



# SOLENEOS

*Bioclimatisme, du bâtiment au quartier !*

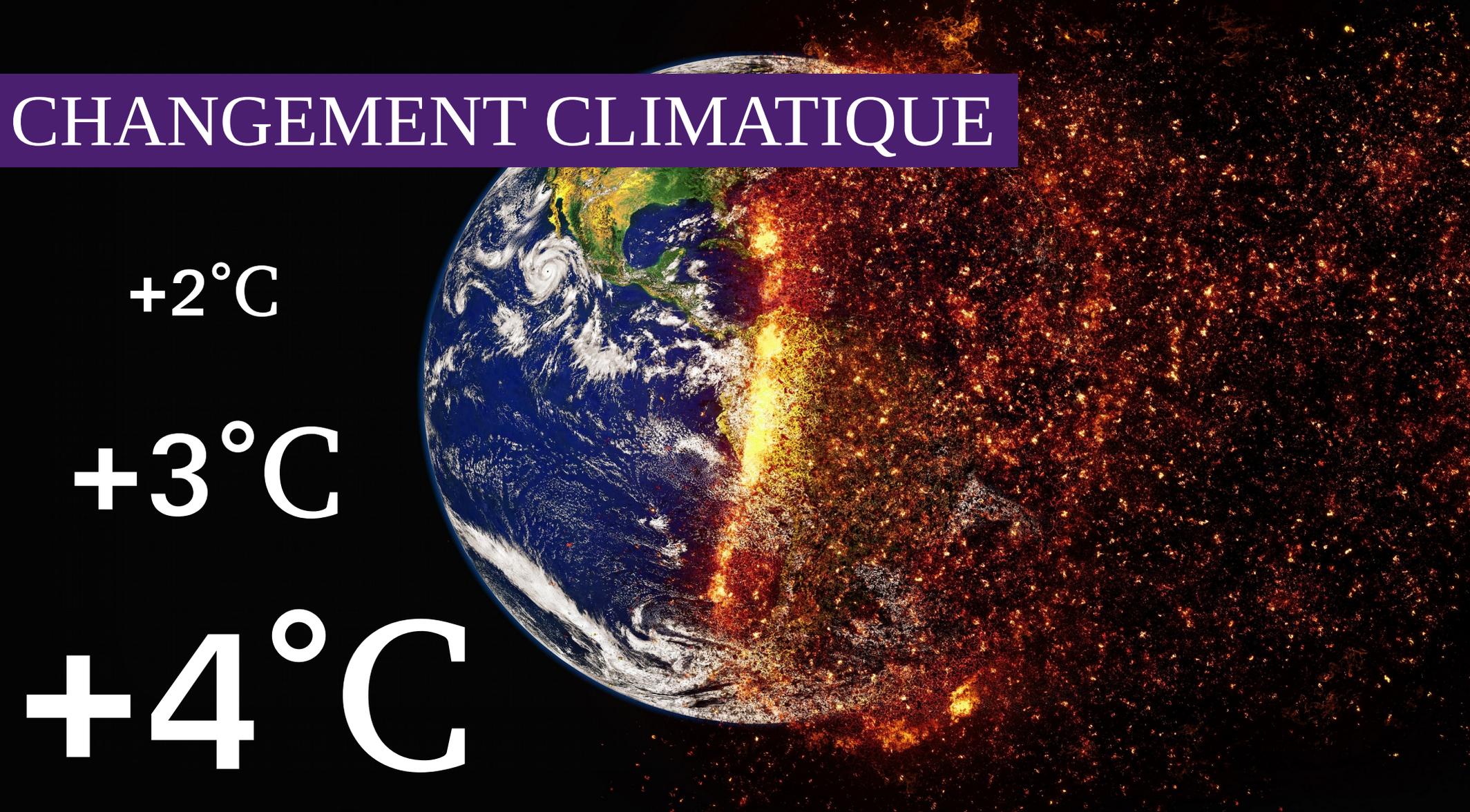
**Benjamin MORILLE**

06 32 54 17 16

[benjamin.morille@soleneos.fr](mailto:benjamin.morille@soleneos.fr)

[www.soleneos.fr](http://www.soleneos.fr)

# CHANGEMENT CLIMATIQUE

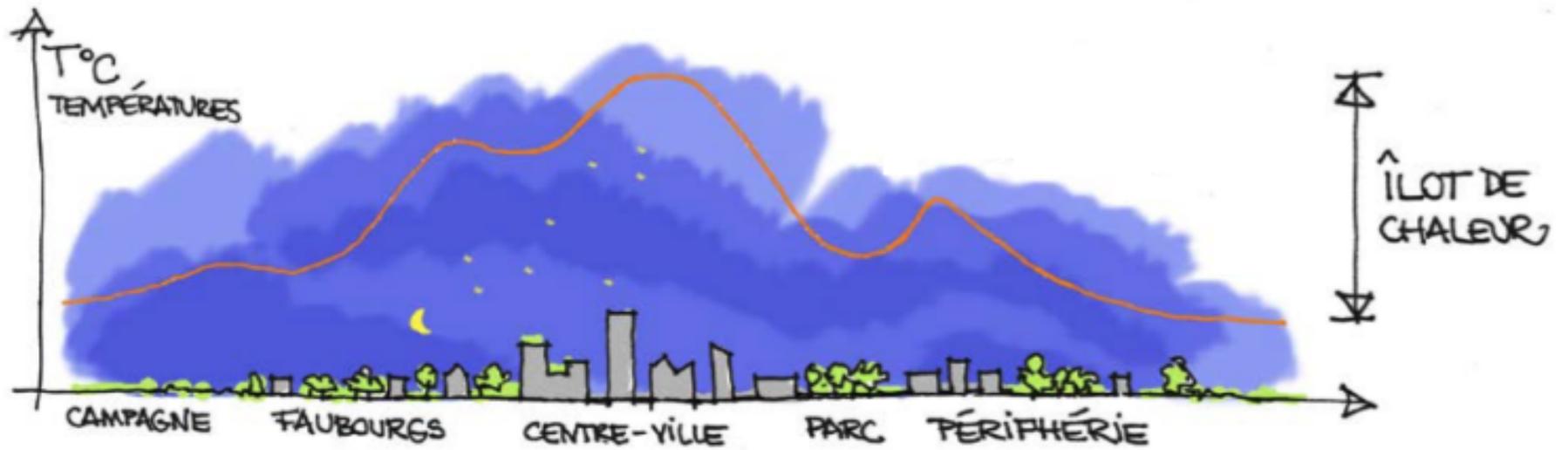
The image features a composite of two Earths from space. The left side shows a normal Earth with blue oceans, green continents, and white clouds. The right side shows a much hotter, more desolate Earth with a fiery orange and red glow, representing a significant temperature increase. The background is a dark, starry space.

+2°C

+3°C

+4°C

# ILOT DE CHALEUR

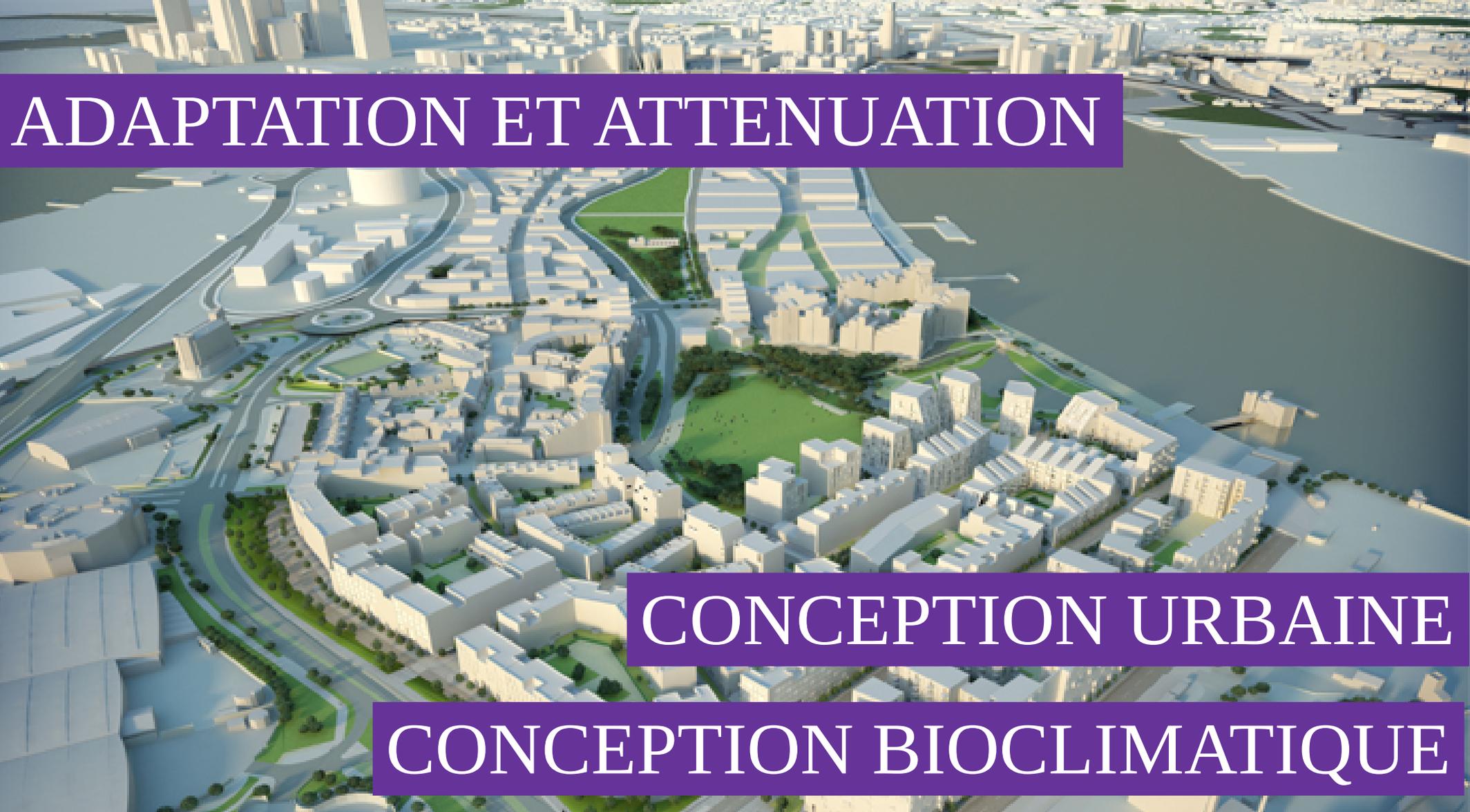


# CONFORT THERMIQUE





CONSOMMATION D'ÉNERGIE

An aerial architectural rendering of a city, showing a central river or canal system winding through a dense urban area. The buildings are rendered in a light, neutral color, and there are several green spaces and parks interspersed among the structures. The overall scene is presented in a clean, modern style with soft lighting.

ADAPTATION ET ATTENUATION

CONCEPTION URBAINE

CONCEPTION BIOCLIMATIQUE

# EXPERTISE SOLENEOS

QUOI ?

AIDE À LA  
CONCEPTION

COMMENT ?

SIMULATIONS  
NUMERIQUES

POURQUOI ?

COMPARAISON  
DE SCENARIOS  
D'AMENAGEMENT

# SOLENEOS

Benjamin MORILLE

Depuis mai 2017

Pour 2020...

