

Probabilistic Crop Yield Simulations over the Southeast US using Global and Regional Climate Model Products

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An advanced land model (NCAR CLM2) is coupled to the Florida State University/Center for Ocean-Atmospheric Prediction Studies (FSU/COAPS) climate model to improve seasonal surface climate outlooks at very high spatial and temporal resolution and to examine its potential for crop yield estimation. The regional model domain is over the southeast United States and run at 20 km resolution, roughly resolving the county level. Warm season (March-September, 7-month simulation) and cold season (October-March, 6-month simulation) ensemble simulations are performed for the period of 19 years (1987-2005) to characterize uncertainty in the forecast. Twenty member ensembles of the regional model are generated using different initial conditions and model configurations (i.e., the ensemble methods based on different convective schemes). These ensembles are used to make probabilistic crop yield forecasts. Outputs from the model such as max/min surface temperatures, precipitation, and shortwave radiation at the surface are analyzed and used as inputs into the crop models (CROPGRO-Peanut and CERES-Maize) to determine crop yields. Observed and simulated weather data produced a somewhat similar interannual variability of crop yields. Detailed results will be presented in the workshop.

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