



Are there common features in land cover and pattern changes in Mediterranean peri-urban areas?

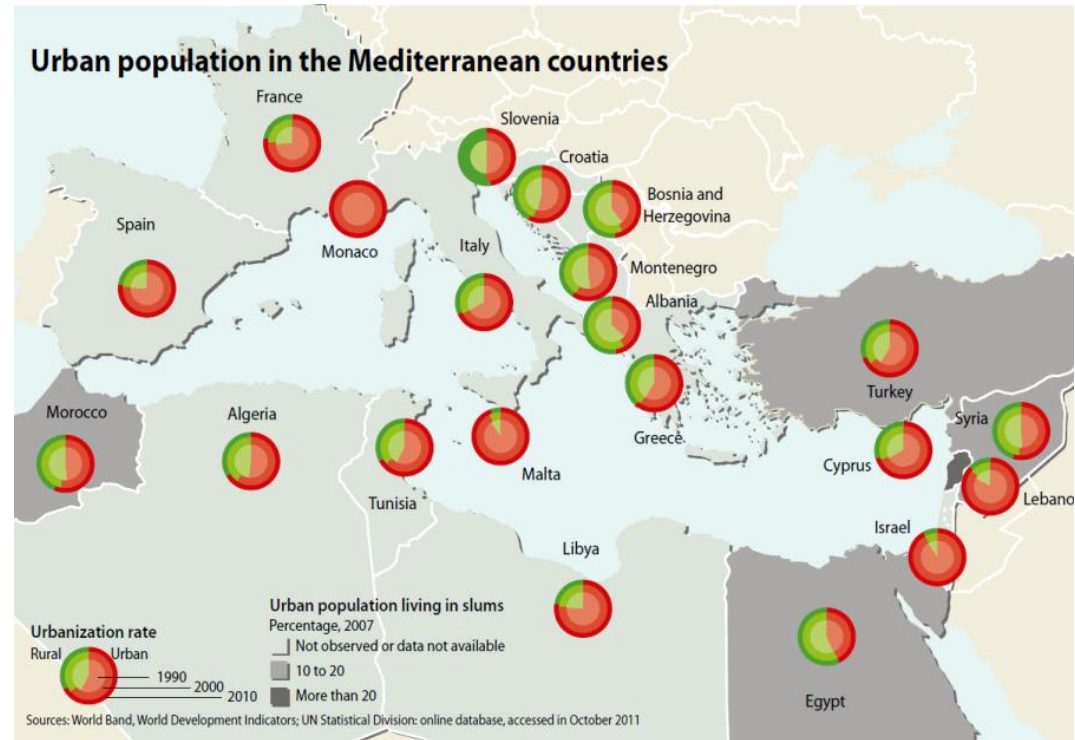
E. Marraccini, M. Debolini, M. Moulery, P. Abrantes, T. Sabbatini,
J.-P. Chéry, A. Bouchier, E. Sanz Sanz, C. Napoleone

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- Artificial land: + 3.4% in Europe 2000-2006
- Peri-urban areas grew 4 times faster than continuous urban ones



- Attraction to the cities and loss / fragmentation of agricultural areas
- Extension of peri-urban settlements in natural areas with fragmentation / loss of ES



