Project: xxx
Project title: EU H2020 ‘CCiCC’ Predicting the carbon cycle and climate for the global stocktake to the horizon of 2030
Project lead: Tatiana Ilyina

Project overview

The objective of the new EU H2020 project ‘CCiCC’ (Climate-Carbon Interactions in the Coming Century) is to advance our quantitative understanding of climate-carbon interactions and resolve large and persistent knowledge gaps in the sensitivity of climate to CO₂ emissions. CCiCC will achieve its objectives through the innovative integration of new models and a wide range of observations. It will develop systems for new climate predictions and projections from annual to centennial timescales that are informed by observations. In this regard the research performed within CCiCC at the Max Planck Institute for Meteorology will focus on two novel modeling activities (1) For the first time, decadal prediction simulations will be performed in the framework of an emission-driven MPI-ESM. Until now, all decadal prediction systems worldwide are driven by prescribed atmospheric CO₂ concentrations. Within CCiCC processes responsible for predictability of the carbon sinks will be addressed using an interactive carbon cycle approach. This will contribute to the improved climate-carbon decadal predictions. (2) We will address the uncertainties related to Transient Climate Response to Cumulative Carbon Emissions (TCRE) within MPI-ESM with higher and lower climate sensitivities. Climate-carbon feedbacks and equilibrium climate sensitivity (ECS) determining TCRE are leading-order uncertainties in climate projections and in estimates of the total carbon budget consistent with the goal to limit global warming set out in the Paris Agreement. The outcomes of CCiCC will provide key knowledge to underpin IPCC assessments and support policy makers. They will furthermore support the stocktaking process of the United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement aiming at limiting the surface warming below 2.0°C.

References:


