Future land use and conservation priority sites for southeastern Spain

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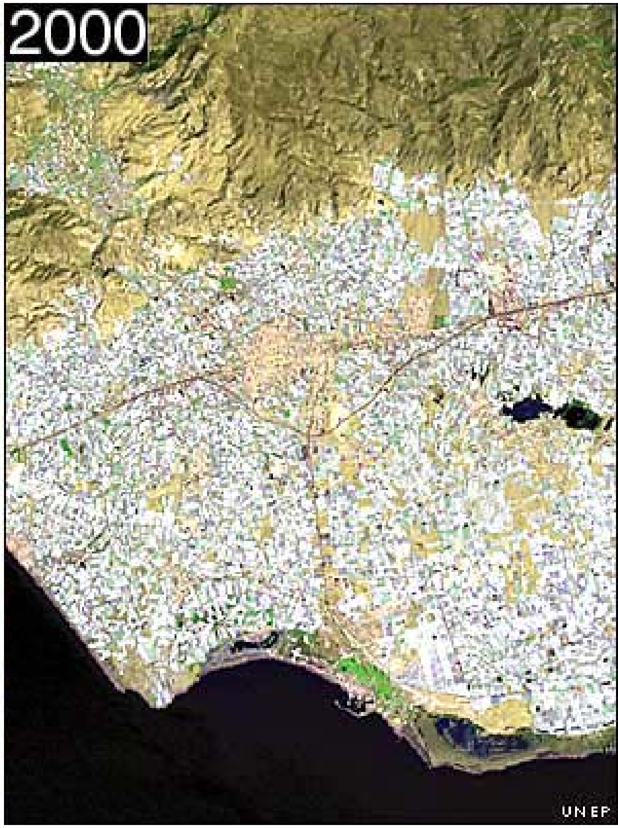
Overview

Study Area

- Study area:

Almería province

- Detected Dynamics:
  - LU polarization: **Population**, **Urbanization** (tourism) and **Agriculture** (intensification)



Berlin city : 892 sq km
Almeria province: 8770 sq km

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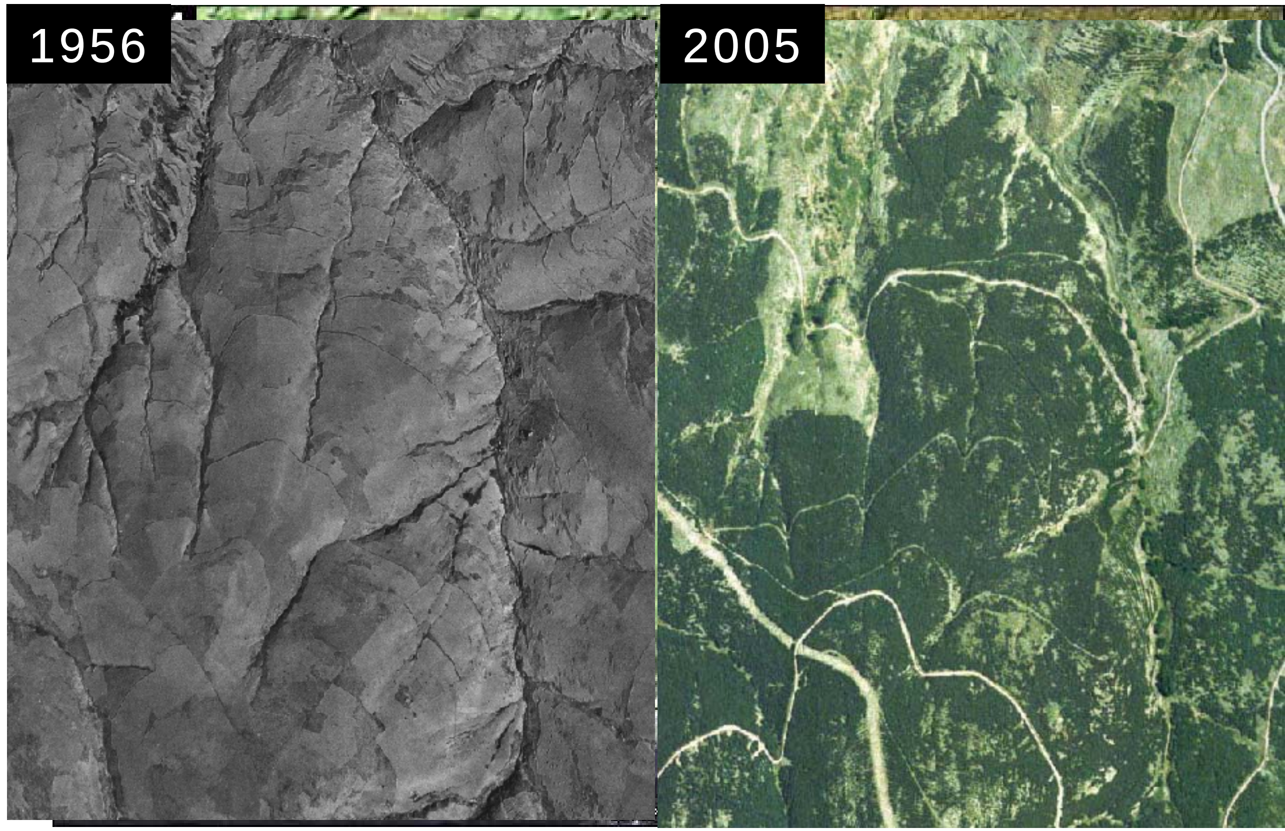

