

Project: **1337**

Project title: **Land Management, climate and financial markets**

Principal investigator: **Leonore Jungandreas**

Report period: **2023-11-01 to 2024-10-31**

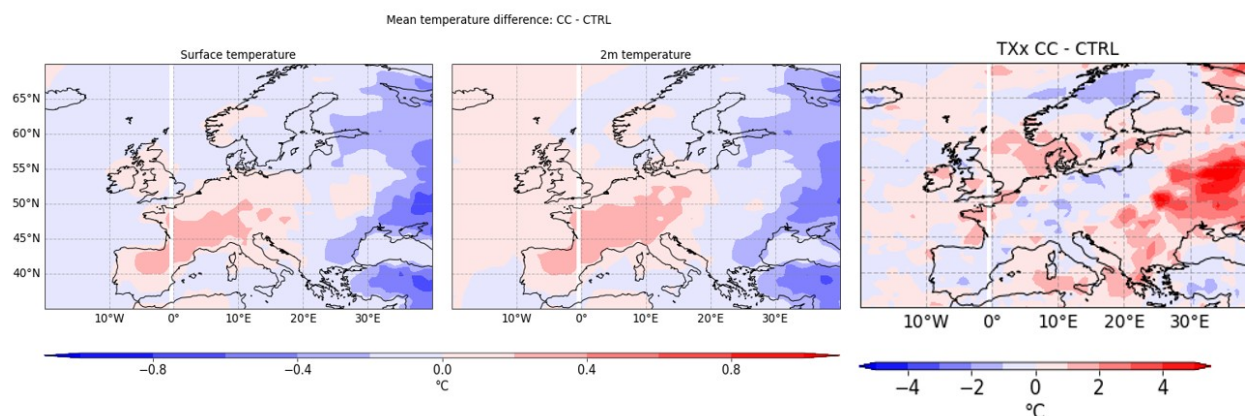
*The main goal of the project is to simulate the biogeophysical impacts of cover crops on extreme weather events, especially drought, heat, and extreme precipitation. For this purpose, I use the coupled ICON-JSBACH model framework. The following steps are necessary for the successful completion of the project:*

- 1. developing and implementing a cover crops (CC) scheme into the land component JSBACH*
- 2. test the CC scheme*
- 3. perform the global AMIP experiments for which computation time was requested*
- 4. perform nested high-resolution simulations over Europe*

*The Cover Crop scheme is implemented and tested. In the January, I performed two more ensemble simulations, one for the CTRL and one for the CC experiment, respectively. I processed the model output for analysis and archived some data to free space.*

*Very preliminary results hint towards a strong seasonal dependence of atmospheric variables (e.g. Maximum daily temperature Txx) on cover crops. Fig. 1 for example shows, that, in the mean over the 21 simulated years, mean surface temperature and 2m-temperature increases (first two panels) over Spain and central Europe, while Txx decreases (third panel). The opposite pattern is found over eastern Europe.*

*This, and the the influence of large scale circulations patterns on European climate, described in the previous report, need further investigations and will be explored in the coming months.*



**Fig 1: Difference in surface temperature, 2m-temperature and, maximum daily temperature (Txx) between the CC and the CTRL experiment over Europe. Analysis has been performed for one simulation period from 1994 to 2015.**

### **Reasons for expired resources and deviations from the project plan**

*Unfortunately I could not advance the project substantially in the past year, because I went into maternity leave from beginning of February until the end of September and only start with 10h/week part time the rest of the year. Therefore, many of my requested resources expired.*