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EVALUATION OF GHGs, CARBON STOCKS AND YIELDS FROM EUROPEAN CROPPING AND PASTURE SYSTEMS UNDER TWO CLIMATE CHANGE SCENARIOS



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CONTEXT: Various strategies can be implemented to counteract the effects of climate change on agricultural production. The most practical aspects are related to the adaptation of livestock system including forage production system, with respect to mitigation options of GHG emissions.

METHOD: The Pasture Simulation model **PaSim** and the crop model **CERES-EGC** were run by using input variables derived from spatialized meteorological, soil and management data, to a reference grid of $0.25^\circ \times 0.25^\circ$.

THE ANIMALCHANGE PROJECT



The main goals of this project are to draw sustainable scenarios for livestock production and reduce uncertainties in GHG emissions.

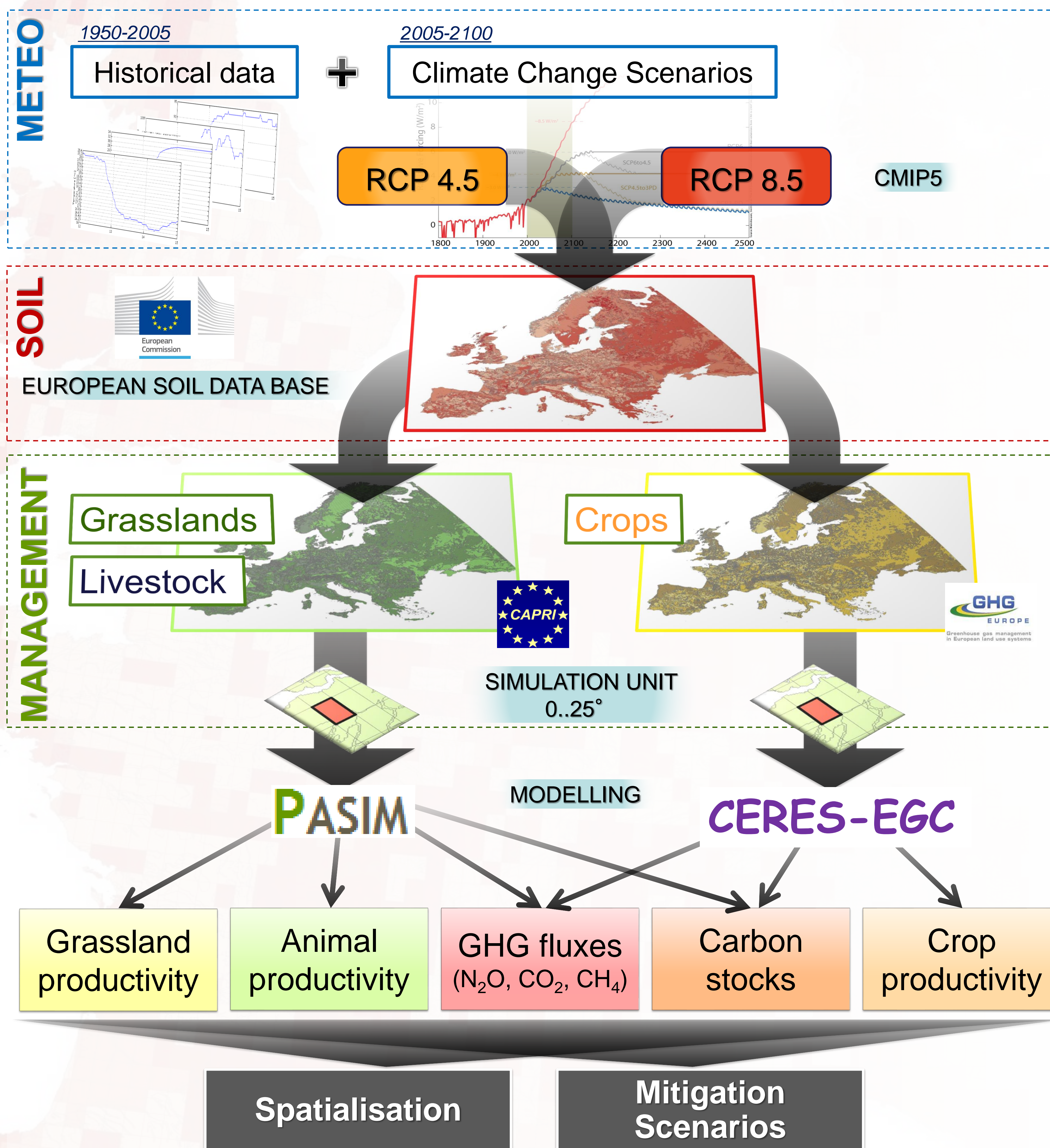
One of the major uncertainties to be tested is the impact of future climate projections

- on **crop** and **grassland** systems,
- soil **carbon sequestration**,
- **GHG** emissions.

To achieve that, a combined modeling approach is used at European scale.



Addressed in the Task 5.1 of the project over European continent.



Simulations from the CERES-EGC and PaSim models allow an overall assessment of

- (i) **dynamics of GHG fluxes (CO_2 , CH_4 , N_2O)**,
- (ii) **soil carbon stocks**
- (iii) **biomass and animal productions.**

CONCLUSIONS: The approach followed allows to represent the real response of models to climate and others drivers of changes. A change in the sowing dates and in the cycle duration of the main cultivated crops, as well as the need to introduce crop irrigation in some European areas has been observed.

