

Impacts assessment confidence based on uncertainty propagation from a regional climate model to a crop yield model

E.S. Takle, Z. Pan, and D. Miller
Iowa State University, Ames, IA 50011, USA

J.H. Christensen
Danish Meteorological Institute, Copenhagen, Denmark

We have constructed a suite of six 10-year climate simulations for the continental U.S.: two regional climate models (RegCM2 and HIRHAM) forced by three sets of lateral boundary conditions (reanalysis, a GCM current climate and a GCM scenario climate) and sea surface temperature. A climate change confidence index, defined as the simulated precipitation change divided by maximum bias among the suite members, varied substantially over geographical regions and seasons. In the present study we extend the confidence index to an impacts assessment model. We use output from the suite of RCM simulations to drive the CERES-Maize model to simulate corn yield. Confidence degradation from climate model (precipitation and temperature) to impacts assessment (crop yield) is evaluated for different crop growing regions. By identifying weak links in the coupled modeling system we prioritize future efforts for improvements in modeling impacts of climate change on agricultural production.