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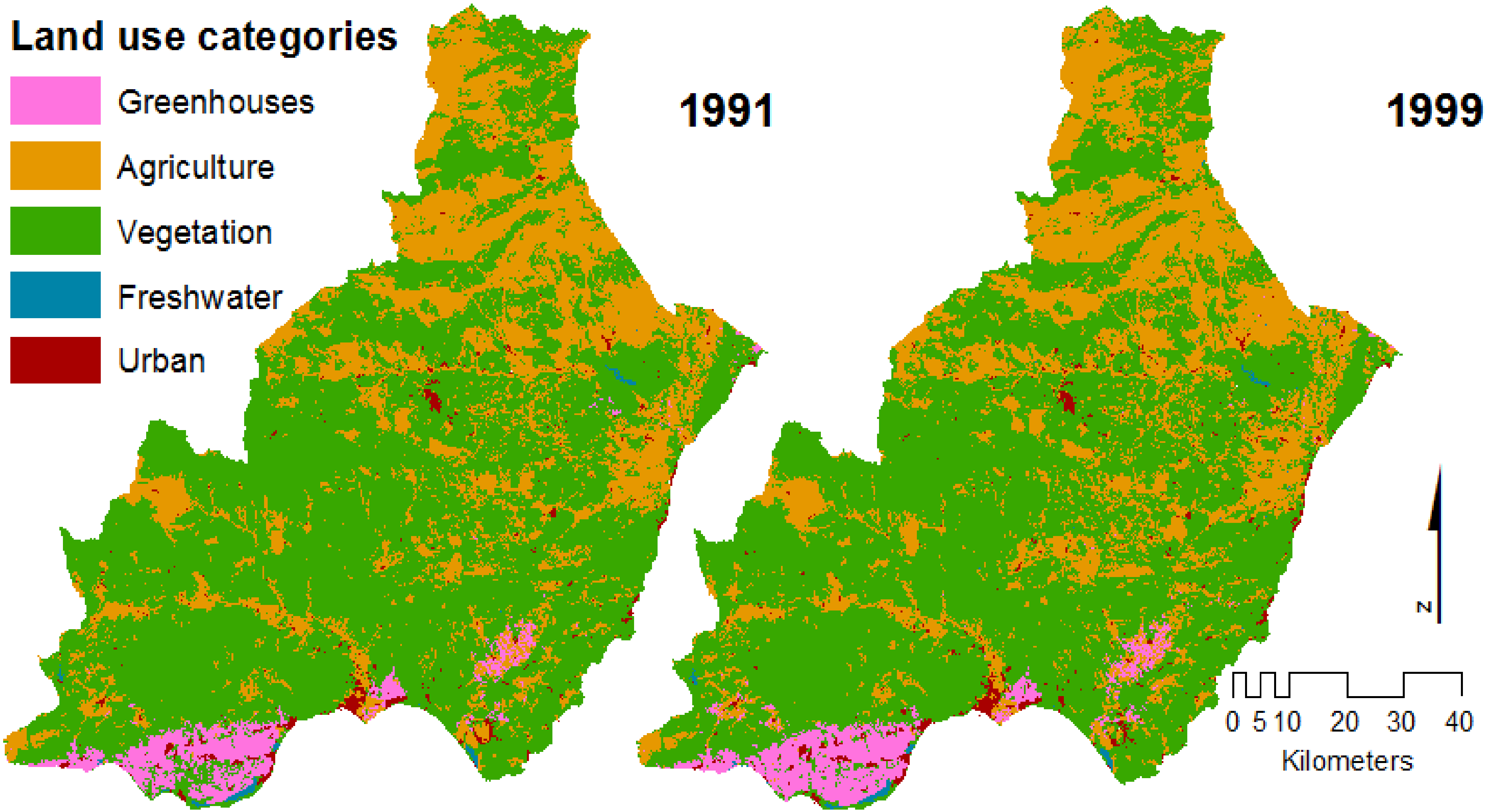
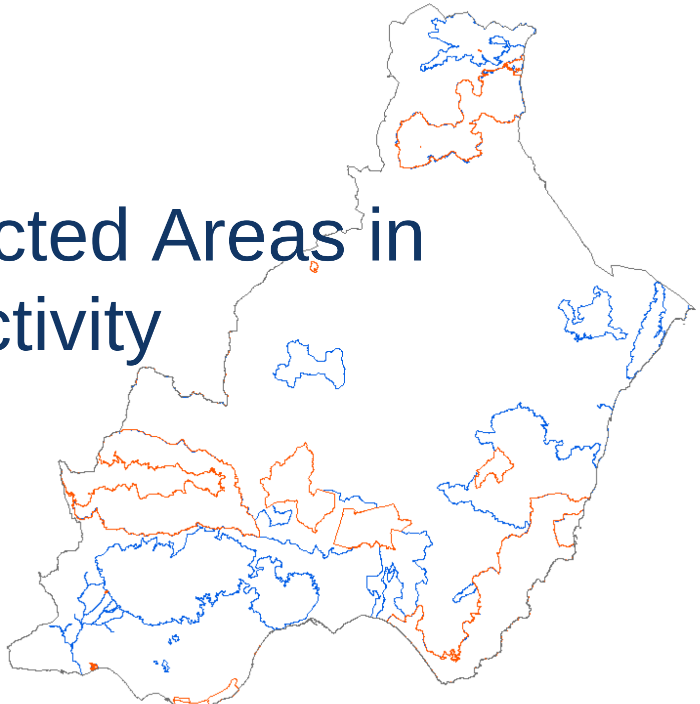

