Cerema

Emma Bousquet,
Satellite Imagery Project Manager

With M. Segaud, A. Ceyte, J. Bouyer, M. Dufournet, A. Puissant, N. Lagarrigue, and C. Murgue

Cerema (Centre for Studies and Expertise on Risks, the Environment, Mobility and Urban Planning) is the major French public agency for developing public expertise in the fields of urban planning, ecological and energy transition.

AIRBUS

USE CASE

Green Urban Sat : a Space Climate Observatory project to map precisely the urban vegetation

Application: Mapping/urban planning
Location: Nancy, France
Products: Pléiades and Pléaides Neo imagery, local databases of vegetation

AIRBUS

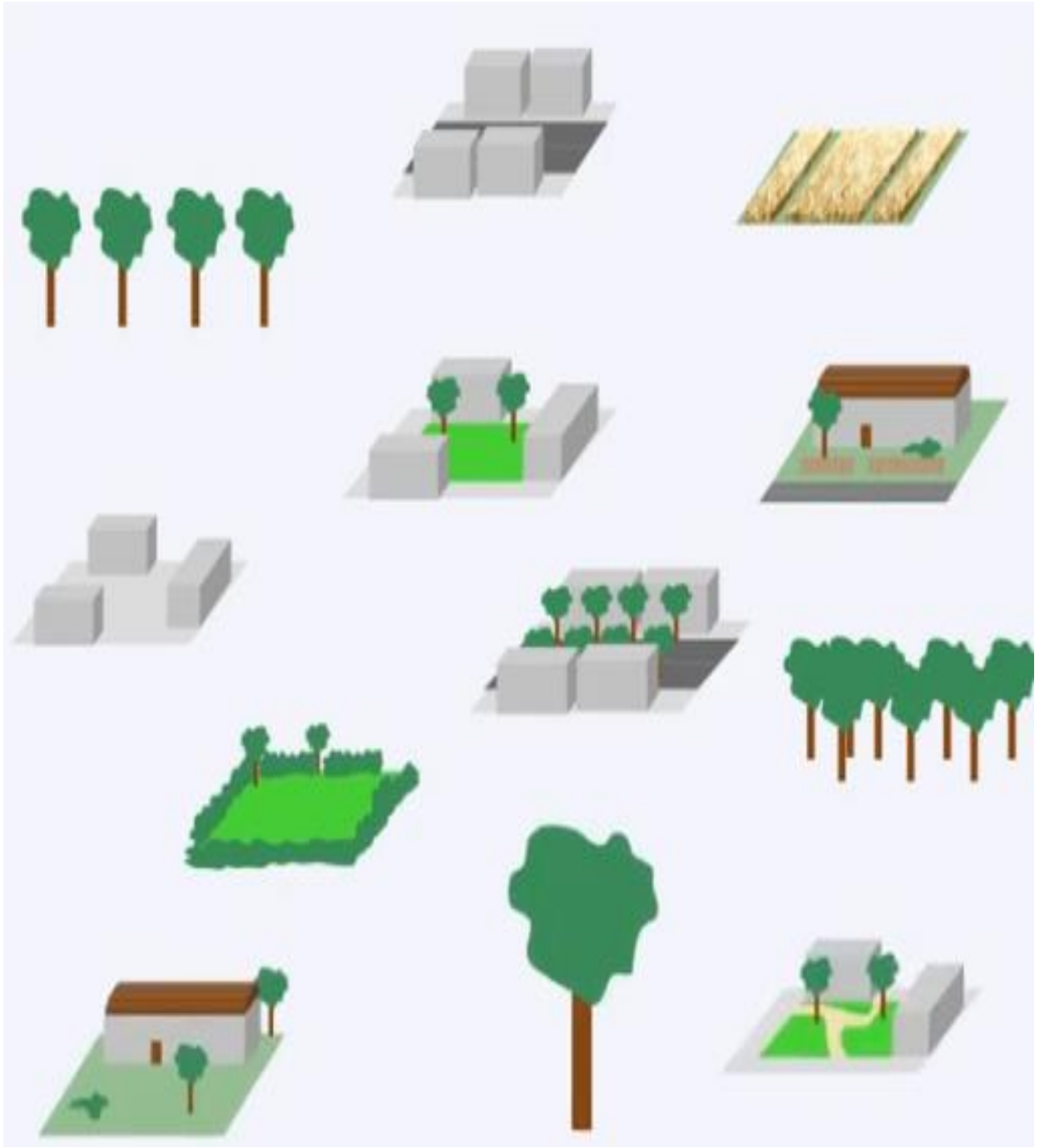
Challenge

Cities suffer more and more from urban heat islands, pollution, runoff, etc. Urban vegetation offers several Ecosystem Services (ES) to cope with these issues:

- Local climate regulation
- Air quality regulation
- Water cycle regulation
- Socio-cultural benefits
