

# Enhancing maps with...



***OpenStreetMap***

**Kimberly Rivera and Tiziana Gelmi Candusso**



urban wildlife information network



**LINCOLN PARK ZOO.**

FOR WILDLIFE. FOR ALL.



**UNIVERSITY OF  
TORONTO**



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## Ecology and Evolution



RESEARCH ARTICLE | Open Access |

### **Leveraging Open-Source Geographic Databases to Enhance the Representation of Landscape Heterogeneity in Ecological Models**

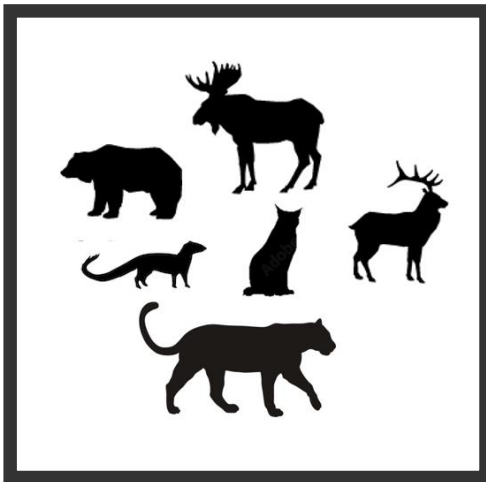
Tiziana A. Gelmi-Candusso Peter Rodriguez, Mason Fidino, Kim Rivera, Elizabeth W. Lehrer, Seth Magle, Marie-Josée Fortin

First published: 10 October 2024 | <https://doi.org/10.1002/ece3.70402> | Citations: 1

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# Why do we need high resolution spatial data?

Wildlife presence  
and movement data



Fine-scale urban  
Landcover need



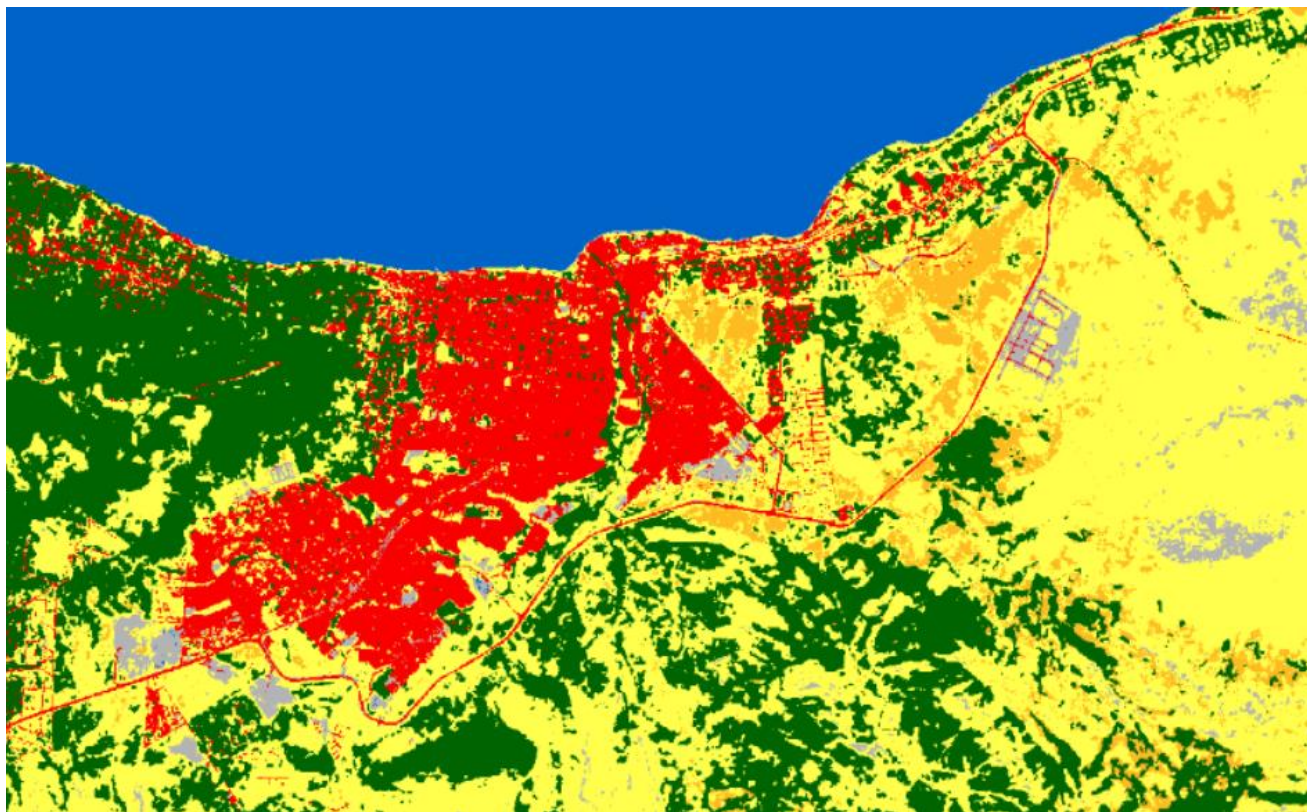
Multispecies habitat  
use and functional  
connectivity





