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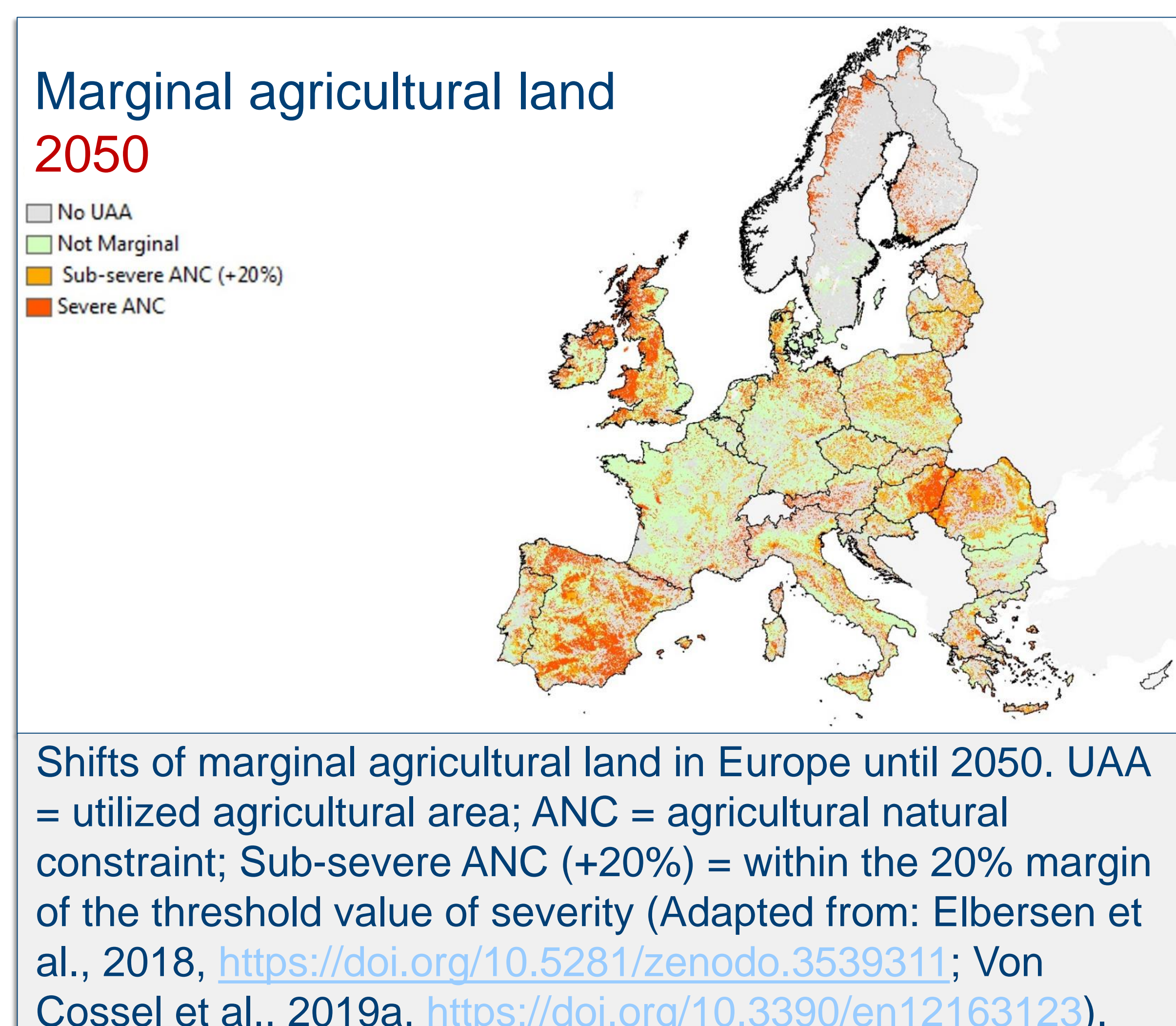
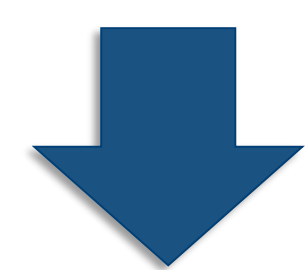
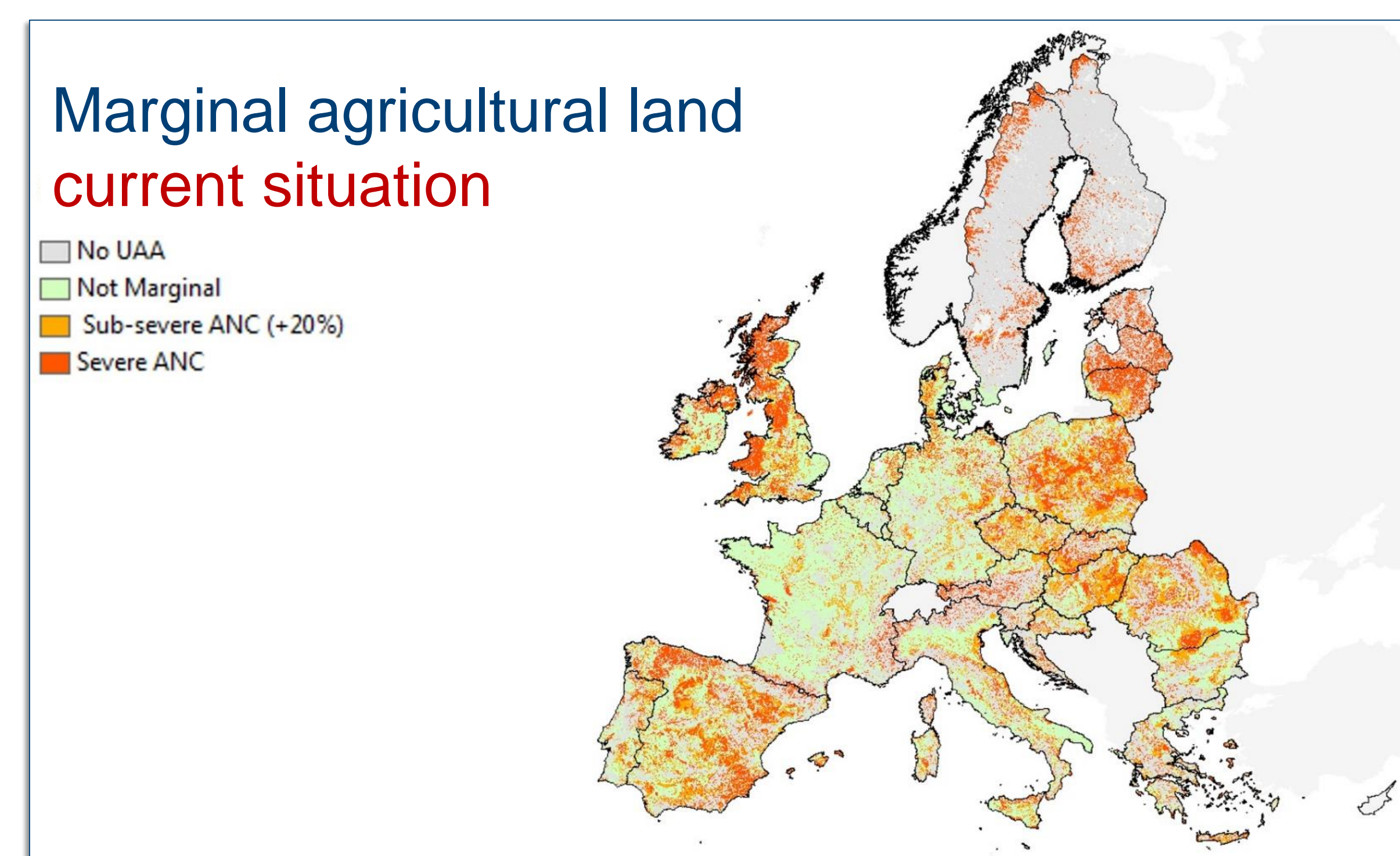
# Climate change-forced shifts in distribution of European marginal agricultural land until 2050 and its implications for food crop cultivation

