

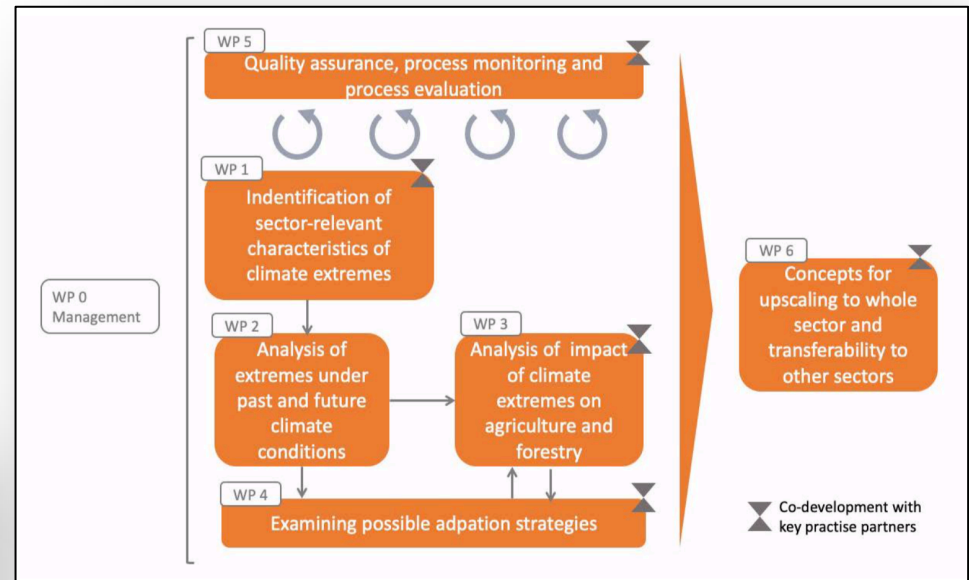
# Climate Services for eXtremes: The idea

## Project goals

- Understand the need of practitioners from forestry and agriculture sector
- Provide them with accessible climate information and tangible solutions
- Investigate the ecological and the compounding climate change risks



*Dead spruce trees in the Harz national park*



*Structure of the CS4eXtremes project and interplay of the main areas of work*

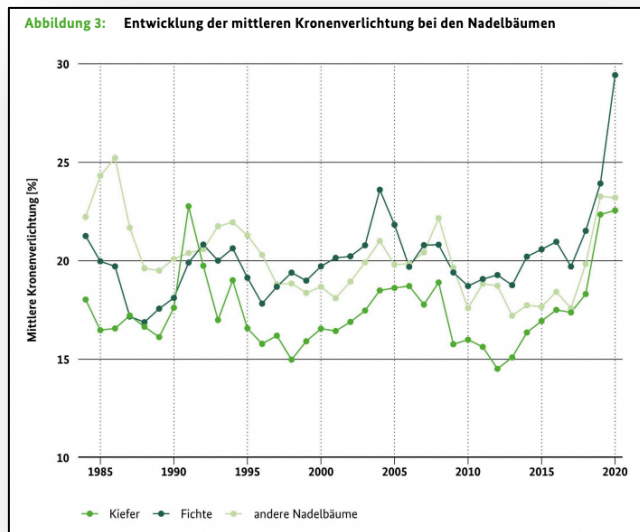
## Methodology

- Conduct stakeholder interviews (dialogue) and develop a strategy to analyse risks in a sector-specific context
- Develop tools tailored to address the identified needs
- Examine adaptation strategies informed by the risk analysis

