The manuscript "Combined Impacts of Climate Change and Human Activities on Blue and Green Water Resources in the High-Intensity Development Watershed" presents a comprehensive and insightful study on the variations in blue water (BW) and green water (GW) resources in the Dongjiang River Basin (DRB). The use of the Soil and Water Assessment Tool (SWAT) model to quantify the impacts of climate change and land use change (LUCC) on BW and GW provides robust and valuable findings. The study's relevance to the Guangdong-Hong Kong-Macao Greater Bay Area (GBA) underscores its importance in guiding sustainable water resource management in a rapidly developing region. However, several issues need addressing to enhance the paper's clarity and impact.

We wish to sincerely thank the reviewers for their extensive and thoughtful comments on our manuscript which we have addressed in the revised manuscript as discussed below. Throughout, reviewer comments are in *blue* font and *italic* type, and **our response** in **black** font.

Major Concerns:

1. Formulation and Demonstration of GW and BW Derivation: The paper should clearly formulate and demonstrate how GW and BW are derived using the SWAT model. Without this critical information, the reader's understanding of the methodology and results is hindered. Additionally, for equations 10-11, it is necessary to specify clearly what "X" represents. This clarification is essential for comprehending these equations fully.

Response: We have added the formulation and demonstration of *GW* and *BW* derivation. Lines 205-214 in the revised manuscript:

2.4.1 Calculation of blue and green water

BW is calculated from the sum of water yield (SWAT output WYLD) and groundwater storage. The former refers to the amount of water that leaves the HRU *and enters the channel. The latter represents the net amount of water recharged to aquifers (SWAT output GW_RCHG) and the amount of aquifer water discharges to the main channel (SWAT output GW_W) during a time step (Hordofa et al., 2023). GW can be divided into two components including GWF which is the actual evapotranspiration (SWAT output ET) from the HRU, and GWS which is the soil water moisture (SWAT output SW) (Nie et al., 2023; Veettil and Mishra, 2018). The calculation of the Green Water Index (GWI) involves dividing the quantity of GW by the sum of BW and GW (Ding et al., 2024; Nie et al., 2023).*

In addition, we have added explanations for Equations 10 and 11. Lines 252-257 in the revised manuscript:

Climate change contribution to BW and GW change is estimated by:

$$CR_C = \frac{|X_2 - X_1|}{|X_2 - X_1| + |X_3 - X_2|} \times 100\% \tag{10}$$

where X_1, X_2, and X_3 are the amount of water including BW or GWF and GWS, respectively for scenario S1, S2, and S3.

The contribution of LUCC to changes in BW and GW are estimated by Equations 11.

$$CR_L = \frac{|X_3 - X_2|}{|X_3 - X_2| + |X_2 - X_1|} \times 100\% \tag{11}$$

2. Language and Readability: The overall readability of the English text needs improvement. For example, in Line 162, "Both stations had simulation streamflow ..." should be corrected to "Both stations had simulated streamflow ...". Similar issues with unclear English should be checked and corrected throughout the manuscript to ensure the text is polished and easily understandable.

Response: Thanks for your good suggestion. We made great efforts to improve our writing. We asked an English-specialist colleague to proof-read our final manuscript to eliminate language problem as many as possible. All the changes were given in the marked version.

3. Abbreviation Clarity: The use of abbreviations in the paper often feels unnatural and can be confusing. Typically, abbreviations are created using the initial letters of the terms they represent. Abbreviations such as LUCC (Land Use Change) and BWR (BW withdrawals) do not follow this convention and may lead to confusion. Clear and consistent use of abbreviations is necessary.

Response: We have normalized the abbreviations.

Table 1 List of abbreviations

Abbreviation	Full name	Abbreviation	Full name
BW	Blue water	*GW*	Green water
GWF	Green water flow	*GWS*	Green water storage
BWSC	Blue water scarcity	*GWSC*	Green water scarcity
EFR	Environmental flow requirements	*BWW*	Blue water withdrawals
BWA	Blue water availability	*GWFO*	Green water footprint
GWA	Green water availability	*P*	Precipitation
T	Temperature	*PET*	Potential evapotranspiration
ET	Evapotranspiration	LUCC	Land use and land cover change

4. Contradictions in Precipitation Trends: It is evident from Figure 3a that there are no significant increases or decreases in precipitation trends. However, the Discussion *and main text cite precipitation trends as reasons for certain results, which appears contradictory. It would be more appropriate to present a figure showing statistically significant trends in precipitation and base the discussion on those results. Additionally, Table 3 is unclear and requires revision for better comprehension.*