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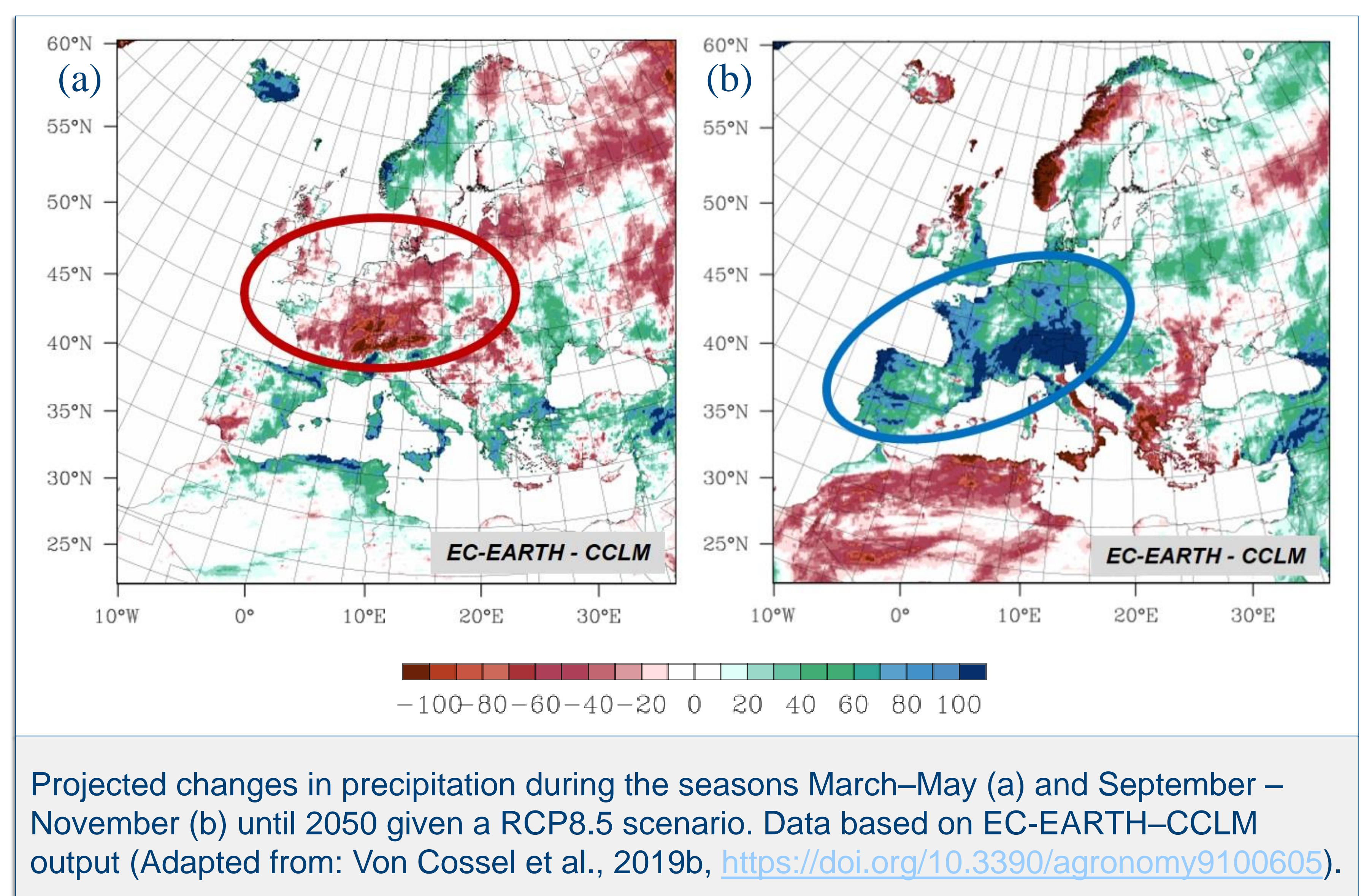
## Background / Issues

