

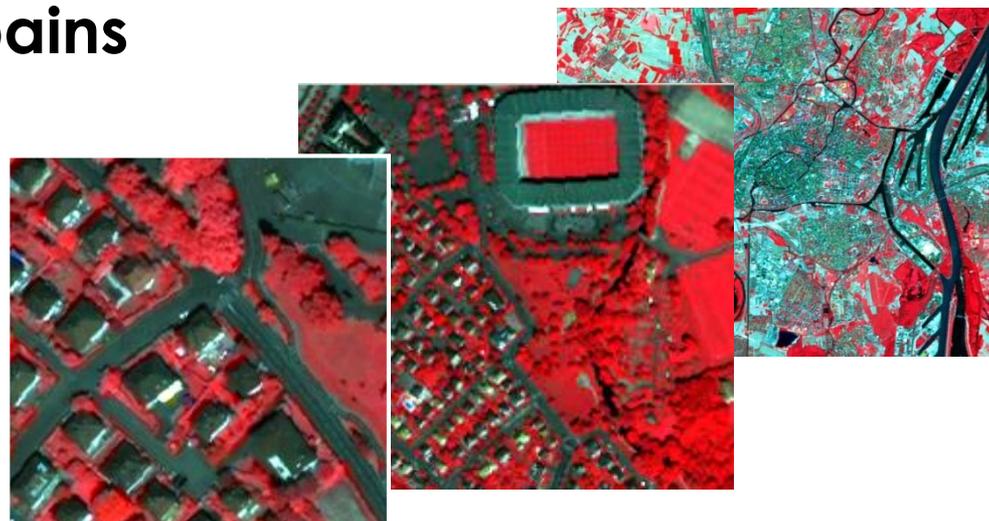
# La télédétection pour cartographier et mesurer l'évolution de l'occupation des sols

## Exemple des espaces urbains

*Anne Puissant – LIVE*

avec des contributions de :