AAU crenau  
ambiances  
architectures  
urbanités



INCUBATEUR

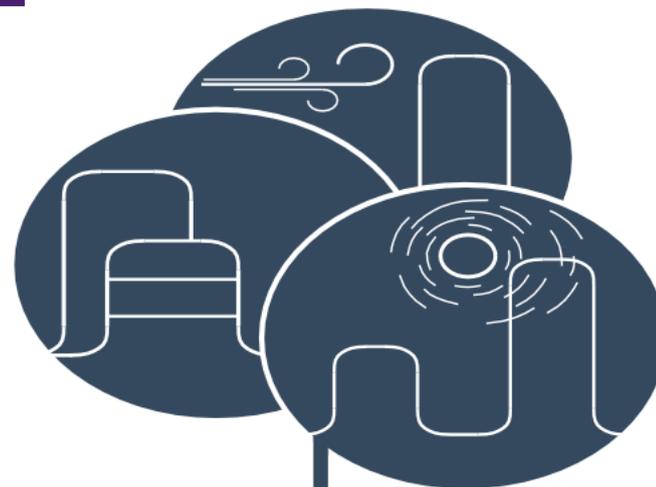


# SOLENE-MICROCLIMAT

AAU crenau  
ambiances  
architectures  
urbanités

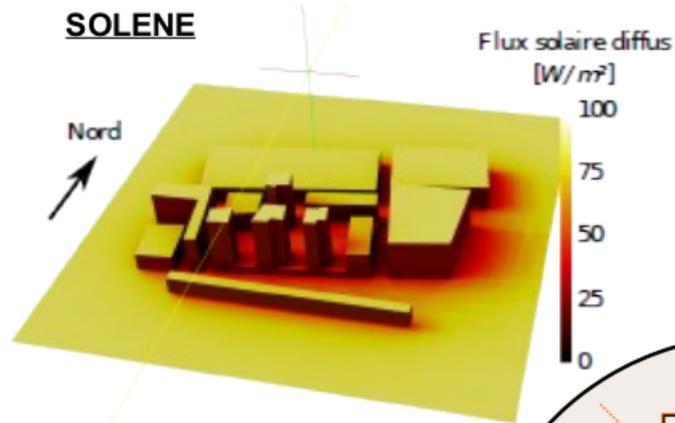


FR CNRS 2488  
Institut de Recherche  
en Sciences et Techniques de la Ville

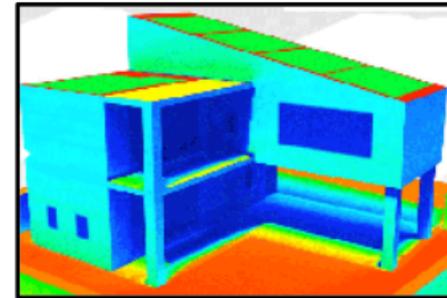


SOLENE  
MICROCLIMAT

# SOLENE-MICROCLIMAT



**SOLENE-microclimat Model**



***Thermal Building Model***



Radiative  
Model



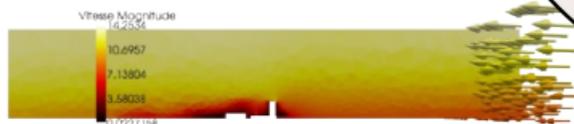
Thermal  
Model

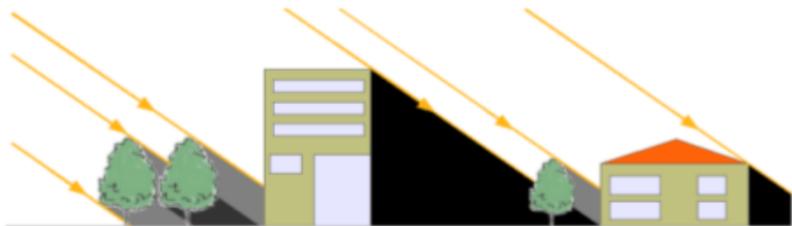


Aerulic  
Model

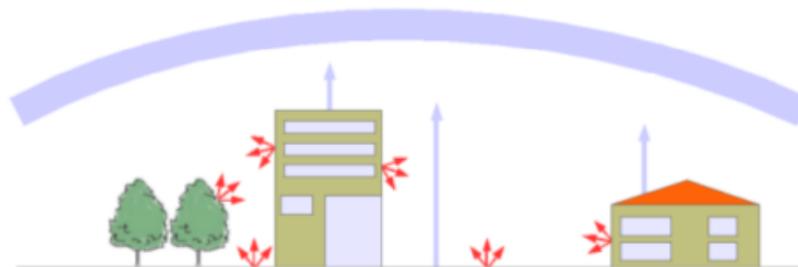
**Coupling**

**Code Saturne**

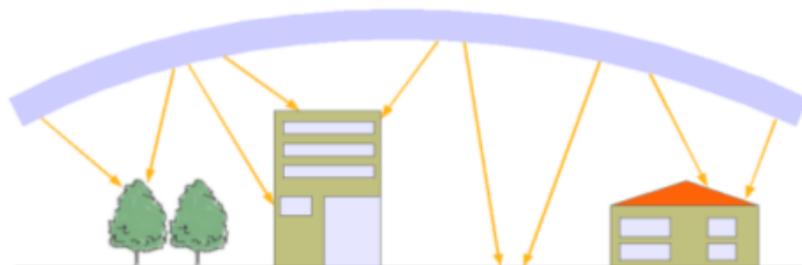




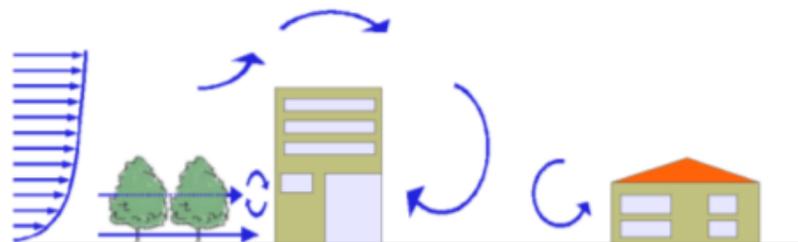
Ensoleillement direct, masques solaires



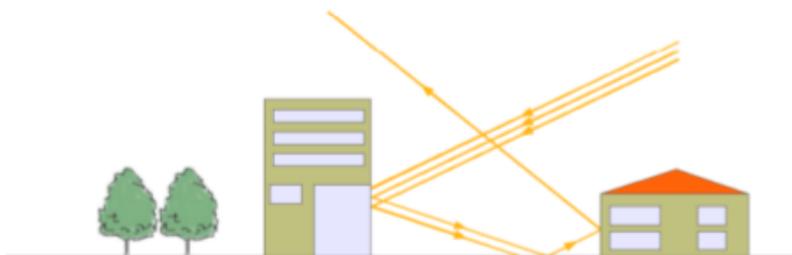
Echanges infrarouges



Ensoleillement diffus



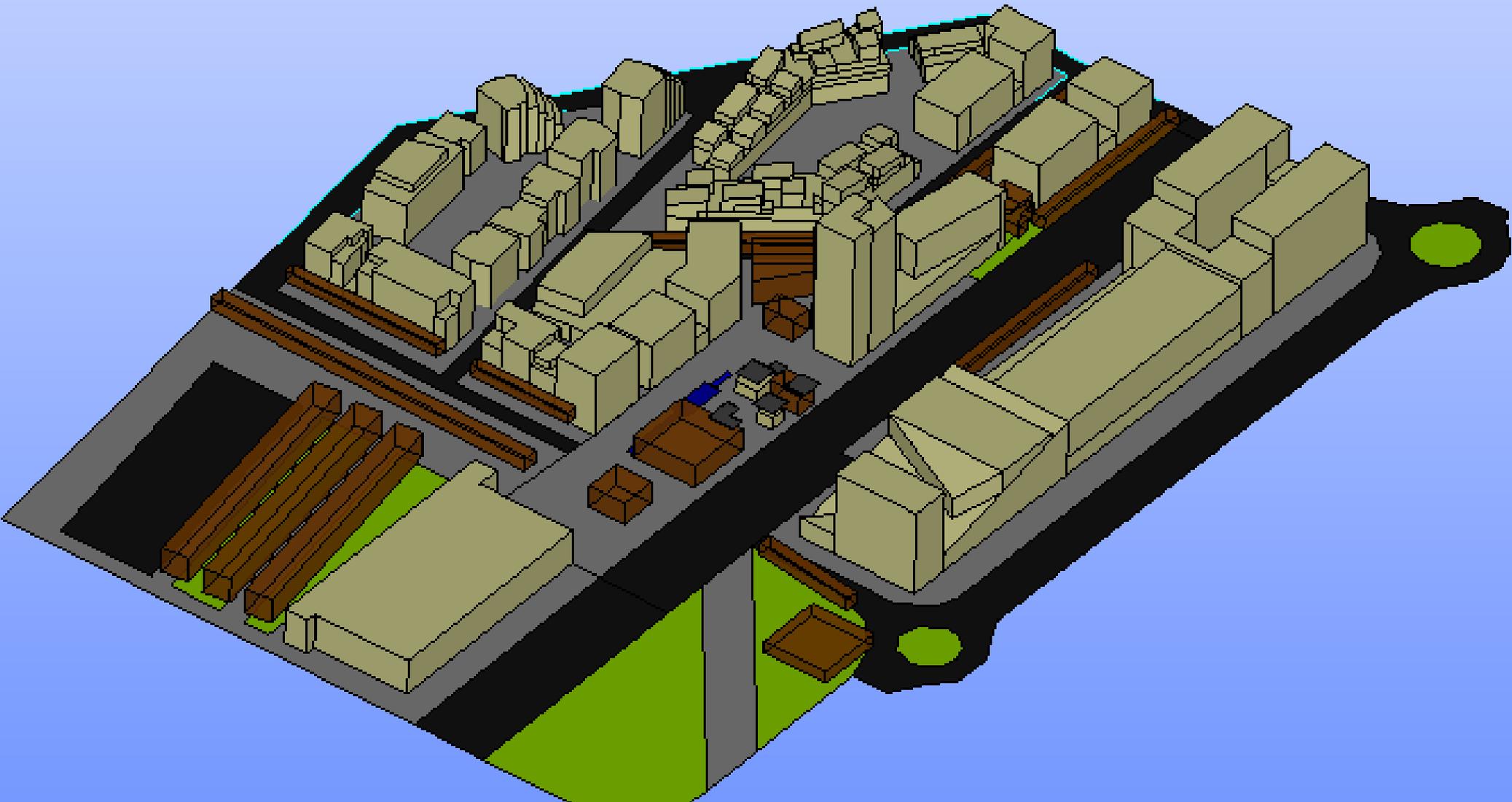
Phénomènes aérodynamiques, échanges convectifs, transport de chaleur



Inter-réflexions solaires, piégage radiatif



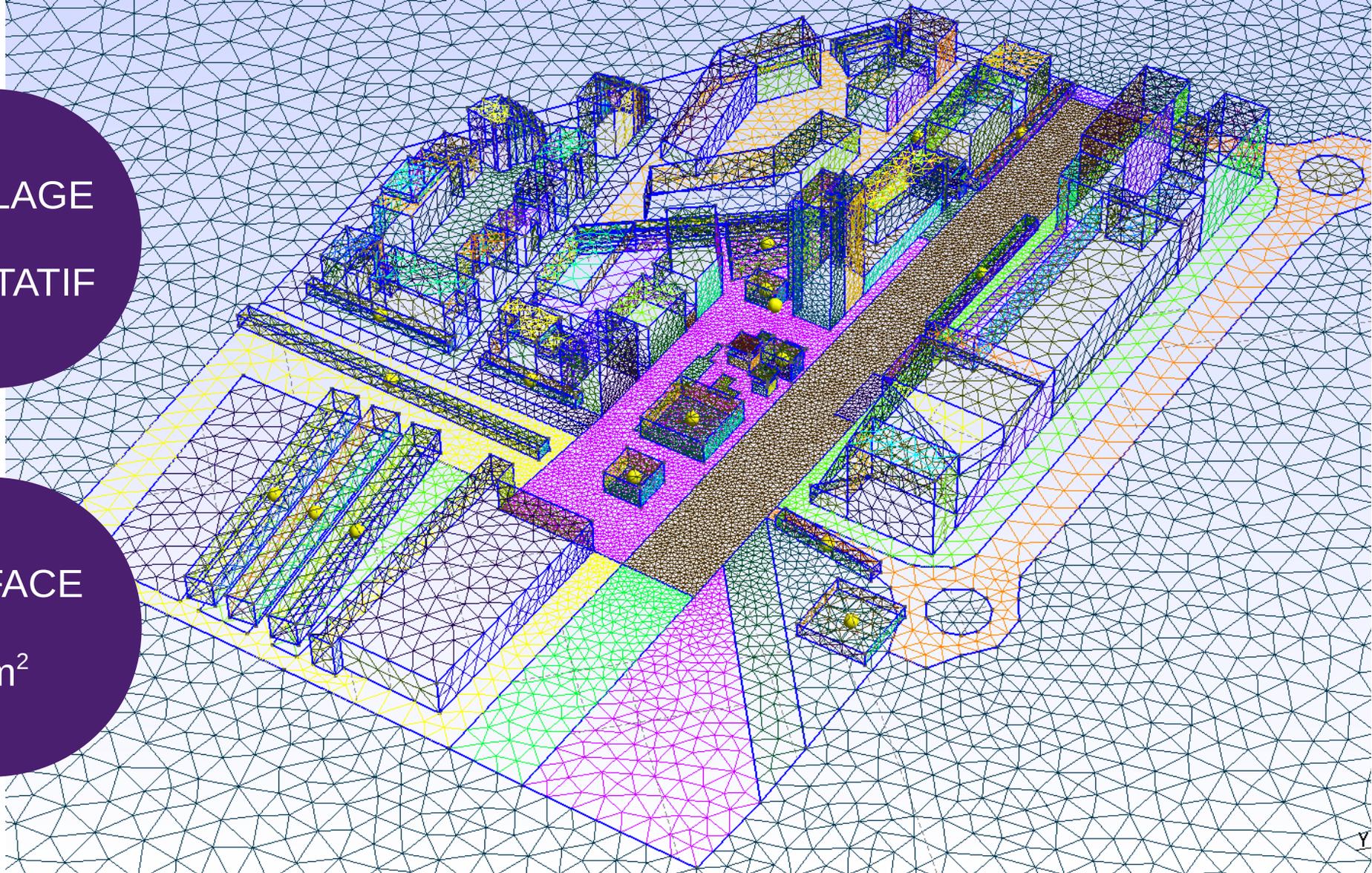
Phénomènes évaporatifs, transport d'humidité



MAILLAGE  
ADAPTATIF

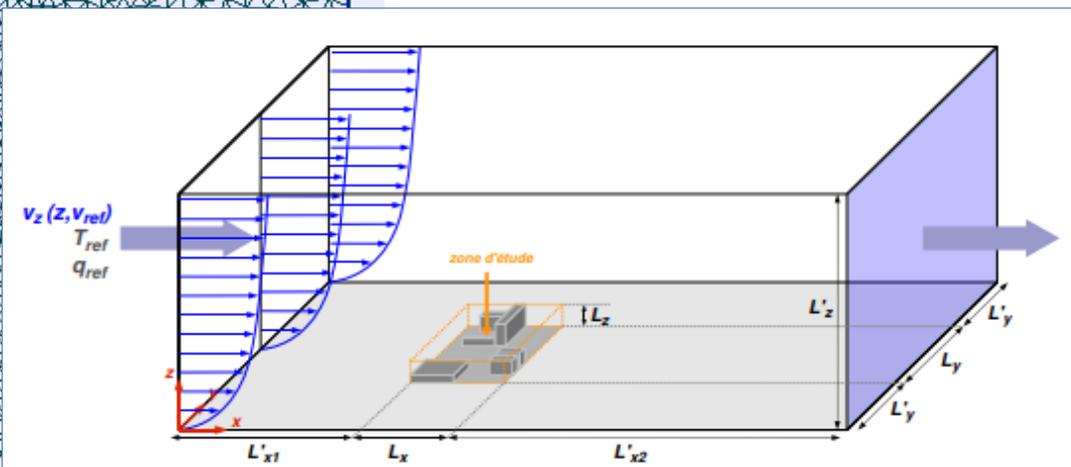
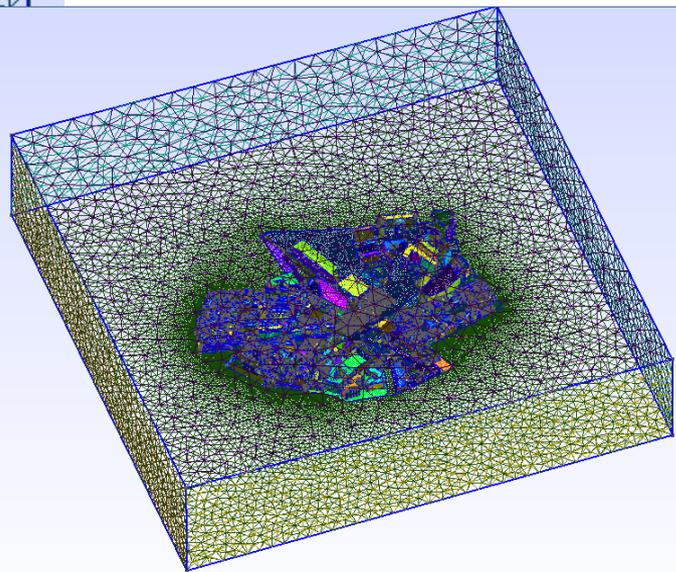
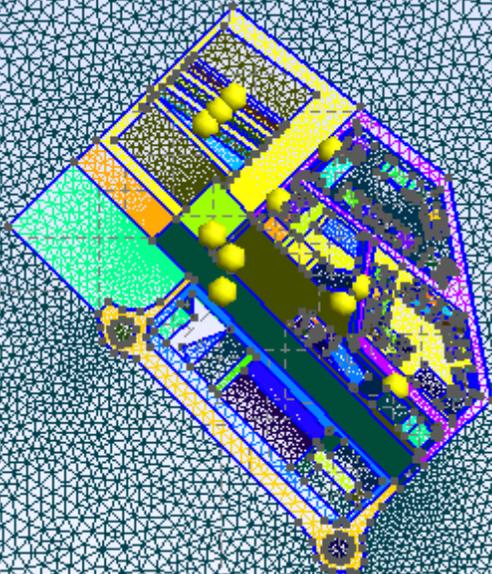
SURFACE

