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SOM FORTELLER

Statistics within the national policy context

MAIA - _KIP INCA September 2019 Brussels

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NINA
Norwegian Institute for Nature Research

Statistisk sentralbyrå
Statistics Norway

Agenda

1. Natural Capital- Resources Rent
2. New data sources- Land use statistics and sattellite data in urban areas.
3. Modelling heat islands
4. Run off etimates

Natural Capital- Resource Rent

- This is a traditional SEEA CF exercise. It is easy to perform and may be developed in several directions.
- We proposed it as part of MAIA both to see if other countrie were interested, and because to have a closer look on Norwegian Agriculture. What are the real values.

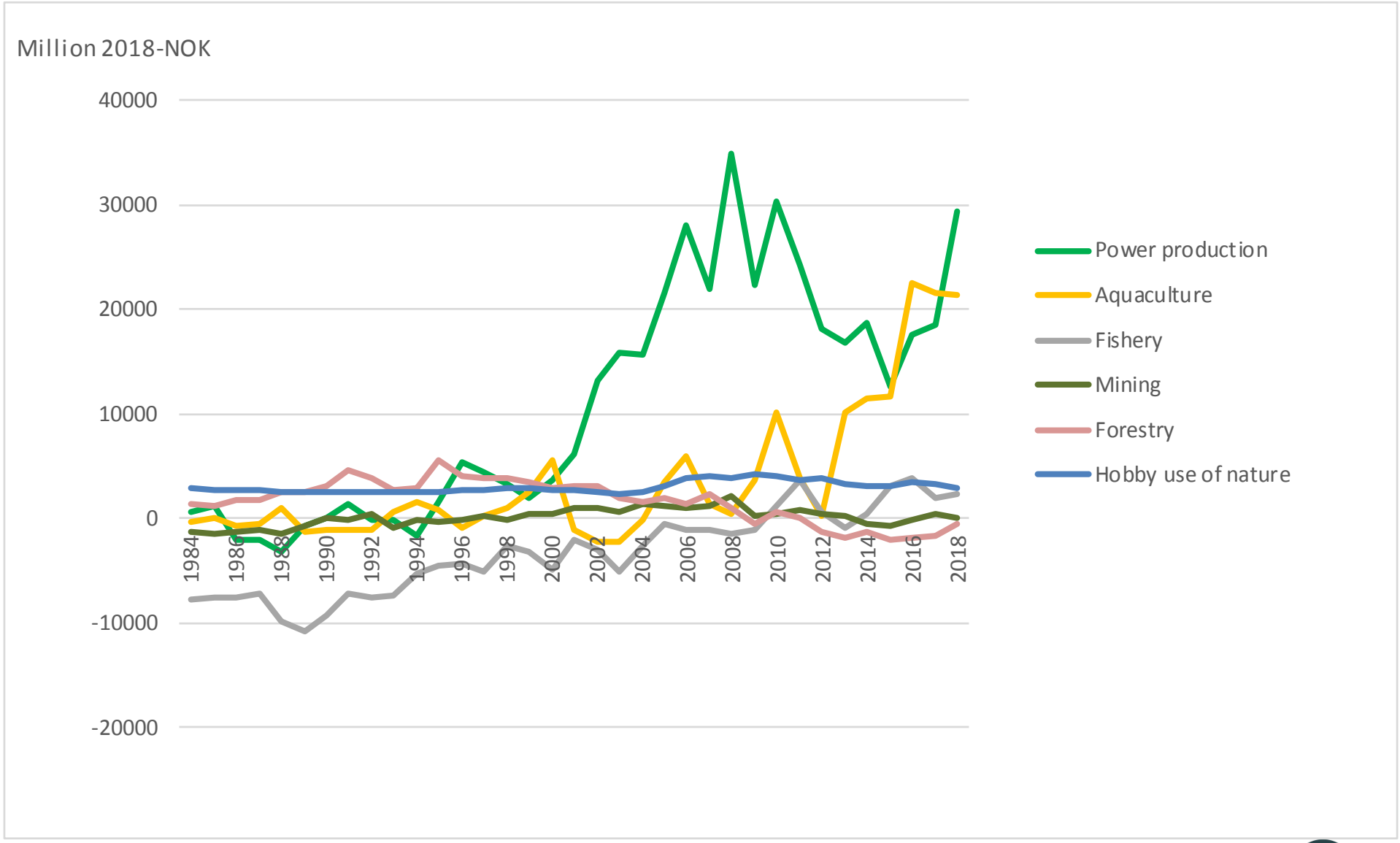
Resurce rent

- Statistics Norway has calculated the value of Norwegian natural resources for several years based on data from the National Accounts (NA) (see e.g. Greaker et al, 2016). The resources included in the Norwegian NA are the renewable natural resource sectors; agriculture, forestry, aquaculture, fisheries and power production (and occasionally also hobby use of nature), and the nonrenewable natural resources; oil, gas and minerals.

Method

Sign	Term
+	Basic value of production- Intermediate uses
=	Gross product (basic value)
+	Product specific taxes – Product specific subsidies
=	Gross product (market value)
-	Non-Industry specific taxes + Non-Industry specific subsidies
-	Compensation of employees
-	Return on fixed capital
-	Capital consumption
=	Resource rent of the sector

The resource rent in natural resource sectors (except agriculture)