Land use categories
Greenhouses
Agriculture
Vegetation
Freshwater
Urban
1991
1999
N
0 5 10 20 30 40
Kilometers


Urban
Agriculture
Greenhouses
Fresh water bodies
Semi-natural
vegetation

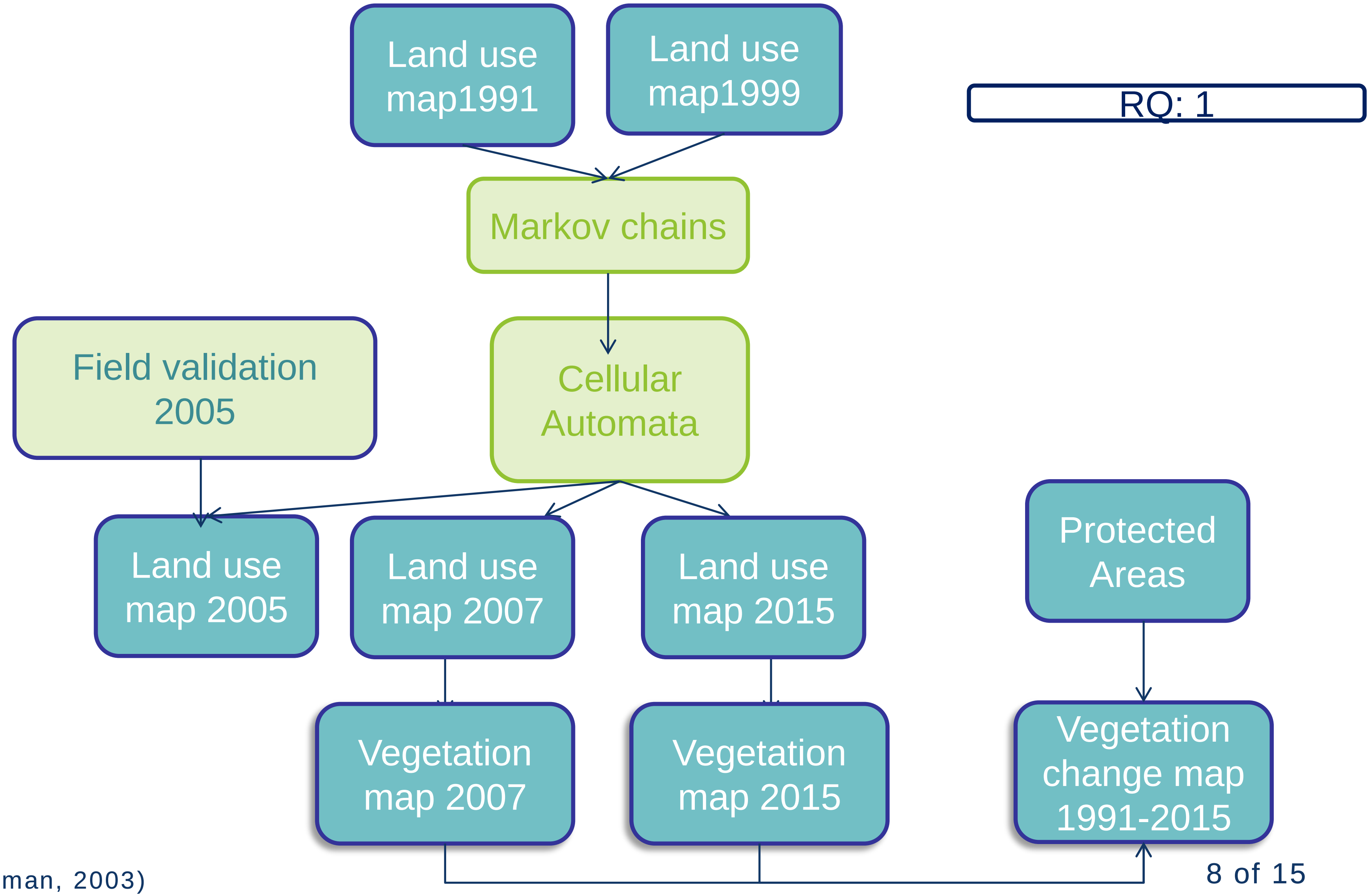
Research Questions

- RQ 1: How does the evolution of past and future land use changes effect future fragmentation and connectivity of natural habitats?
  - Land use model
  - Image segmentation

- RQ 2: What is the role of Protected Areas in preserving habitats and connectivity



Evolution of LU- Method



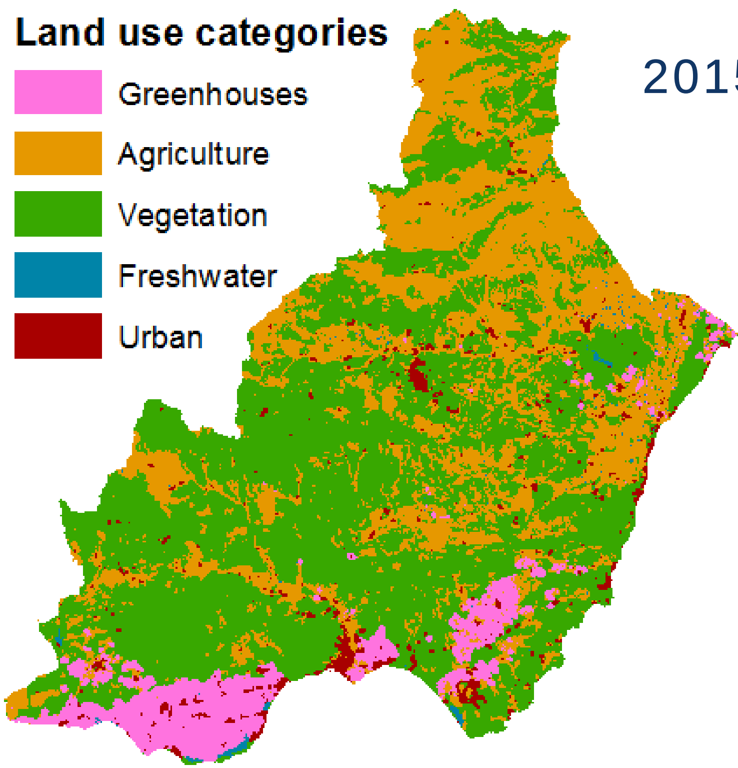
(Eastman, 2003)