$1 \text{ m}^2$

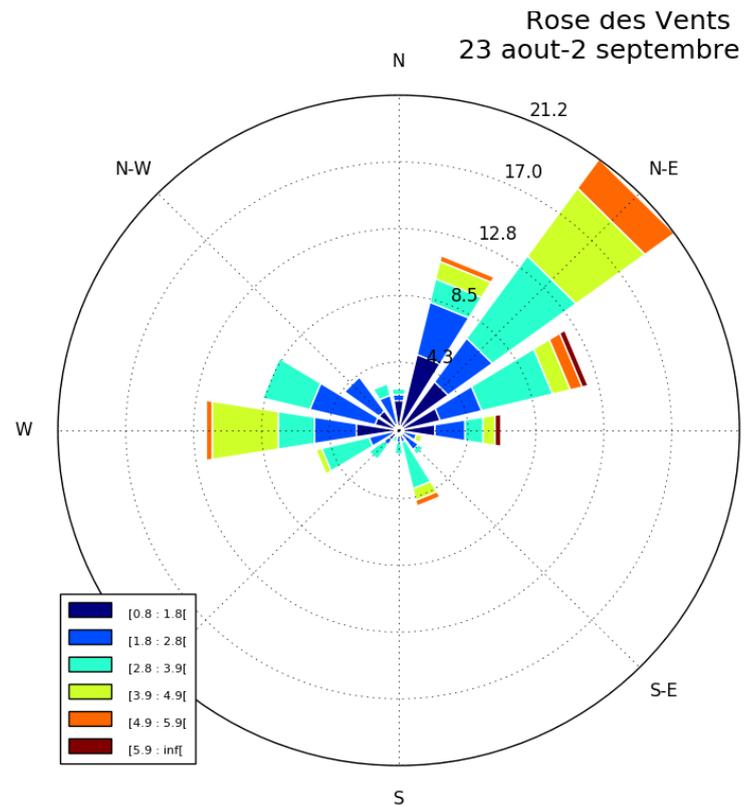
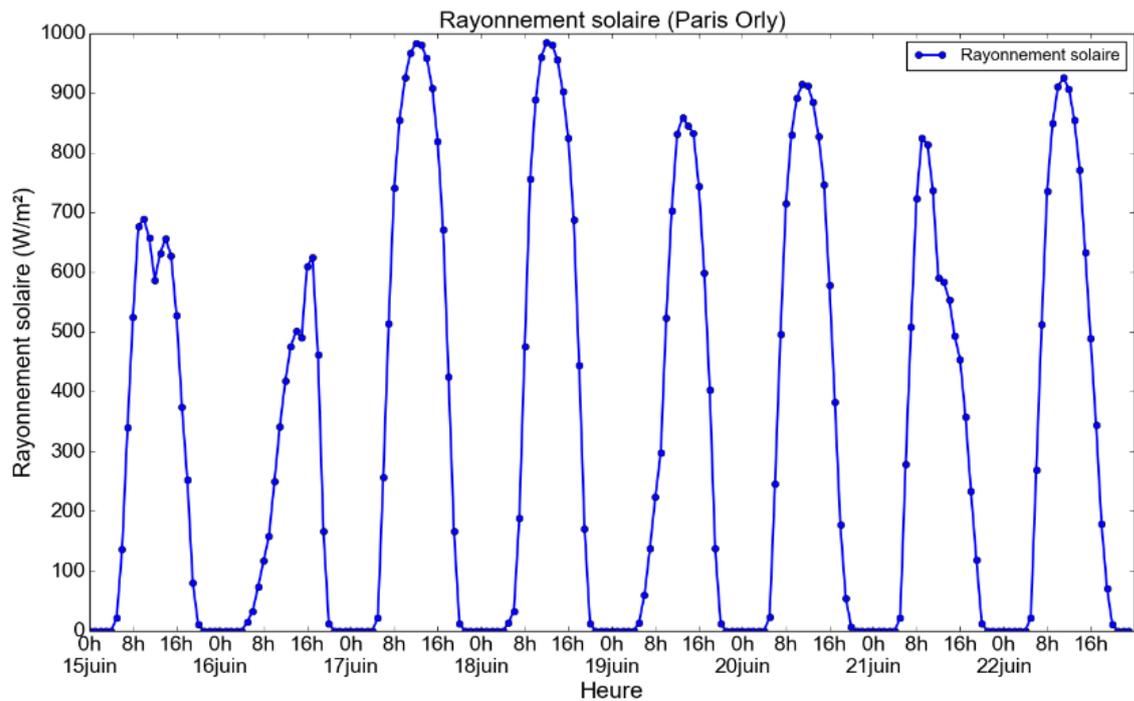


VEINE  
NUMÉRIQUE

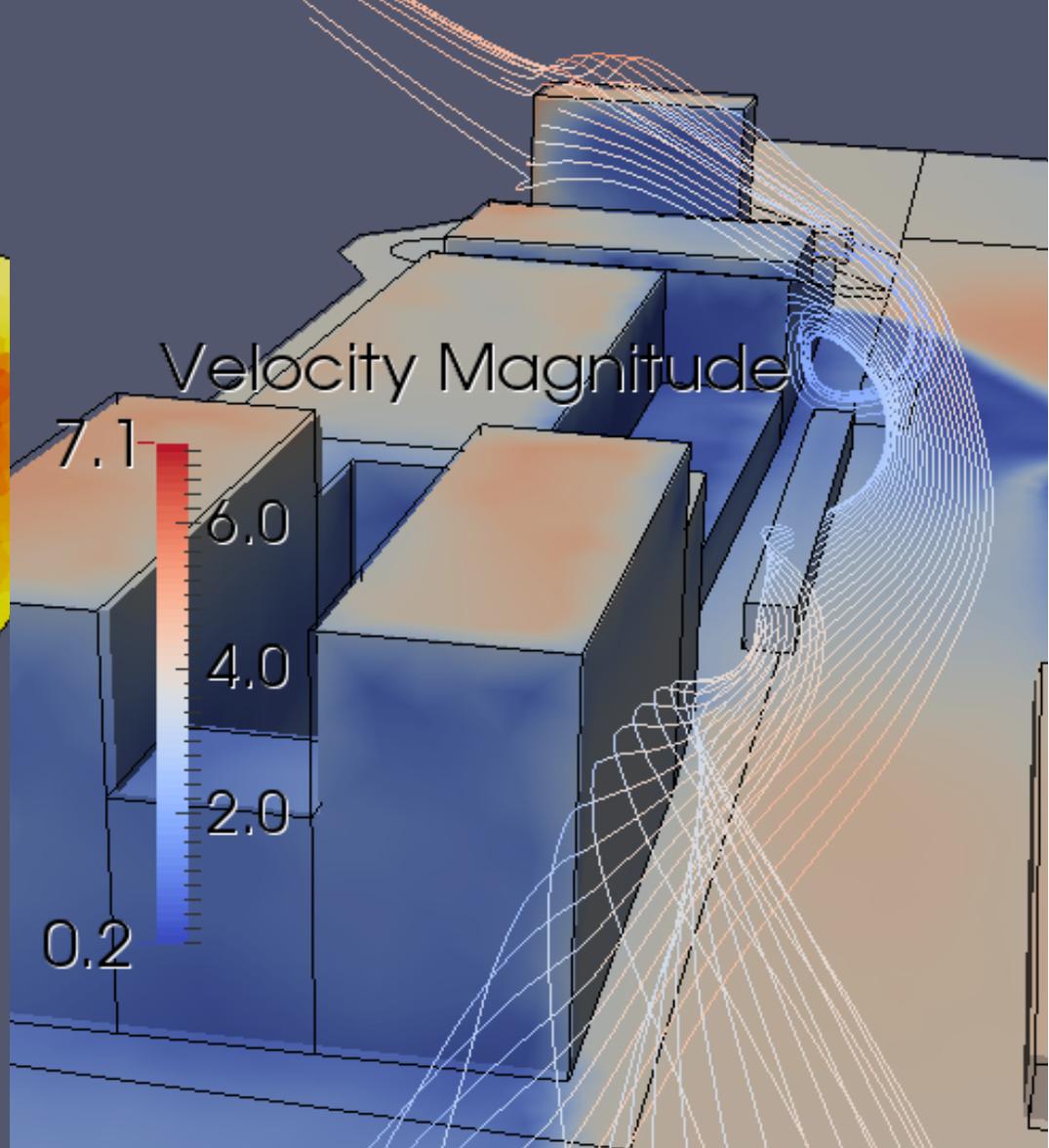
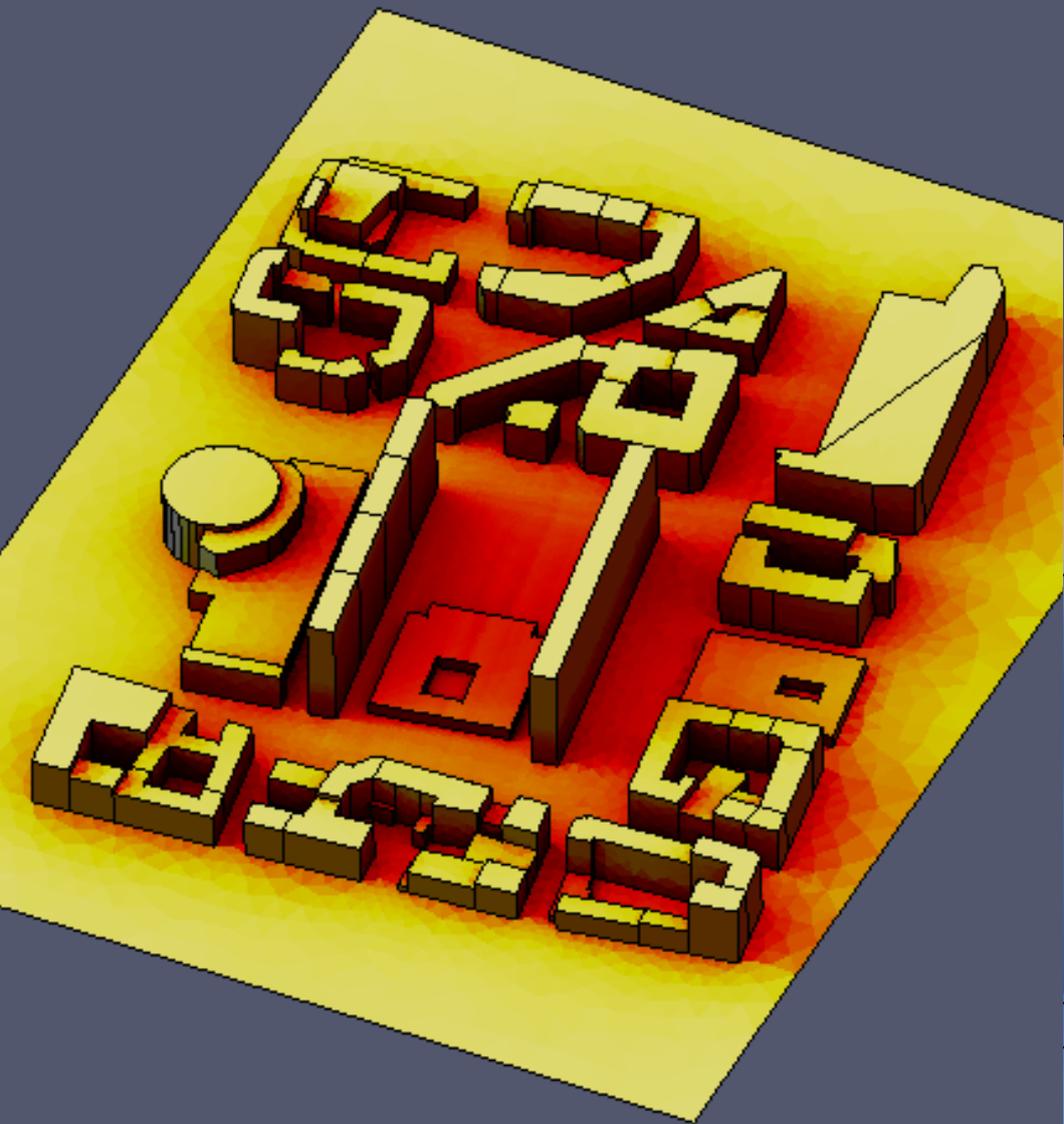
VITESSE ET  
DIRECTION  
DU VENT



# DONNEES D'ENTREE







ENSOLEILLEMENT

TEMPÉRATURE

HUMIDITÉ

VENT

CONFORT

Air Temperature

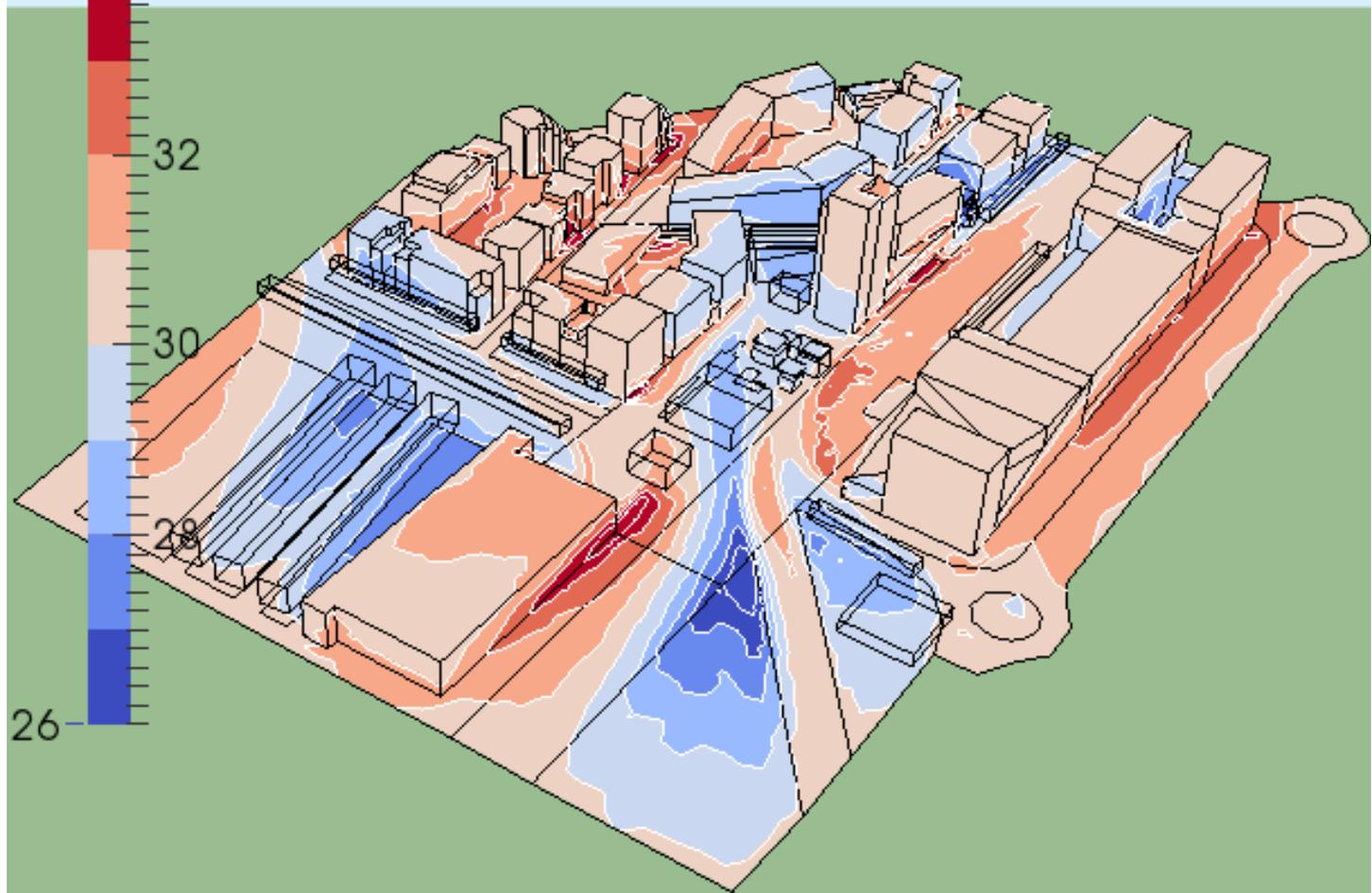
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32

