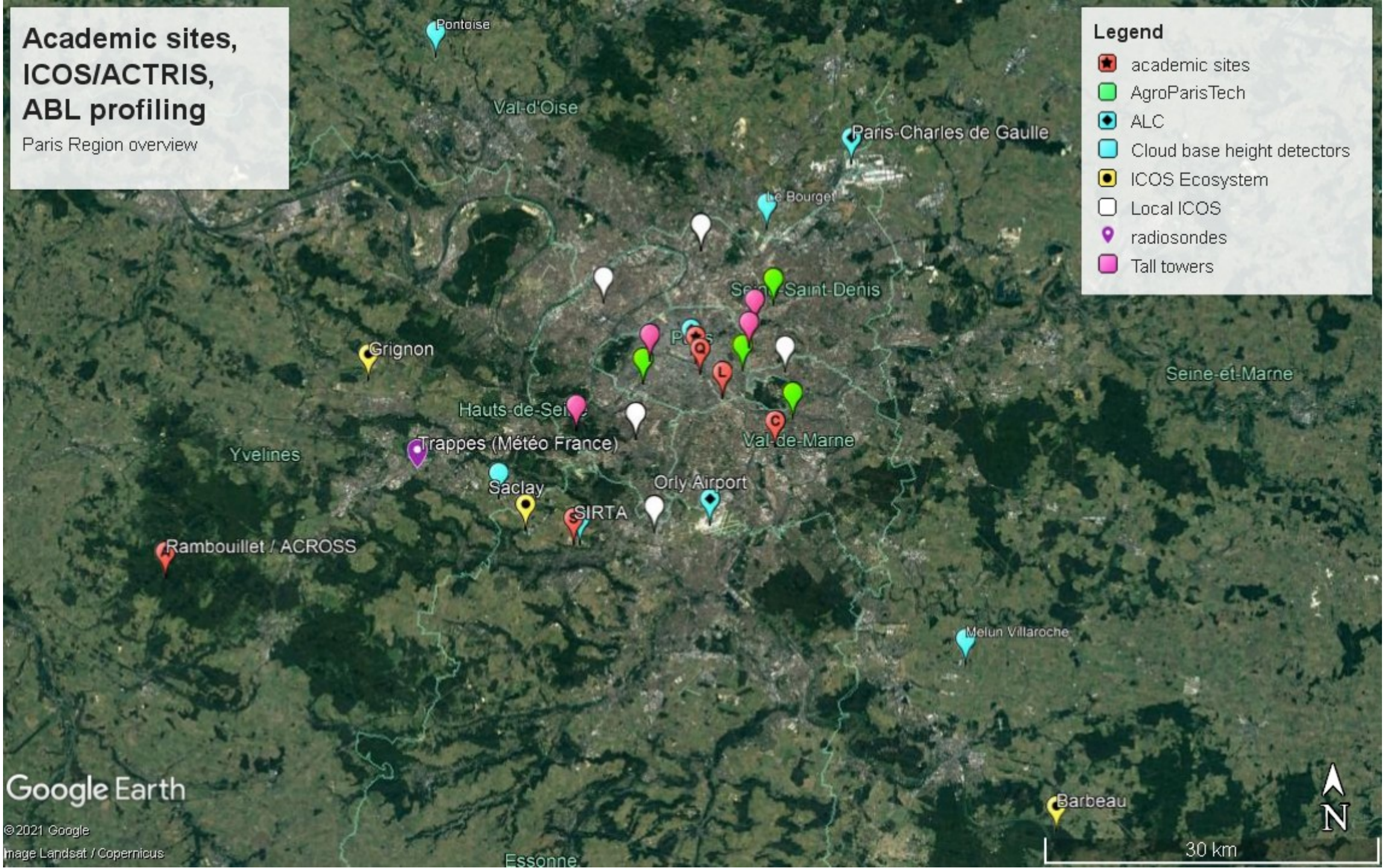
Academic sites, ICOS/ACTRIS, ABL profiling
Paris Region overview
Legend
academic sites
AgroParisTech
ALC
Cloud base height detectors
ICOS Ecosystem
Local ICOS
radiosondes
Tall towers
Pontoise
Val-d'Oise
Paris-Charles de Gaulle
Le Bourget
Seine-Saint-Denis
Grignon
Seine-et-Marne
Hauts-de-Seine
Trappes (Météo France)
Val-de-Marne
Yvelines
Saclay
Orly Airport
