



*Supplement of*  
**Global Stable Isotope Dataset for Surface Water**

**Rui Li et al.**

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## Supplementary Information

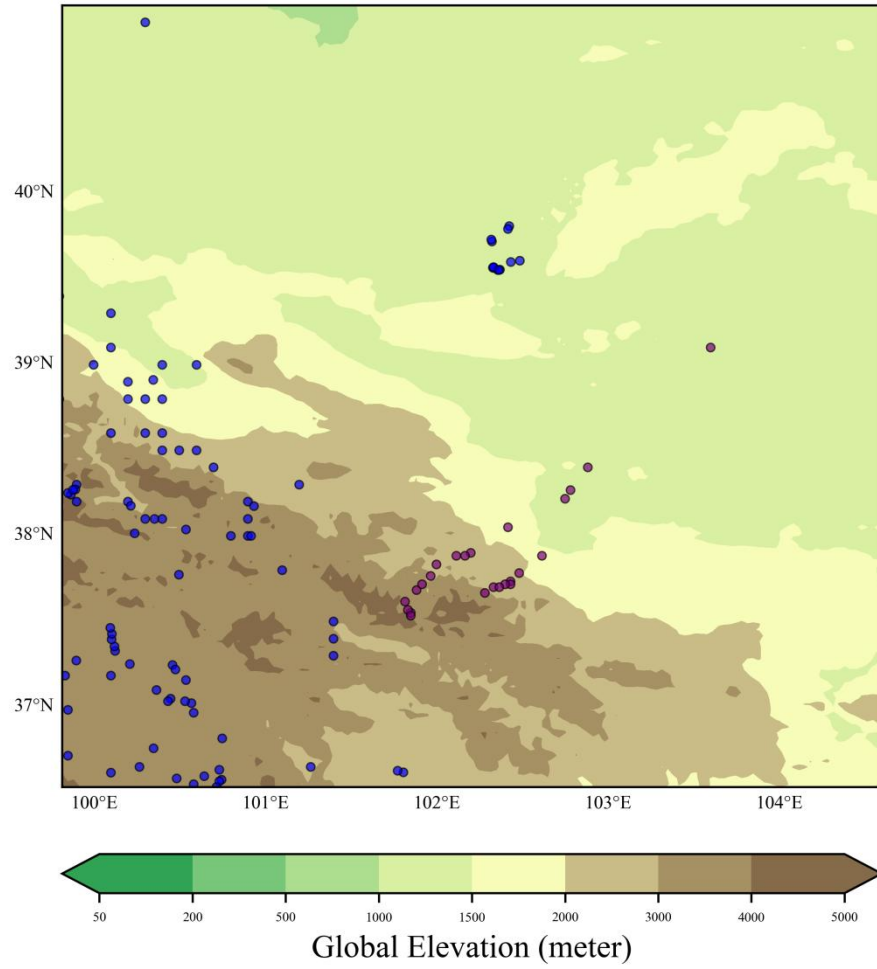
### Text S1:

Both root mean square error (RMSE) and mean absolute error (MAE) were utilized to estimate the model's error (Kartal, 2024). The RMSE and MAE are calculated as follows:

$RMSE = \sqrt{\frac{1}{n} \sum_{i=1}^n  M_i - P_i ^2}$	(1)
$MAE = \frac{1}{n} \sum_{i=1}^n  M_i - P_i $	(2)

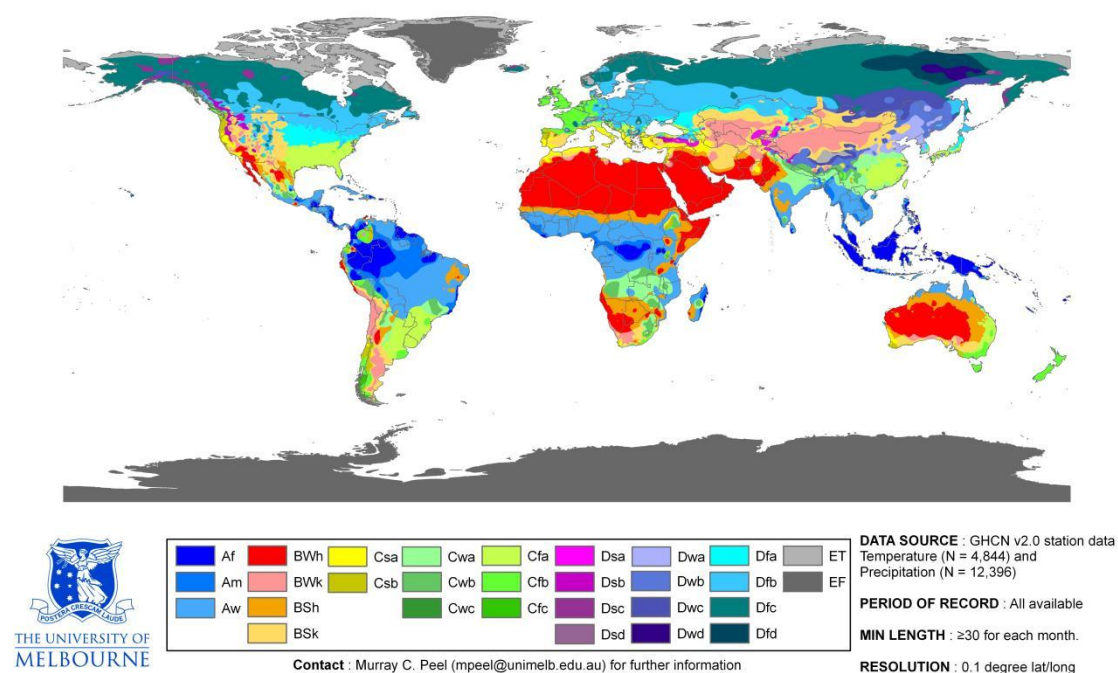
where  $M$  and  $P$  are the measured and predicted values and  $n$  denotes the number of samples in the validation set.