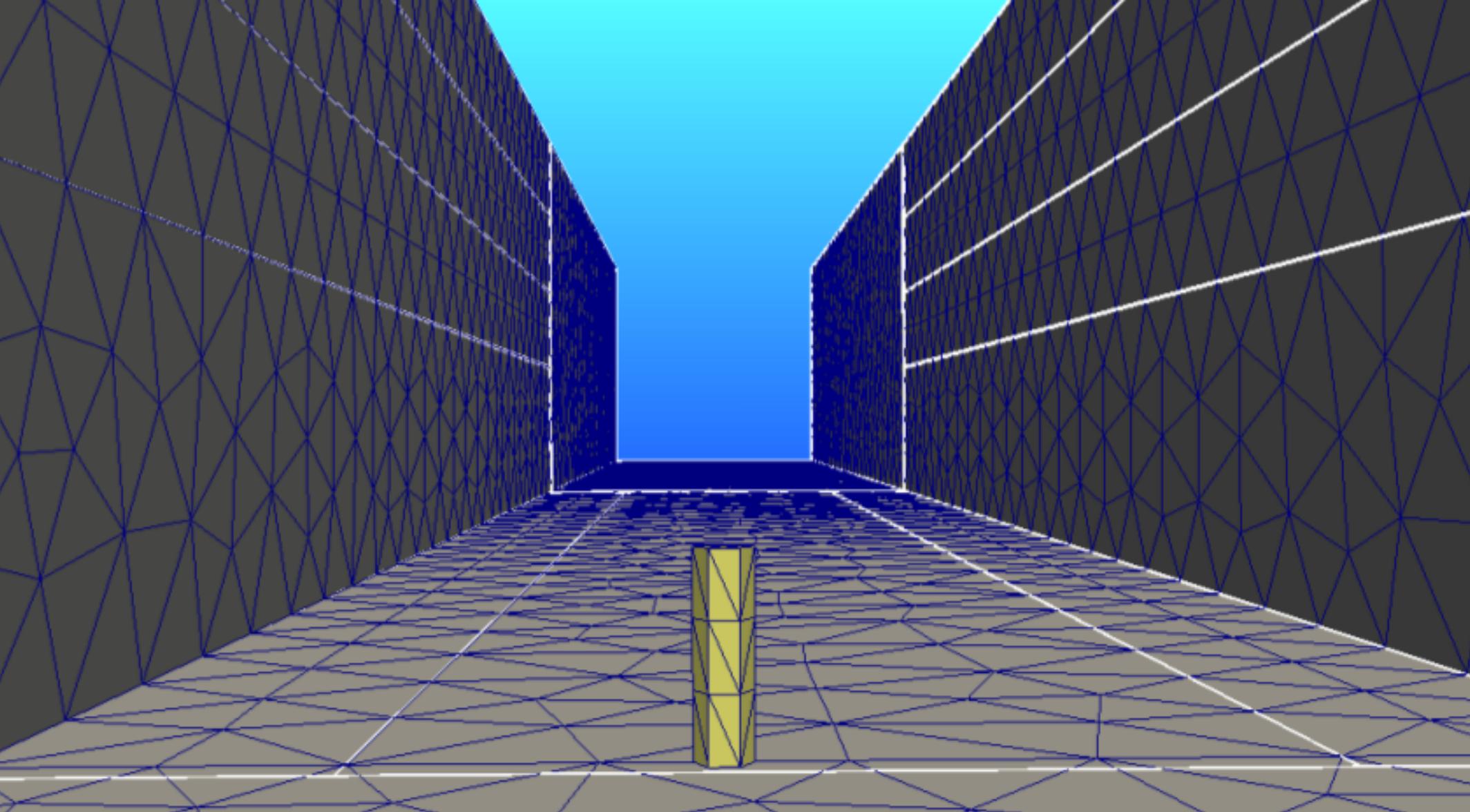
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28

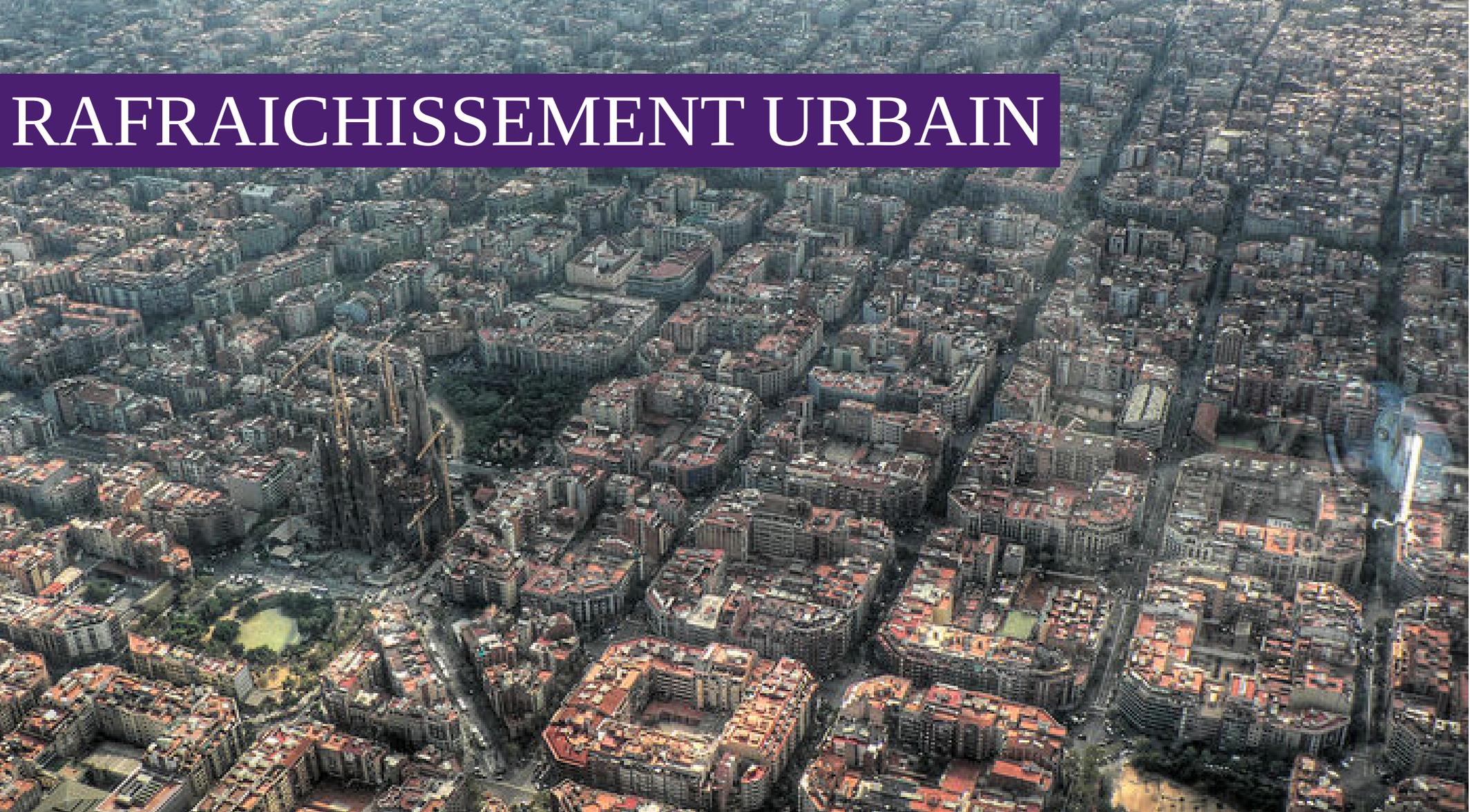
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# RAFRAICHISSEMENT URBAIN



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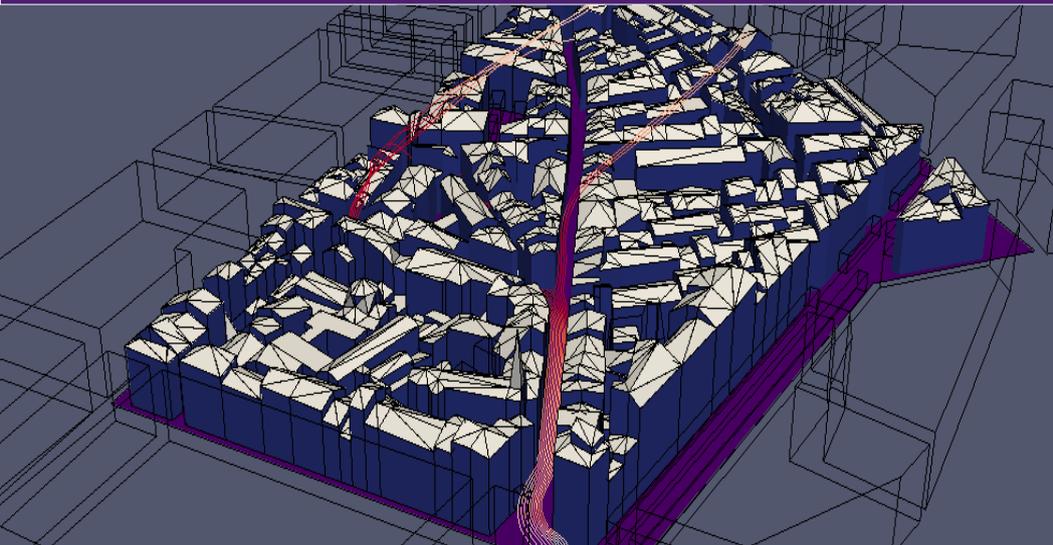
# RAFRAICHISSEMENT URBAIN



# APPLICATIONS :



## PLAN GUIDE CENTRE VILLE MARSEILLE



## GROUPE SCOLAIRE IVRY LEVASSOR





**Opération bioclimatique pilote**  
**Démarche éco-innovante d'économie circulaire**

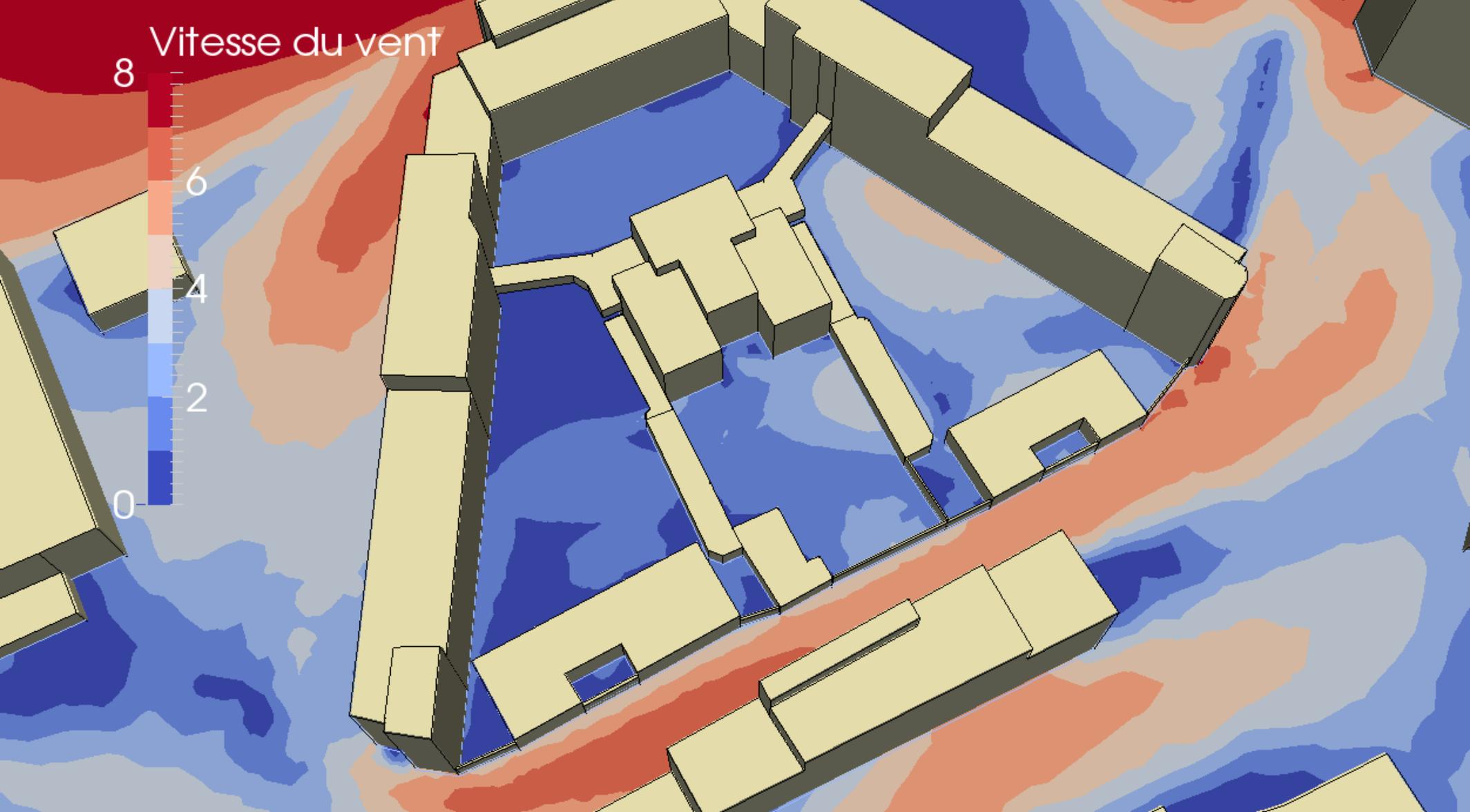
1 bâtiment : 160m<sup>2</sup>  
2 bibliothèques – 1 salle de classe  
1 cours Oasis – 1 jardin pédagogique

