

From Climate Change to Crop-Yield Change

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Global climate change is not bad. And it is not good either. Mankind is used to live in an environment. This environment is constantly changing. With increased technical capabilities man changes his surrounding faster than ever before. However, mankind is aware that fast climate changes (anthropogenic and/or natural) have impacts on many aspects of life.

The most direct economical influence of global climate change is due to its direct impact on crop yields. However, there is a long way from the knowledge of global warming on the one hand to the weather changes at an arbitrary location on the other hand. The latter drives crop growth and affects crop yields and by that expresses the local impact of global warming.

While coupled global atmospheric and oceanic circulation models (GCM) may predict realistic global scale pattern of warming under different scenarios, they do up to now not provide reliable sub-national patterns of climate change with respect to all the meteorological parameters that drive crop growth (e.g. precipitation, surface solar radiation, humidity and wind speed). However, these variables are observed by national services and thus are available for national investigations under the recent circumstances.

Our presentation shows how to bridge the gap between GCM results on the one hand and crop-yield impacts on the other hand by using FAO's crop-specific soil water balance model and random weather generators fit to observed meteorological data and crop yield statistics. The strategy allows investigating the sensitivity of different crops in various regions with respect to a broad range of different future climate scenarios. It helps to answer the question where and with respect to what climate-change impact is good or bad.