**MODELLING PAST AND FUTURE LAND USE AND COVER CHANGES**

A MULTI-SCALE APPROACH APPLIED IN THE PYRENEES – THE MODE RESPYR PROJECT

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**CONTEXT AND OBJECTIVES**

**Context**
- Land cover changes have significant impacts on local and regional climate and on others environmental issues.
- Understanding past LUCC is essential to reduce uncertainties related to current changes, identify driving forces of LUCC and better anticipate future changes.
- Under climate change assumptions, Pyrenees mountains will face dramatic effects of climate change and show high environmental stakes (water / snow resources, biomass, biodiversity...)

**Scientific & Methodological issues**
- Providing knowledge on past and future land use and cover changes with heterogeneous datasets
- Simulating local / regional land use and cover changes using spatially explicit models
- Simulating past / futures land use and cover changes based on scenarios
- What is the role of spatial approaches in prospective research?
- What spatial and temporal resolutions are required for short / long term projections?

**PROJECT METHODOLOGY**

**STUDY SITES**

**The Pyrenees**
- Davaytage
  - Long Term Ecological Research site
  - 76 km² - 6 municipalities
- Víceos
  - Human-Environment Observatory
  - 244 km² - 7 municipalities
- Garrotxes
  - 25 years of observations / studies
  - 85 km² - 5 municipalities

**PRELIMINARY RESULTS**

**LUCC databases**

Constitution of LUCC databases based on a reliable land use and cover typology
- Palaeo database (PALEOPYR and in situ cores)
- Land use and cover maps from 1940's (Houet et al. 2012)

**Local LUCC over the last Century**
- Comparison of local LUCC (cf. Sheeren et al. 2012 - Poster AGILE'2012)
- Combining palaeo and GIS datas for understanding LUCC
  - Linking grazing activities and land use and cover changes (Galop et al. 2011)

**CONCLUSION**

MODE RESPYR (2011-2015) is an ongoing project integrating heterogeneous spatially explicit LUCC data and coupling various disciplines.
- LUCC databases are nearly finalized and multi-scaled analyses have started as well as model comparison and exploration.
- Local landscape changes are mostly attributed to human land use changes rather than global warming and have to be compared with regional trends
- Participatory and scenarios approaches will be performed for modelling future and past local and regional land use and cover changes

**REFERENCES**


**WEBSITE**

http://w3.mode-respyr.univ-tlse2.fr