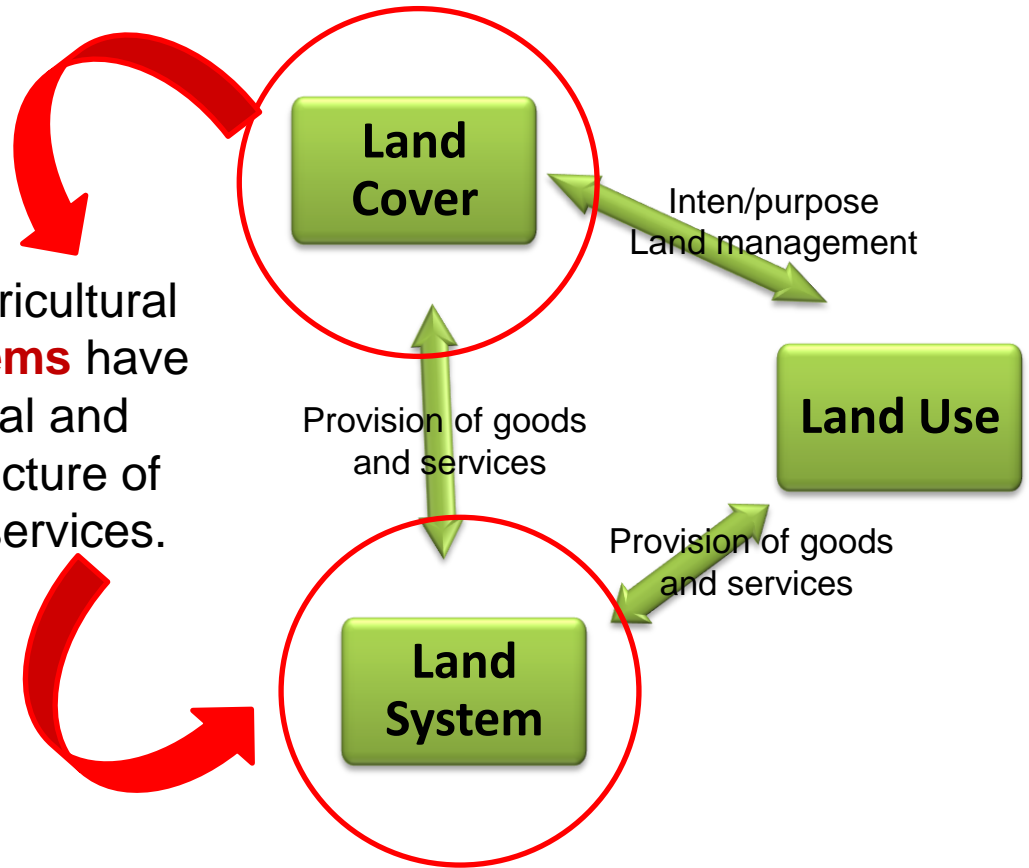
In the Mediterranean:

- urbanization increase more rapidly than population growth
- cities growing with the fastest rate
- High (agro)-ecosystems vulnerability

