FACCE-MACSUR

DC-3.4 Evaluation of scaling methods for other crops, regions and scaling methods

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Abstract/Executive summary

The MACSUR WP3 Scaling Exercise predominantly investigated the effects of spatially aggregating or sampling model input data for large scale model assessments. This was first carried out for the region of North Rhine-Westphalia (NRW) and predominantly evaluated for water-limited yield simulations of winter wheat grain yield. In this report, specific findings from NRW are compared to findings from a larger population of simulation settings / environmental conditions, extending the analysis to further crops, regions and impact variables. Similar aggregation errors and spatial patterns of silage maize and winter wheat yield have been found. When verifying findings with a different region, partially similar error patterns were observed for Tuscany, Italy. While the aggregation error is strongly related to the spatial heterogeneity of the data, other influences as e.g. the climate may be less relevant if the cropping system is adapted to local conditions. Findings for different output variables (NPP, N-leaching, water use efficiency, etc.) largely confirm findings from crop yield with regard to error patterns. However, absolute values and thresholds partially differed considerably across output variables. The findings give a first empiric insight towards a possible generalization of aggregation errors.

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