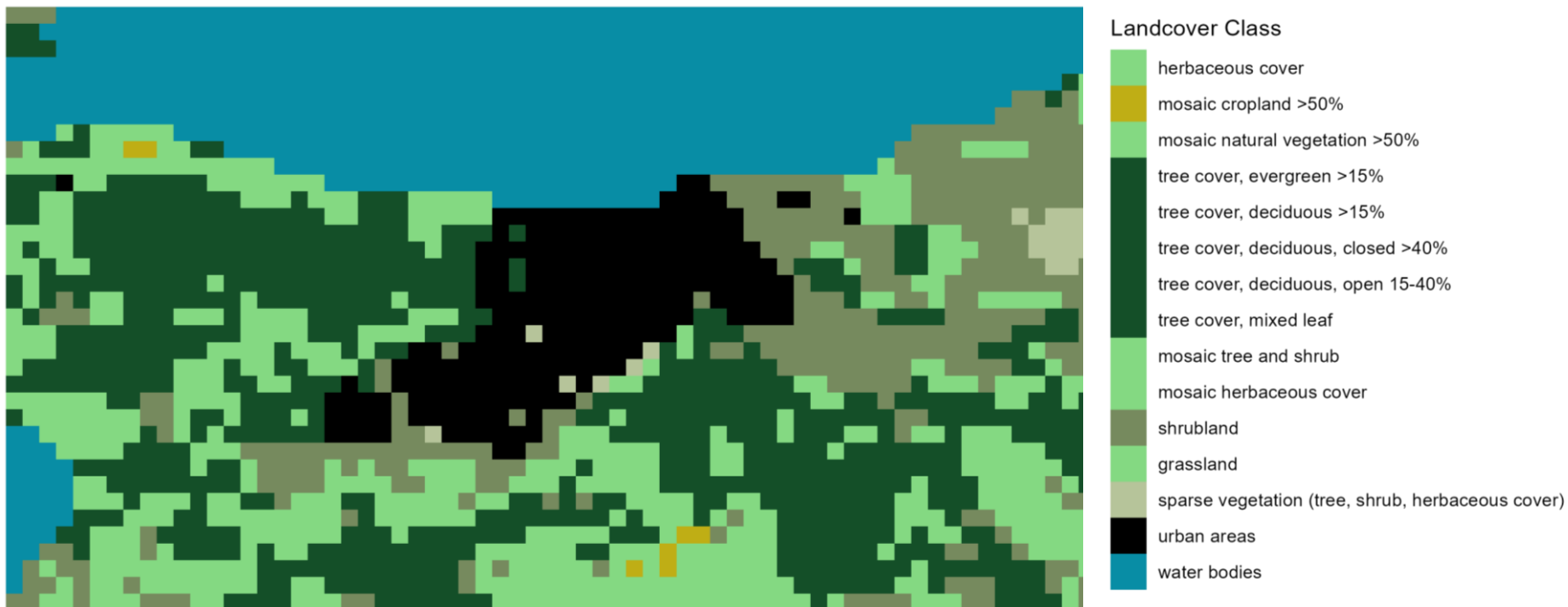
# The Problem

## 2021 European Space Agency WorldCover, Bariloche (10m)



# The Problem

## 2022 Climate Data Store, Bariloche (300m)



# What is OpenStreetMap?



***OpenStreetMap***

- Open-source mapping platform
- generated by community contributions
- Supported with data from global governmental and non-governmental agencies

