



## **Short-term projections of changes in crop yields at the global scale related to climate change**

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There is a widely recognized need in the scientific and policy communities for more probabilistic estimates of climate change impacts that go beyond simple scenario analysis. This poster describes a study of one major climate change impact - changes in average global yields of wheat, maize, and barley by 2030. The analysis is conducted in a probabilistic manner by integrating uncertainties in climate change and crop yield responses to temperature, precipitation, and carbon dioxide. The resulting probability distributions, which are conditional on assumptions of an A1B emission scenario and no agricultural adaptation suggest that conclusions of the IPCC-AR4 report are plausible for wheat and barley, but at the more optimistic end of projections for the latter. For maize, yield losses appear virtually certain without adaptation, assuming recent experiments correctly identify a negligible response of maize to elevated CO<sub>2</sub>. Uncertainties in climate change and crop responses to climate contribute roughly equally to overall variance of projections, while CO<sub>2</sub> effects are significant in size but represent a considerably smaller source of uncertainty. Importantly, these results indicate that significant reductions in uncertainty will require progress in understanding both the climate system as well as the response of agricultural systems to climate.