F. Guttler, S. Rougier, Q. Poterek,  
G. Skupinski

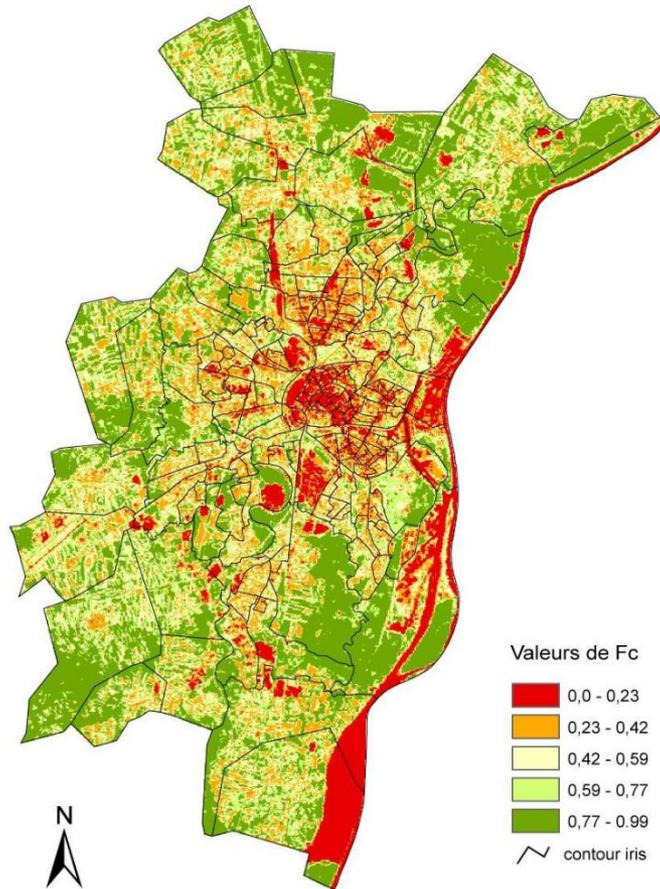


# A partir des images satellites optiques HRS

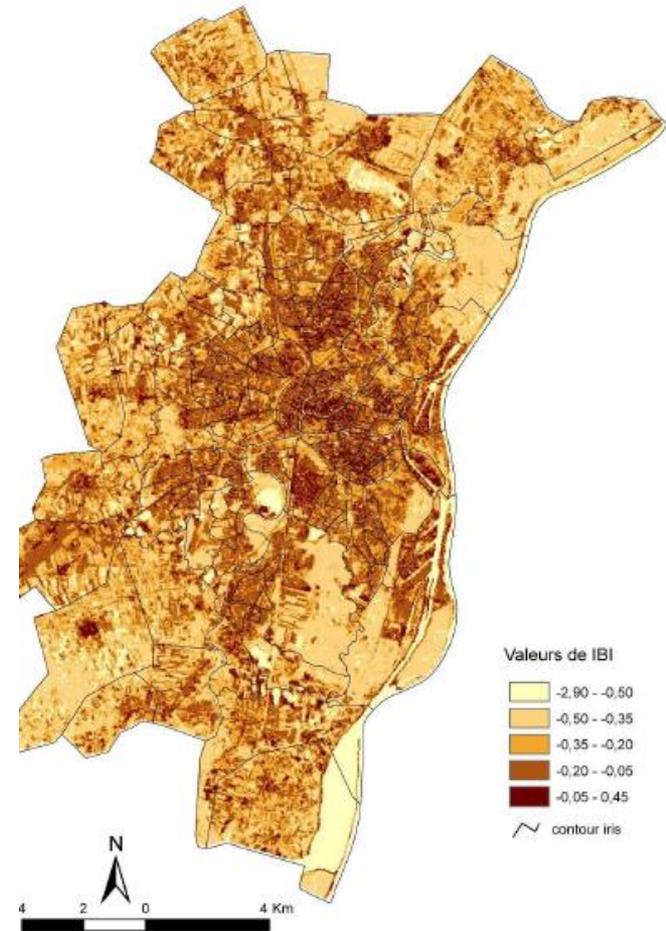
- Des indicateurs 'biophysiques' de l'état des surfaces