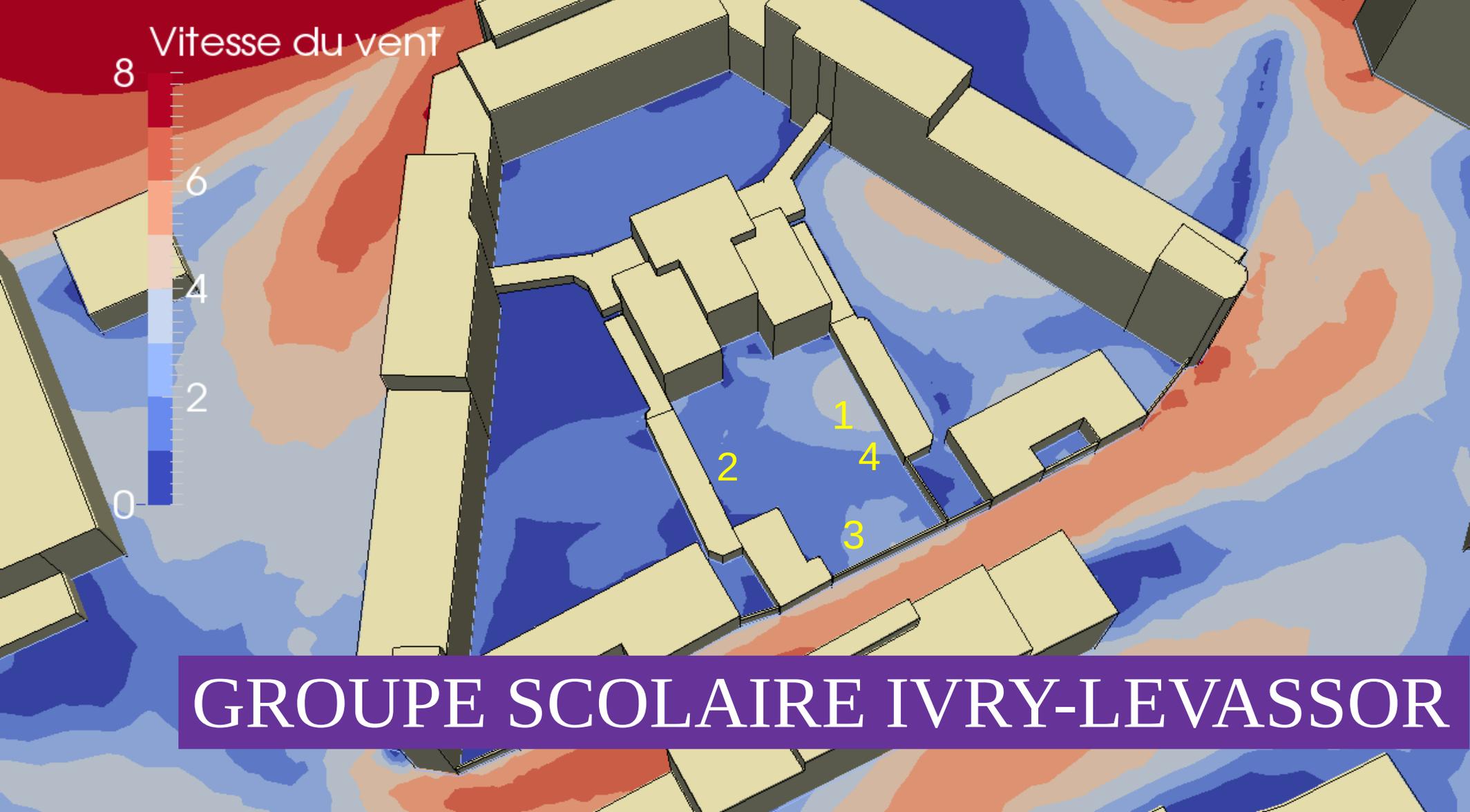
**Eco-conception**  
**bioclimatique**

Faible Impact environnemental  
Batiment Econome en énergie

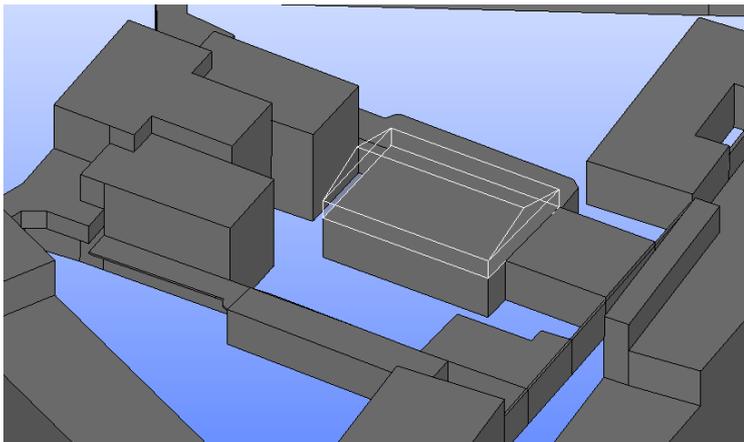
**Impact socio-économique**

Matériaux bois, naturels ou biosourcés  
issus du réemploi et / ou en circuit court.  
Recours à des entreprises d'insertion.

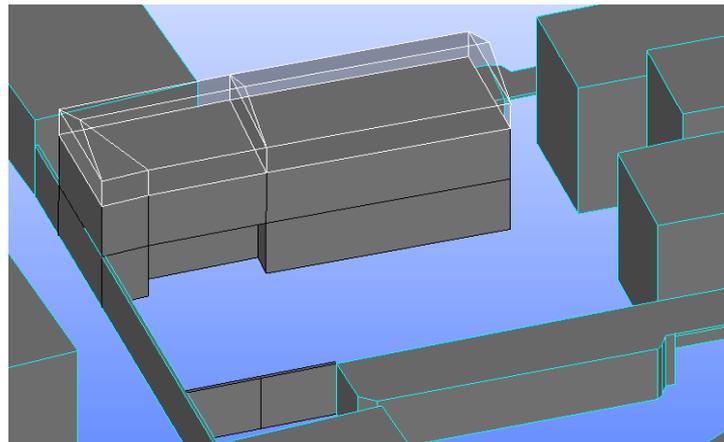




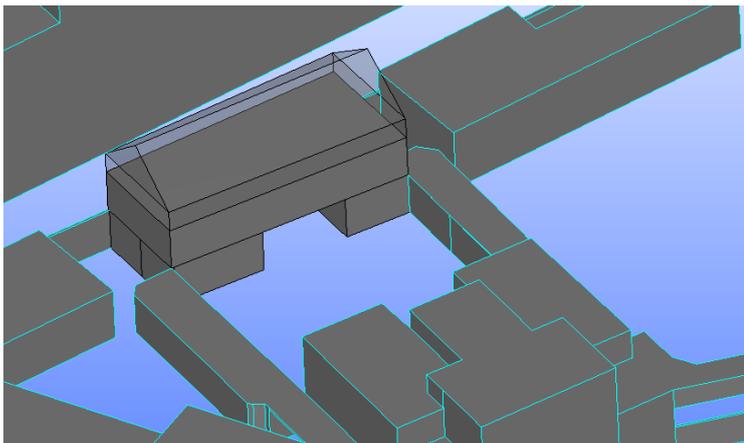
Batiment 1



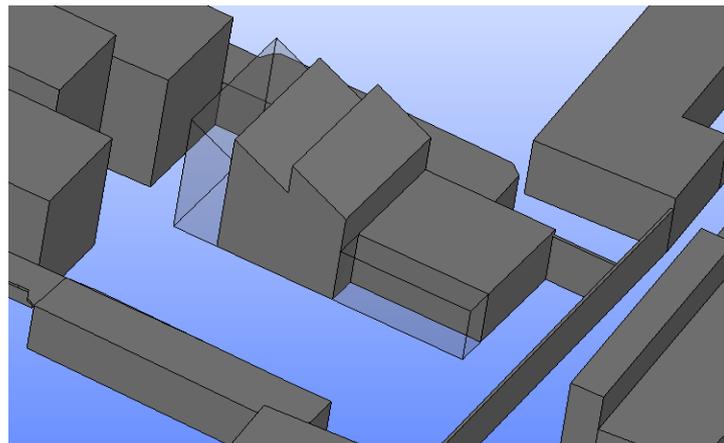
Batiment 2

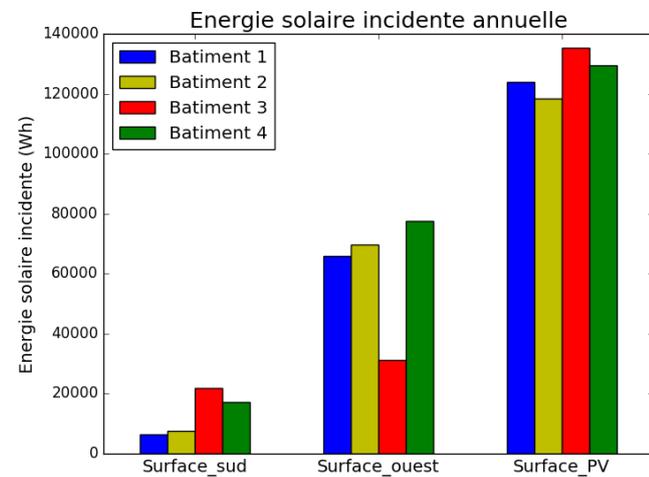
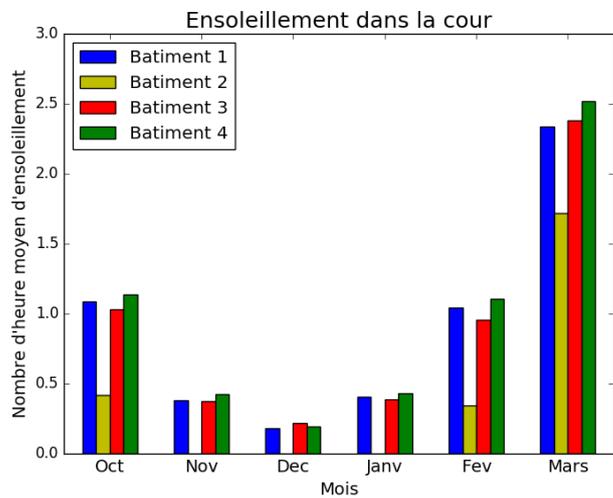
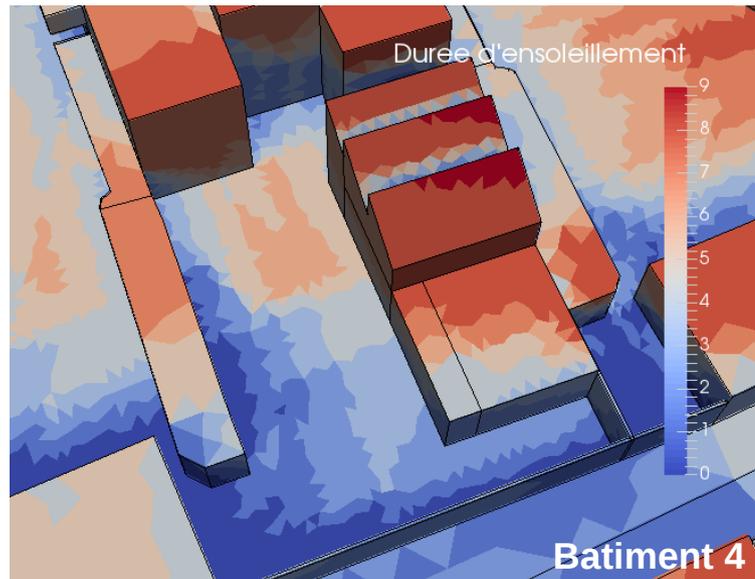
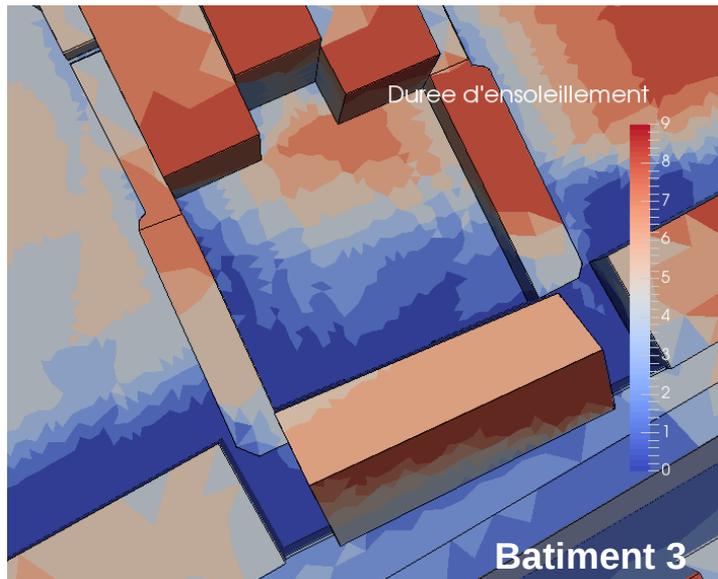


Batiment 3



Batiment 4







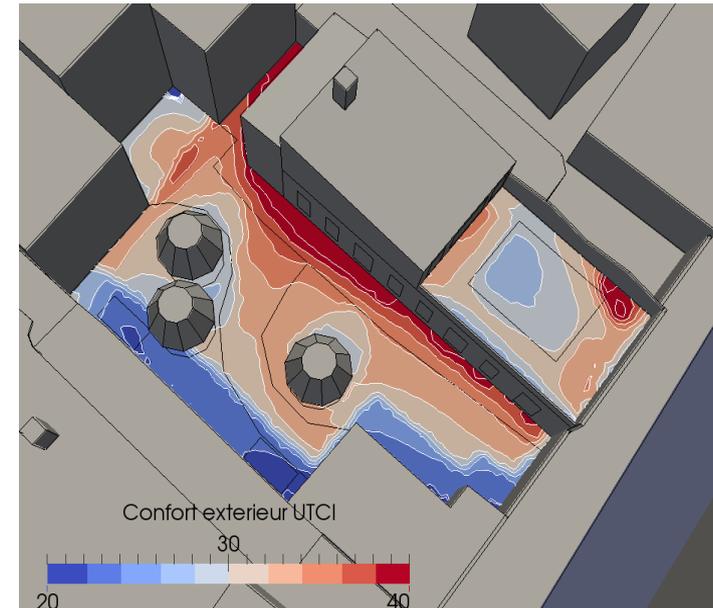
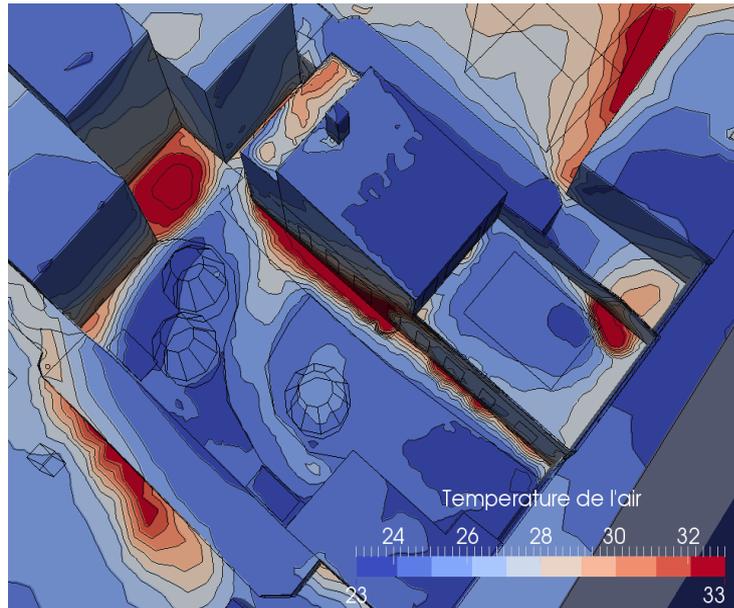