- Ecological continuities
- ...

Critical issue for municipalities: to map precisely the urban vegetation and its characteristics.

Green Urban Sat: a 2-year (2022-2024) SCO project to develop a method for urban vegetation mapping, based on the precise detection of vertical and horizontal strata.



Solution & Results

- Pléiades: multi-temporal and multi-angular acquisitions to i) discriminate vegetation on its seasonality ii) discriminate vertical strata iii) discriminate horizontal shapes
- First step: vegetation detection (NDVI or supervised classification)

Pléiades Neo Challenge

- Local database: to validate the results

Pléiades Neo Imagery helped to:

- **Detect more precisely vegetation shapes**
- **The spatial resolution was shown to bring more improvement than the spectral capacities**

NDVI

$NDVI_{PHR} > 0.3$

$NDVI_{PNeo} > 0.3$

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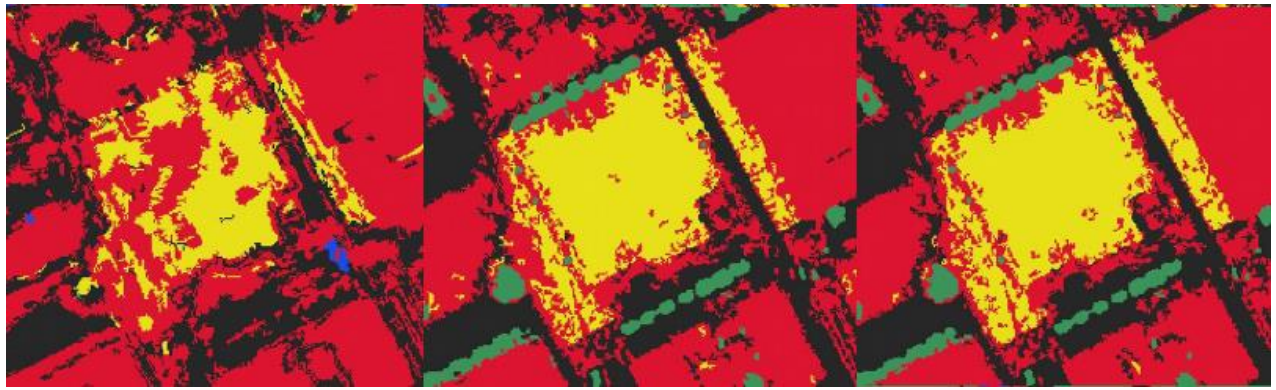
Supervised Classification