Response: Although from the point of view of the stations, the trend of changes in precipitation in the Dongjiang River basin is not statistically significant (Figure 3a). The average precipitation of Dongjiang River basin can be obtained from the precipitation of these station using the Voronoi method. The average precipitation in Dongjiang River basin decreased at a rate of 0.51 mm year^{-1} (p>0.05) (Figure S3). Since the change in average precipitation is not statistically significant, we have revised the discussion on precipitation change. We have added descriptions of temporal changes in mean precipitation, temperature, and potential evapotranspiration in the basin (lines 335-340 in the revised manuscript), and removed the discussion of the relationship between precipitation and total water resources (lines 498-500 in the revised manuscript).

The mean precipitation, temperature, and potential evapotranspiration of DRB can be obtained from the precipitation, temperature, and potential evapotranspiration of stations using the Tyson polygon method. The inter-annual variation of annual precipitation in DRB showed an insignificant decreasing trend (-0.51mm a^{-1}). The annual mean temperature showed a significant increasing trend (0.024℃ a^{-1}). The annual potential evapotranspiration showed a significant decreasing trend (-0.38mm a^{-1}) (Figure S3).

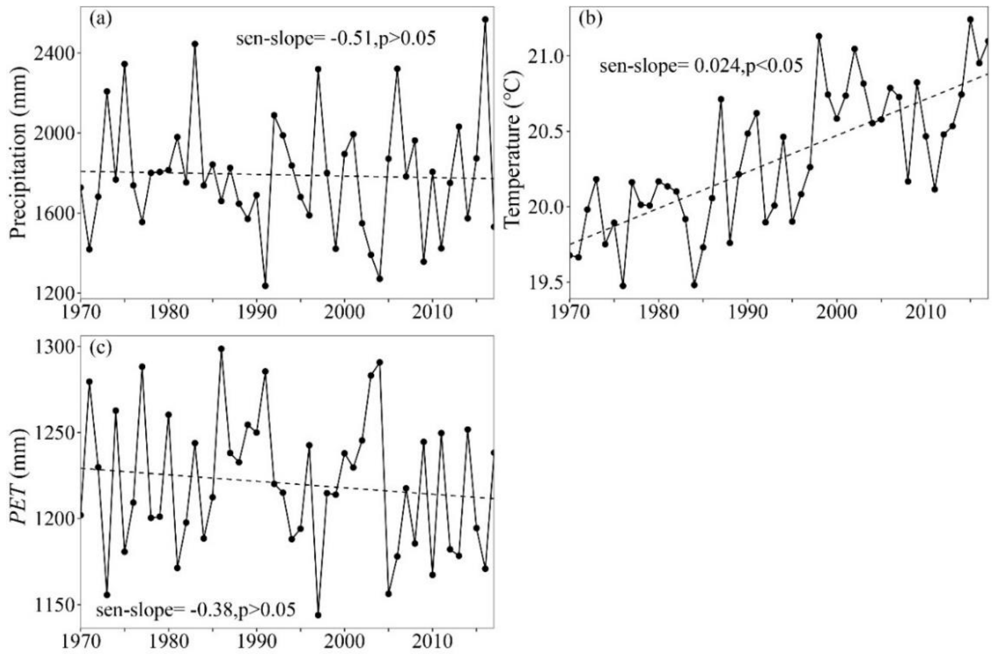

Figure S3. Interannual variation of (a) precipitation, (b) temperature, and (c) potential evapotranspiration in the Dongjiang River basin from 1970 to 2017.

5. Additional References: I recommend adding the following papers to the citation in Line 24 to enhance the literature review and context:

- *S. Berezovskaya et al. (2004), DOI: 10.1029/2004gl021277*
- *Suzuki et al. (2021), DOI: 10.3390/rs13214389*

Response: We have added the references in the literature review. Lines 24-29 in the revised manuscript:

Land use and land cover change (LUCC) and climate variability may alter hydrological processes in watersheds (Berezovskaya et al., 2004; Chagas et al., 2022; Konapala et al., 2020; Tan et al., 2022)*, which successively affect variations of regional water resources (Hoek van Dijke et al., 2022; Pokhrel et al., 2021; Stocker et al., 2023; Suzuki et al., 2021), potentially leading to ecosystem degradation and severe water shortage crises (Aghakhani Afshar et al., 2018; Zuo et al., 2015).*

By addressing these concerns, the manuscript's quality and clarity will be significantly improved, making it more accessible and informative to the readers.

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