



Impact of input data aggregation on simulated NPP of wheat

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Spatial modelling requires aggregated data, which represents the environmental conditions as accurately as possible. As the environment is very heterogeneous and measurement approaches have limitations, data are often aggregated to achieve the necessary resolution. Intuitively, a finer resolution is assumed to be more accurate than a coarser resolution. However, the impact of the resolution on an average over a larger study area is unknown. This study analyses the impact of the model input data aggregation effect of soil, climate and management for North Rhine-Westphalia situated in the West of Germany. The input data are in grid maps, aggregated for five different resolutions (1 km², 100 km², 625 km², 2500 km², 10000 km² cell size). The results of wheat net primary production (NPP) simulated by 10 models show higher differences for the aggregation of soil data than for the aggregation effect of the other two variables. The impact of aggregation on crop NPP is up to 10 % for a 30 year average and even larger for shorter periods, while for some models and variables there is no relevant effect. The results provide a good basis for understanding error and uncertainty associated with data aggregation in spatial modelling approaches.