Evolution of LU- Results

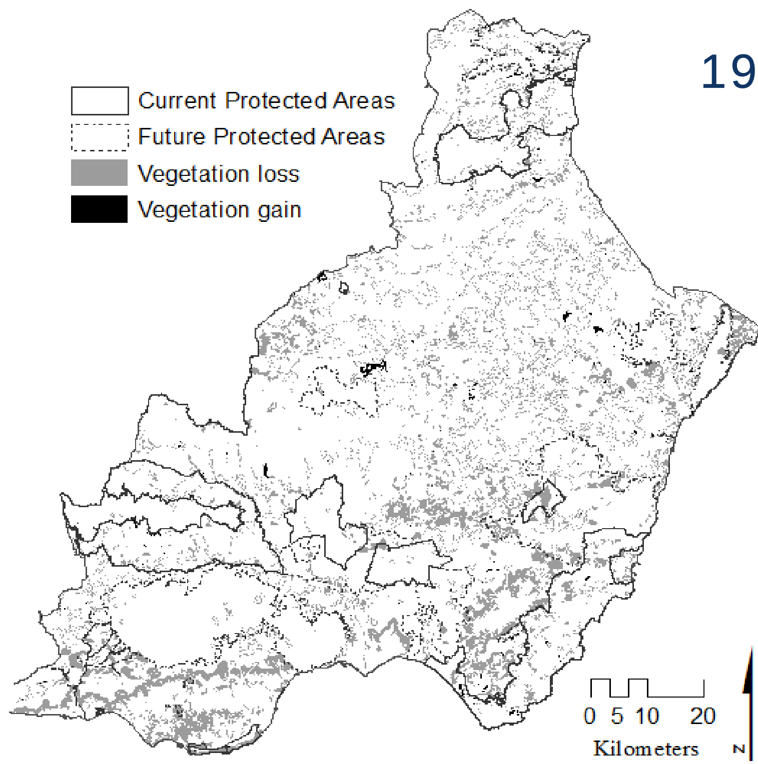
RQ: 1

- LU drivers: agriculture
  - coast:urban,greenhouse
- Overall accuracy: 79%
- Main vegetation loss: coastal areas