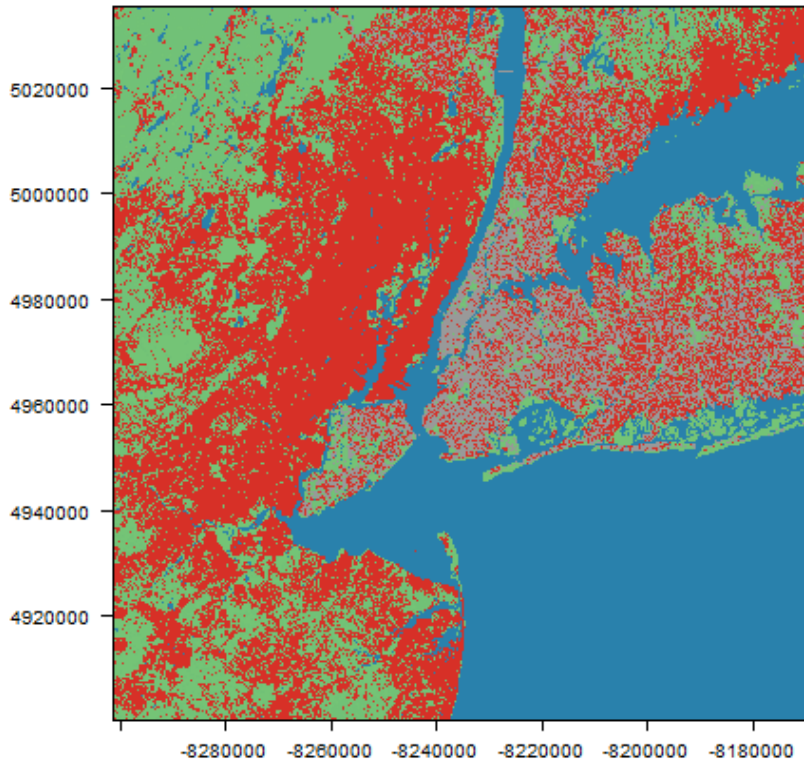
# Why use OpenStreetMap?

- Fine-scale urban data
- Land cover and land use
- Can be integrated into existing land cover land use maps
- Freely available
- Globally available

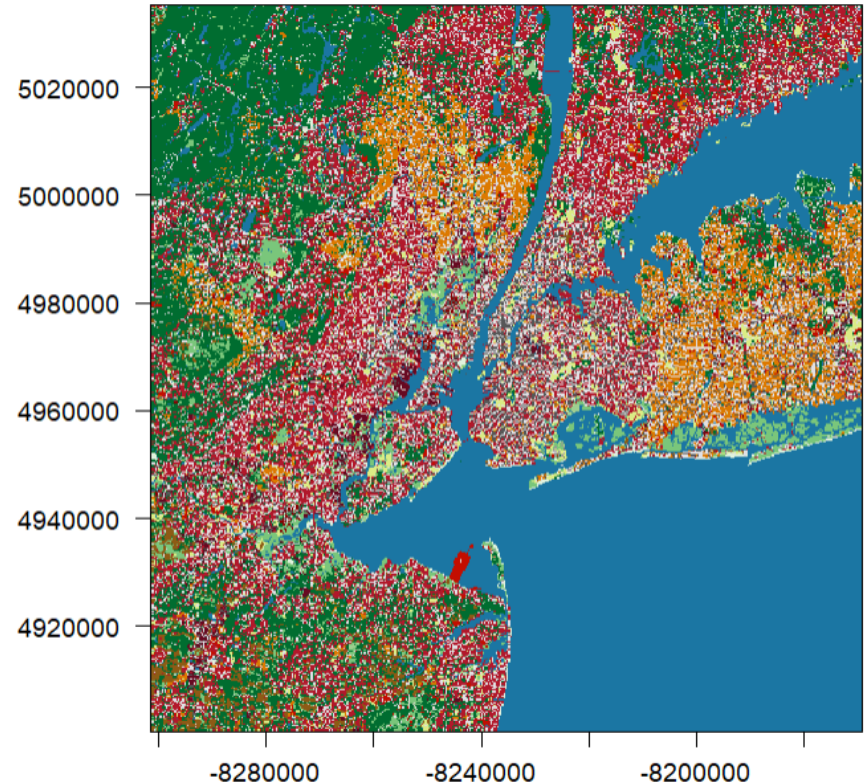


# Why use OpenStreetMap?

## New York, NY



Commission for Environmental Cooperation  
Land cover and land use map

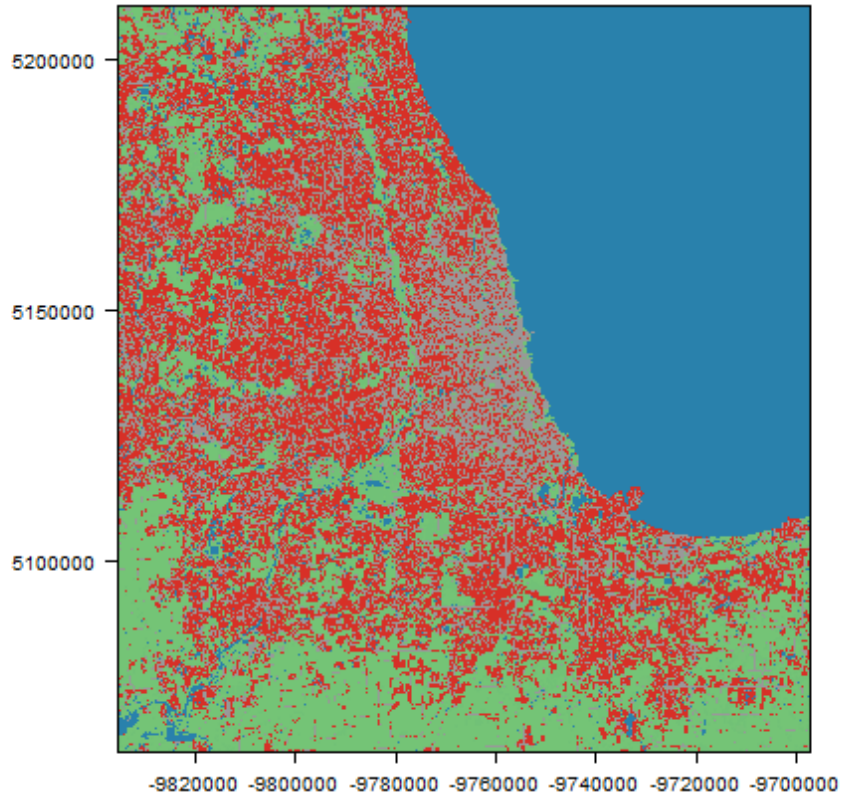


