**From:** Wanderson Luiz-Silva; Maria Elvira Piñeiro Maceira;
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**To:** Editors of Environmental Modeling & Assessment

Title paper: **On the Observations and Environmental Modeling in Xingó Hydropower Plant – São Francisco Basin, Brazil: Present and Future Hydroclimatic Features**
Article type: **Research article**

Dear Editors,

The Electrical Energy Research Center (Eletrobras Cepel) is the largest electrical energy research institution in South America. The characteristic of the Brazilian electrical system motivated Eletrobras Cepel to develop and maintain in the state of the art an innovative and integrated chain of methodologies and computational tools for energy optimization, water resources, and environment, which guide the expansion and operation planning of the Brazilian power generation system.

Eletrobras Cepel has been developing the comprehensive Climate Change Project – MUDCLIMA, which aims at developing methodologies to narrow the gap between climate and energy simulation/optimization models. This project encompasses the elaboration and analysis, from the IPCC's Representative Concentration Pathways (RCPs), of inflow scenarios to the hydropower plants by 2100, including extreme events, and the development of methodologies to consider their impacts in the power system expansion and operation planning, in terms of economy, security and emissions of greenhouse gases, also considering the associated effects on mitigation and adaptation policies.

The evaluation of the interaction of climate variability and change with energy production is quite important in the present and future scenarios. Since the journal's scope involves building a bridge between the scientific community's understanding of key environmental issues and the decision makers' need to influence relevant policies and regulations, this article can be very relevant for the Brazilian hydroelectricity and readerships as climatologists, meteorologists, hydrologists, environmental managers, and public policymakers.

The predominantly hydroelectric energy generation in Brazil imposes conditions and risk factors that the country needs to attend to and to guard against possible changes in the hydrological regime of the basins that produce natural streamflows to the power plants. In this work, a methodological structure of how to explore the climatology, precipitation and streamflow trends and the consequences of climate change in the drainage basin of the Xingó hydropower plant was clarified. The preponderant idealization of this article is because before referring to future projections, it is primordial to interpret in detail the climatology and trends currently observed in the São Francisco River basin, in the Northeastern region of Brazil. Thus, it becomes

possible to understand what impacts will be accentuated in the face of future scenarios in such area through the qualitative and quantitative comparison of the studied climatic periods. This research is essential in elucidating scenarios in which hydrological and, consequently, energy threats could be previously perceived.

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Thank you very much for your attention.

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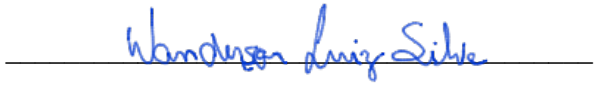

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