SIRTA
Rambouillet / ACROSS
Melun Villaroche
Barbeau
Essonne
Google Earth
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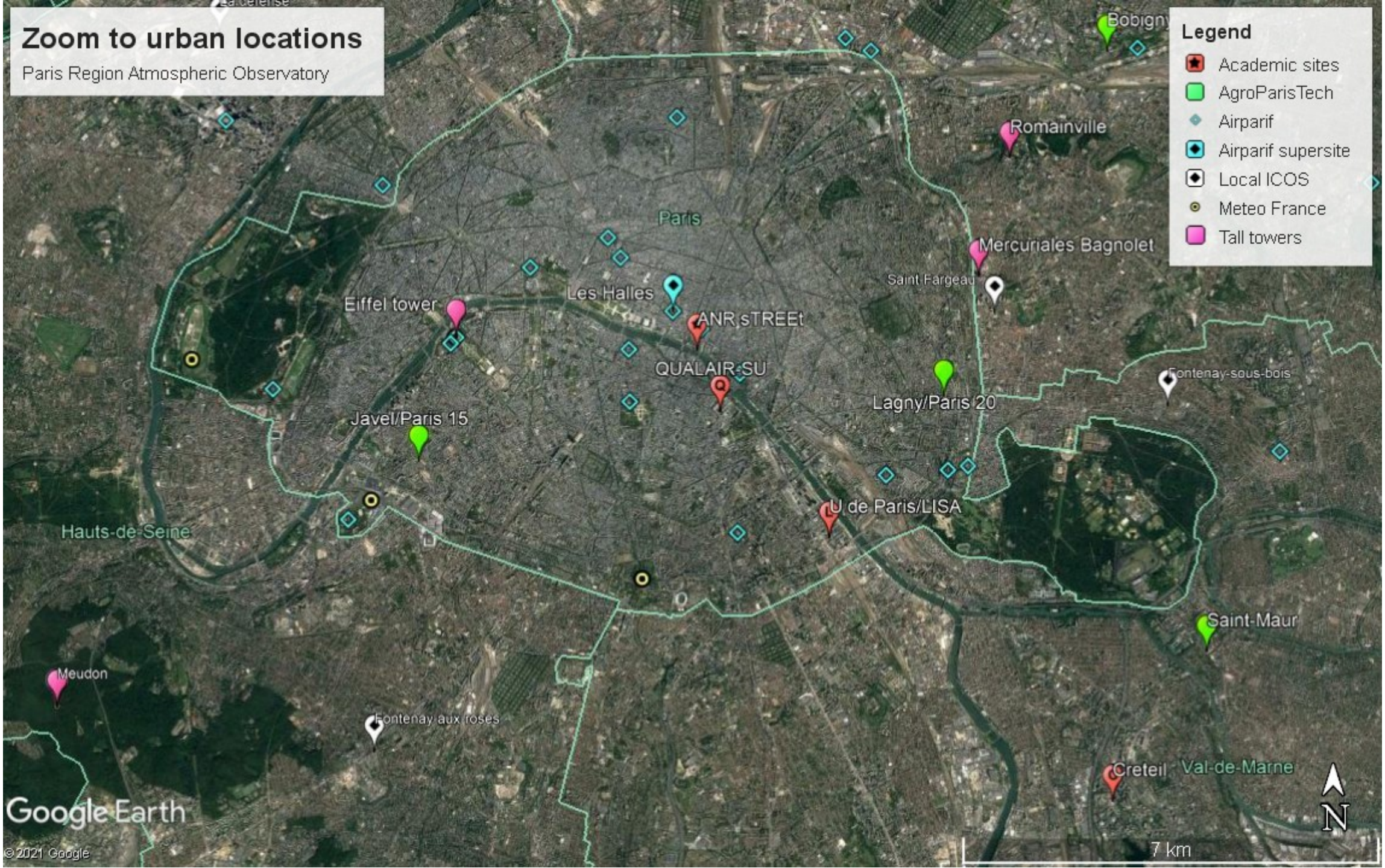
Image Landsat / Copernicus
N
30 km


Zoom to urban locations
Paris Region Atmospheric Observatory
Legend
Academic sites
AgroParisTech
Airparif
Airparif supersite
Local ICOS
Meteo France
Tall towers
Paris
Eiffel tower
Les Halles
