



Importance of different climate projections for the simulation of the ecological impact

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Simulating the ecological impact of future climate change using climate projections represents a crucial part of climate change research and politics. However, future climate is not clearly defined but described by a spread of results from different climate models, emission scenarios, realisations of model runs and of weather for the same climate period. All these simulated weather data are used as input of ecological models to investigate the impact of climate change on plants, land-use changes and greenhouse-gas emissions. Accordingly, the quality of the climate data affects the ecological model runs as well as the predictions and assumptions based on simulation results. Up to now it is unclear, in how far the results of the ecological impact will increase the uncertainty related to various climate projections or not. The objective of this poster is to investigate the effect of various weather input of climatically similar periods on bud burst of plants using temperature data and a simple phenology model. Weather data of model runs from two emission scenarios (A1B and B1) of a statistical-dynamic climate models (WETTREG) and a dynamic climate model (COSMO-CLM) were applied. For the second model, additionally two realisations of the scenarios were available to investigate the differences of separated model runs with similar initial conditions. Bud burst of beech was predicted for a region in the east of Germany considering a 50 year period. For some simulations the results are partly contradictory to expected trends and developments that have been already observed in the decades before. Instead of an earlier bud burst the trends show a later one. The comparison of the two climate models exhibits a discrepancy of one week between the two average dates of bud burst within the 50 years period. But between two realisations of the same climate model and the same emission scenario differing only in the initial conditions of the model runs, a stronger difference in the trend of bud burst was observed. All these results demonstrate the effect of varying weather data from climate projections, which have a relevant dimension that has to be taken into account for the interpretation of ecological impacts.