1/25 000 – 1/50 000

Végétation

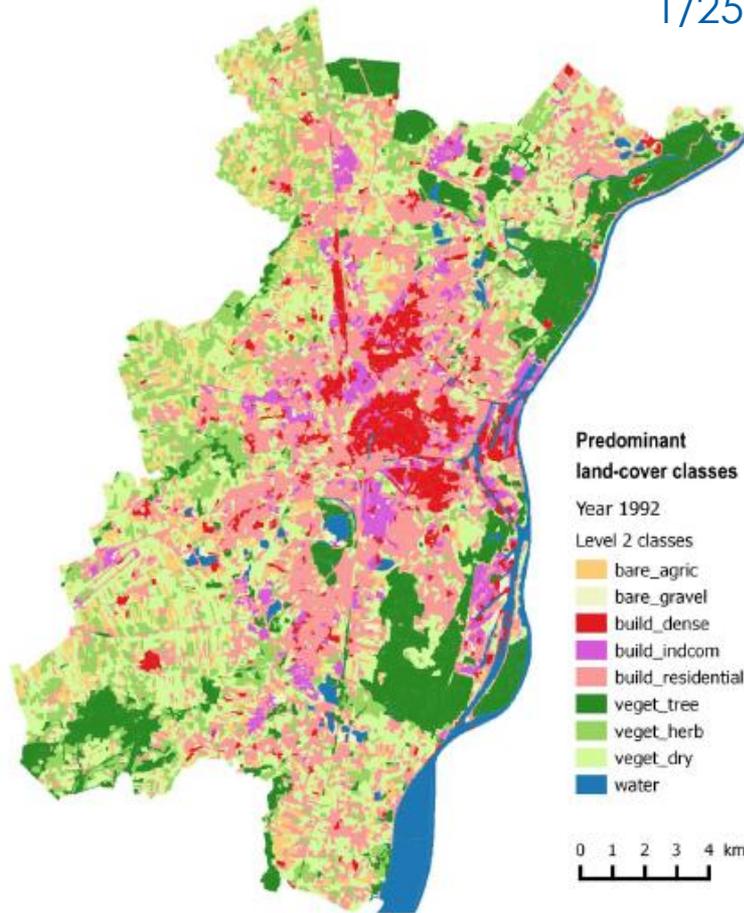


Imperméabilisation

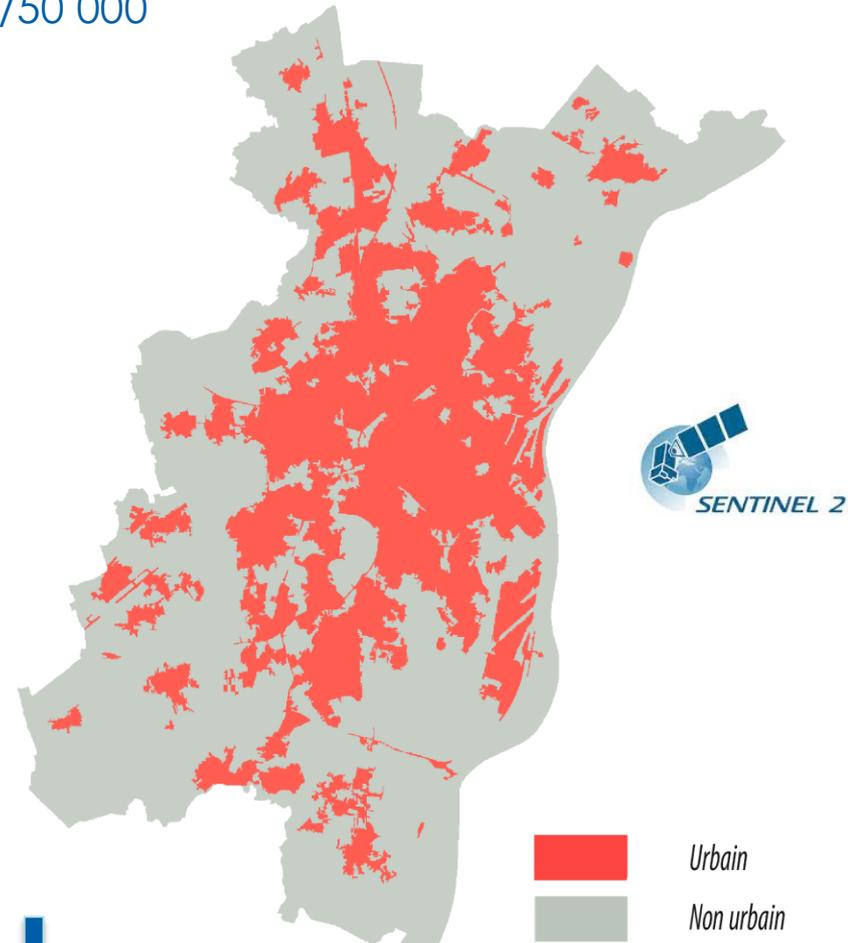
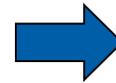


# A partir des images satellites optiques HRS

- Une cartographie de l'occupation des sols / des surfaces artificialisées  
1/25 000 – 1/50 000