ANR sTREEt
QUALAIR-SU
Javel/Paris 15
Lagny/Paris 20
Mercuriales Bagnolet
Saint Fargeau
Romainville
Bobigny
Fontenay-sous-bois
U de Paris/LISA
Hauts-de-Seine
Saint-Maur
Meudon
Fontenay aux roses
Creteil
Val-de-Marne
Google Earth
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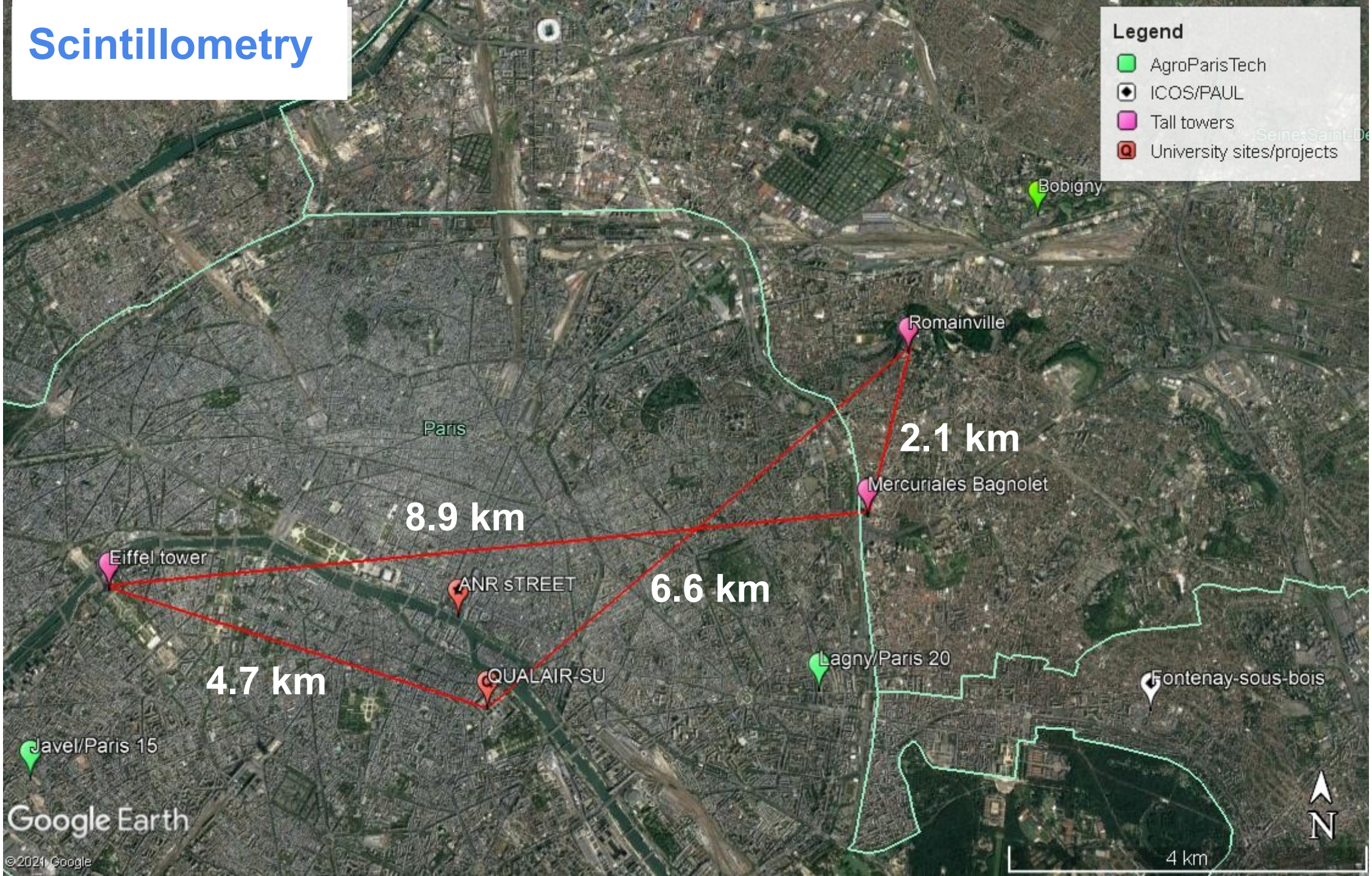
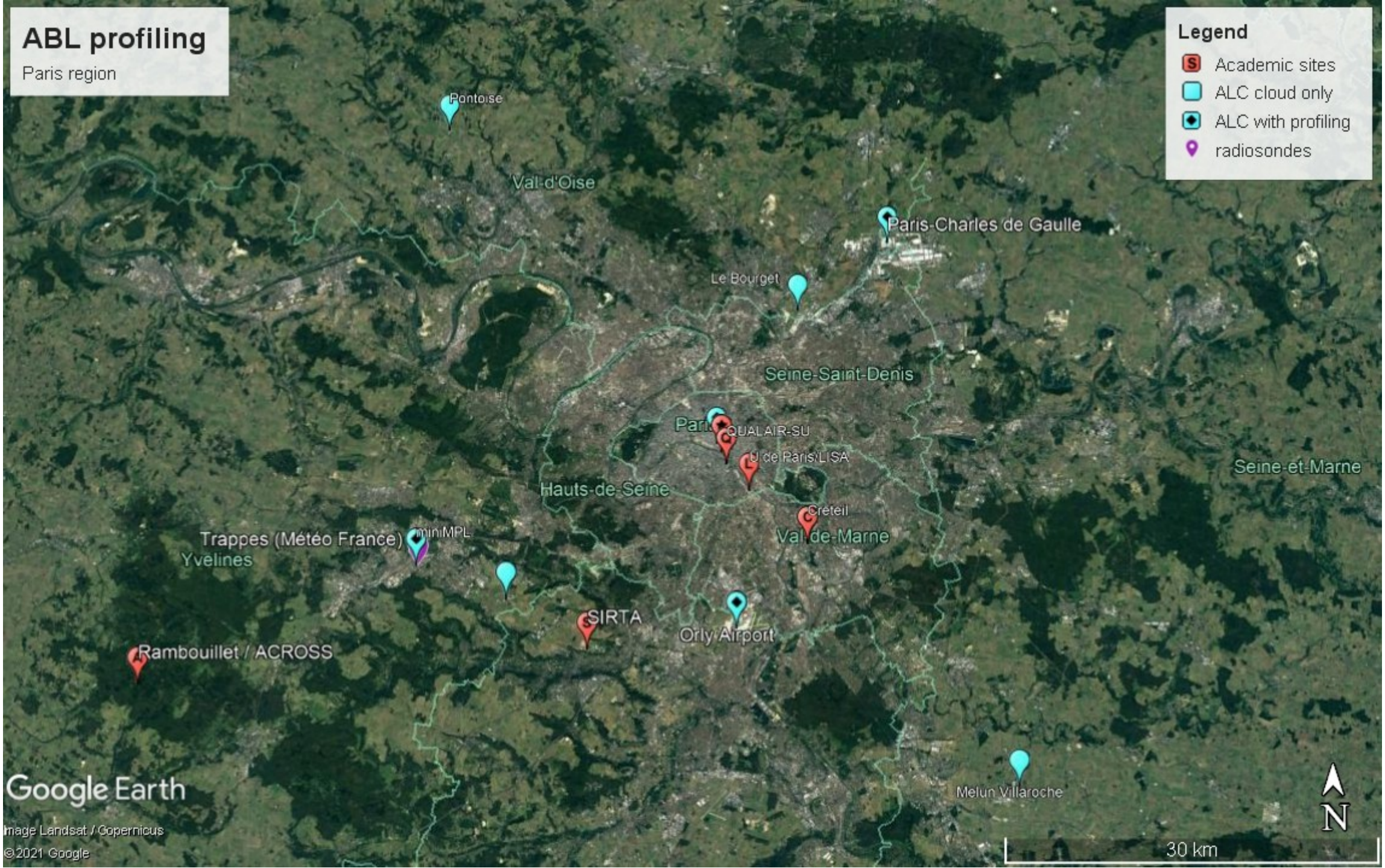
N
7 km

Scintillometry




ABL profiling
Paris region
Legend
Academic sites
ALC cloud only
ALC with profiling
radiosondes
Pontoise
Val-d'Oise
Paris-Charles de Gaulle
Le Bourget
Seine-Saint-Denis
QUALAIR-SU
U de Paris/LISA
Hauts-de-Seine
Seine-et-Marne
Créteil
Val-de-Marne
Trappes (Météo France)
miniMPL
Yvelines
SIRTA
Orly Airport
Rambouillet / ACROSS
Melun Villaroche
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N
30 km