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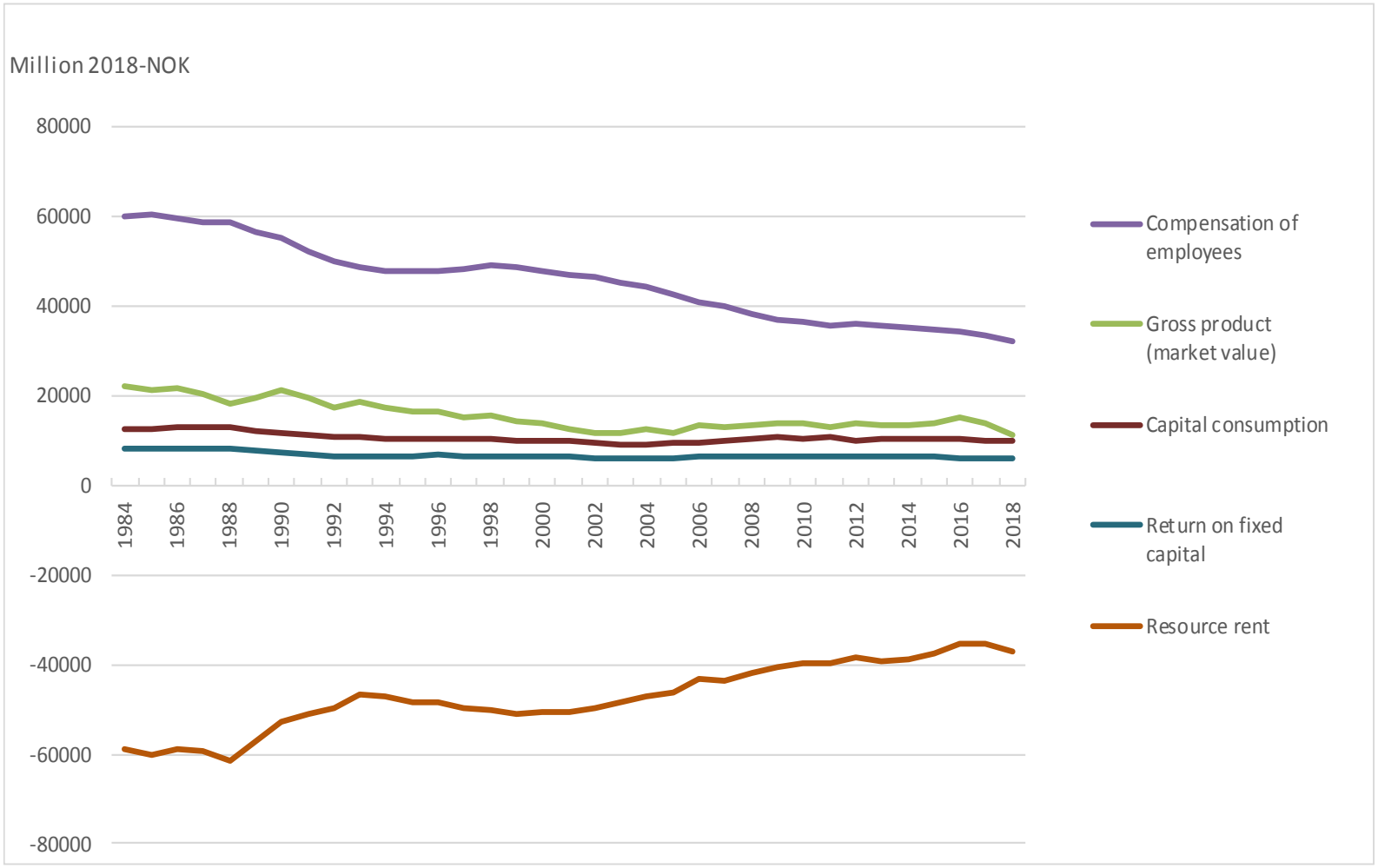
Resource rent for Norwegian agriculture



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Statistics on Ecosystem and Extent and Condition requires new types of data.

- New types of land use statistics and ecosystem accounts will be generated by using new methods and new types of data. Big data give completely new types of data sources that also National Statistical Offices benefit from utilizing.

- A main challenge is to use the traditional large national databases in the combination with new types of data on land use and land cover to provide more timely and comprehensive statistics on transactions, connections, movement and the use of resources, both economic, material and natural.
- Georeferenced material may be one type of data that will provide possibilities in order to produce completely new types of statistics. Mobile phones and social media represent one type of data-sources of interest, but also the use of more detailed satellite data seems promising.
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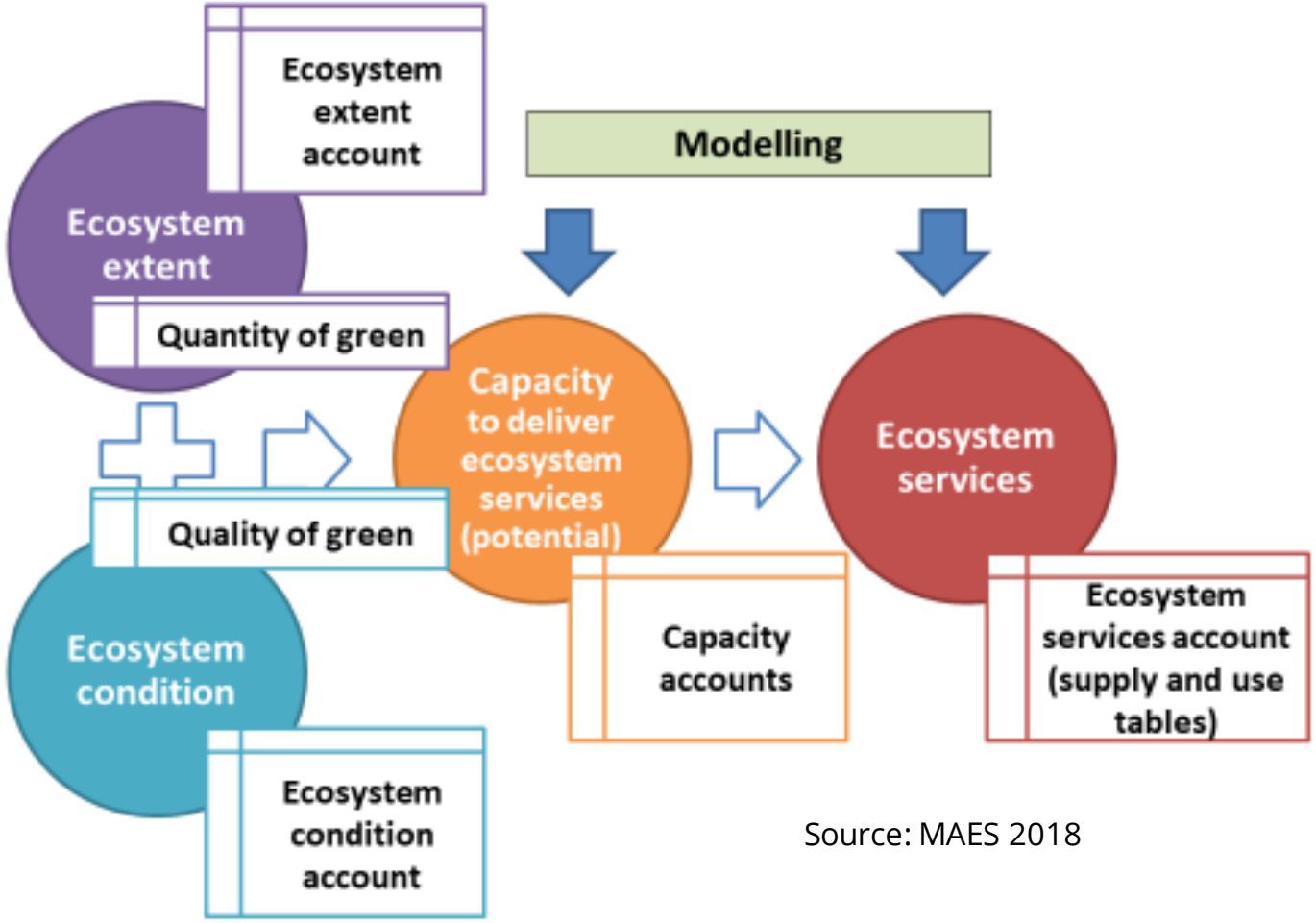
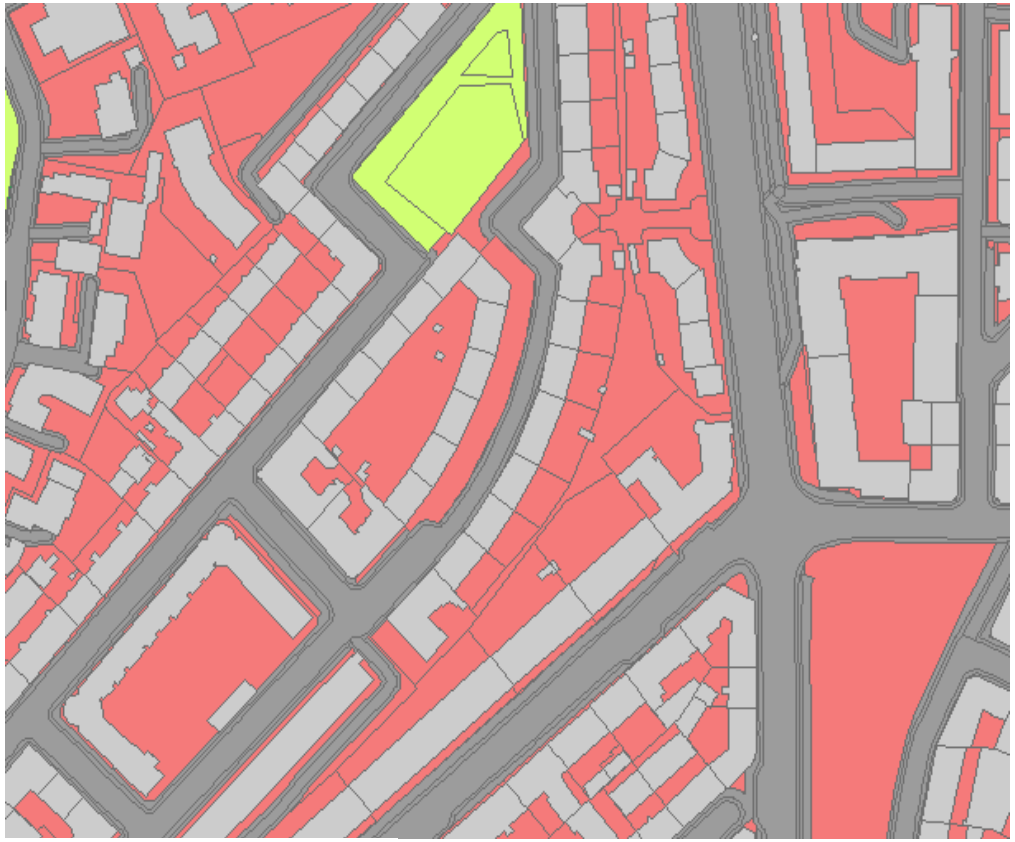
The extent and condition account can form a basis to analyze the capacity (potential) for different ecosystem services (MAES 2018)