CES Occupation des sols

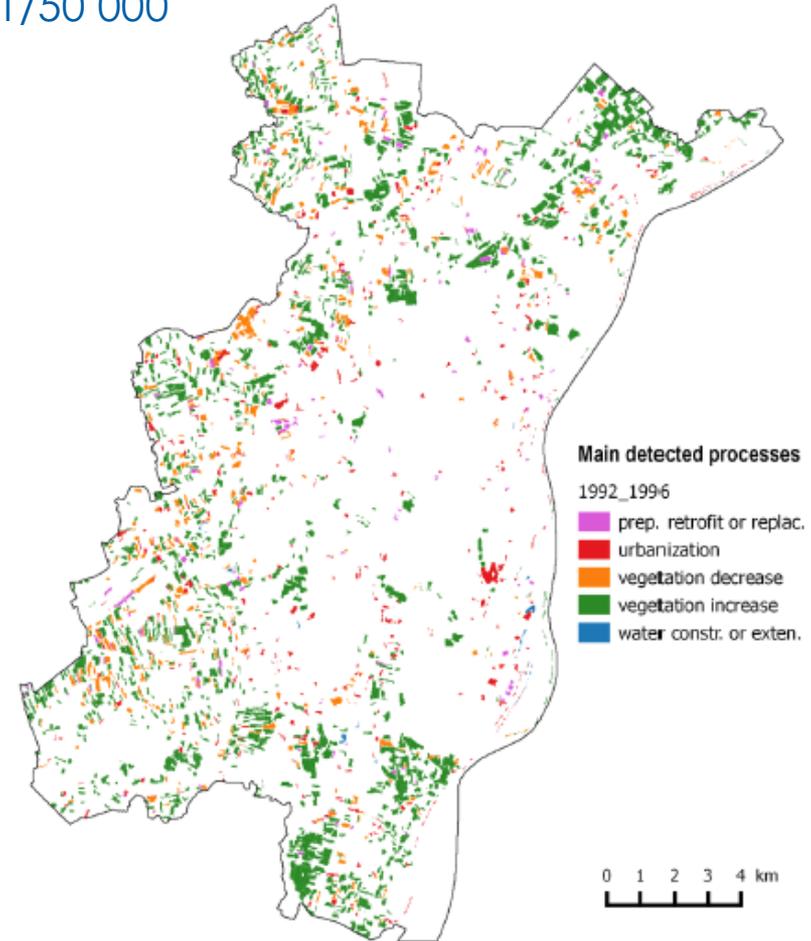
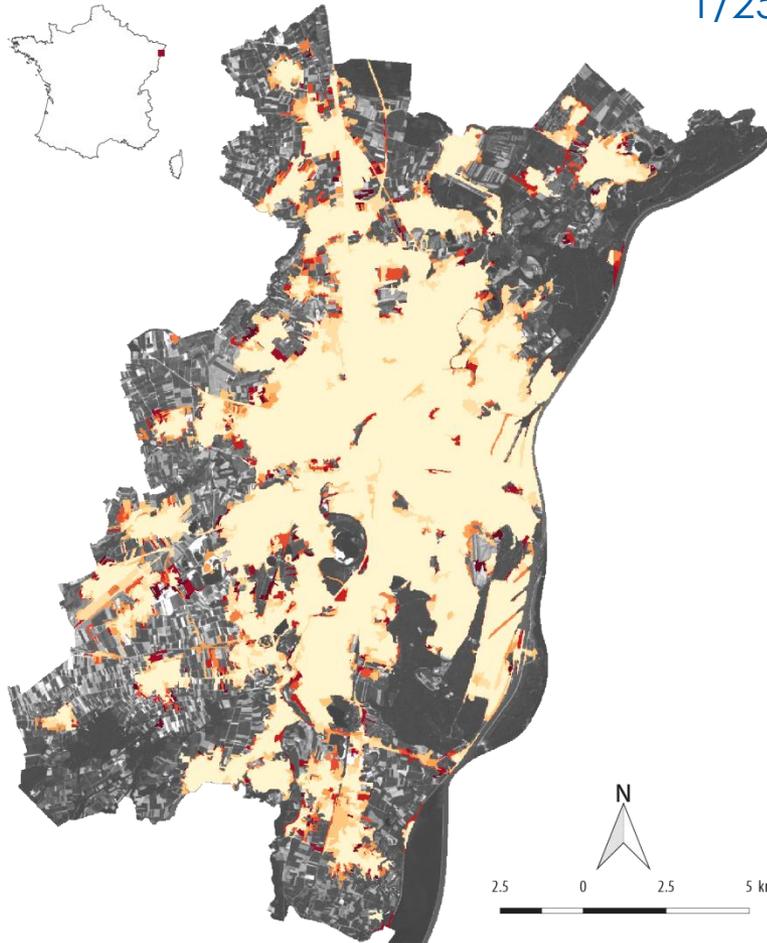