- Food security high on the agenda of SGDs
  - Agricultural land suitable for food crop cultivation limited and rather decreasing (land degradation through wind- and water erosion, sea level rise)
  - Land use conflicts increasing
- Climate change-forced shifts in marginal agricultural land may also become crucial for achieving & maintaining food security



## Research question

- What are potential implications of marginal agricultural land shifts on food crop cultivation in Europe and what are options for mitigation?



## Results

- Increases in average air temperature and growth degree days across Europe lead to an increase of marginal agricultural land in the Mediterranean region and a decrease in northern regions
- Changes in precipitation patterns may lead to increased probability of drought events in central Europe in spring and wetness conditions in autumn

## Discussion & Conclusions

- Food crop cultivation expected to become more challenging through climate change-forced marginal land shifts in many European regions, especially in the Mediterranean and central Europe
- Winter-annual C3 crops more promising than summer annuals in central Europe in the future due to crucial shifts of precipitation patterns
- C4 summer annual food crops like maize (*Zea mays* L.) becoming more interesting for northern regions, depending on the required vegetation period length and the type of use such as feed and biogas substrate
- CAM ([Crassulacean Acid Metabolism](#)) crops which are partially edible such as prickly pear (*Opuntia ficus-indica* L. Mill.) expected to become more important for food crop cultivation in the Mediterranean