2015

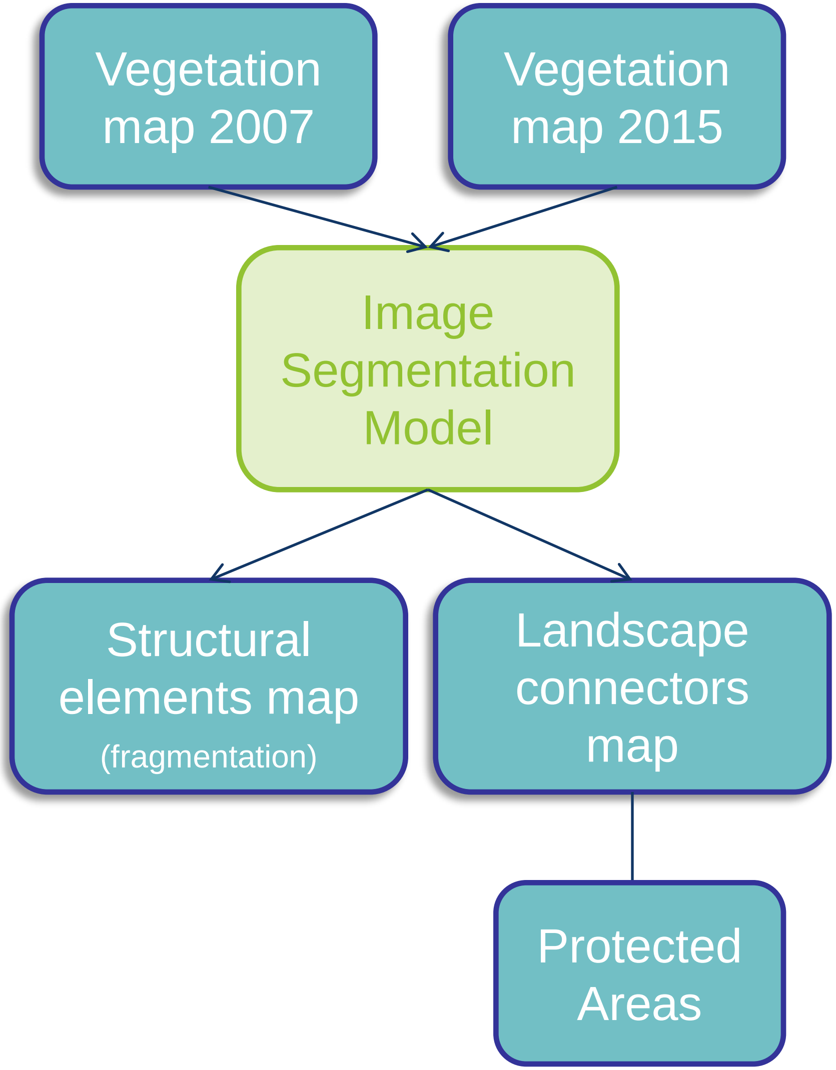


1991-2015



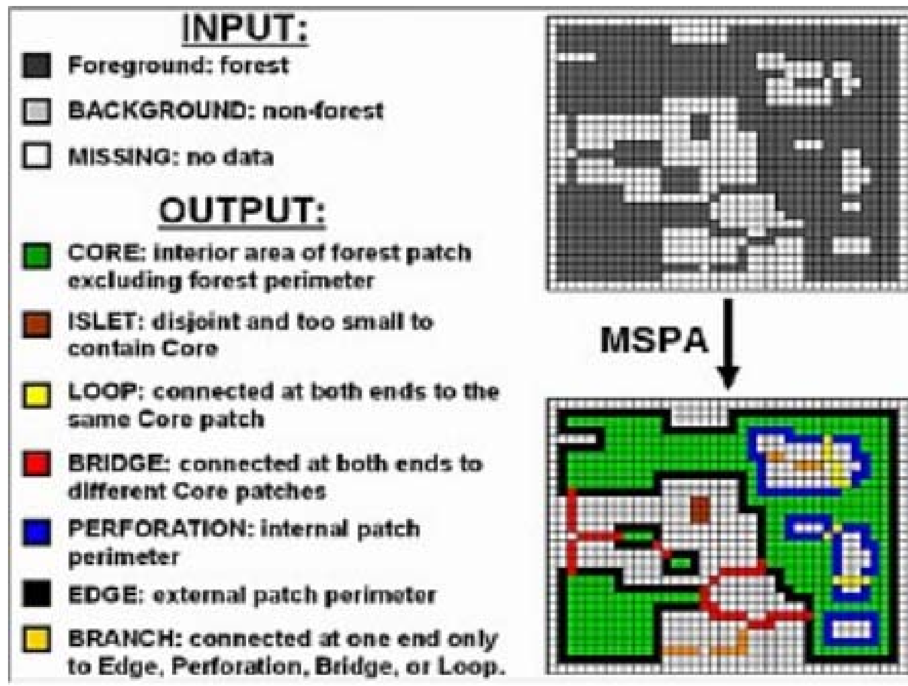
Evolution of Fragmentation and Connectivity- Method