Temperature de l'air

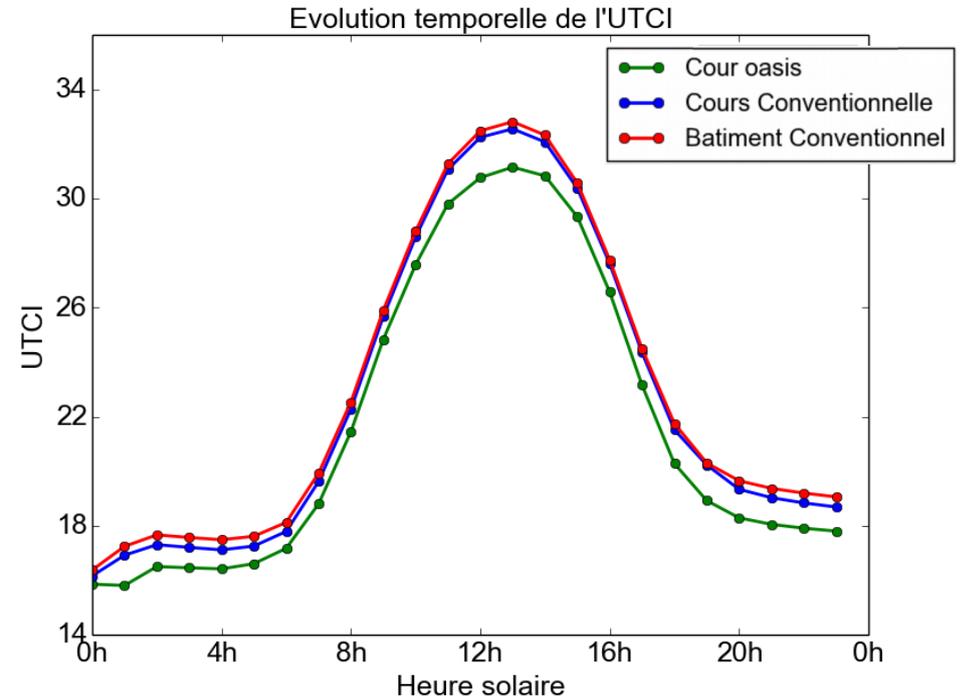
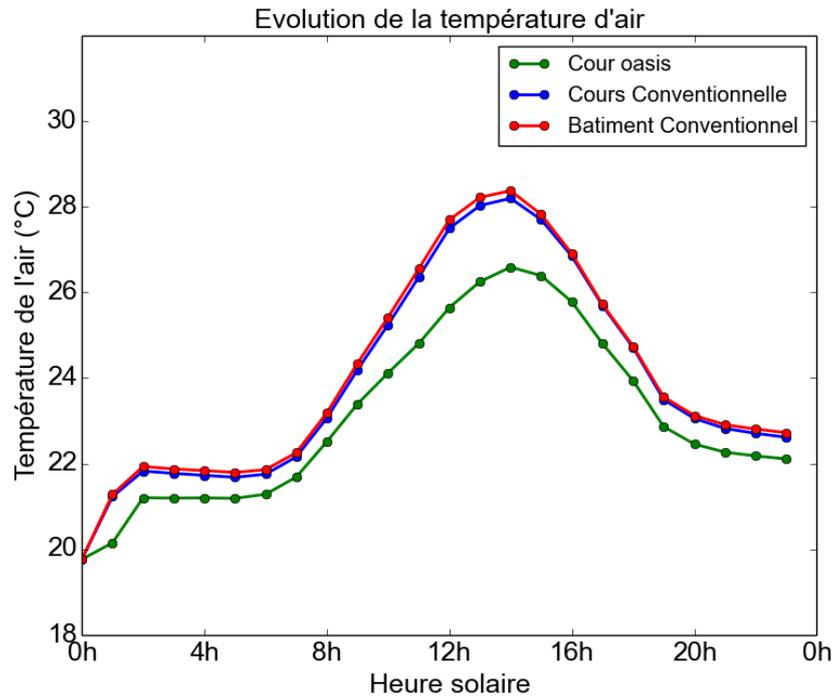


Heure : 13 h

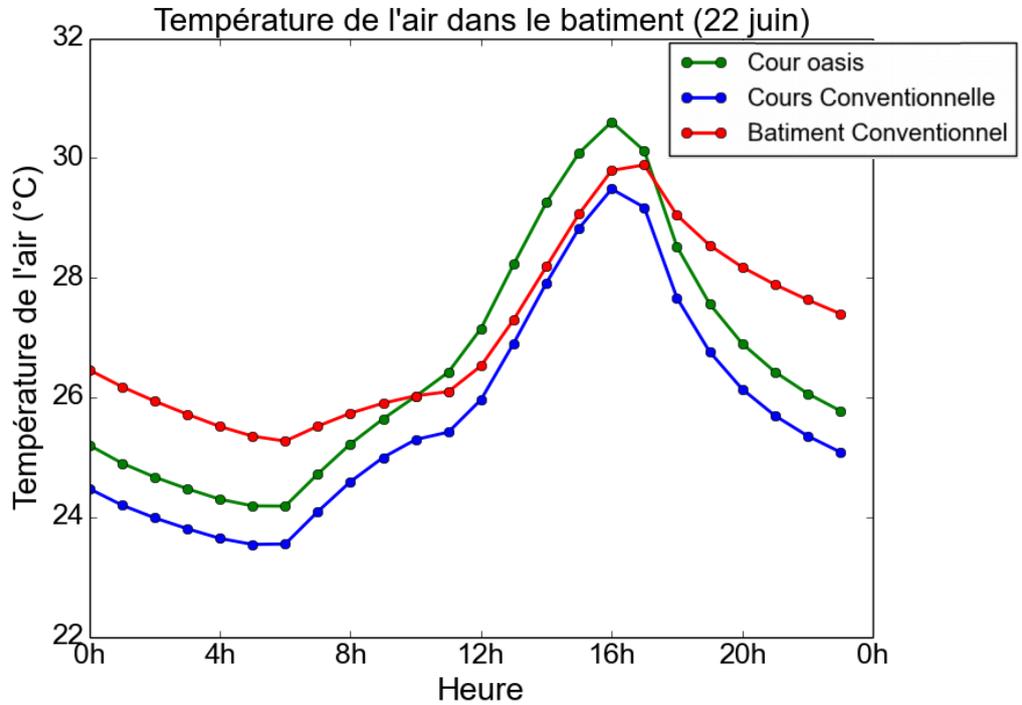
	Cour	Batiment
Simulation 1	Oasis	Bois
Simulation 2	Conventionnelle	Bois
Simulation 3	Conventionnelle	Conventionnel



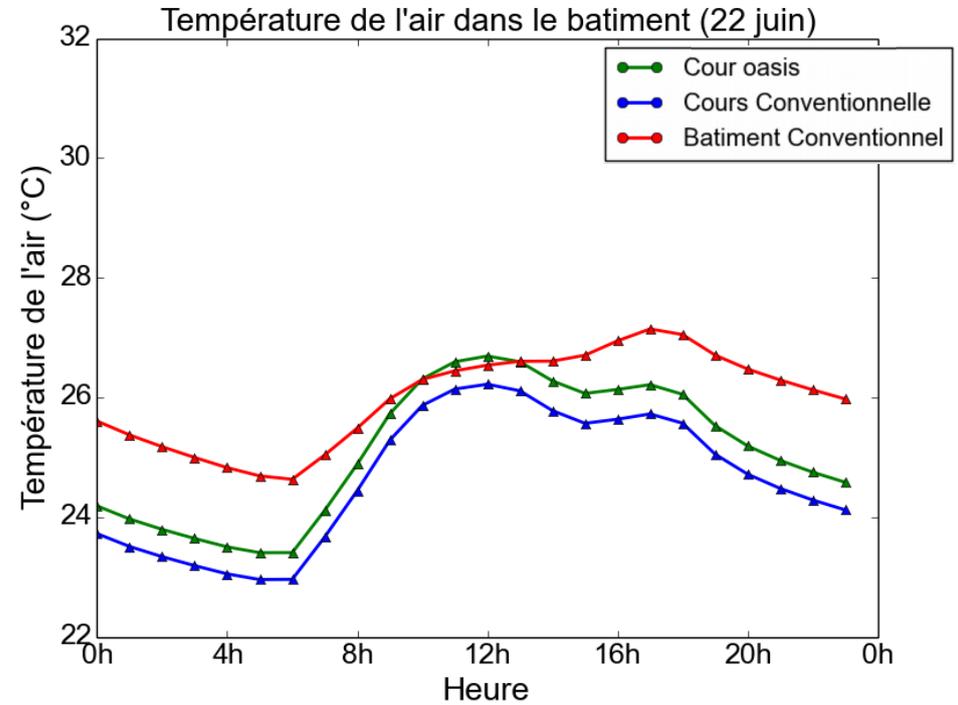
# DANS LA COUR...



# DANS LE BATIMENT...

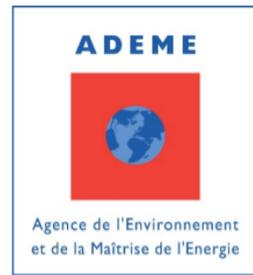


Rez de Chaussée



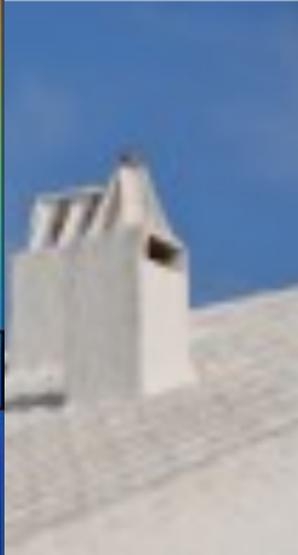
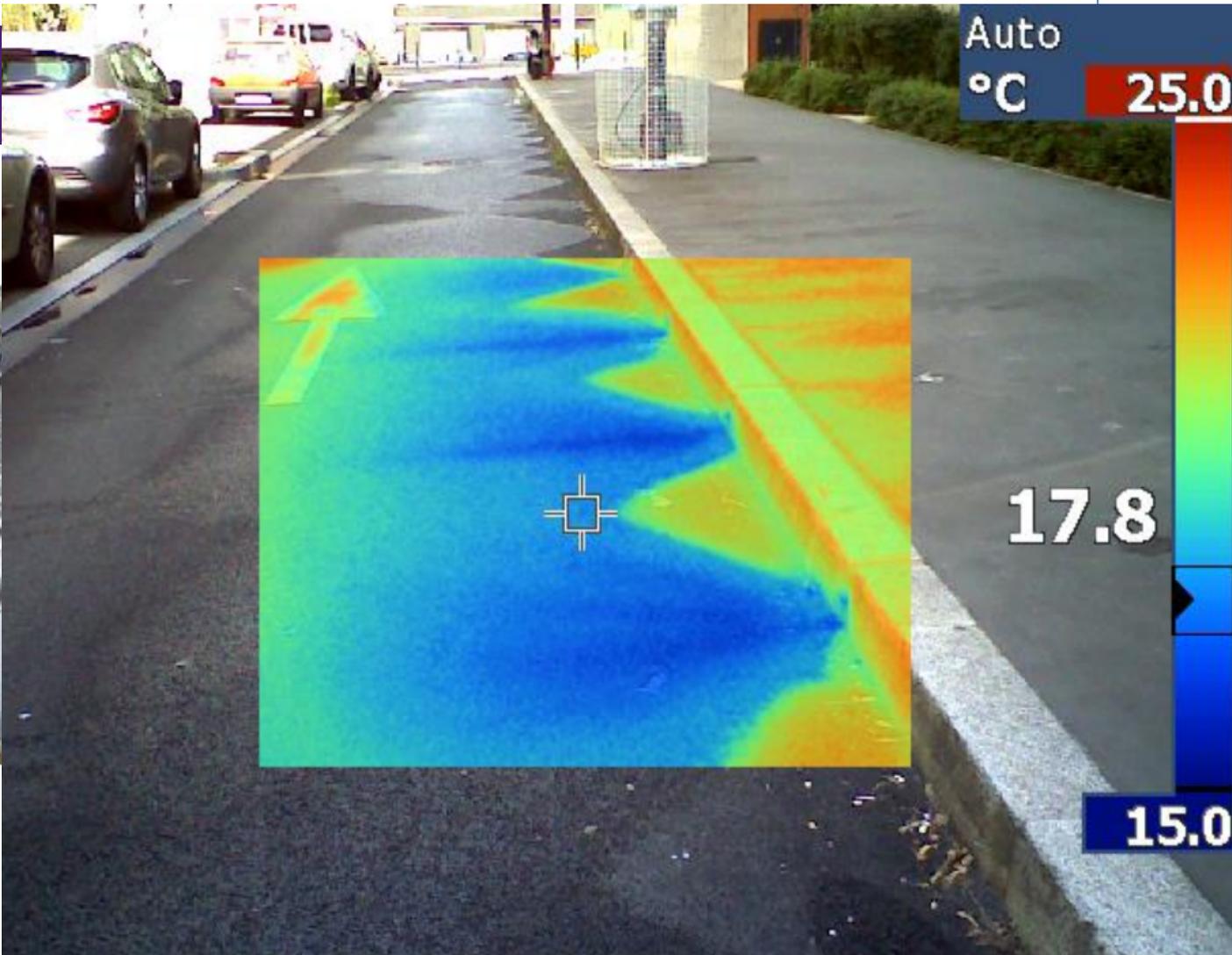
1<sup>er</sup> étage

# PROJET RECHERCHE EVA



EAU – VÉGÉTAL – ALBÉDO

# PROJET



### Scénarios Monodispositifs

Eau

Végétation

Albédo

### Scénario optimisé

Eau + Végétation + Albédo

### Scénarios Soustractifs

Optimisé

-

Eau

Optimisé

-

Végétation

Optimisé

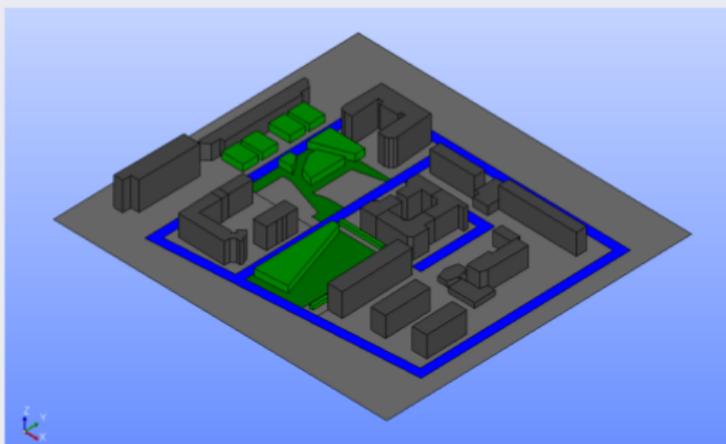
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Albédo

