

**PARALLEL SESSION B : FRONTIER DOWNSCALING TOOL
B2: HUMAN-CLIMATE REGIONAL INTERACTIONS, TOWARDS RESMS**

EURO-CORDEX-LUC: A new initiative on coordinated regional land use change experiments

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We introduce a new initiative within EURO-CORDEX focussed on coordinated regional land use change (LUC) experiments, that will be carried out in collaboration with the LUCID international intercomparison project. LUC in this context refers to human activities at the land surface, and we consider land cover conversions as well as land management changes. We want to explore robust impacts of LUC on regional climate under current and future changing global climate conditions. Our primary questions are:

- What is the relative contribution of LUC on the regional climate change signal?
- Which temporal and spatial scales are relevant for LUC effects on climate?
- What is the effect of LUC on changes in climate extremes?
- What is the feedback of LUC for adaptation and mitigation purposes under today's and potential future climate conditions?

Prior to solving those important questions, there are major challenges for coordinated LUC experiments with regional climate models on high spatial resolution. Some key challenges which we will address include:

- How to achieve land use information based on a common land use distribution for all models to start from
- How to generate consistent LUC information for potential flag ship pilot studies at high spatial resolution beyond 0.25°
- How to define and implement a standardized LUC protocol
- Evaluation of model performances, based on Re-analyses driven simulations
- How to design the LUC experiments and conduct an efficient RCM matrix combined with global climate models for historical time periods, and for future time periods based on different emission scenarios
- Inter-comparison of model sensitivities related to LUC

As a climate service for Europe, we aim to establish an ensemble of coordinated regional climate change projections based on land use change scenarios in addition to emission scenarios. One major goal is to provide realistic and robust regional climate change information. The investigation of regional LUC feedbacks can also support the planning of regional land management strategies. With this conference contribution we would like to present and discuss an initial concept for the EURO-CORDEX-LUC activity as a strategy to invite and engage widespread collaboration, also beyond EURO-CORDEX.

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