OSM integrated map

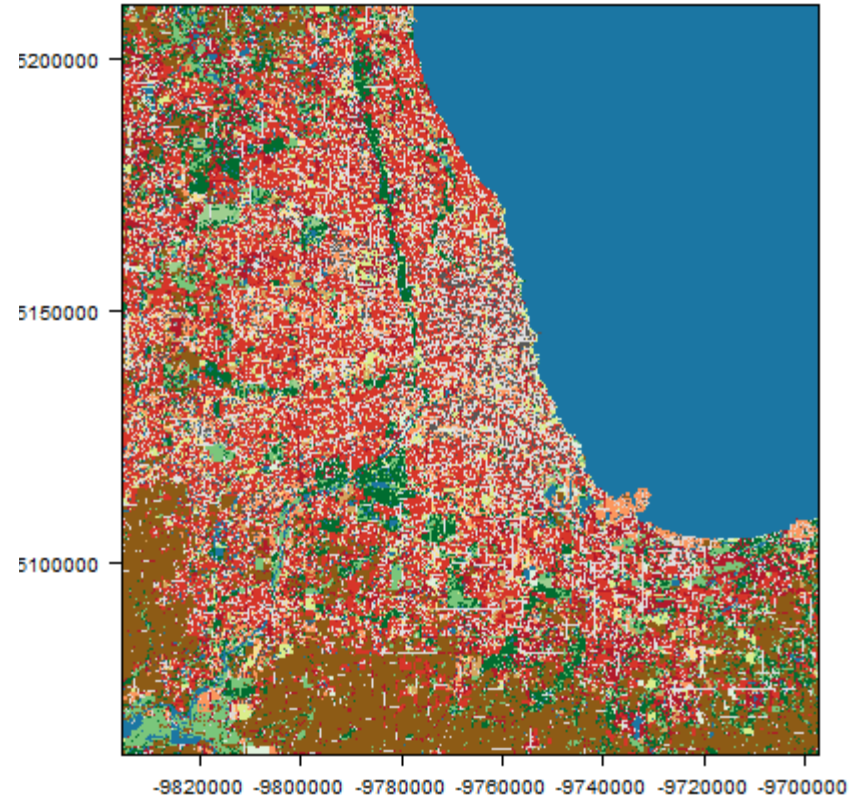


# Why use OpenStreetMap?

## Chicago, IL



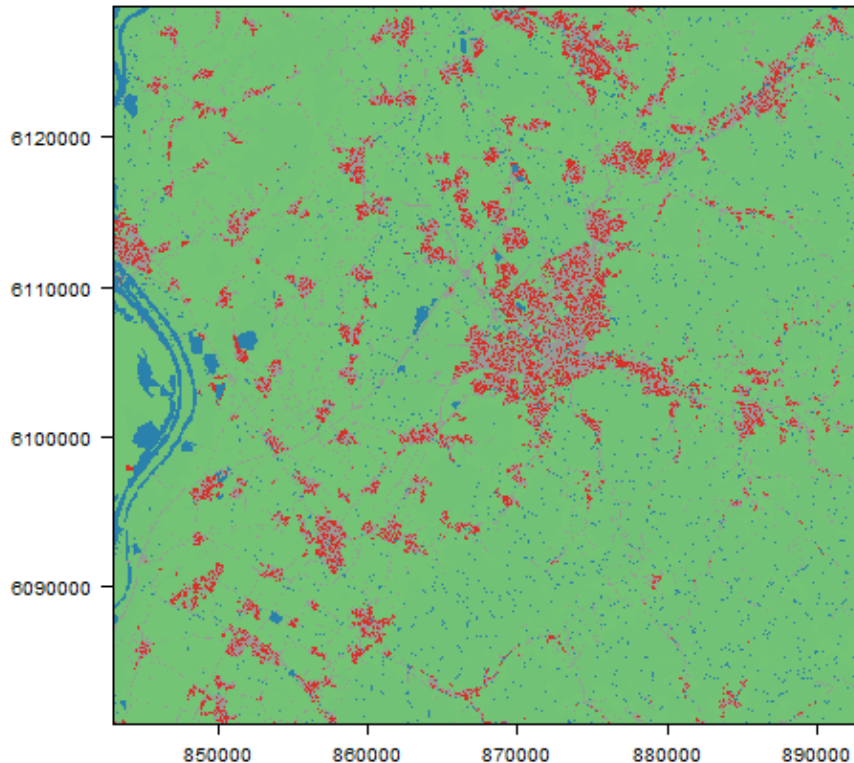
Commission for Environmental Cooperation  
Land cover and land use map