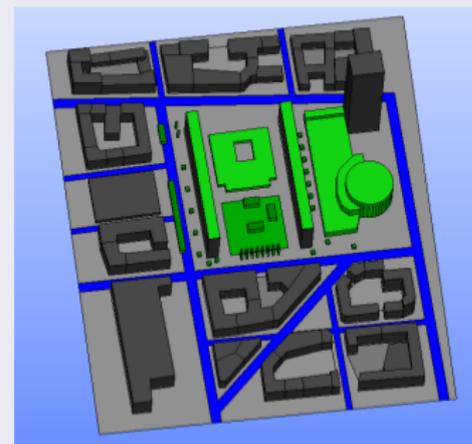
### Buire District



### Francfort Square District



### Moncey District



## Scénarios Monodispositifs

Eau

Végétation

Albédo

## Scénario optimisé

Eau + Végétation + Albédo

## Scénarios Soustractifs

Optimisé

-

Eau

Optimisé

-

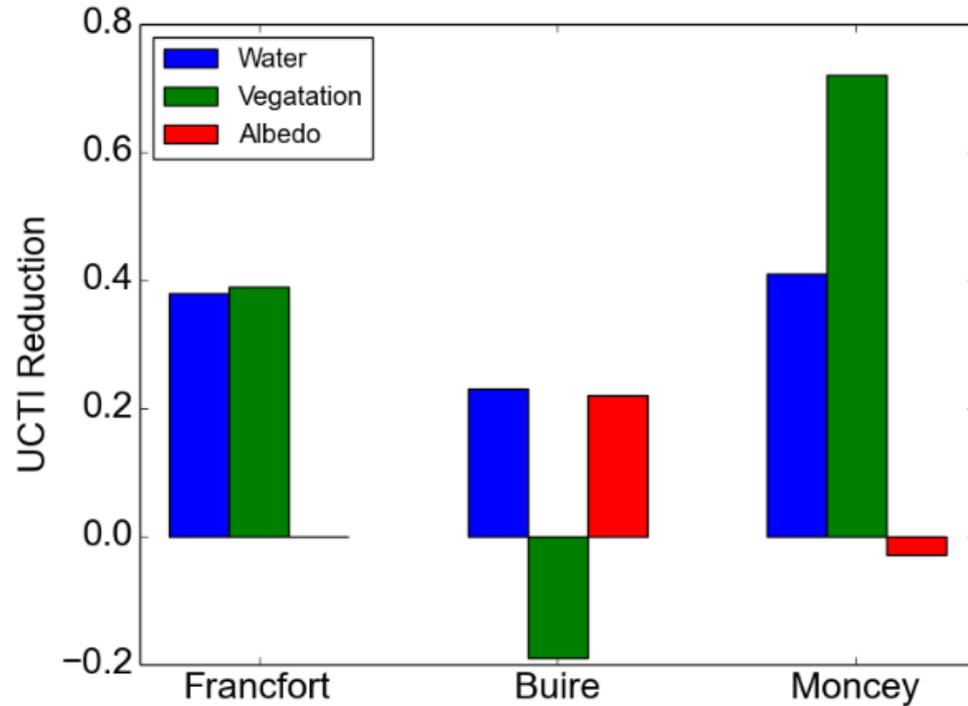
Végétation

Optimisé

-

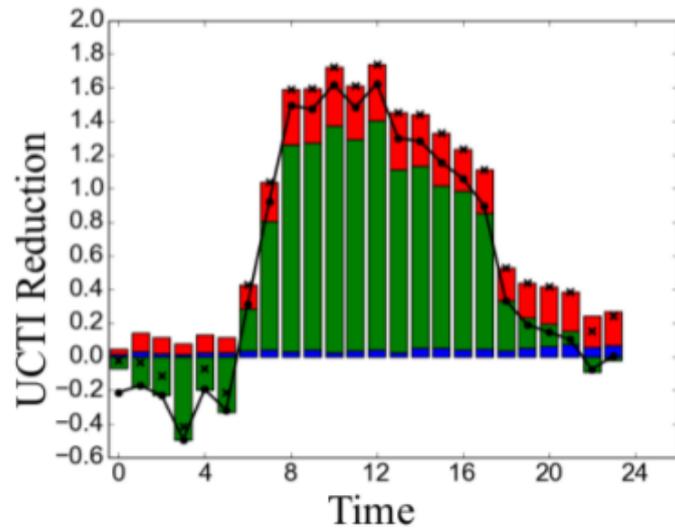
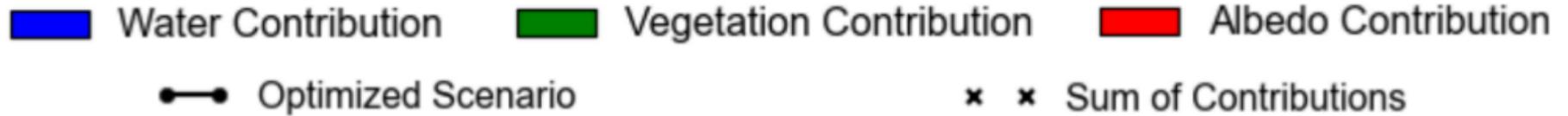
Albédo

