



## **A risk-based approach to assess projected yield changes at regional scale**

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Impacts of climate change on agricultural production are likely to negatively affect food security. However, large uncertainties exist in future projections of agricultural yields as well as regional differences in the direction and magnitude of the projected changes. An important question with regard to uncertainties in future crop yield projections is how to translate the modelling range into results meaningful for impact analyses and provide policy-relevant information.

One way of addressing this question is to use a risk-based approach, analysing the risk of yield reductions at different levels of temperature increase on the basis of modelling intercomparison data (AgMIP). To assess regional scale differences in yield changes, we look at aggregates of agricultural production within the 26 regions defined in the IPCC SREX report. Using the available output of the AgMIP project, we assess the projected risk of regional yield reductions for maize, rice, wheat and soy at incremental steps of 0.5°C warming. Based on production areas of the year 2000 (MIRCA2000, Portmann, 2011), we assess projected yield changes only within current production areas, thereby excluding potential cropland expansion. Our approach provides an additional view-point to the existing analyses of the output of the AgMIP project.

### References:

Portmann, F.T. (2011): Global estimation of monthly irrigated and rainfed crop areas on a 5 arc-minute grid. Frankfurt Hydrology Paper 09, Institute of Physical Geography, University of Frankfurt, Frankfurt am Main, Germany.