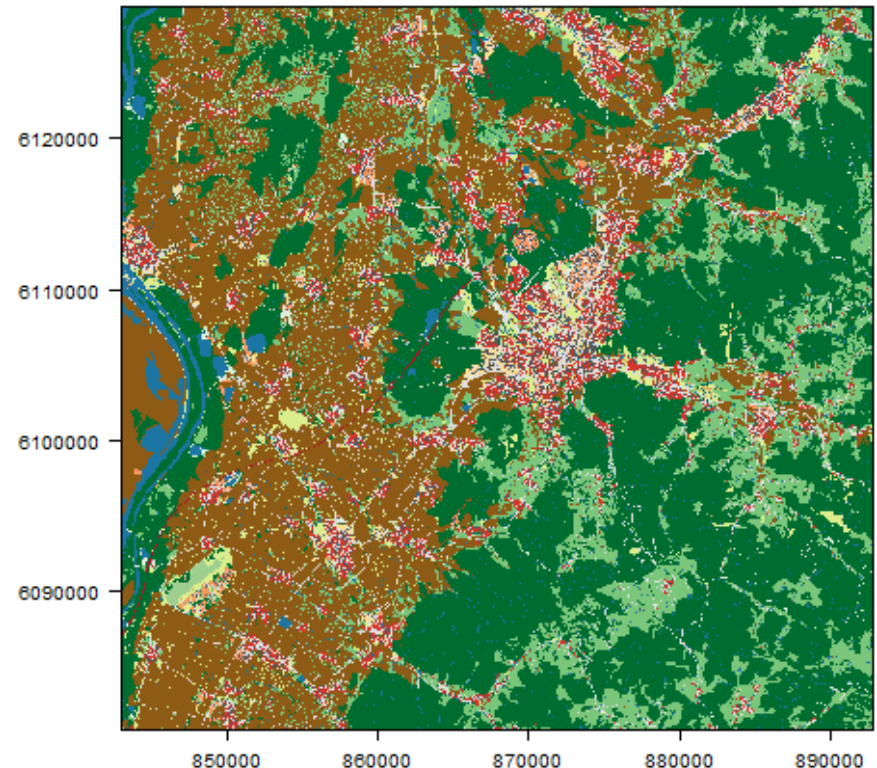
OSM integrated map

# Why use OpenStreetMap?

## Freiburg, Germany



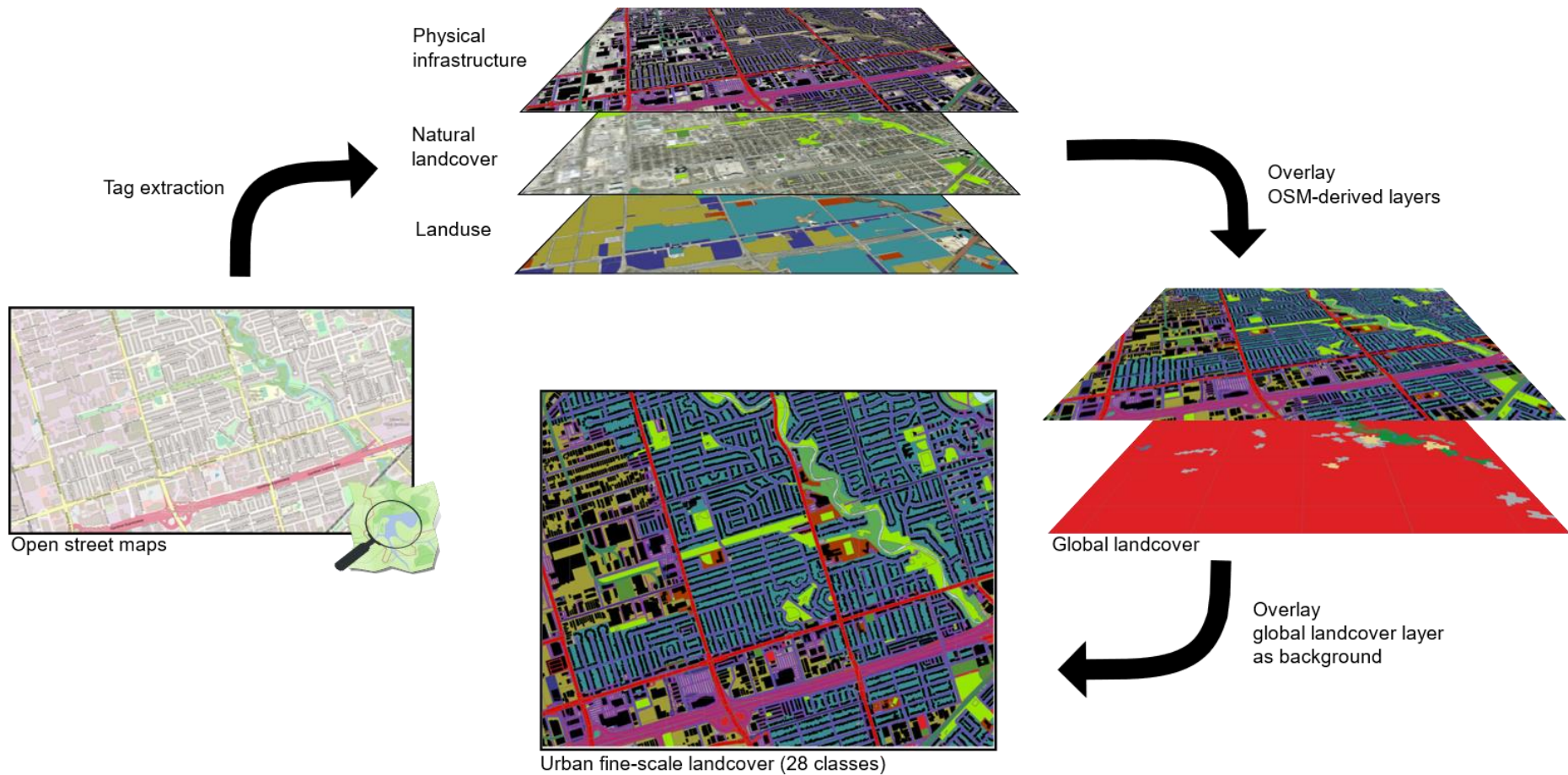
Commission for Environmental Cooperation  
Land cover and land use map



