

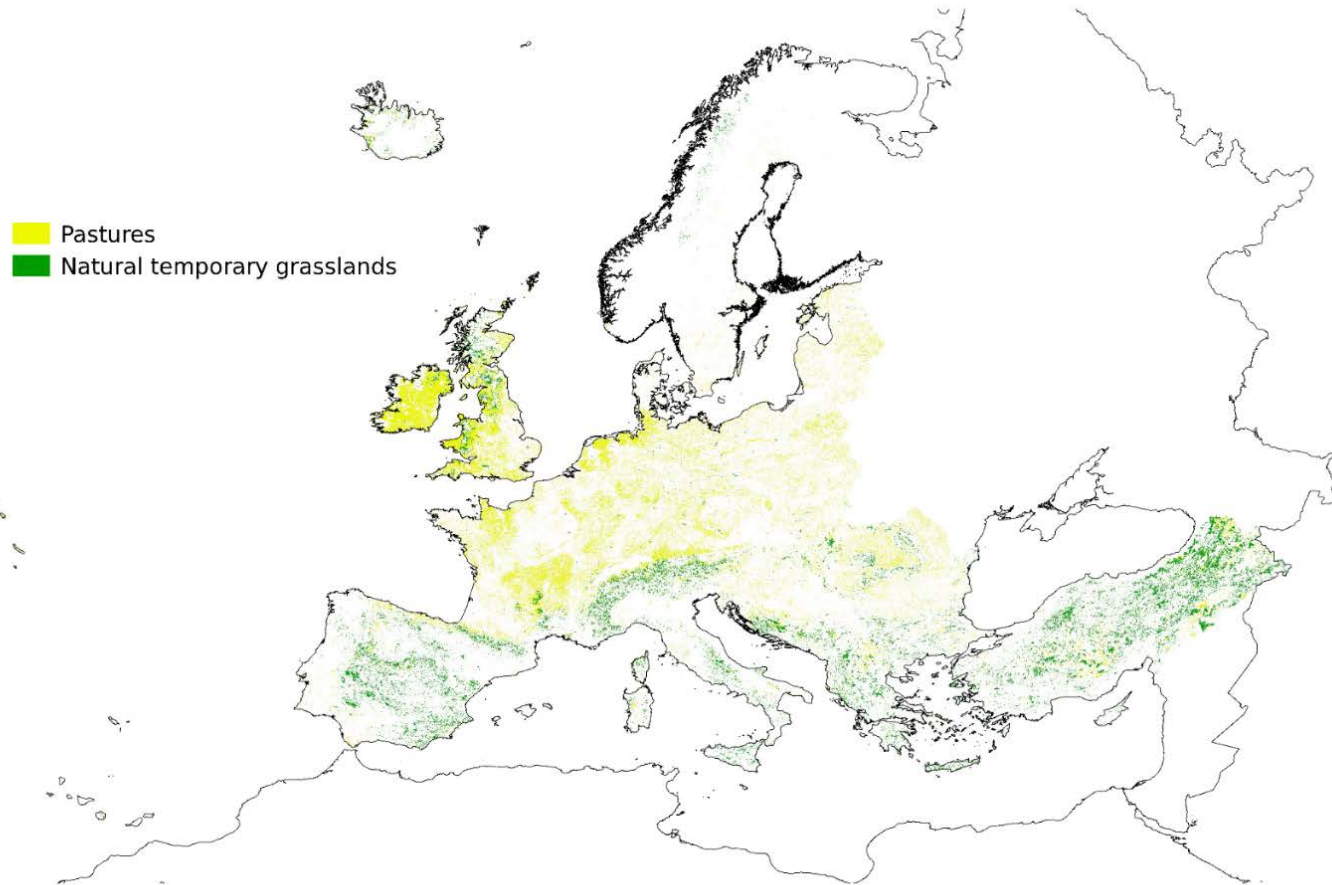
# Boosting the genomic adaptation to anthropogenic climate change in a European grassland species

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# INTRODUCTION

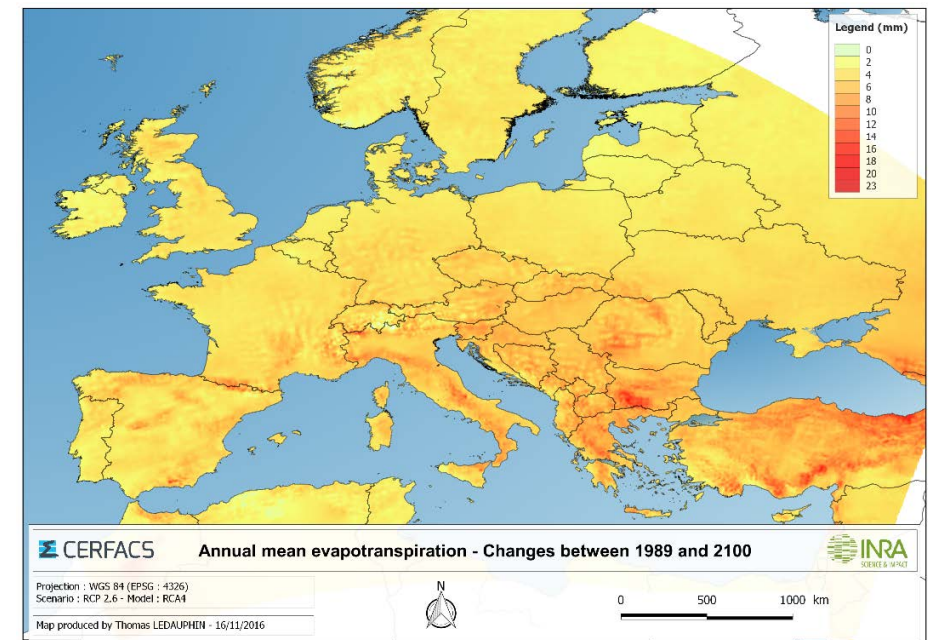
## Grasslands in Europe



- **Economical services**  
↪ 36% of the total utilized agricultural area in the EU.