CES Artificialisation / urbanisation

# A partir des images satellites optiques HRS

- La quantification de l'artificialisation / l'identification des processus

1/25 000 – 1/50 000



## Main detected processes

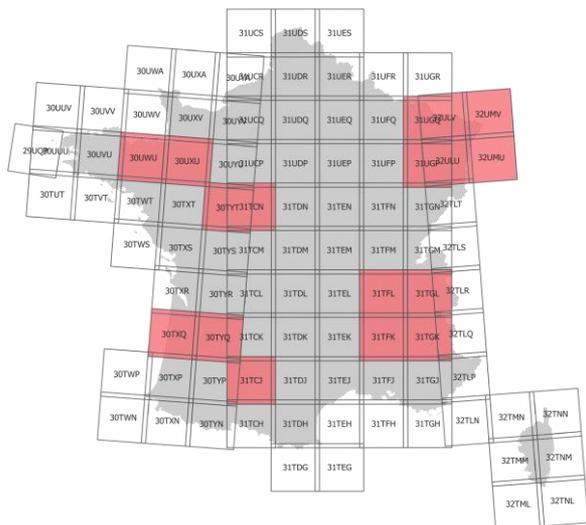
1992\_1996

- prep. retrofit or replac.
- urbanization
- vegetation decrease
- vegetation increase
- water constr. or exten.

1992 1996 1998 1999 2000 2001 2004 2010 2011

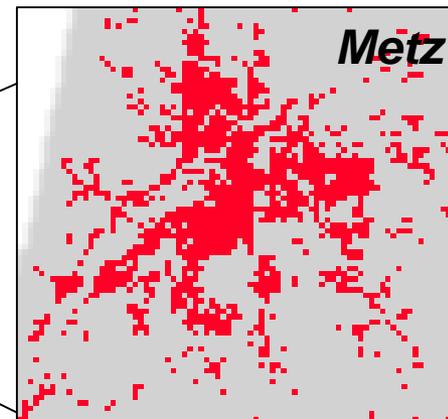
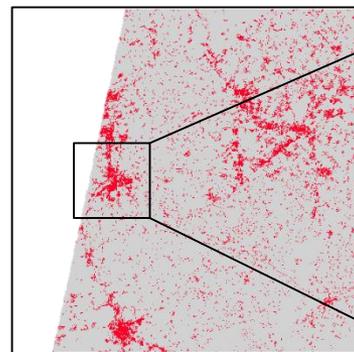
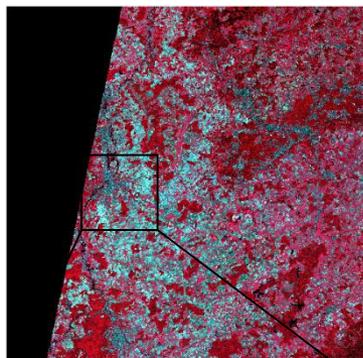
# Vers la mise à disposition de 'produits' ....


**CES Artificialisation / urbanisation**  
**Prototype SPOT-S2 / en développement**




**Tests tuiles S2**

## UGQ – 2016/08/23 – Nancy, Metz



*Class 1 : Not Urban / Class 2 : Urban*

Confusion matrix for the classification:

	Class 1	Class 2	Error
Class 1	10127	158	0.015362178
Class 2	32	10253	0.003111327

OOB error: 0.923%

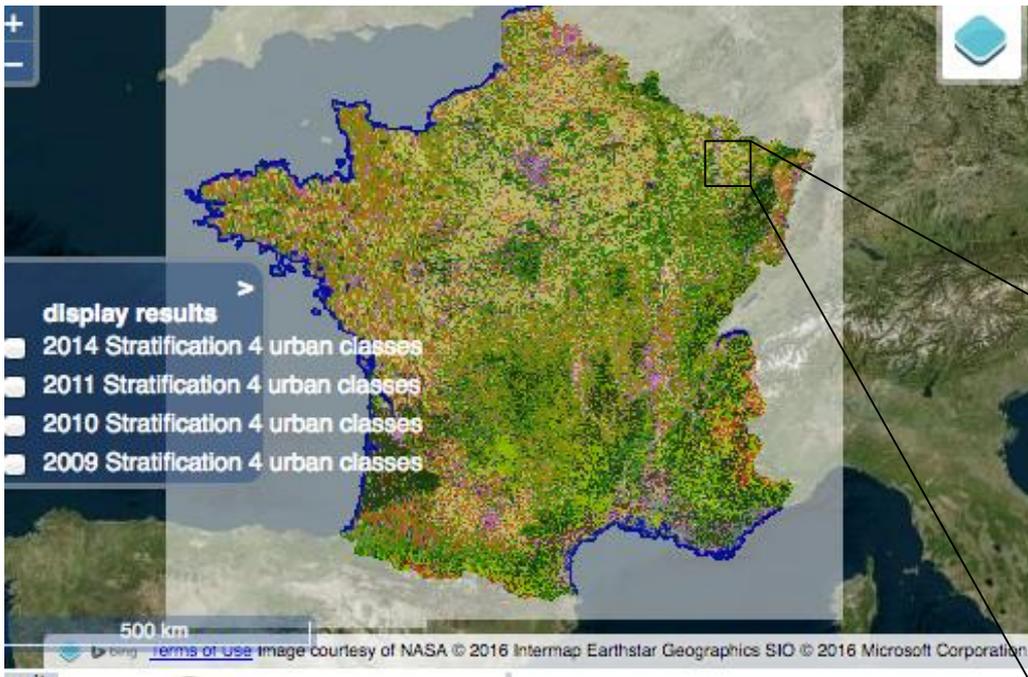
User Accuracy: Class 1 0.984 Class 2 0.996