OSM integrated map







# How do we use OpenStreetMap?











# Landcover classes included (27 classes)

## Physical Infrastructure

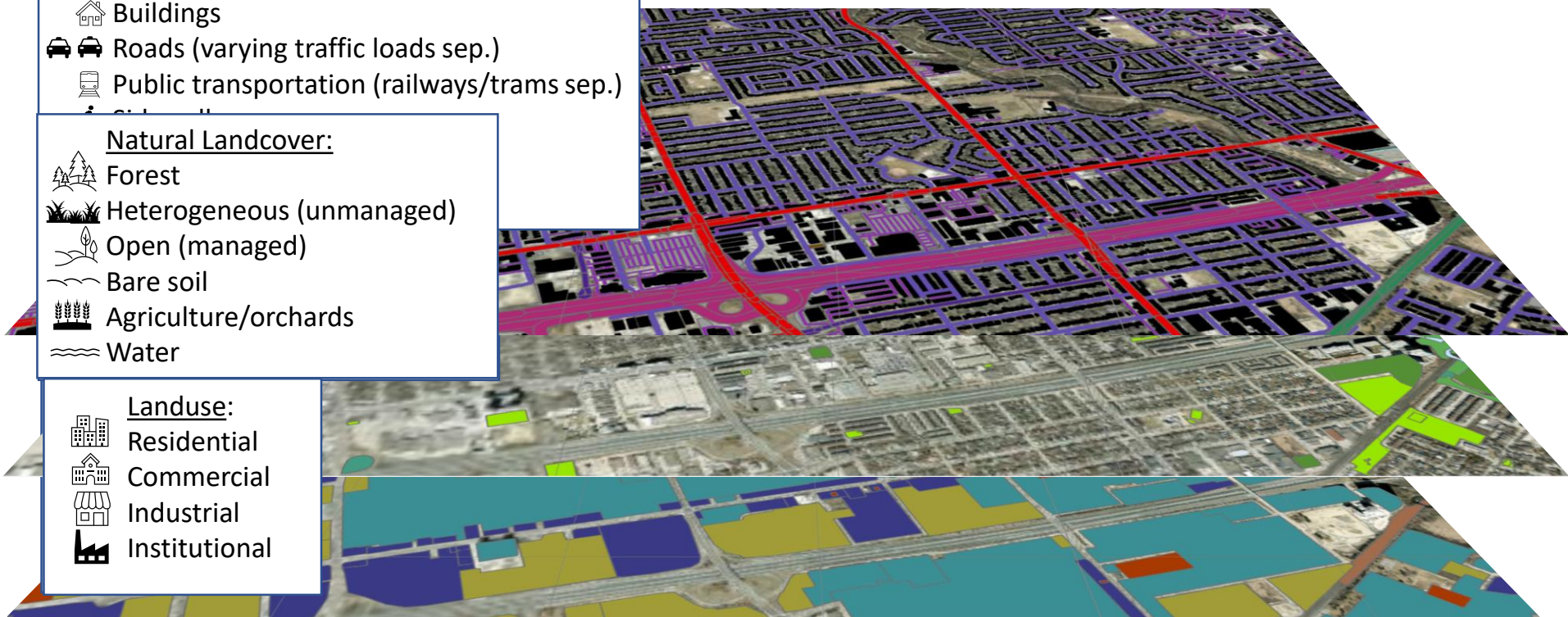
-  Parking lots
-  Buildings
-  Roads (varying traffic loads sep.)
-  Public transportation (railways/trams sep.)

