

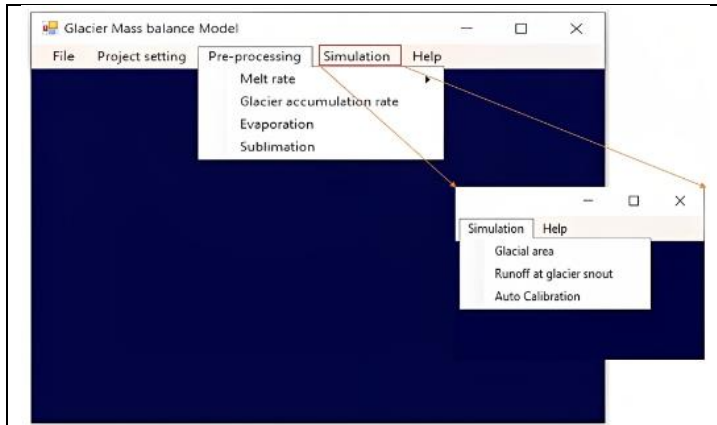
**Title:** Glacier Mass Balance Model (GMBM)

**Type:** Copyright

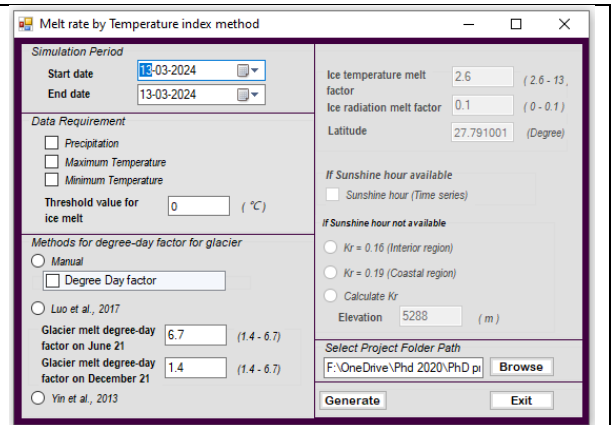
**No.:** SW-17912/2023

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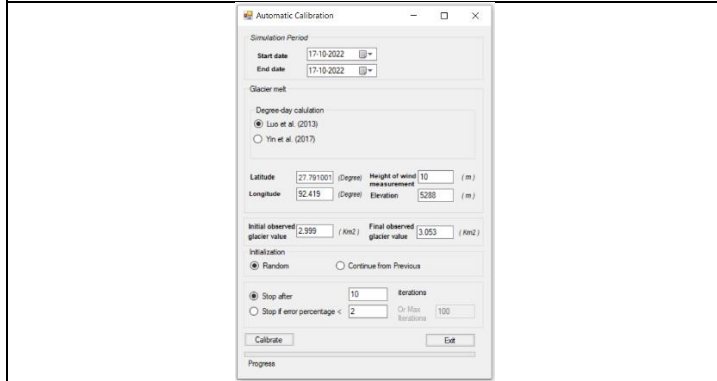
GMBM is a GUI-based windows application developed to simulate daily changes in glacier surface area. It uses a simplified temperature index approach, making it adaptable for data-sparse regions. The model operates on fundamental meteorological parameters like temperature, precipitation, albedo, and wind speed, making it globally applicable. It computes critical snow and glacier variables, aiding in studying climate change impacts. The user-friendly interface of GMBM simplifies complex calculations, and its automatic calibration module ensures a seamless calibration process. The model's temporal and spatial analysis of glacier surface area allows for glacier health monitoring and trend identification in glacier dynamics, crucial for understanding climate change. GMBM incorporates diverse CMIP6 future data, enabling it to simulate variations in glacier extent under different RCP scenarios. This feature enhances the model's ability to anticipate future changes in glacier health, aiding in sustainable water resource management. In summary, GMBM is a cost-effective tool for monitoring glacier resources, studying climate change impacts, and aiding in sustainable water resource management. It's designed with operational simplicity and user-friendliness, making it a valuable tool for researchers and decision-makers alike.



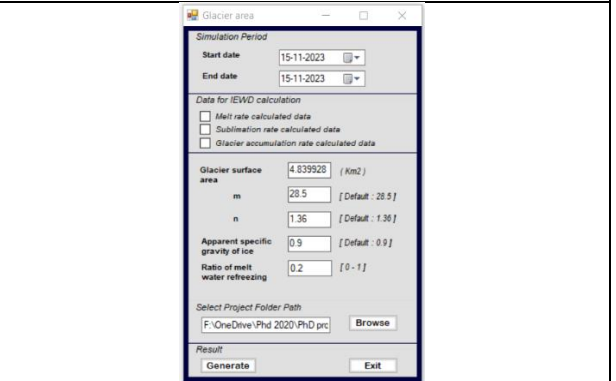
**Fig. 1** Main window



**Fig. 2** Melt rate window



**Fig. 3** Automatic calibration



**Fig. 4** Daily glacier area