

## **Challenges in spatial bio-economic modelling**

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We present a global land use modelling approach, in which we couple a grid-based dynamic vegetation model with a mathematical programming model of the agricultural sector. We combine aggregate (national or regional) demand for food, bio-energy and nature conservation with spatially explicit constraints on land and water availability, in order to derive land use patterns and shadow prices for scarce resources. The model can handle the impacts of different climate patterns on crop growth, especially in relation to water availability. Methodological challenges with respect to technological change and dynamic model coupling are discussed.

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