Kartal, V., 2024. Machine learning-based streamflow forecasting using CMIP6 scenarios: Assessing performance and improving hydrological projections and climate change. *Hydrological Processes* 38, e15204. <https://doi.org/10.1002/hyp.15204>

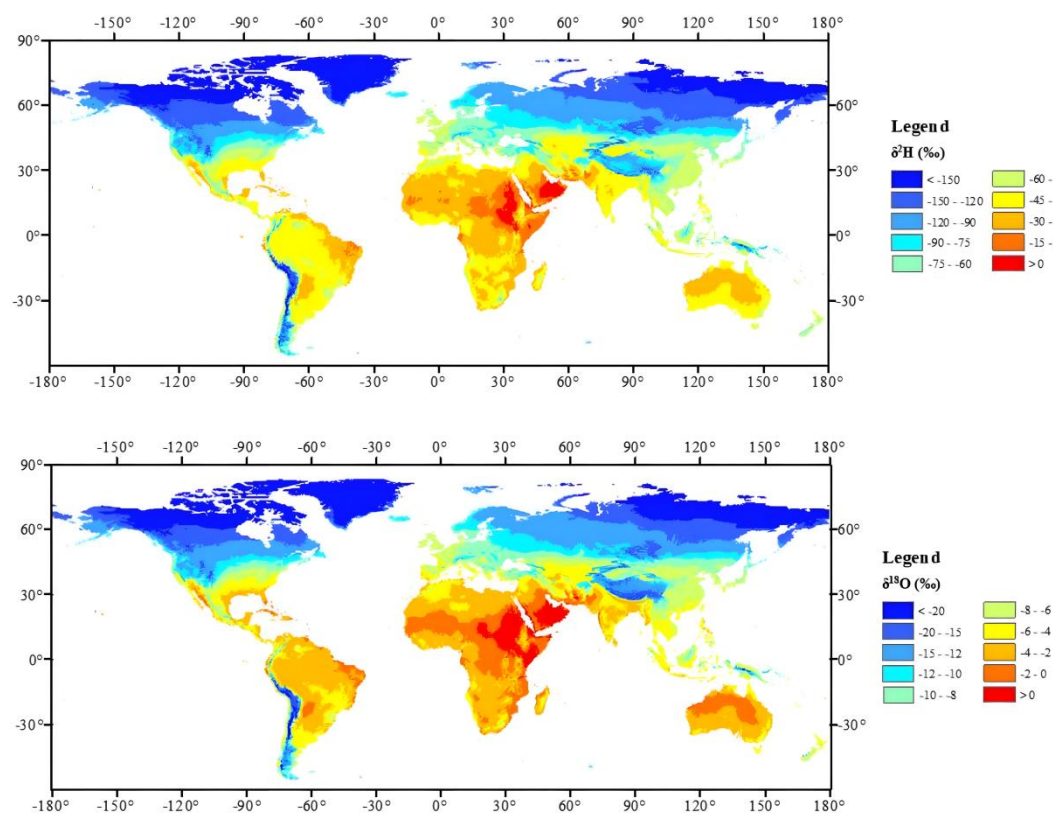


**Figure S1** Distribution of sampling sites in the Shiyang River Basin.

World map of Köppen-Geiger climate classification



**Figure S2** The world map of the Köppen-Geiger climate classification (Peel et al., 2007).



**Figure S3** Global distribution of (a)  $\delta^{18}\text{O}$  and (b)  $\delta^2\text{H}$  in precipitation (Nan et al., 2019).

**Table S1** Random Forest Model Assessment Indicators

Variant	RMSE	MAE
$\delta^2\text{H}$	12.87	10.02
$\delta^{18}\text{O}$	3.23	0.89

**References:**

Nan, Y., Tian, F., Hu, H., Wang, L., and Zhao, S.: Stable Isotope Composition of River Waters across the World, *Water*, 11, 1760, <https://doi.org/10.3390/w11091760>, 2019.

Peel, M. C., Finlayson, B. L., and McMahon, T. A.: Updated world map of the Köppen-Geiger climate classification, *Hydrol. Earth Syst. Sci.*, 11, 1633–1644, <https://doi.org/10.5194/hess-11-1633-2007>, 2007.