## Natural Landcover:

-  Forest
-  Heterogeneous (unmanaged)
-  Open (managed)
-  Bare soil
-  Agriculture/orchards
-  Water

## Landuse:

-  Residential
-  Commercial
-  Industrial
-  Institutional



# Why use OpenStreetMap?

## Climate Data Store + OSM, Bariloche

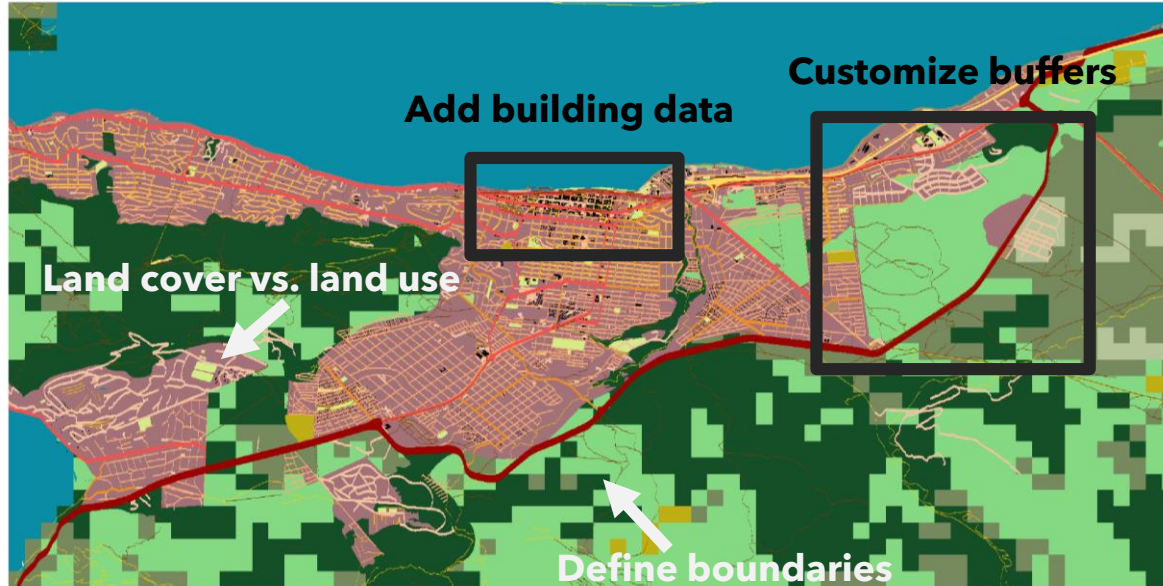


Landcover Class

residential	roads_na
landuse_railway	roads (v.l. traffic)
open green	roads (l. traffic)
protected area	roads (m. traffic)
resourceful area	roads (h.t.l.s)
heterogeneous green area	roads (h.t.h.s)
barren soil	walking trails
dense green area	railways
water	unused linear feature
parking surface	barriers
buildings	shrubland
sidewalks	sparse vegetation (tree, shrub, herbaceous cover)

# Why use OpenStreetMap?

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# Lets get started!

## Enhancing Maps with OSM Tutorial

1. Login to GitHub online and open UWIN\_tutorials>IUWC25\_OSM >enhancing\_maps.md
2. We are going to fork the 'UWIN\_tutorials' repository on your local GitHub
3. Start a new R project and script in this folder to work through code

# Questions?

Email us:

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[tiziana.gelmi@gmail.com](mailto:tiziana.gelmi@gmail.com)

# Thank you!



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