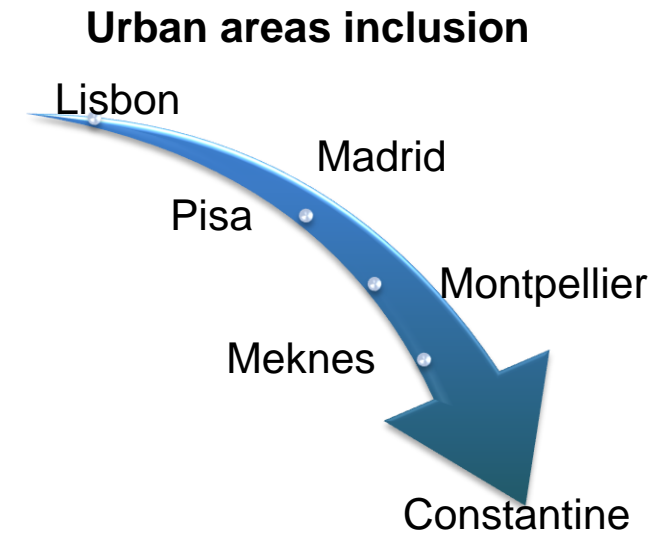
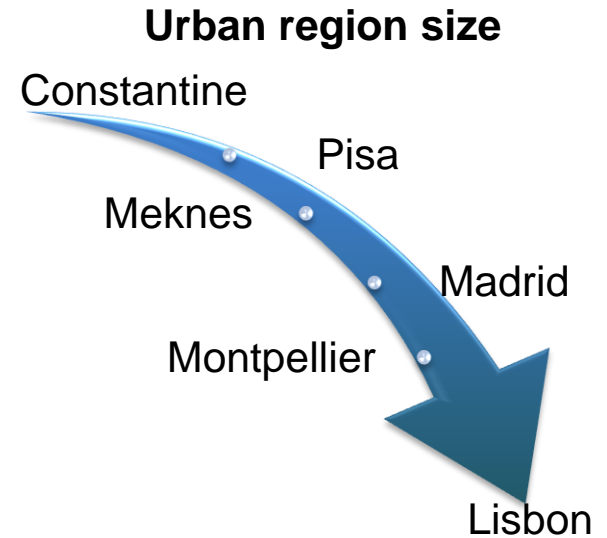
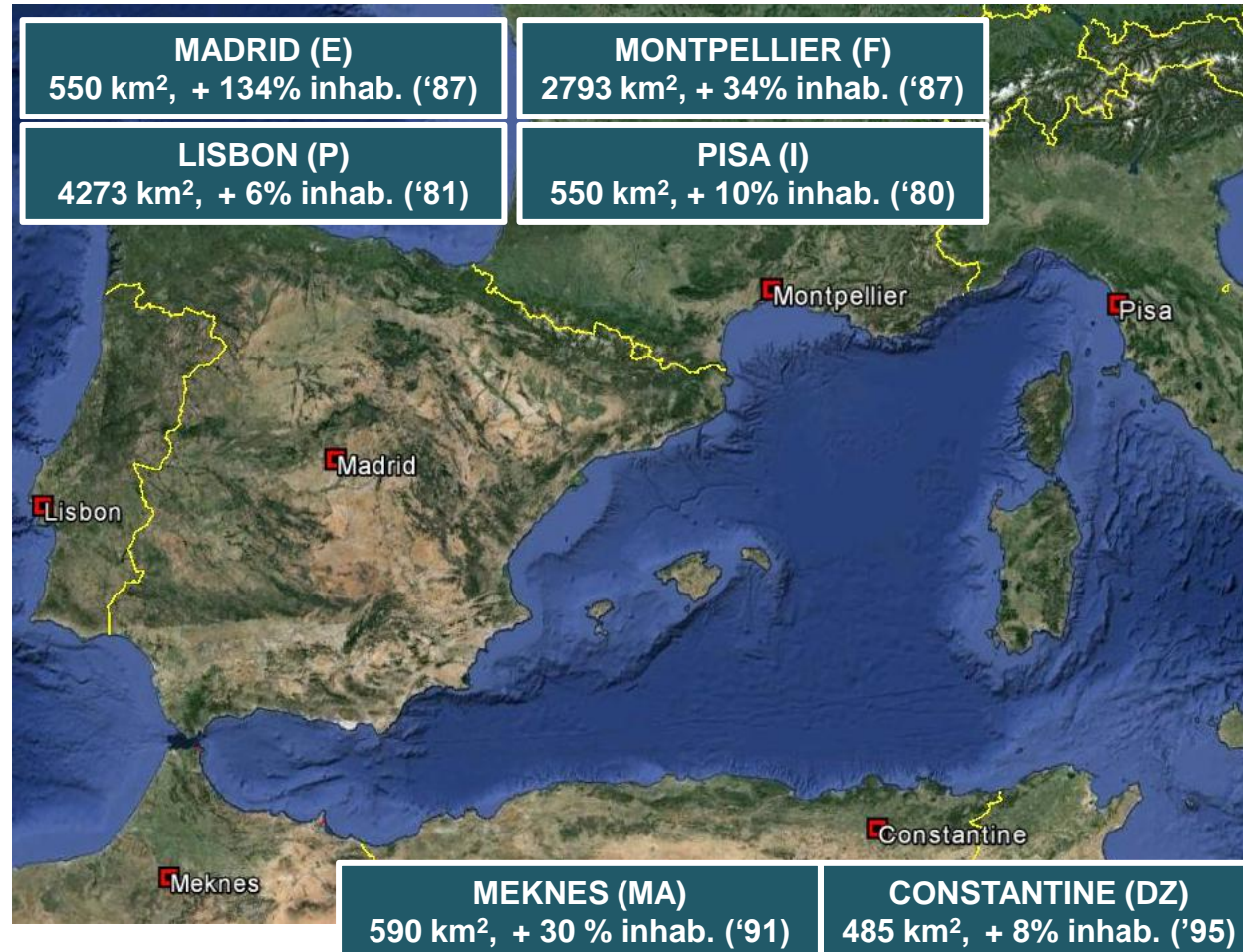
EEA (2010). *The European environment state and outlook. Land Use.*
EEA (2006). *Urban sprawl in Europe, the ignored challenge, EEA report 10.*

Focus on **peri-urban areas as agri-urban systems** fulfilling relevant functions, providing agro-environmental and feeding services

Changes at "systemic" level - agricultural systems or in general **land systems** have direct impacts on environmental and productive/ socio-economic structure of landscapes and on ecosystem services.