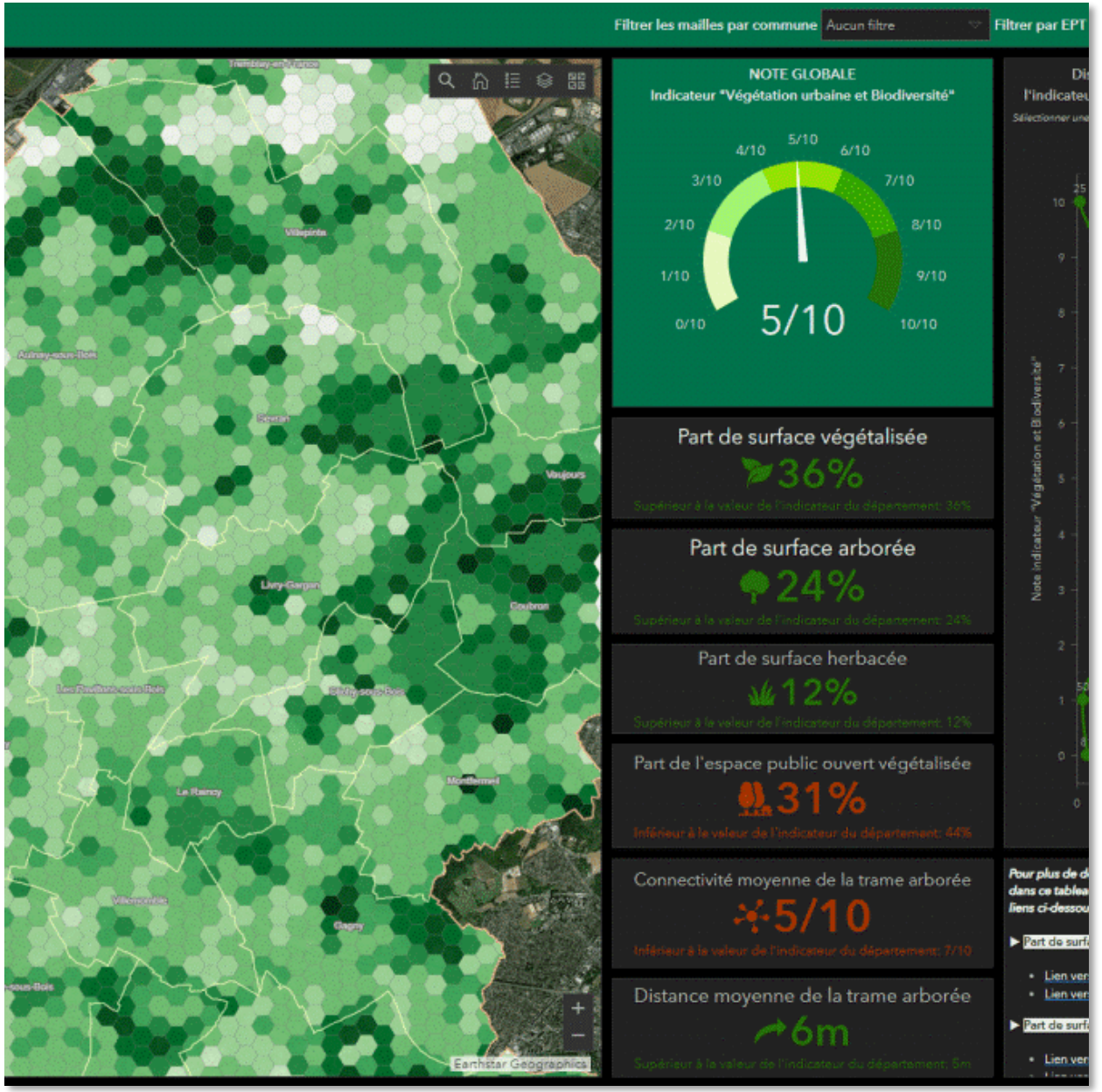
Pléiades (4C) | Pléiades Neo (4C) | Pléiades Neo (6C)



Built-Up
Road
Bare Soil
Water
Vegetation

Benefits

- A tool to monitor precisely and to help evaluate the ecosystem services of urban vegetation
- The demonstrator over Nancy will be included in the GreenCity platform (TerraNIS)
- The method will be replicable at the national and global scale
- The use of Pléiades Neo images could improve the precision of the results



Organisations Involved:

SCO SPACE CLIMATE OBSERVATORY

Cerema CLIMAT & TERRITOIRES DE DEMAIN

Laboratoire image, ville, environnement | LIVE Université de Strasbourg

métropole GrandNancy

terraNIS New Information Services