Source: MAES 2018

Intersection of SSB land use maps and Sentinel-2 land cover classification. Example



Built-up, buildings

Built-up, infrastructure

Grass

Developed, known land use, unknown land cover

In the area with a red circle there is an asphalted school yard and a back yard used for parking space.

The green circle is an area for housing with a back yard with trees.

The blue circle is a playground which is asphalted, but with trees around

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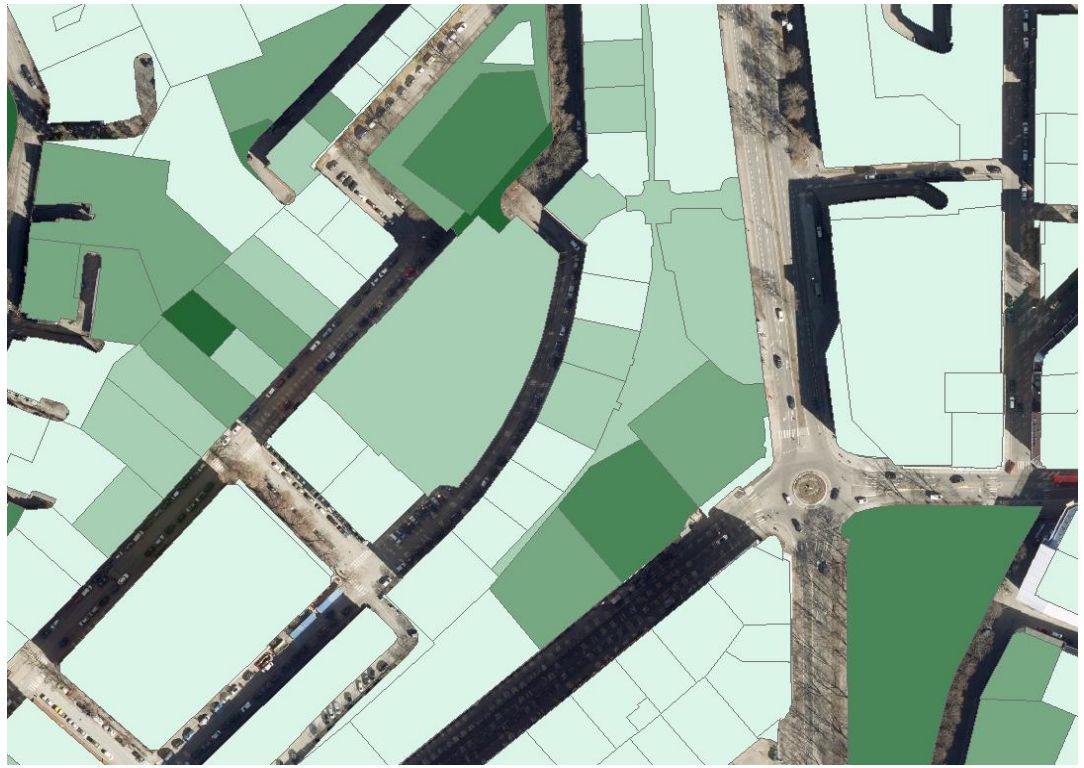
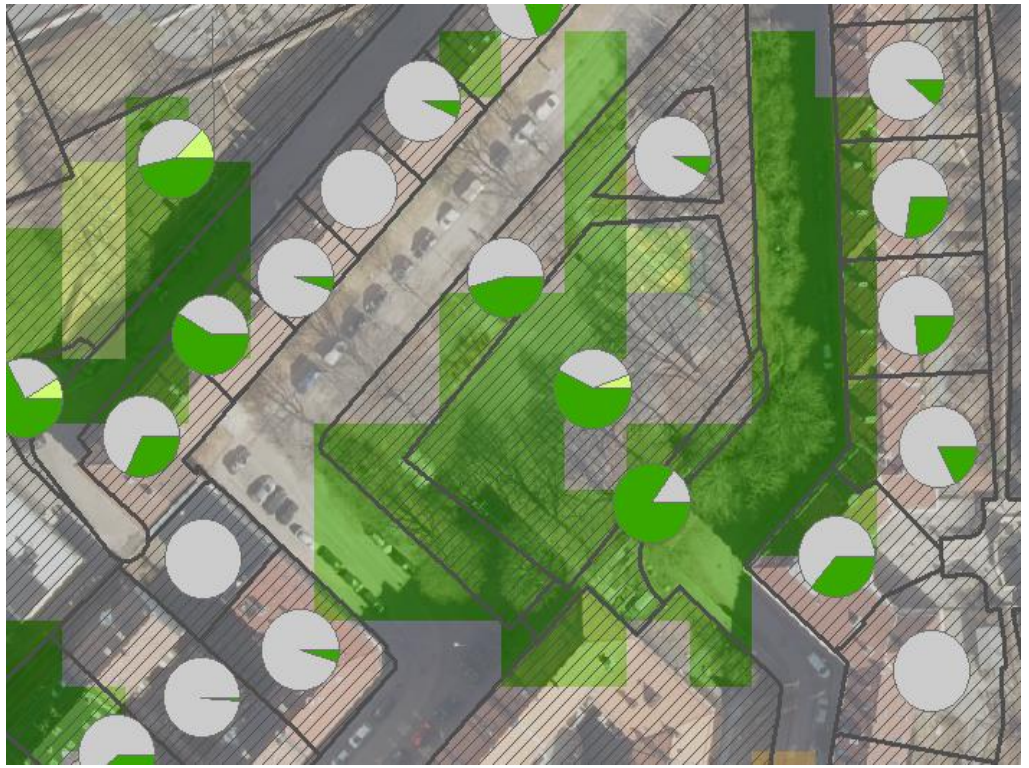
Intersection of Sentinel-2 landcover classification and Statistics Norways land use map