Verburg et al. (2009). *J Env Manag*, 90 : 1327-1335



Materials and methods

Land cover changes

- *Between the '80s and the '10s*
- *Landsat images / MultiSpect, ArcGis*
- *Large land cover classes*

**Choice of the year/date:
30 m resolution,
maximum crop cover,
disturbance**

**Semi-supervised
classification based on
different bands / field**

Land cover pattern changes

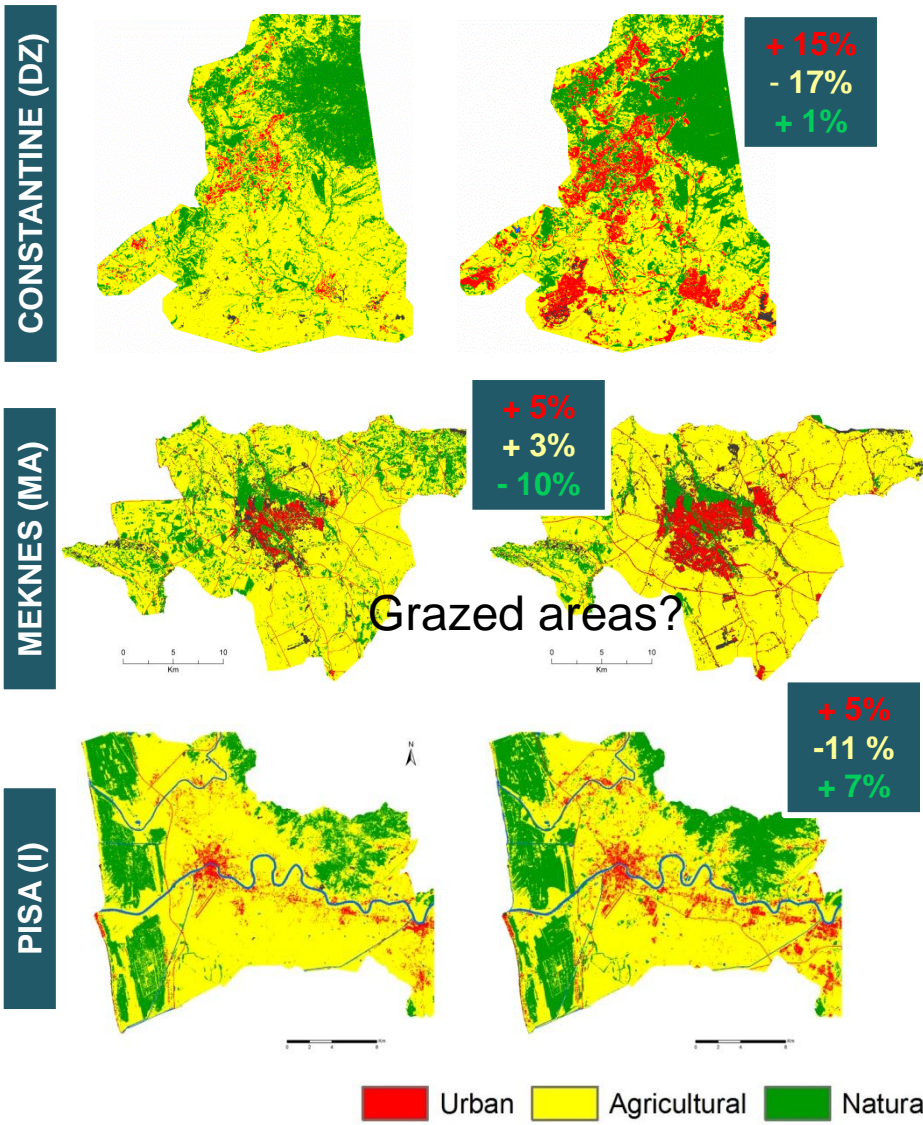
- *Classes and landscape metrics / Fragstat*
- *Use of the moving windows / diversity indexes*