- **Ecological services**  
↪ Large areas of natural grasslands producing habitat for wildlife.

## Most optimistic Climate Change Scenario



# INTRODUCTION

- **Study species:** *Lolium perenne* (perennial ryegrass)
- **Objective:**
  1. Detect genetic markers associated with climatic parameters -subject to natural selection in the past
  2. Design genotypes that would be adapted to future conditions

# MATERIAL AND METHODS

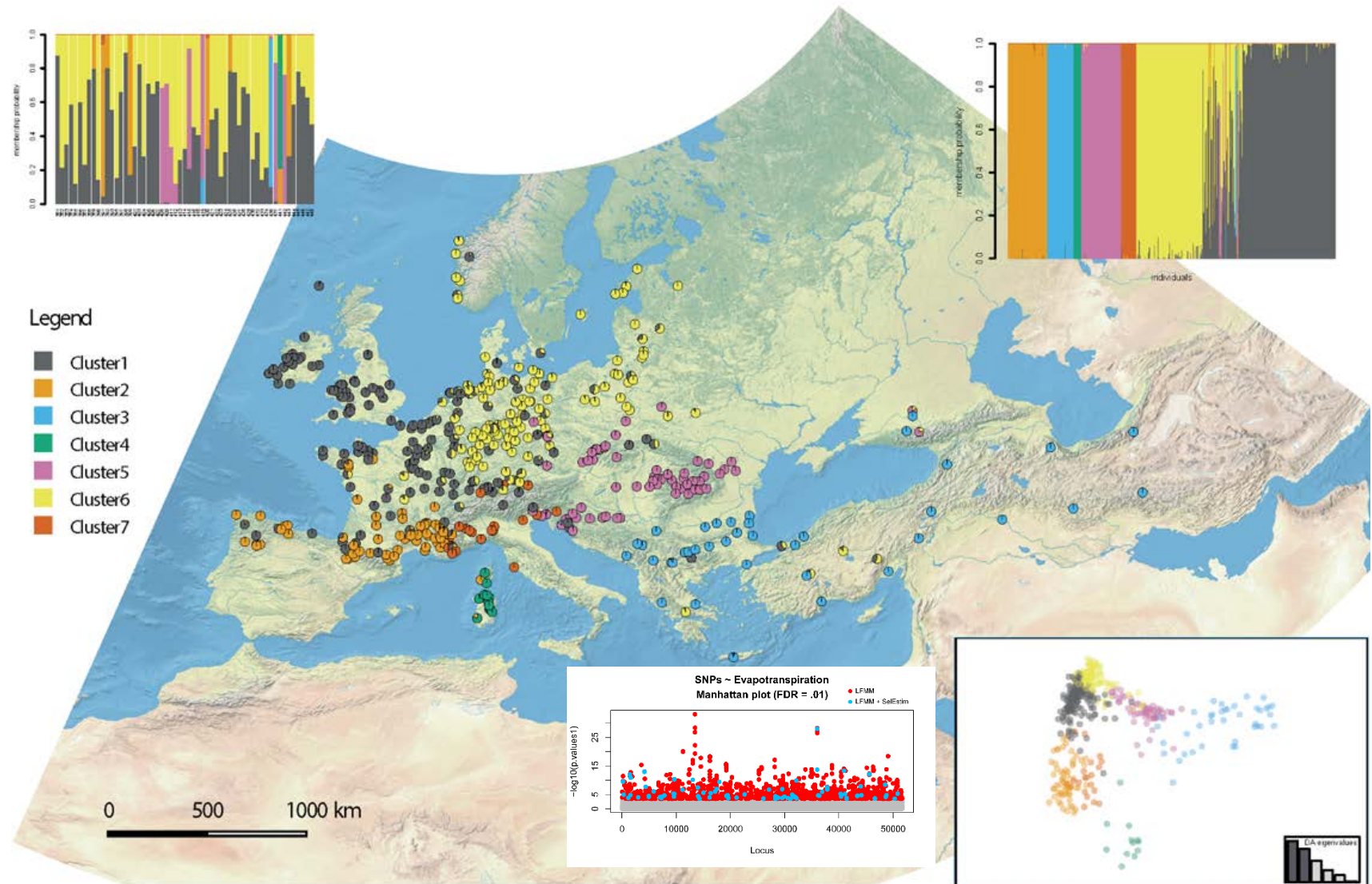
- **The dataset:**
  1. **80 environmental and ecophysiological variables:**
    - ETCCDI (Extreme Climate Change Detection Indices) (27)
    - WorldClim BIOCLIM (indexes used for Species Distribution Modeling (27)
    - Newly created “Ecophysiological indexes” specially relevant for perennial ryegrass (25)
  2. **467 *Lolium perenne* populations**
    - 412 from European genebanks and 55 from new In situ sampling
  3. **>500 000 SNPs in >70% populations**
    - Genotyping-by-sequencing (GBS) of pools of individuals (Pool-seq)
      - DNA mixture of 300 individuals used per pool (population)

# RESULTS AND DISCUSSION

## Genetic structure

- Strong geographical structure and low level of admixture
- Low impact of human-mediated migration derived from domestication practices.
- Strong differentiation in the species along latitude and longitude

• POSTER: preliminary results for the first step of the project:  
**Detection of SNPs associated with evapotranspiration.**



Thanks!

