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Predicting climate change impacts on southern pines productivity in SE United States using physiological process based model 3-PG

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There are approximately 82 million ha of timberland and more than 13 million ha of southern pine plantations in the southeastern United States. In this region, slash pine (*Pinus elliottii* Engelm. var. *elliottii*) and loblolly pine (*Pinus taeda L.*) are the most important species, accounting for more than 90% of the planted seedlings in the US. The physiological-process based model, 3-PG (physiological process predicting growth), has been widely applied to estimate the effects of management, climate and site characteristics on different stand level attributes such as stem volume growth, biomass dynamics or water use efficiency. This model uses species-specific physiological traits in conjunction with empirical tree- and stand-level dynamics attributes to quantify stand growth and dynamics. Recently, the model was parameterized for loblolly and slash pine stands. The model was validated against a large number studies and operational plots across the natural range of distribution of both species. In this study, we used the model to estimate the impact of future climate change scenarios (using RCP 4.5 and 8.5) on stand dynamics and productivity in SE United States.

Biography

Carlos A Gonzalez-Benecke obtained his PhD at the University of Florida on 2009. Currently he works as research associate of the SERDP project for ecological forestry and carbon management in Pinus palustris forests, and as Program Coordinator of the Carbon Resources Science Center, working on ecophysiology and carbon balance modeling of southern pine forests at the school of Forest Resources and Conservation at the University of Florida. He also teaches a course in Plant Ecophysiological Techniques at the Biology Department. He has published more than 15 articles in international scientific journals.

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