**PD, ED, LPI,
CIRCLE_CV, IJI, SHDI, AI**

**Distribution of different
land cover classes per
window size**

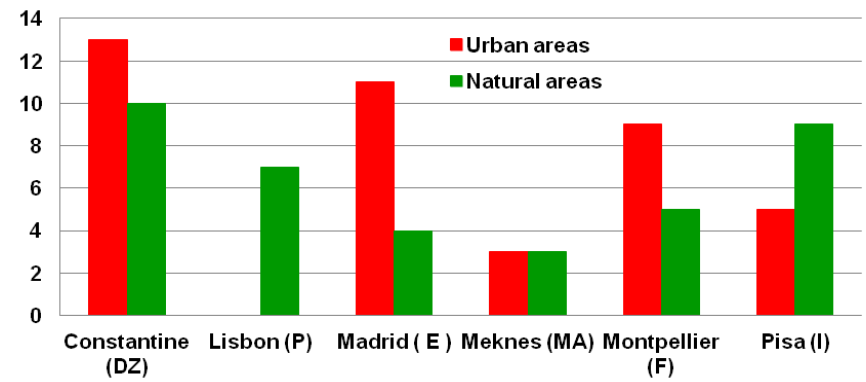
Lu & Weng (2013). Int J Rem Sens, 28: 823-870
Bailey et al. (2007). Ecol Indic, 7: 692-709
Zhang et al. (2012). Prof Geog, X: 1-15

Daume Land cover changes (1985 – 2011)

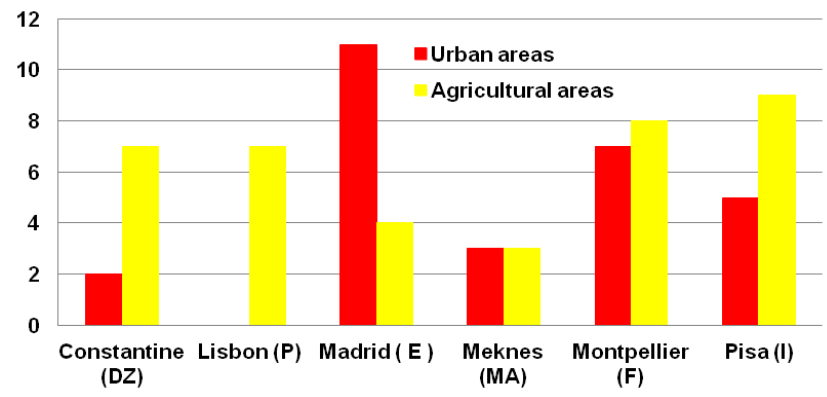


Grazed areas?