RQ: 1



Morphological Spatial Pattern Analysis: MSPA

Probability of Connectivity: dPC

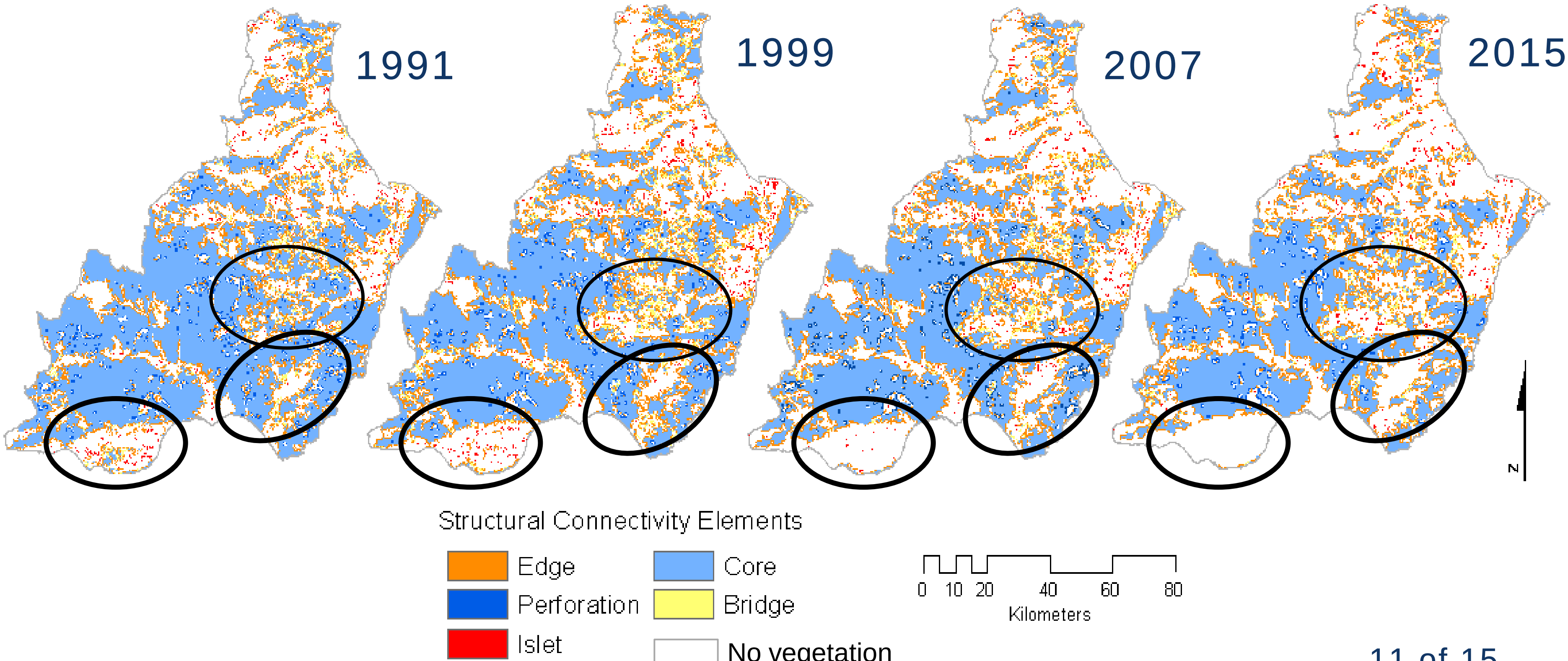


http://forest.jrc.ec.europa.eu/docs/pattern/guidos/Guidos_handout.pdf

(Vogt et al., 2007; Saura and Rubio, 2010)

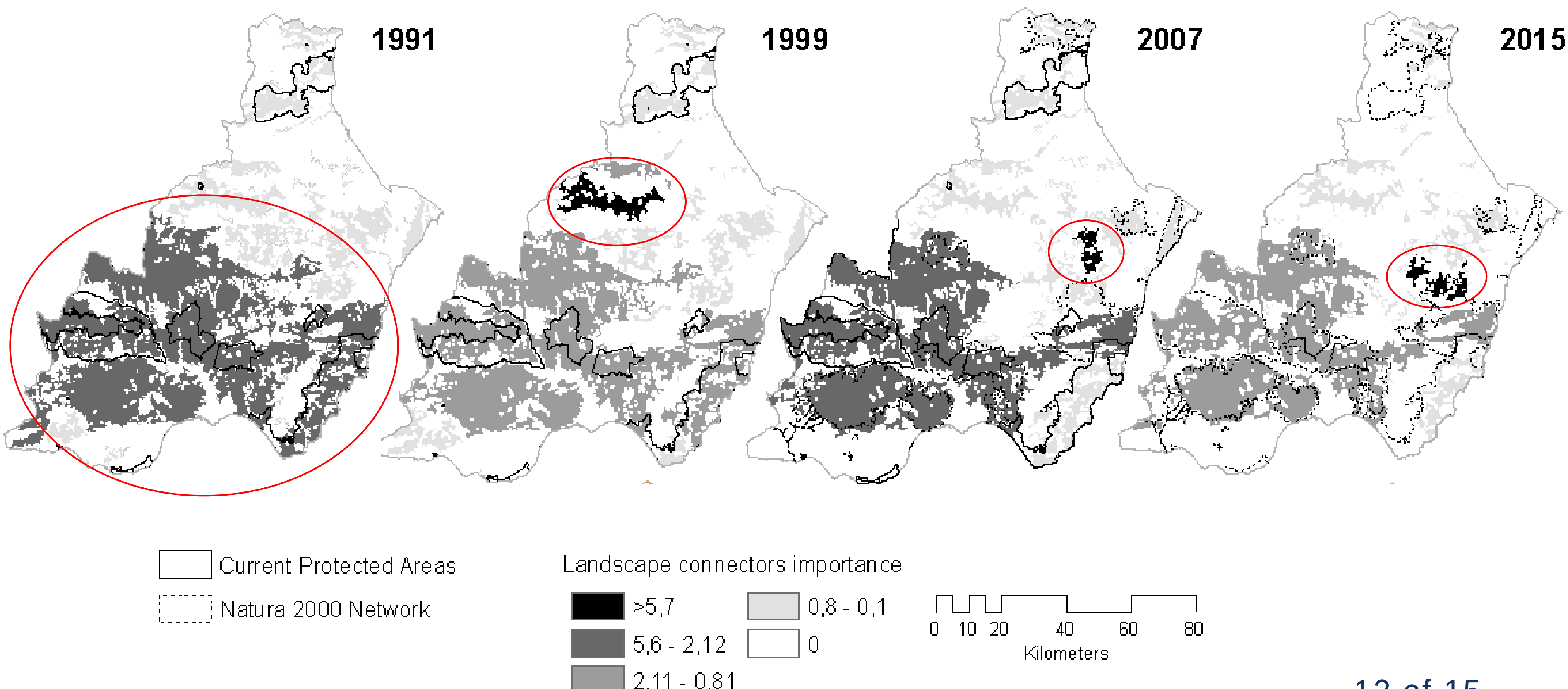
Evolution of fragmentation- Results

- Core area and perforations → Edge effects: coast
- Islet loss: coastal regions



Evolution of Connectivity-Results

- Geographic shift of most important connector
- Most important connectors under protected



