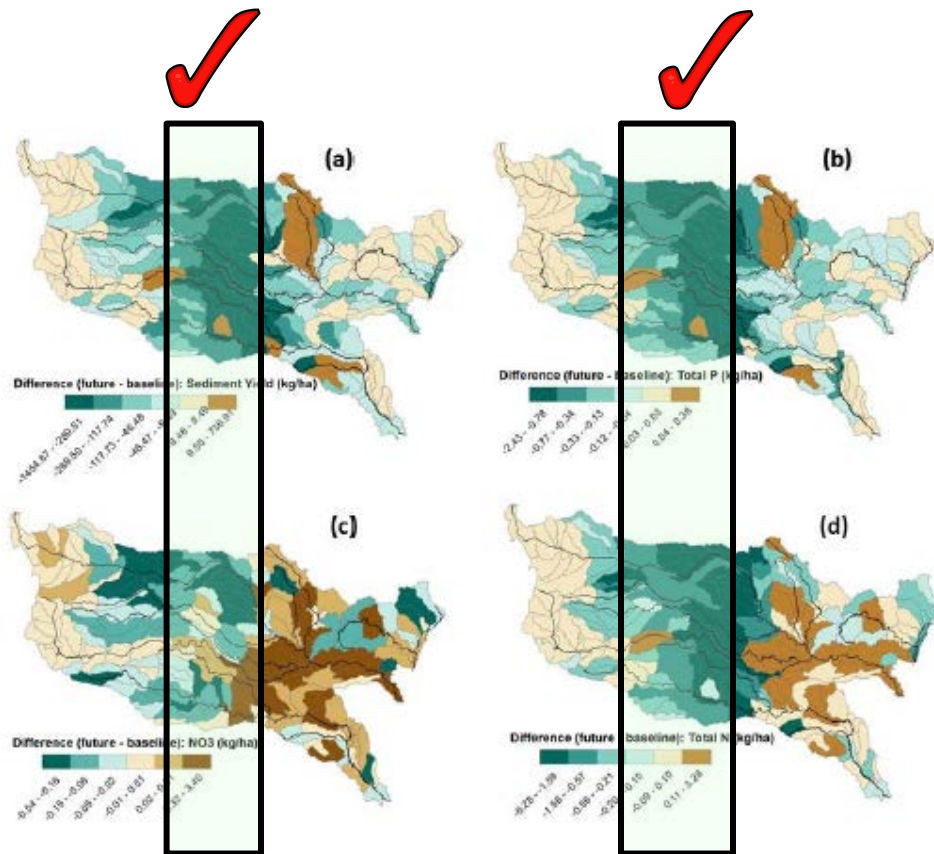


Forecasting Changes in Water Quality and Biodiversity

Bioenergy crops can improve water quality and be economically viable in semi-arid regions of the US

An important future challenge currently facing the U.S. will be to ensure that bioenergy supplies meet sustainable production standards that protect or enhance water quality and aquatic biodiversity. This project, funded by DOE’s Office of Biomass Programs, seeks to evaluate whether and how 2nd generation feedstocks will that promote the long-term economic viability of bioenergy feedstock production by improving water quality and biodiversity. We have identified areas of the Arkansas-White-Red river basin where switchgrass will be economically viable at \$50/dt with reduced loadings of sediment and nutrients. In addition, we are now using spatial optimization to allocate conservation practices to minimize the tradeoffs between crop yields and nutrient / sediment loadings.

Our approach begins with bioenergy-driven changes in the agricultural landscape projected by an economic model and downscaled to produce future realizations. Changes in water quality associated with these future bioenergy landscapes are evaluated by using a regional-scale watershed model, the Soil Water Assessment Tool.



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