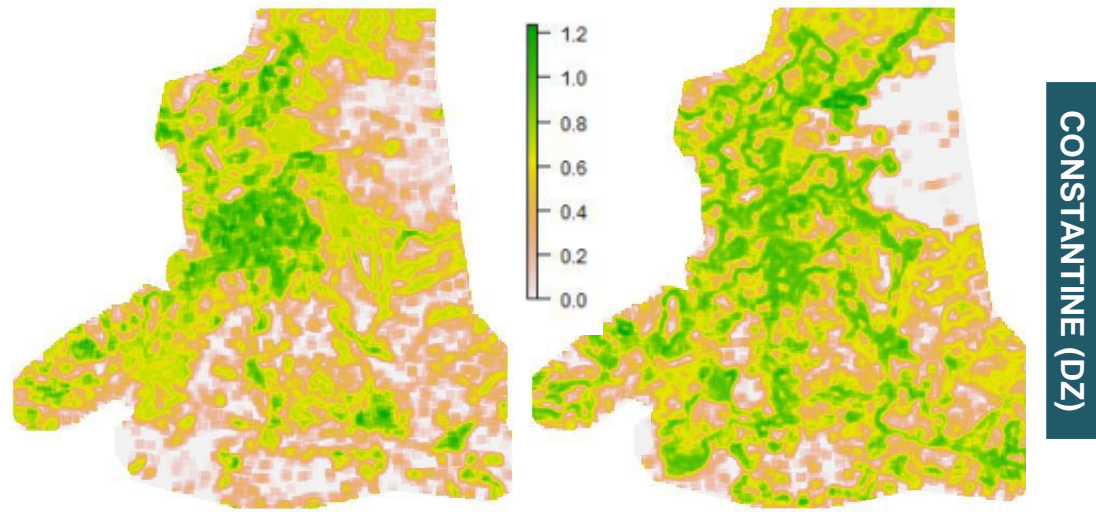
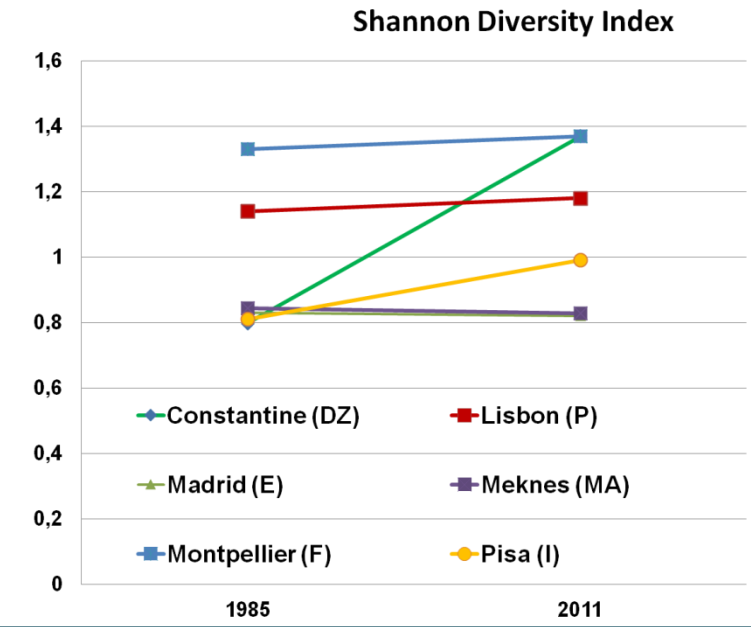
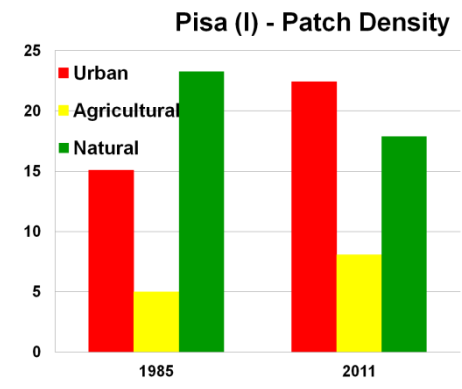
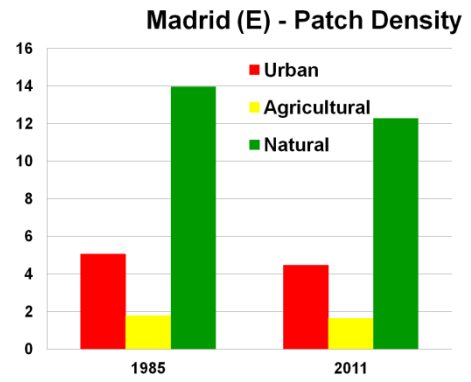
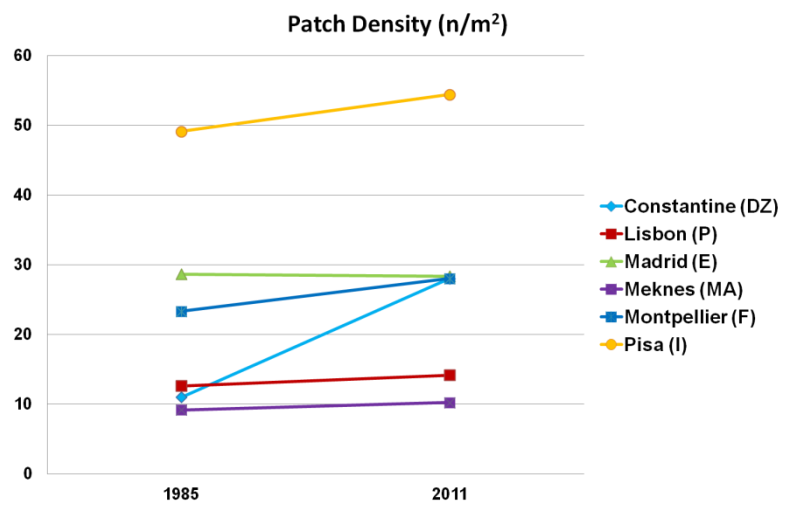
Transitions from agricultural areas (%)