Producer Accuracy: Class 1 0.996 Class 2 0.984

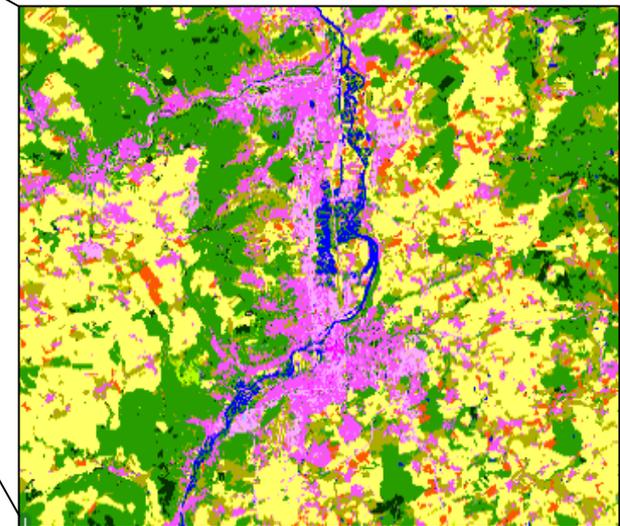
F-score: 0.991

# Vers la mise à disposition de 'produits' ....

↳ **CES Occupation des sols**  
**Production : France entière**



- Images L8 (2014) / L5 (2009, 2010, 2011)
- Découpage éco-climatique
- 18 classes
- Supervisé pixel (30m)
- Données Ent : CLC 06/12

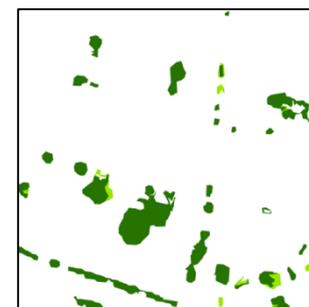
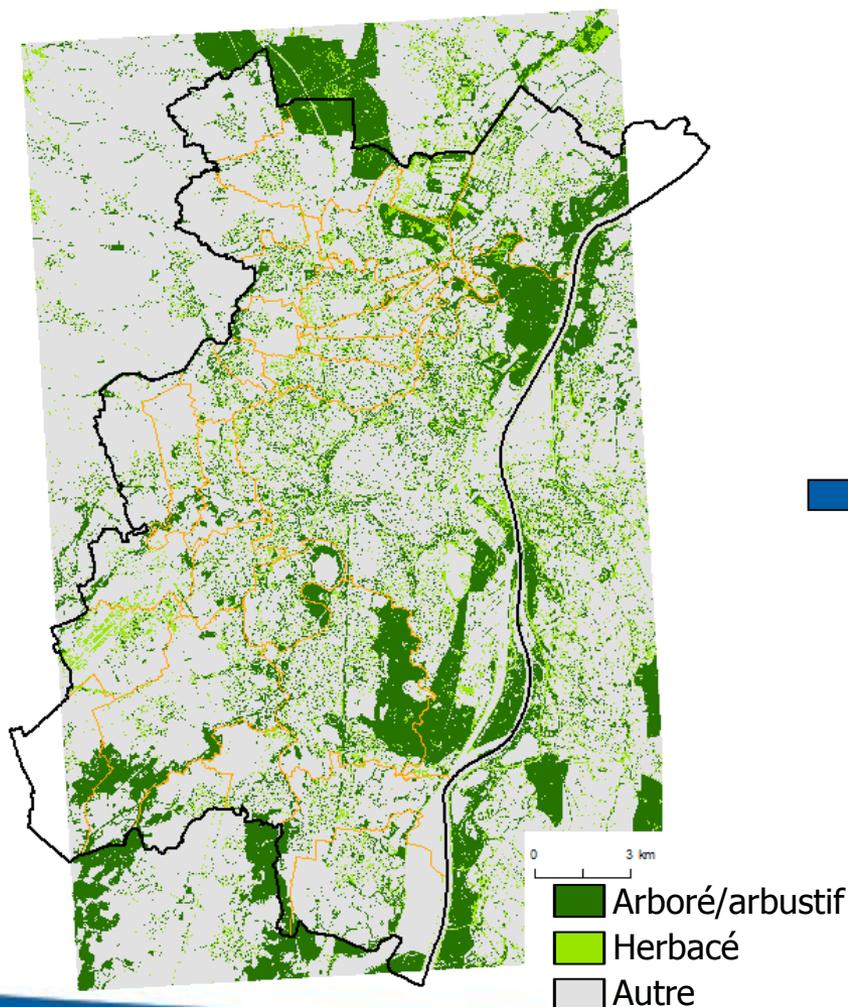