Landuse maps and Sentinel 2

Share of green

- 0 - 20 %
- 21 - 40 %
- 41 - 60 %
- 61 - 80 %
- 81 - 100 %



Landuse maps and Sentinel 2

- Grass
- Trees
- Built_up

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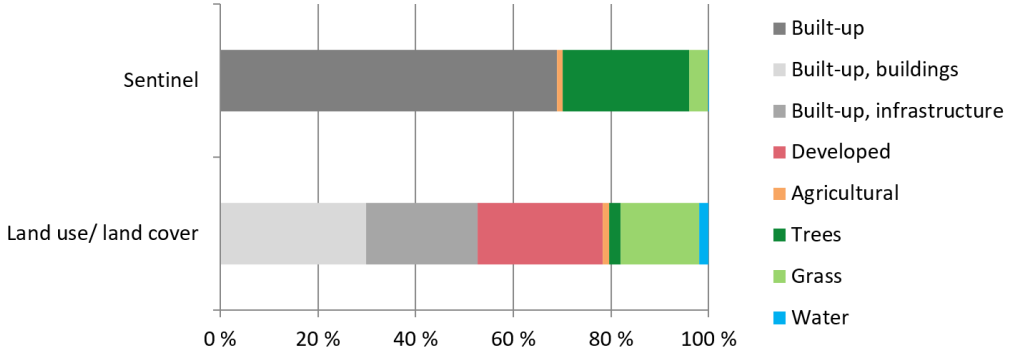
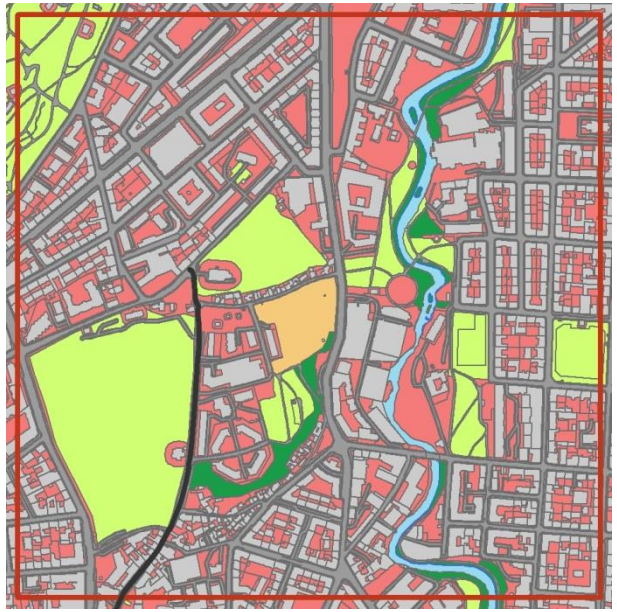
Case study: Akersveien

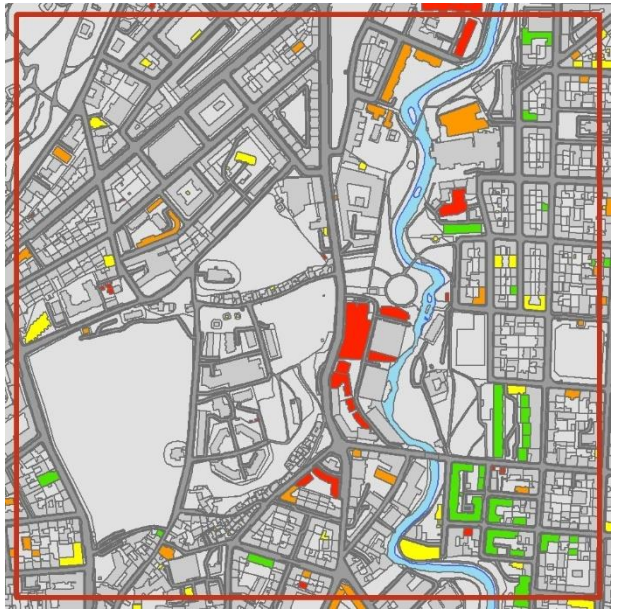


A- Land use/land cover maps



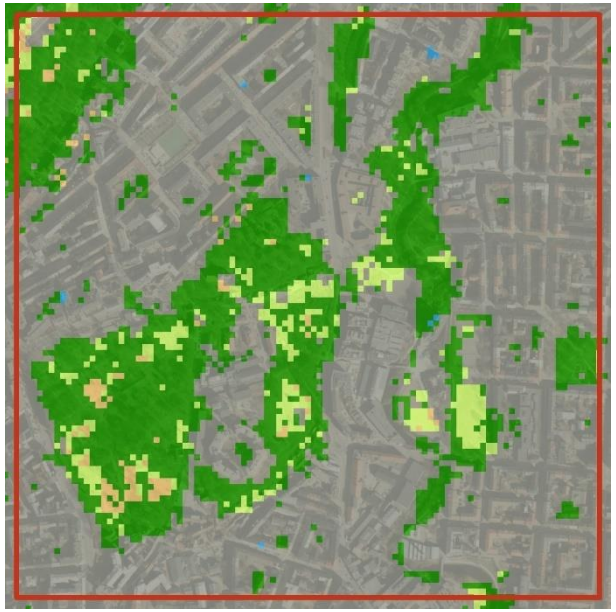
Akersveien
Case study
Built-up, buildings
Built-up, infrastructure
Developed, known land use, unknown land cover
Agricultural
Grass
Water