Role of Protected Areas in preserving connectivity- Methods, Results

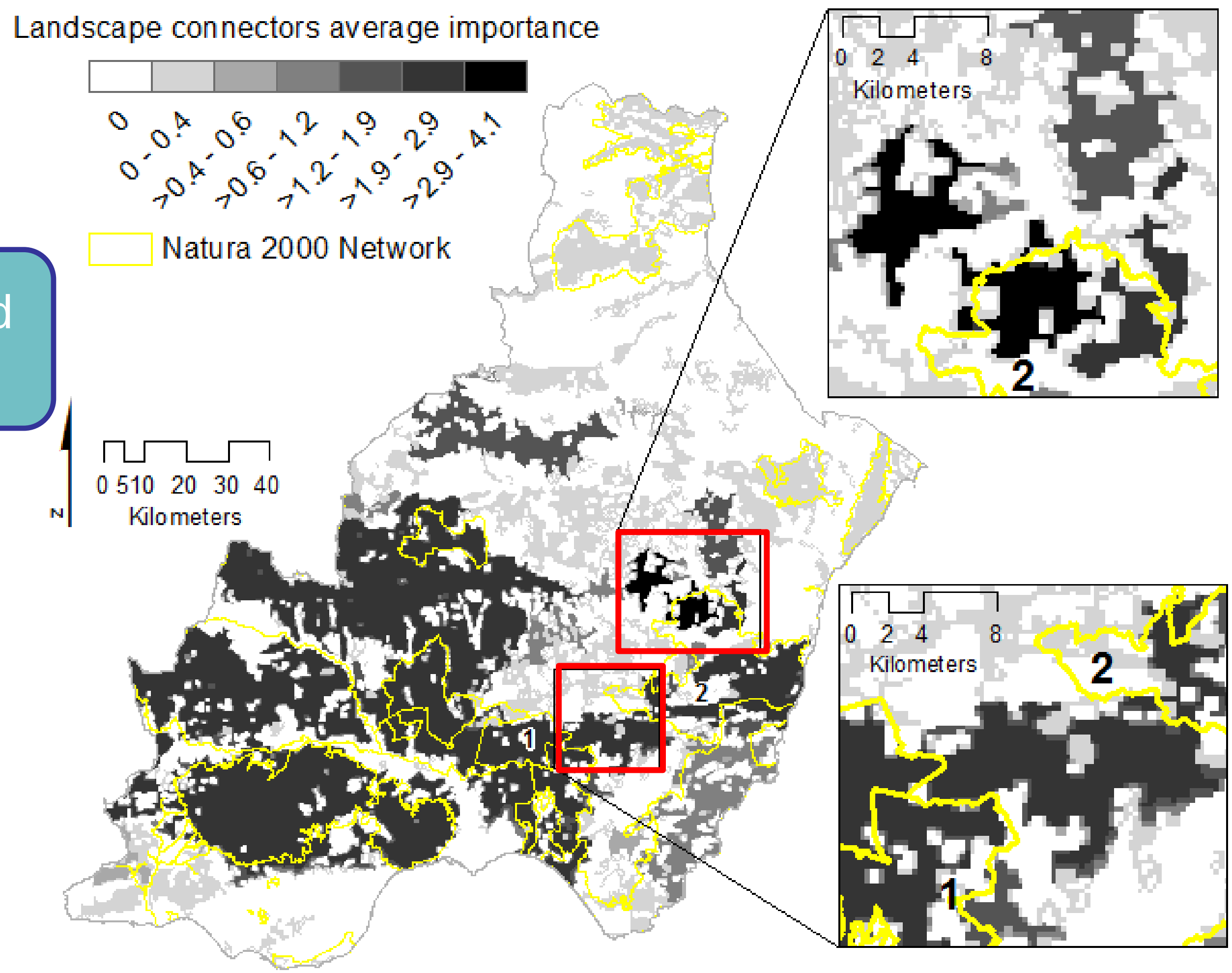
RQ: 2

Landscape connectors maps

GIS

Protected Areas

Protected averaged landscape connectors 1991-2015



Conclusions

- Main LU driver: **agriculture**. Coast: urban and greenhouses developments
- **Coastal areas**: future fragmentation and connectivity patches
- The consideration of good coastal landscape connectors **outside protected areas** in future conservation plans may enhance **landscape connectivity**
- Method: integration of **future land use** patterns with **fragmentation** and **connectivity** analysis -> potential **conservation gaps**

Danke Schoen!

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