# SCÉNARIOS MONO-DISPOSITIFS

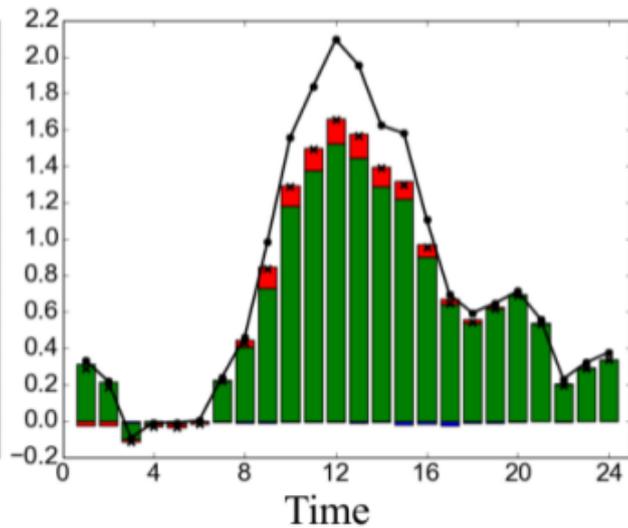


Amélioration du confort thermique

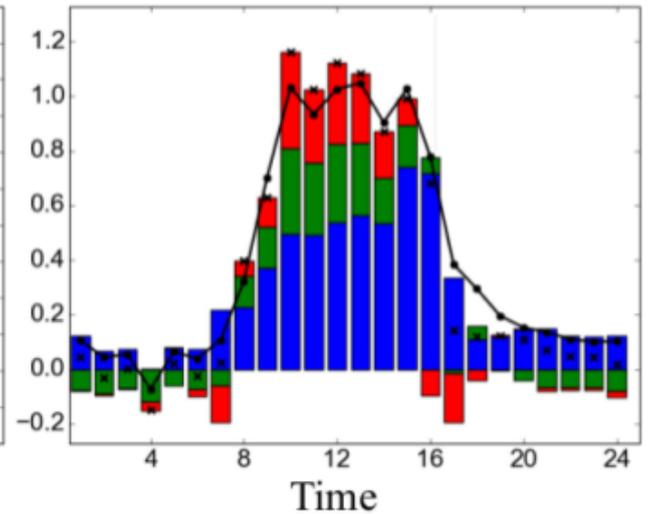
# SCÉNARIOS SOUSTRACTIFS



Francfort place



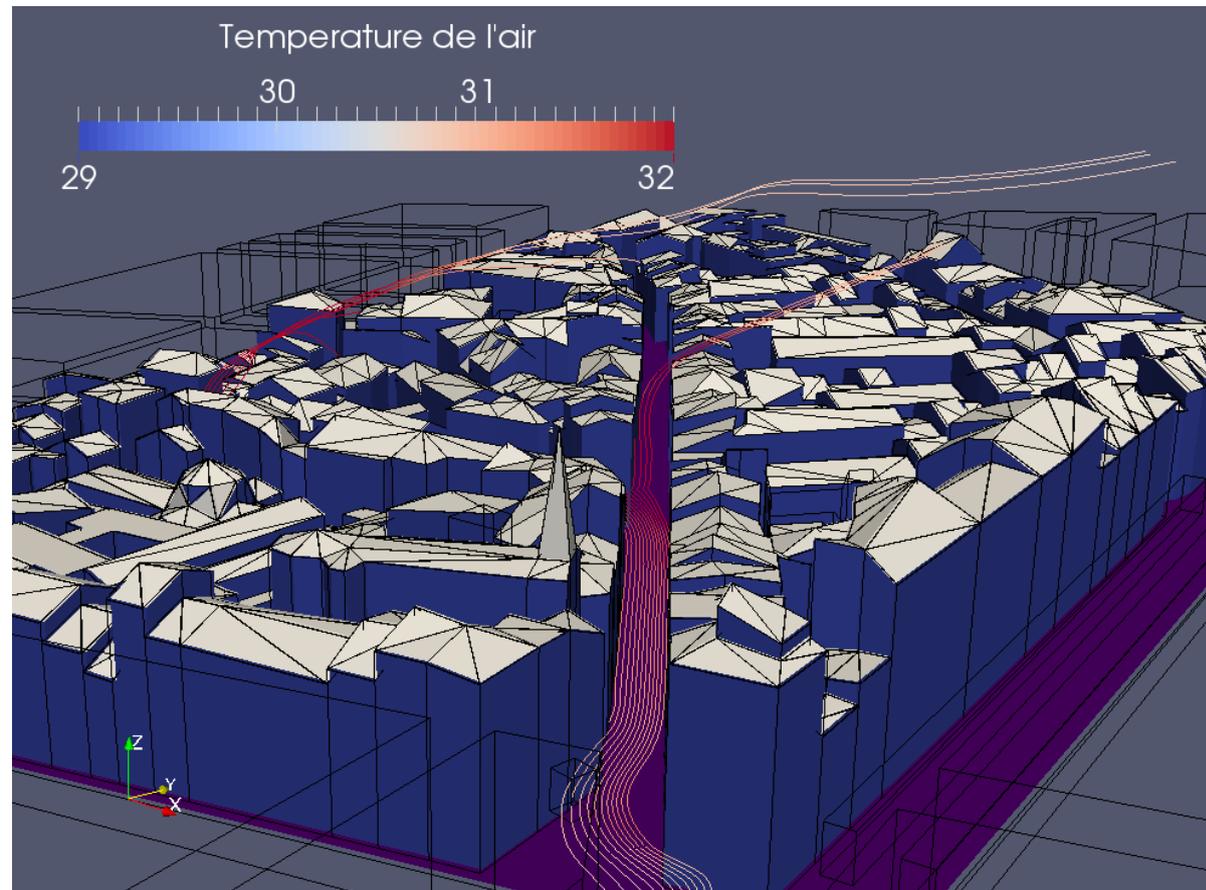
Moncey district



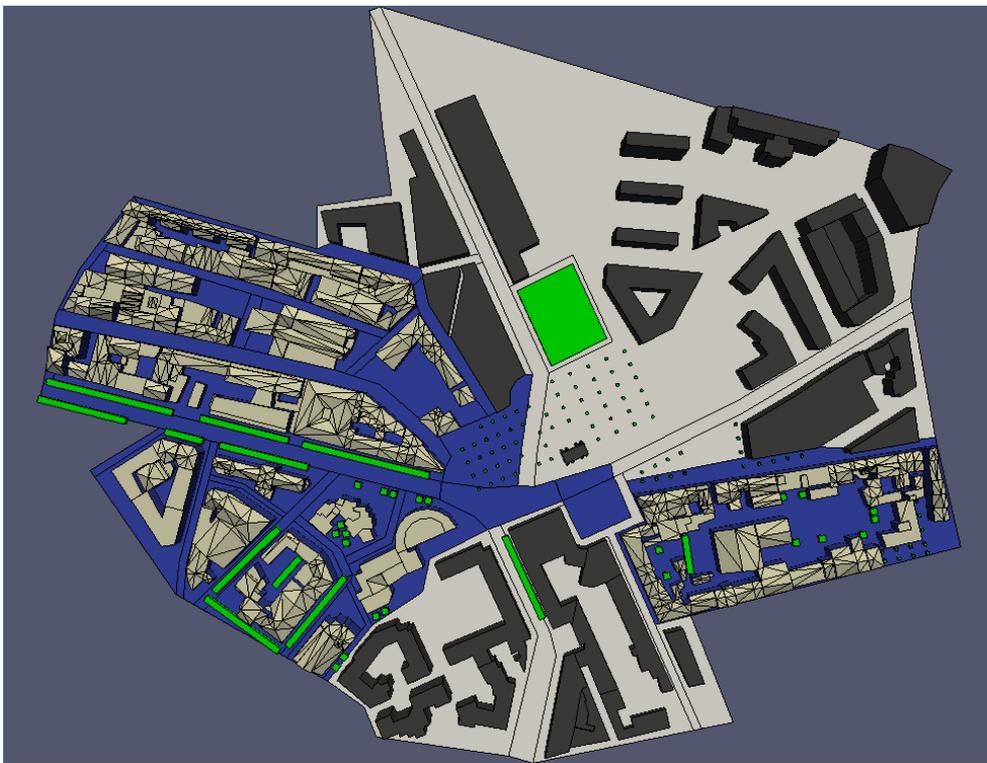
Buire street

Amélioration du confort thermique

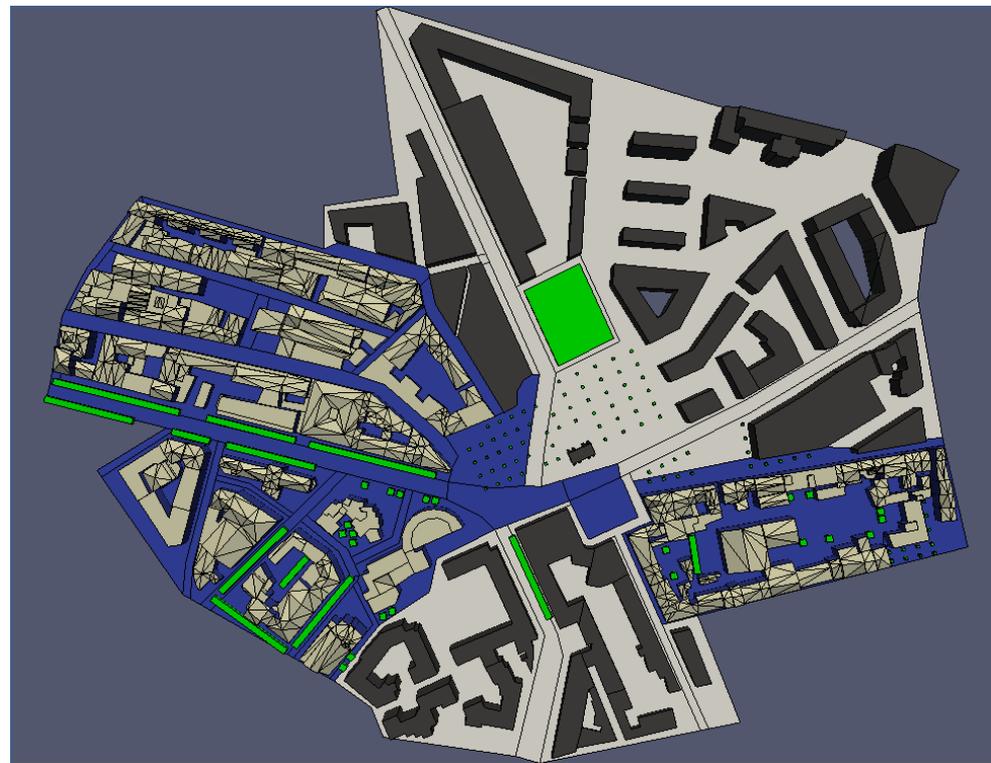
# CENTRE VILLE MARSEILLE



# CENTRE VILLE MARSEILLE

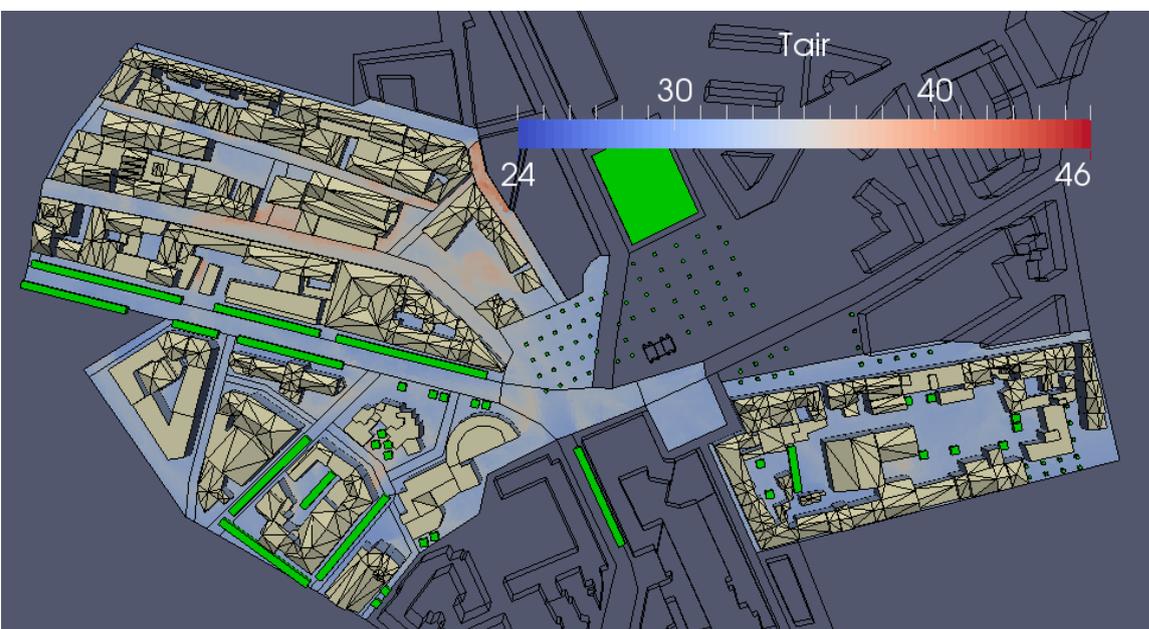


2017



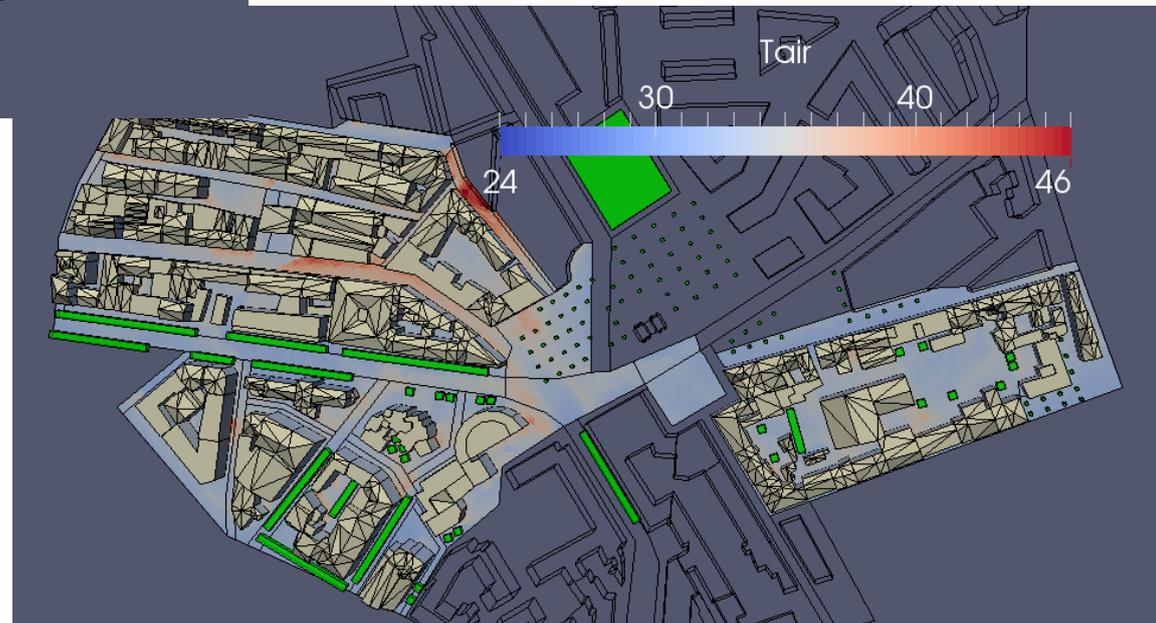
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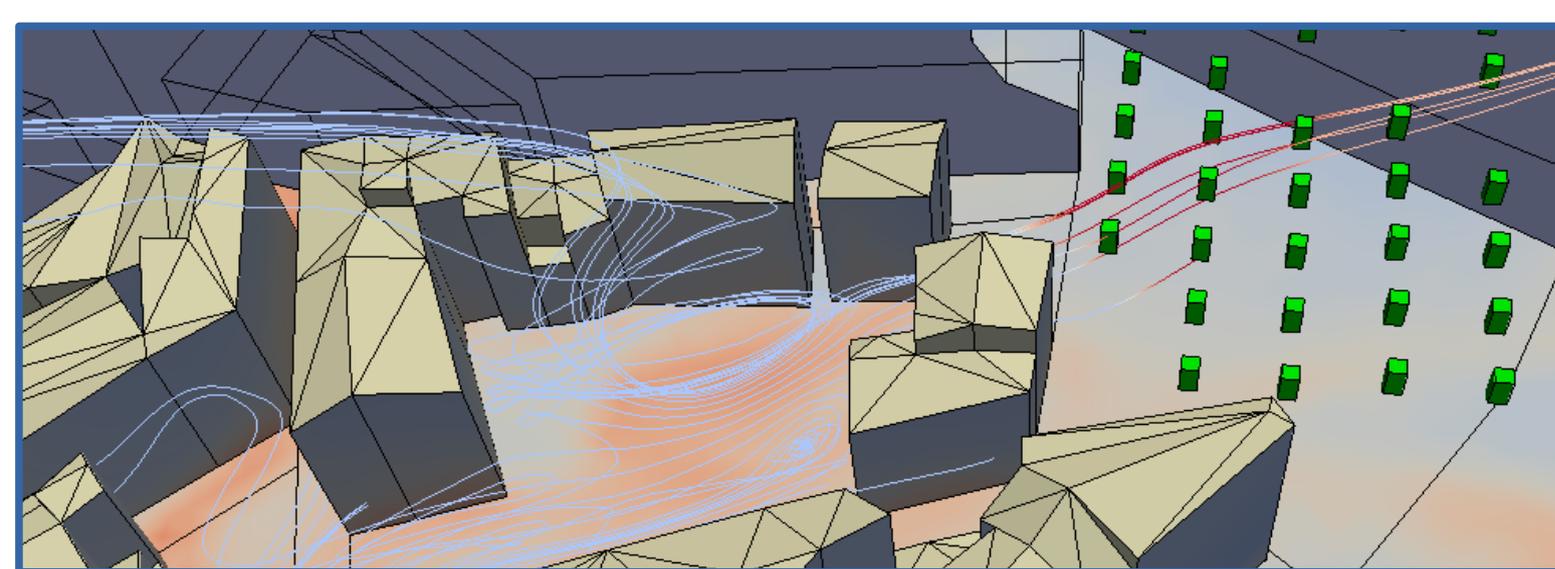
21 juin à 14h



2017

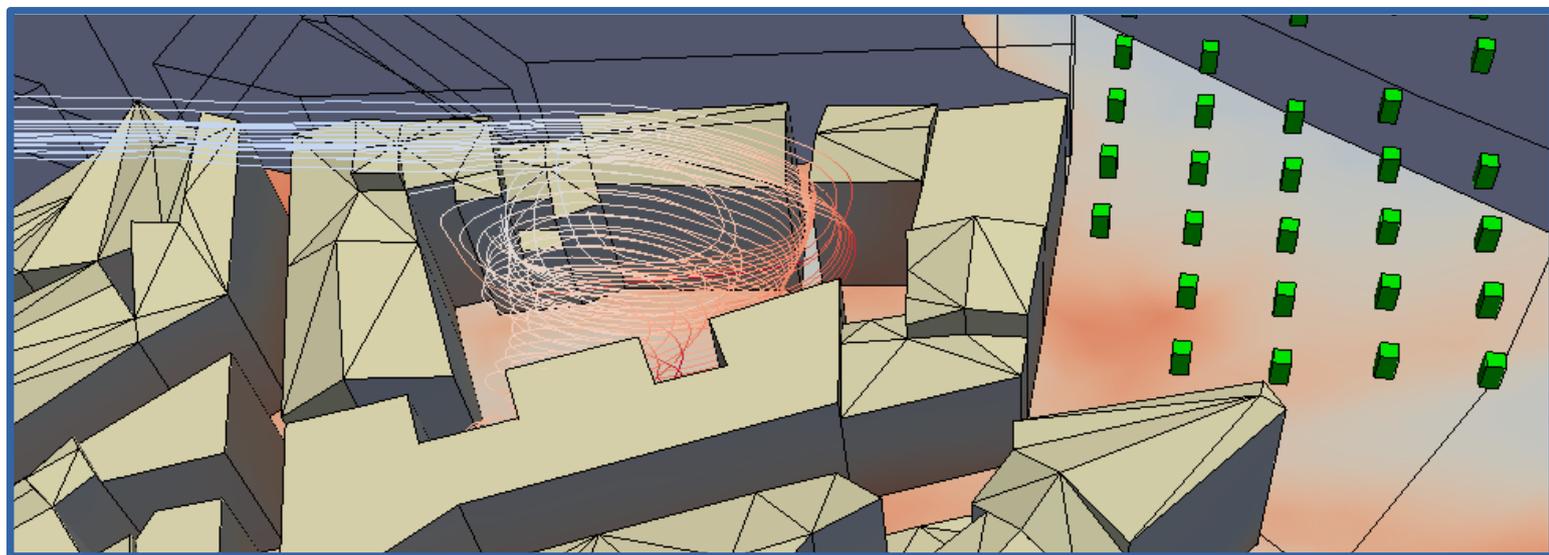
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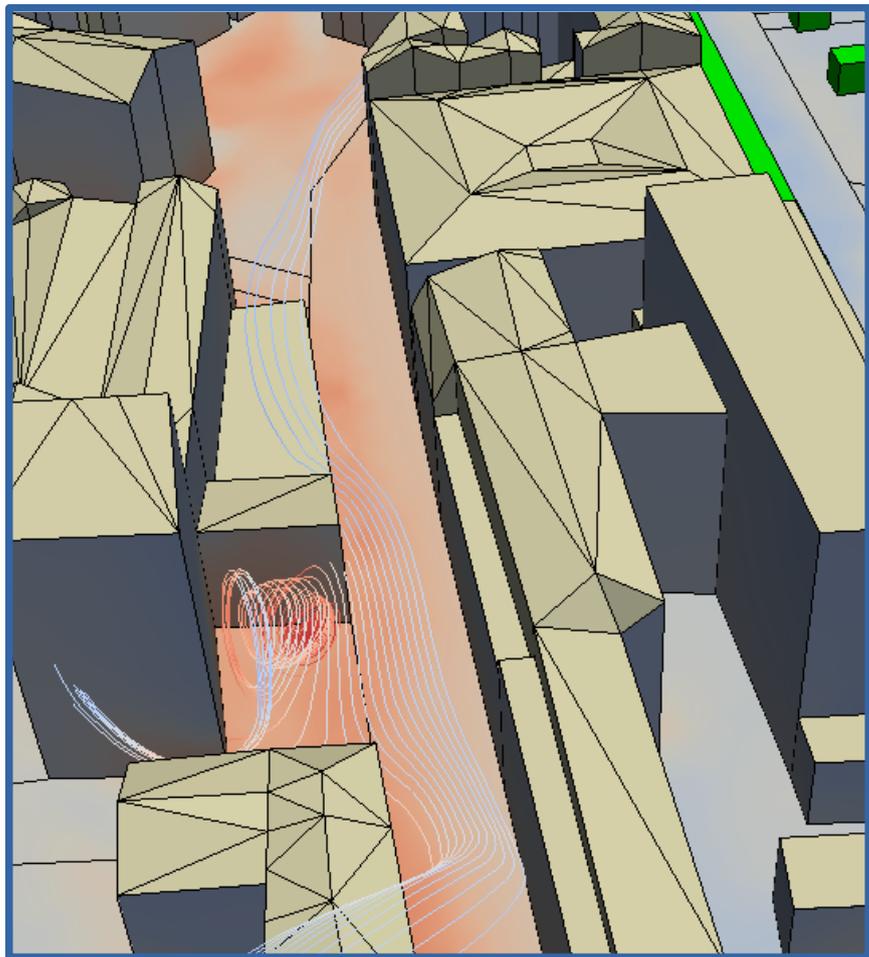




2017

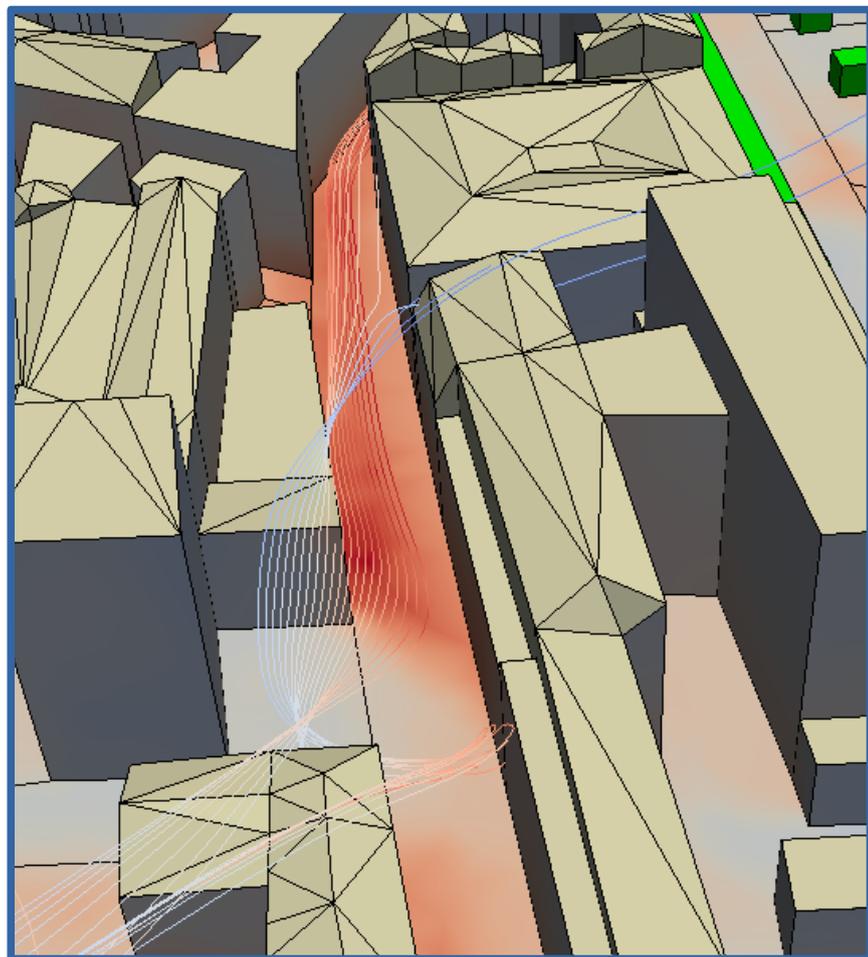
2050





2017

2050



# SOLENEOS, UNE EXPERTISE...

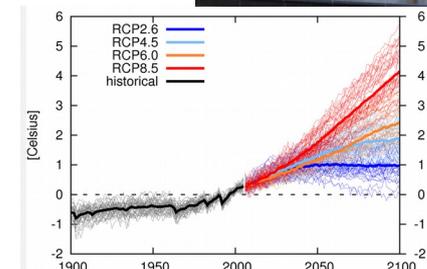
## ... POUR AIDER A LA CONCEPTION :

1. Diagnostique
2. Comparaisons
3. Préconisations



## ... POUR JUSTIFIER LES CHOIX DE CONCEPTION :

- Avant / après projet
- Prospective du changement climatique



## ... COMMUNIQUER DE MANIERE VULGARISEE :

- Auprès des élus
- Auprès des habitants





# SOLENEOS

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