B- Buildings, year of construction



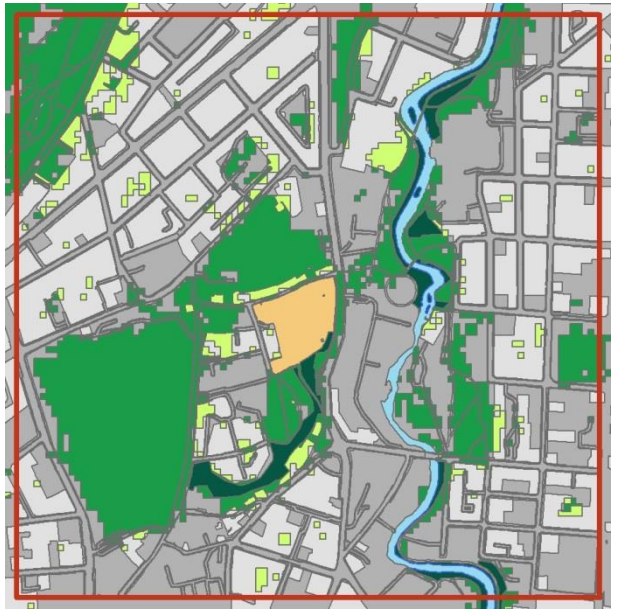
Case study
Buildings
Year of construction
1976 or earlier
1977 - 1986
1987 - 1996
1997 - 2006
2007 - 2016

C- Sentinel-2, NDVI and orthophoto



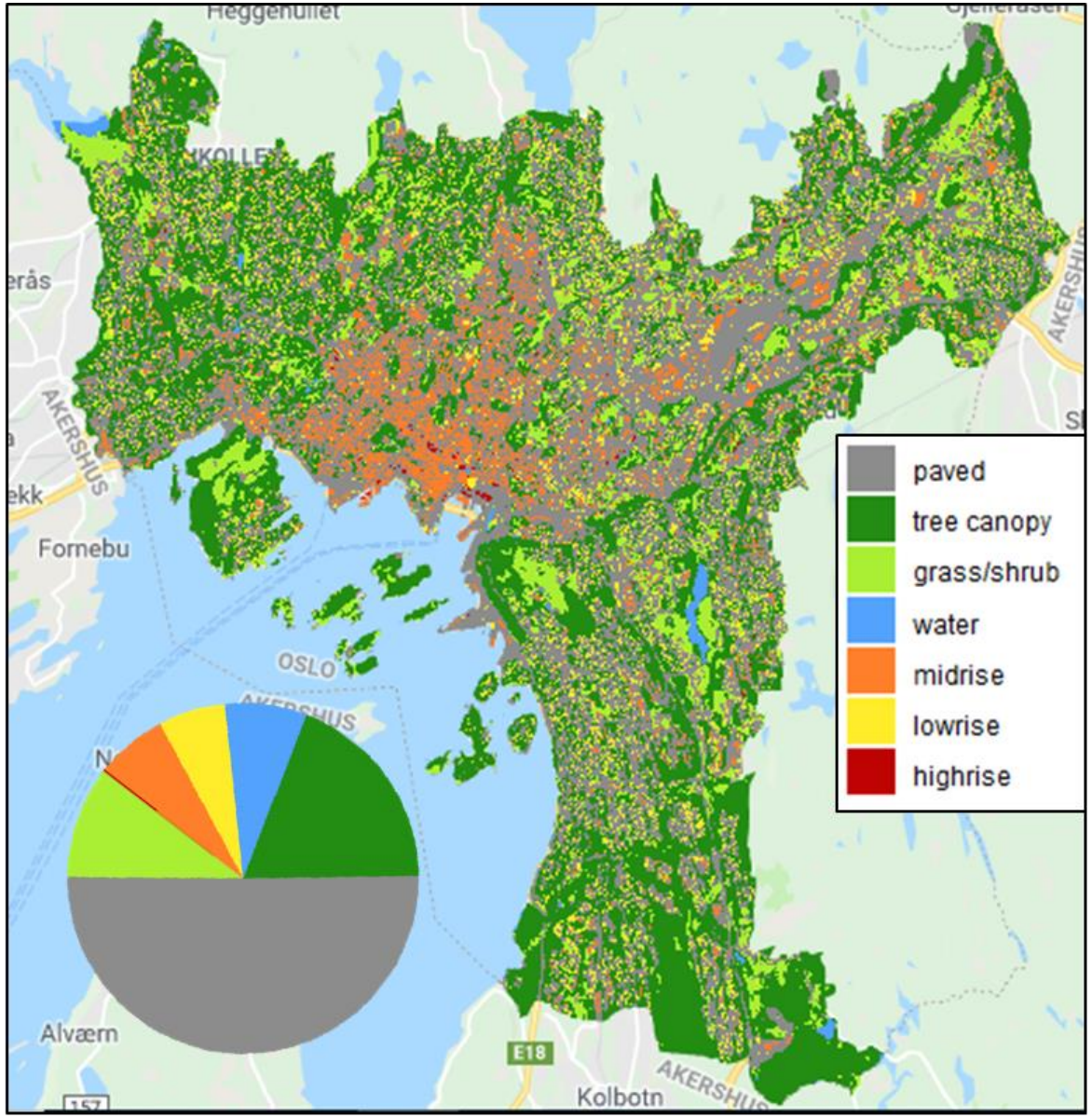
Case study
Sentinel 2
Land cover category
Agricultural
Grass
Built-up
Trees
Water

D- Private and public green



Case study
Sentinel 2 and maps
Green, private
Green, public access
Grey, private
Grey, public access
Maps
Agricultural
Forest
Water