Transitions from natural areas (%)



Land pattern changes



Trends in land cover changes

- ***No differences between North and South of the Mediterranean***
- ***Results affected by the case study***
- ***Limits of Landsat data***

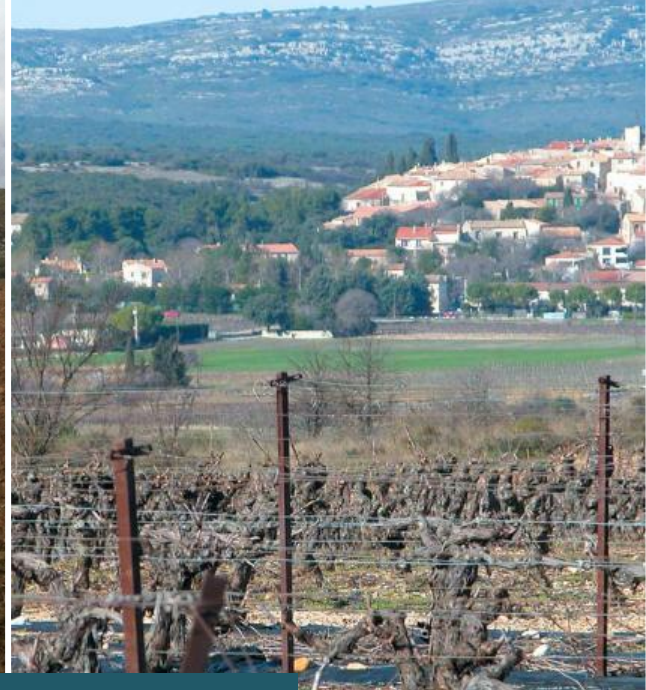
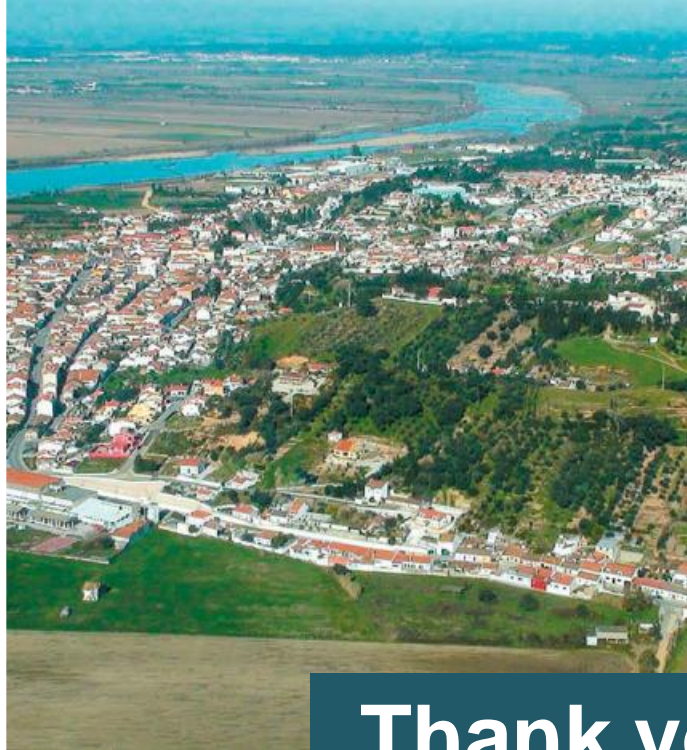
Trends in land pattern changes

Common loss of agricultural and increase of the natural areas

Direct (proximity) and indirect (distance) impacts of urbanisation

Fragmentation (agricultural areas) and compaction (urban & natural areas)

Use of SPOT data → land use changes



Thank you for your attention

