

Effects of climate change on water yield and water quality of forested watersheds in Southeastern Brazil

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Climate change effects on water resources are one of the most concerns of public authorities, and such impacts can be predicted through hydrological simulation, considering climate change scenarios and models calibrated using a historical climatic data from a given region. We considered that watersheds have different responsiveness to climate change due to their physical characteristics. Therefore, effects of these changes will cause different levels of impact on water flow and quality, depending on the region in which the basin is located. The objective of this study is use the hydrological model of Fu adapted, calibrated and validated for a series of climatic data from 29 watersheds in the Southeastern region of Brazil. Model was used to simulate and predict the climate change effects and identify critical factors for the stability of water yield and water quality in watershed. At studied watersheds, forest cover varied from 5% to 80%, mean annual precipitation ranged from 1200 to 1800 mm and the annual runoff represented 20% to 50% of the annual precipitation across all sites. The model proposed was able to capture the differences among watersheds, enabling simulations under climate change scenarios. Simulations showed high variation on sensitiveness to climate change. Regional mapping of sensitiveness was created, critical areas for stability of water yield and water quality were identified in the watersheds. Results provide subsidies to guide the planning of public policies and propose ways of managing and conserving forest on watersheds.