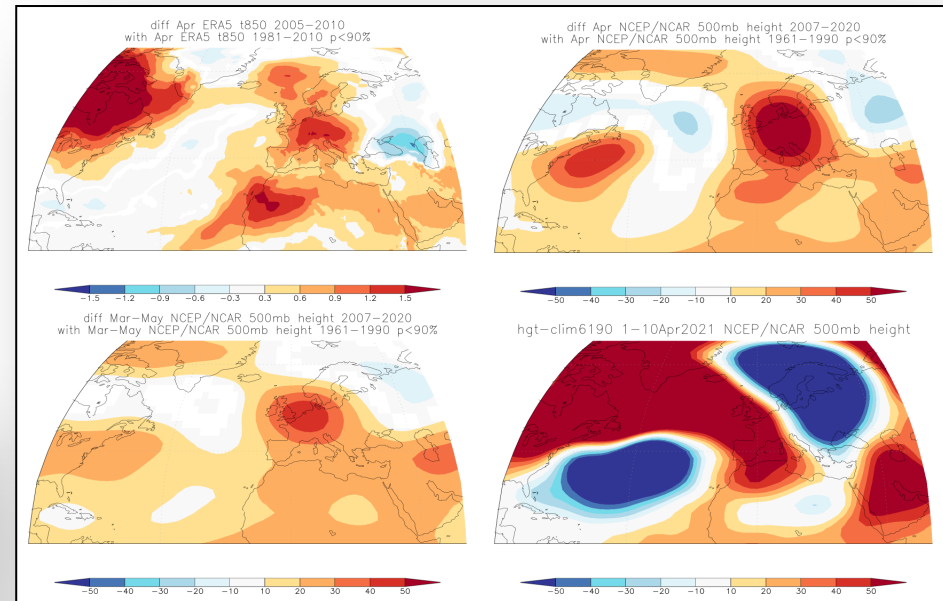
# Climate Services for eXtremes: The challenges

## First results

- Clear trend towards drier summers with persistent heat episodes
- Massive forest damages in recent years
- Practitioner naturally want to know whether this is already the new normal



Evolution of crown transparency in needle trees



ERA5 temperature and NCEP reanalysis Z500 anomalies in April and Spring

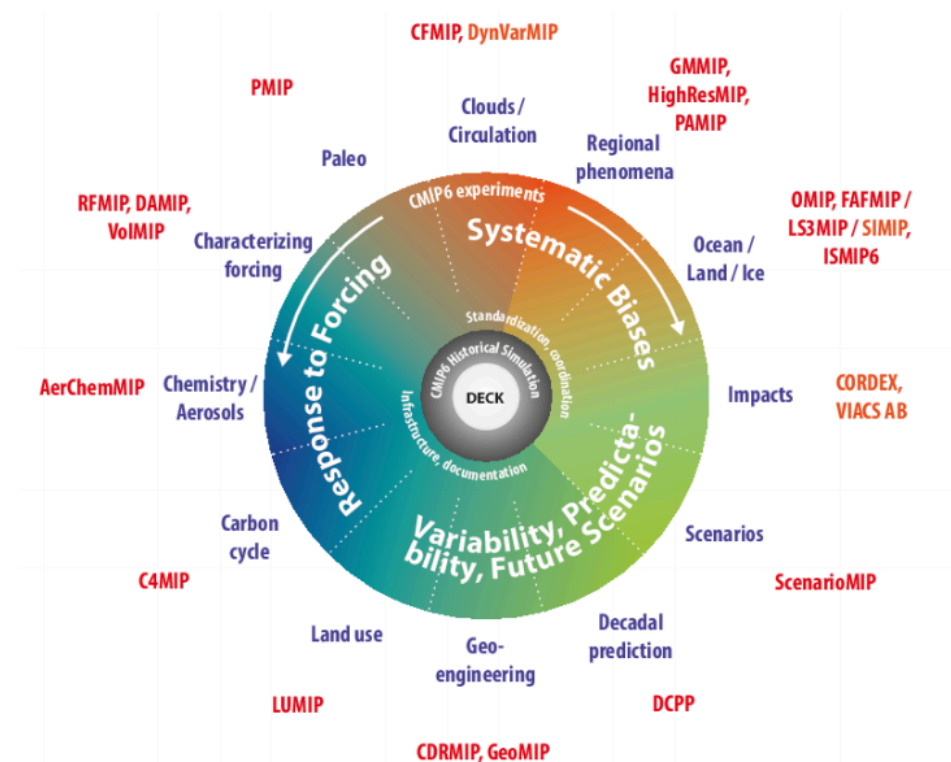
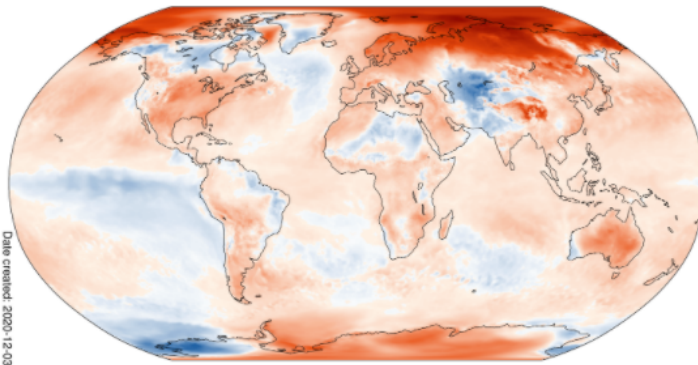
## Summer drought

