# Article information:

Sustainability | Free Full-Text | Hydrological Response of Tropical Catchments to Climate Change as Modeled by the GR2M Model: A Case Study in Costa Rica  
<https://www.mdpi.com/2071-1050/14/24/16938>

# Article summary:

1. This study aimed to assess the impacts of climate change on streamflow characteristics of five tropical catchments located in Costa Rica.

2. An ensemble of five General Circulation Models (GCMs) and two Regional Climate Models (RCMs) were used to provide an overview of the impacts of different climate change scenarios under Representative Concentration Pathways (RCPs).

3. Results anticipate wetter conditions for all catchments in the near-future and mid-future periods under RCPs 2.6 and 4.5, whereas dryer conditions are expected for the far-future period under RCP 8.5.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article is generally reliable and trustworthy, as it provides a comprehensive overview of the hydrological response of tropical catchments to climate change as modeled by the GR2M model, with a case study in Costa Rica. The authors have provided detailed information on their methodology, including the selection of an ensemble of five General Circulation Models (GCMs) and two Regional Climate Models (RCMs), as well as their use of the GR2M hydrological model to reproduce historical monthly surface runoff patterns for each catchment. Furthermore, they have presented results that anticipate wetter conditions for all catchments in the near-future and mid-future periods under RCPs 2.6 and 4.5, whereas dryer conditions are expected for the far-future period under RCP 8.5.

However, there are some potential biases that should be noted when considering this article's trustworthiness and reliability. Firstly, while the authors have discussed potential risks associated with climate change such as flooding, droughts, and water supply shortages compared to historical hydrological regimes, they do not explore any possible counterarguments or alternative solutions that could be implemented to mitigate these risks or address them more effectively. Additionally, while they have discussed temperature trends indicating consistently warmer conditions with increasing radiative forcing and future periods, they do not provide any evidence or data to support this claim or discuss any potential implications this may have on streamflow changes across all catchments studied in this article. Finally, while they have provided detailed information on their methodology and results from their simulations using GCM-RCM multimodel ensemble-mean (MEM), they do not discuss any other methods or approaches that could be used to assess similar impacts of climate change on streamflow characteristics in tropical catchments located in Costa Rica or elsewhere around the world.

# Topics for further research:

* Mitigation strategies for climate change impacts on tropical catchments
* Temperature trends and implications for streamflow changes
* Alternative approaches to assess climate change impacts on streamflow
* Flooding risks in tropical catchments due to climate change
* Drought risks in tropical catchments due to climate change
* Water supply shortages in tropical catchments due to climate change

# Report location:

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