Sentinel-2 landcover classification for urban heat island (UHI) modelling



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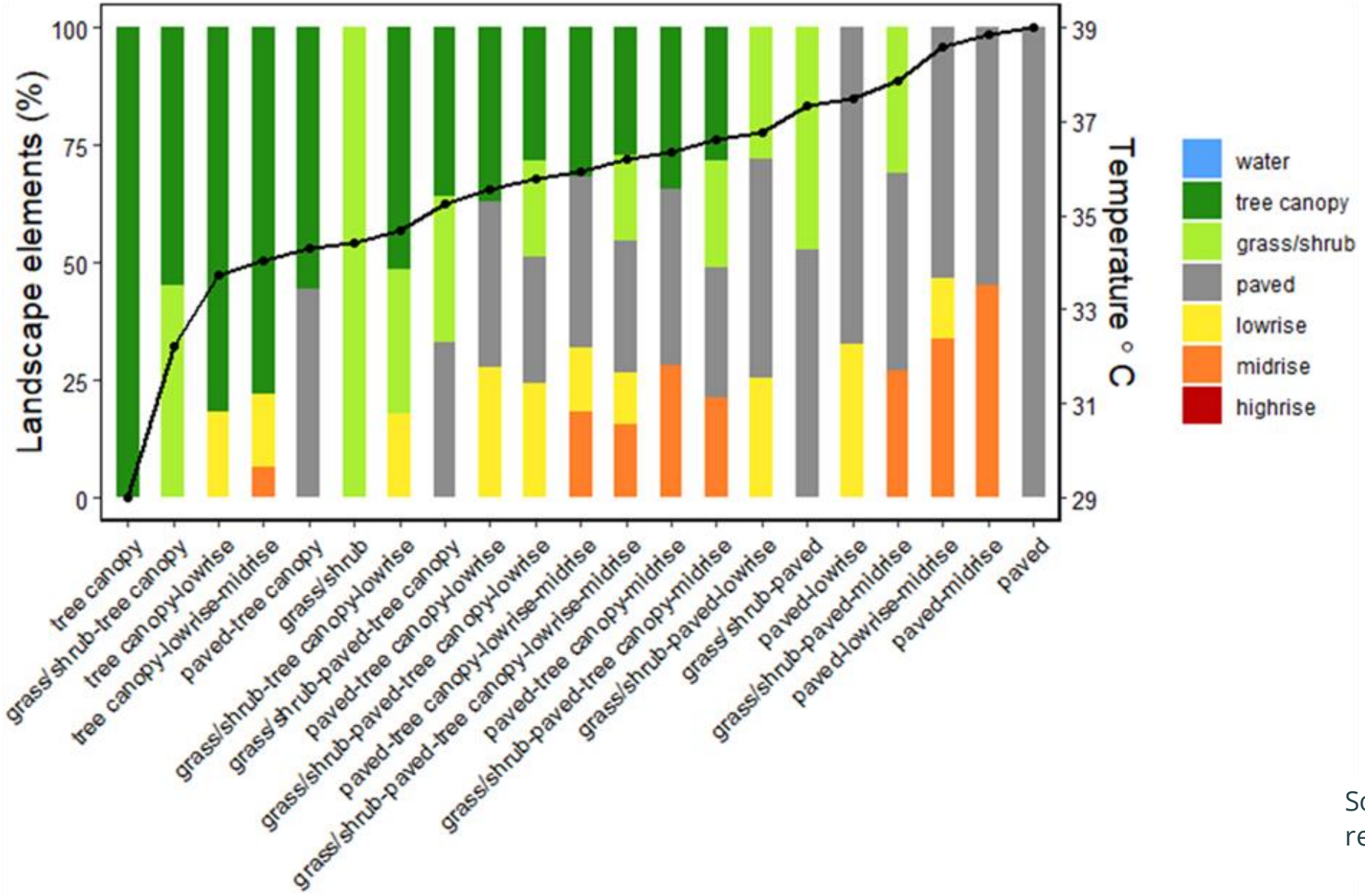
Source: Venter et al. (under review)

Structural urban landscape (STURLA) classification
using Sentinel-2 landcover against Landsat land surface temperature