- Spring drought as precursor with particular strong April trend
- April has also been extremely warm between 2007-2020
- Scientific challenge to understand the dynamical drivers

# Climate Services for eXtremes: The data

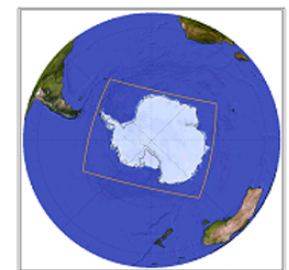
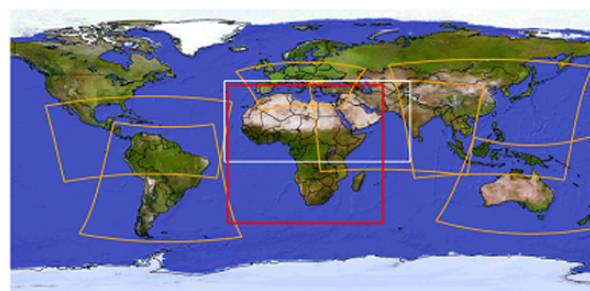
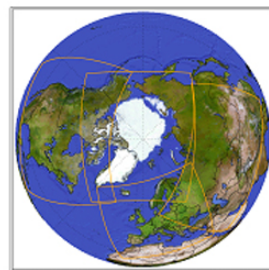
## Observational data

- ECMWF ERA5 global and ERA5 land
- Other lower resolution reanalysis products
- Instrumental data products



## Model data

- CMIP6 (DECK)
- EuroCordex
- Large ensembles

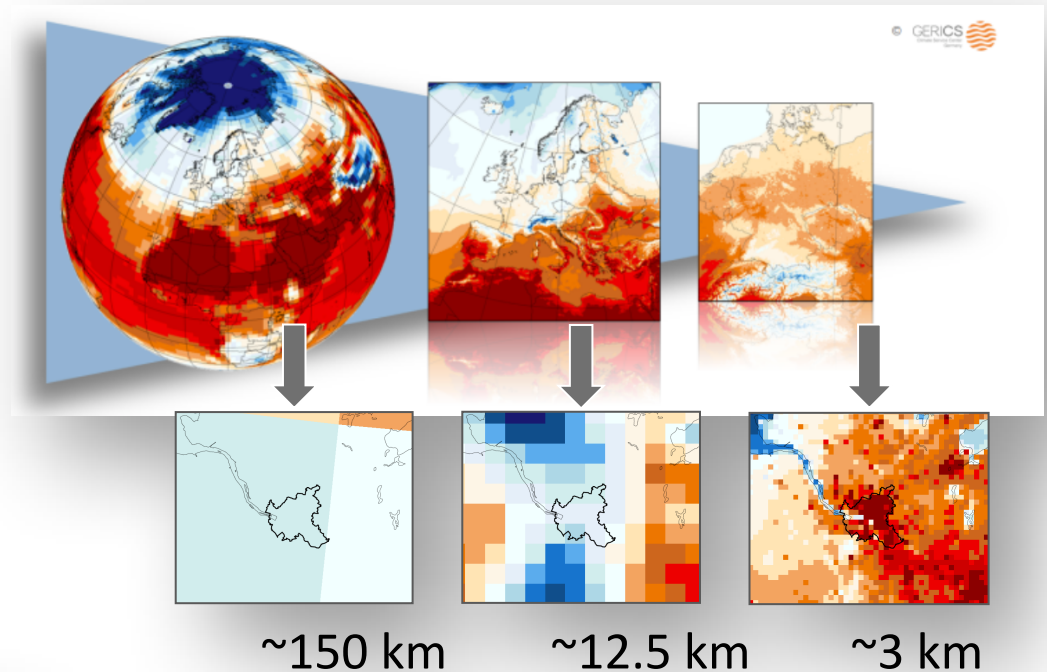




# Climate Services for eXtremes: The solutions

## Steps forward

- Based on first results, recreational and aesthetic values play major role
- Solutions could therefore focus on public forest preservation near cities
- Hence use high resolution models to provide truly tailored information
- Collaborate with practitioners who have already gathered valuable data
- Collaborate with ClimXtreme project partners to understand the changes
- Adaptation can be better planned if circulation changes can be attributed
- Determine adaptation capacity



## The future

- Explore scaling options of the developed framework
- Gradual transition towards more consultatory model