<http://osr-cesbio.ups-tlse.fr/~oso/ui-ol/2009-2011-v1/layer.html>

<http://osr-cesbio.ups-tlse.fr/~oso/posts/2016-10-06-cartes-2009-2011/>

# A partir des images satellites optiques THRS

- Une cartographie fine de la trame verte (1/5 000 – 1/10 000)



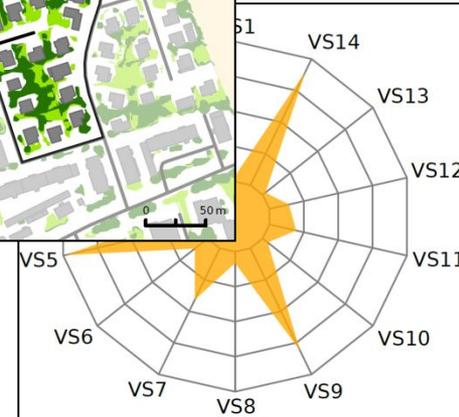
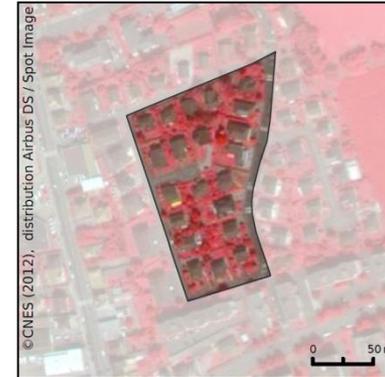
# Combinaison avec des données exogènes

Trame verte

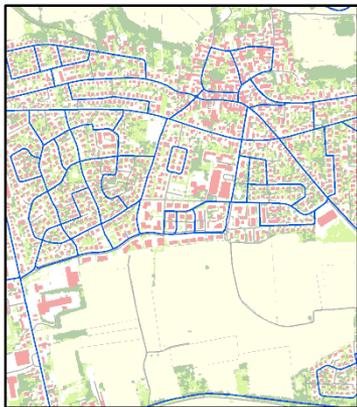


+

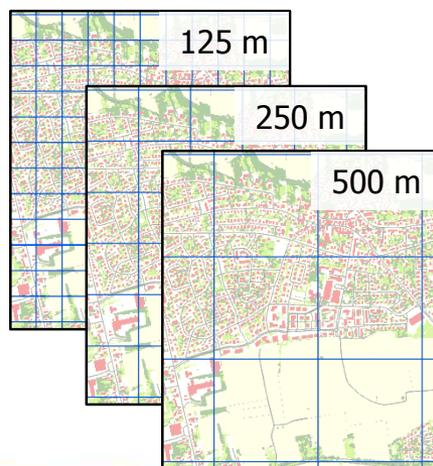
Trame grise



Îlot



Grille carrée



- Indicateurs paysagers (fragmentation / connectivité)
- Données d'entrée dans modèle (climatologie urbaine)