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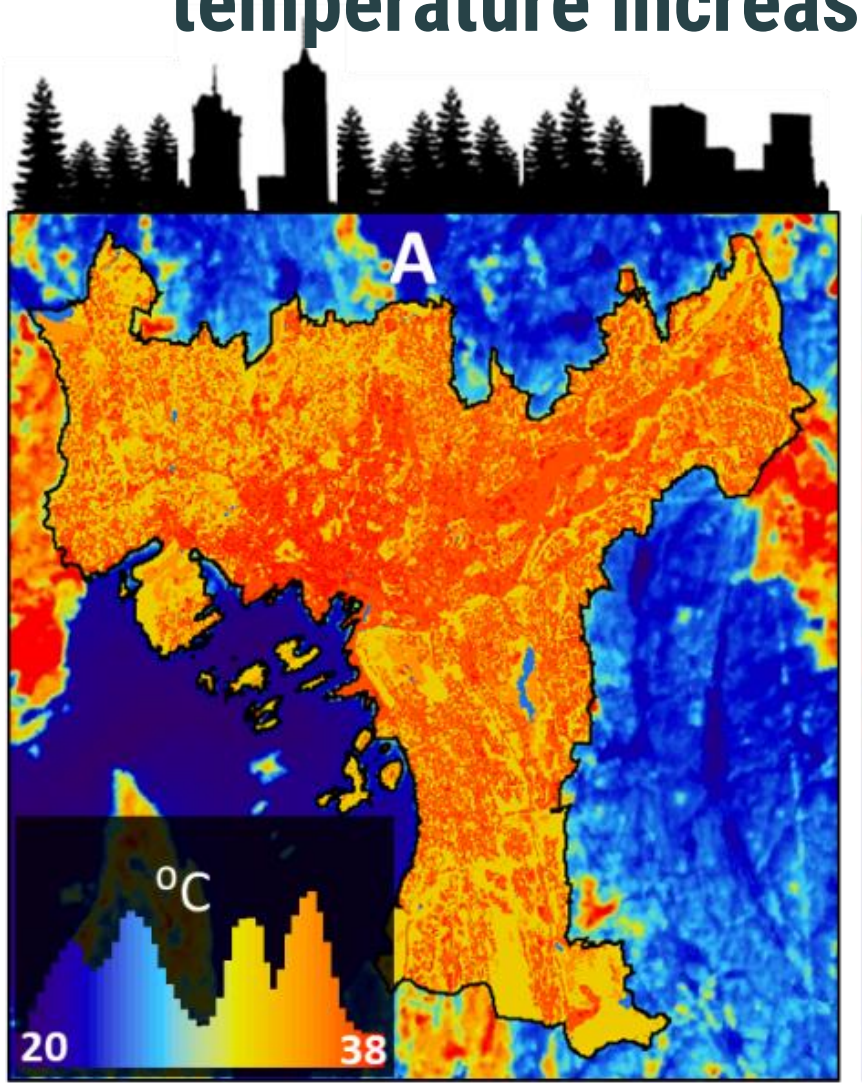
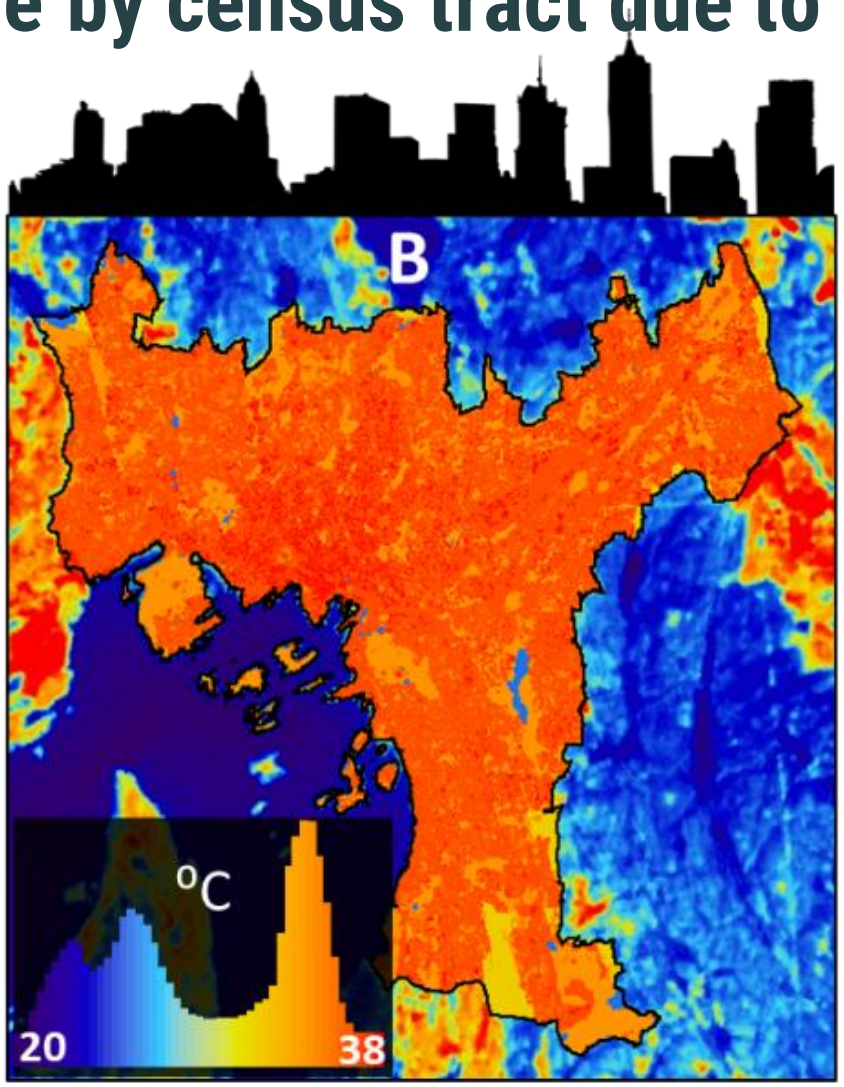
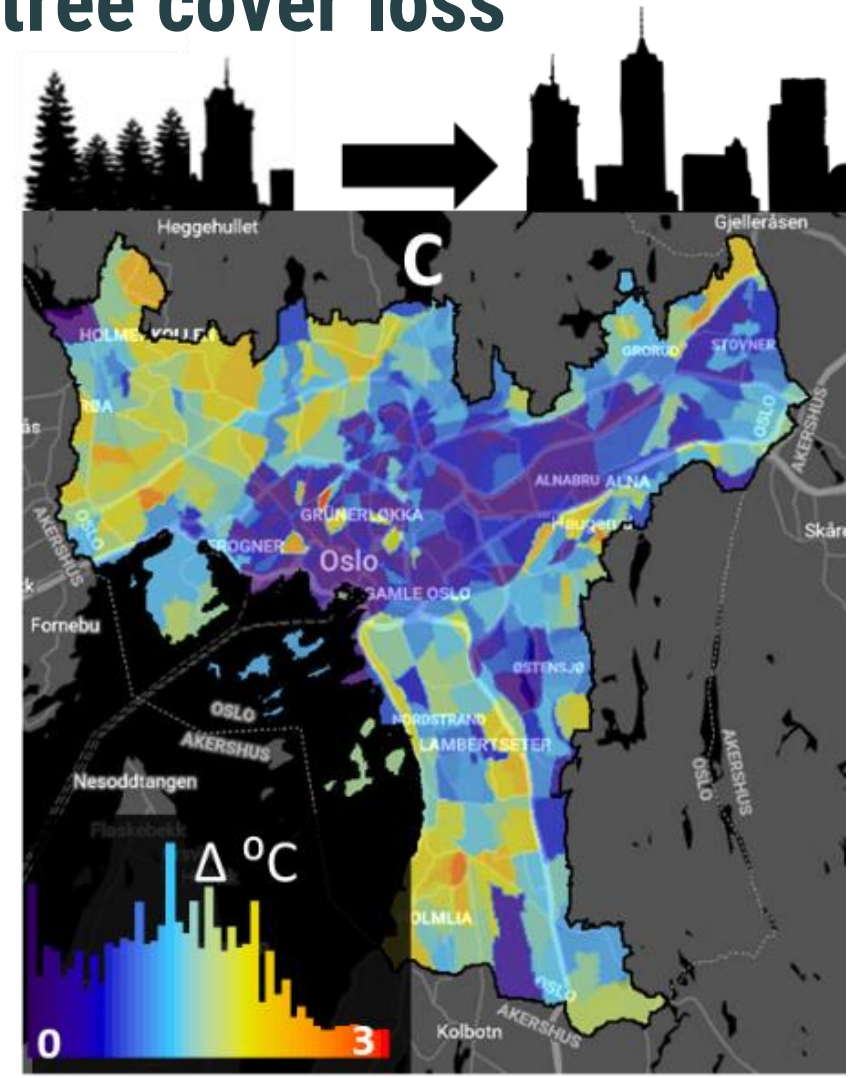
Source: Venter et al. (under review)

Land surface heat signature of urban tree canopy and mean temperature increase by census tract due to tree cover loss

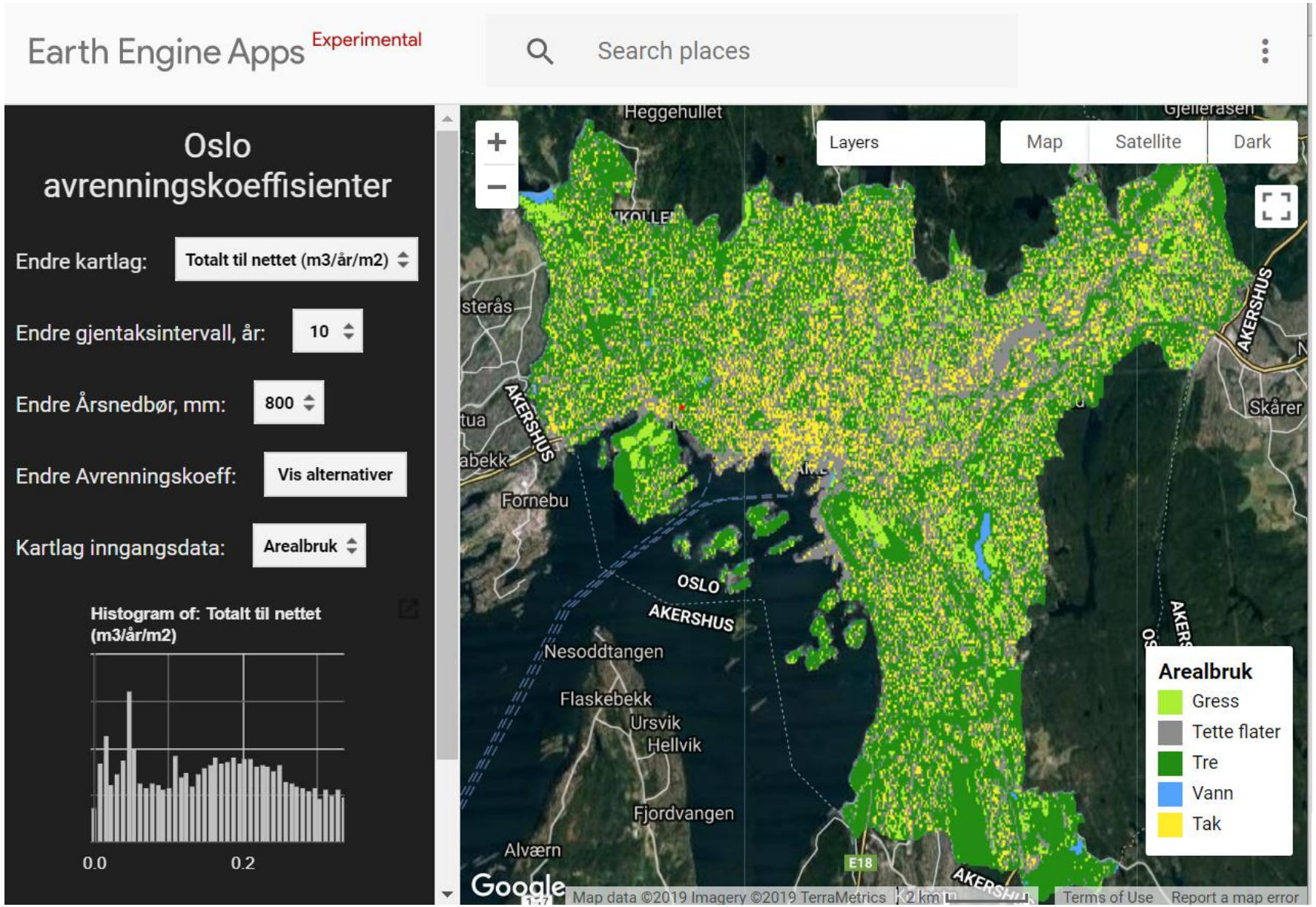






Source: Venter et al. (under review)

Sentinel-2 landcover classification for urban surface runoff modelling



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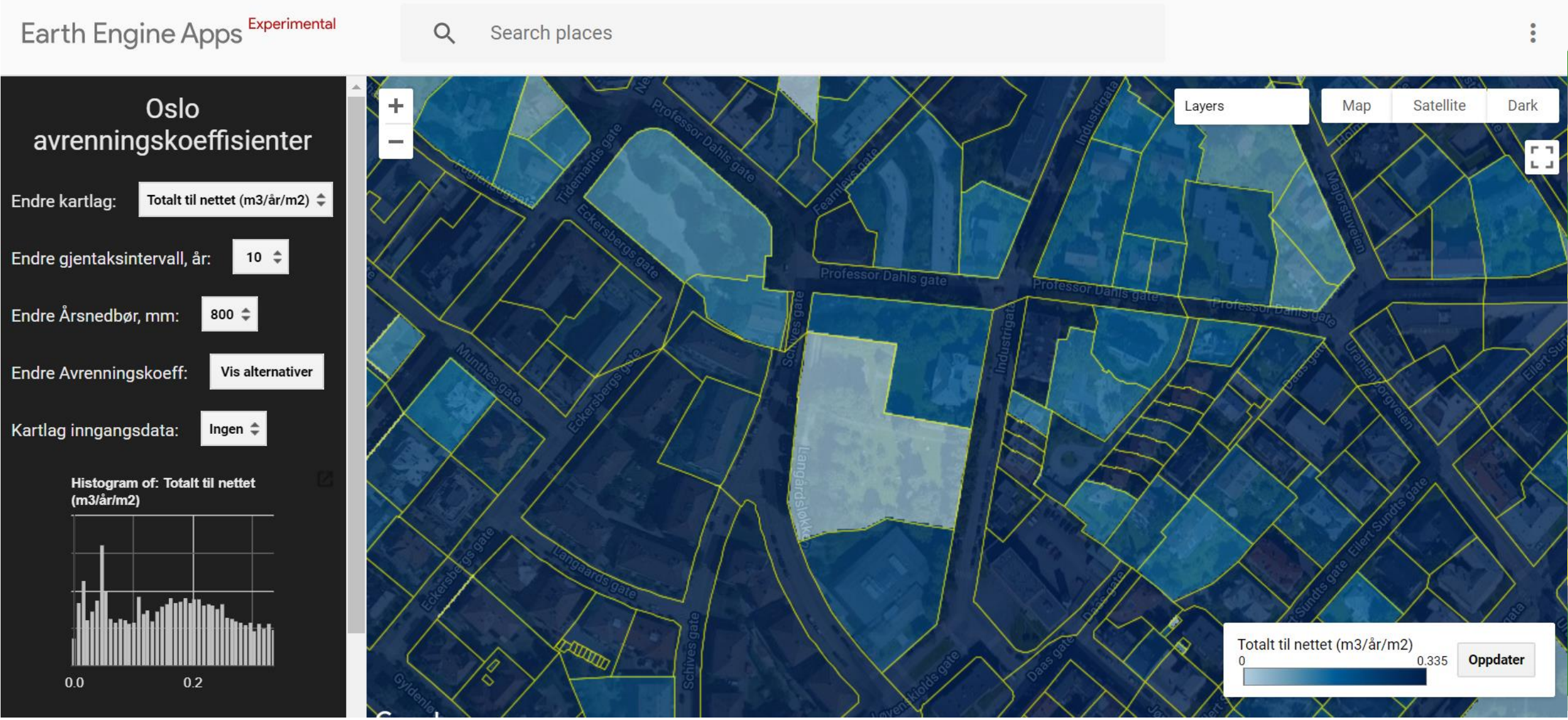
Source: New Water Ways

Zander Venter

Sentinel-2 landcover classification for urban surface runoff modelling



Source: New Water Ways

Zander Venter

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Thank You!

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