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Impact of climate scenario uncertainties on agrometeorological models

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Climate scenario data offers the chance to investigate possible impacts in a wide range of topics. The new ÖKS15 (Austrian Climate Scenarios) dataset which was recently made available became into focus of reliability and usability examinations. The investigated ÖKS15 dataset was created by applying statistical downscaling and bias correction methods on latest regional climate projections from the EURO-CORDEX ensemble together with the gridded observational data, a set of benchmark climate projections was made available. These projections consist of time series for temperature, precipitation, and global radiation on a daily basis (period 1971 to 2100) and cover the Austrian territory on a 1 km x 1 km grid. The ÖKS15 dataset shall provide an overview on climate change effects in Austria and ready-to-use inputs for future climate impact/adaptation/vulnerability studies across Austria. Within the STARC project the strengths and limitations of the ÖKS15 dataset are analyzed by operating the crop model DSSAT and the agro-climatic risk model AGRICLIM. These models were calibrated and validated in previous studies in three Austrian study regions characterized by different climatic and orographic conditions (Upper Austria, South Eastern Styria, and Lower Austria). In order to derive the models' requirements on the ÖKS15 data with respect to its spatial resolution and to estimate the effect of error propagation, sensitivity simulations with DSSAT and AGRICLIM using the gridded ÖKS15 observational datasets are conducted. Selected ÖKS15 projections are artificially averaged to coarser resolutions (e.g. 5 km, 10 km, 20 km grid spacing) to investigate the effects on the model results.