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Insurance Fund as an Adaptation Measure for Increasing Water Security in Basins Under Change

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Extreme weather events are increasingly evident and widespread around the world due to climate change. These events are driven by rising temperatures and changes in precipitation patterns, which lead to changes in flood frequency, drought and water availability. To reduce the future impacts of natural disasters, it is crucial to understand the spatiotemporal variability of social, economic and environmental vulnerabilities related to natural disasters. Particularly, developing countries are more vulnerable to climate risks due to their greater economic dependence on climate-sensitive primary activities, infrastructure, finance and other factors that undermine successful adaptation. In this concept, adaptation plays the role of anticipating the adverse effects of climate change and taking appropriate measures to prevent or minimize the damage they may cause. Thus, the insurance fund is a valuable adaptation tool for unexpected losses reimbursement, long-term impacts prevention and encouraging risk mitigation. Although this approach is successful throughout the world and major organizations support insurance as an adaptation measure, the Brazilian insurance fund only provides support for rural landowners. Thus, we will evaluate the implementation of an indexed multi-risk insurance fund integrated with water security parameters, as an instrument for adaptation to climate change. We will use the SWAT+, a hydrosedimentological model, to assess the current conditions and future scenarios (up to 2100) of water security indices considering two International Panel on Climate Change (IPCC) Representative Concentration Pathways (RCP 4.5 and RCP 8.5). Then, we will incorporate those parameters to the Hydrological Risk Transfer Model (MTRH). Our results will provide optimized premium in current and future scenarios for supporting adaptation plans to climate change. Furthermore, to contribute to technical-scientific information addressing possible effects of climate change on the hydrometeorological variables and their spatiotemporal variability.