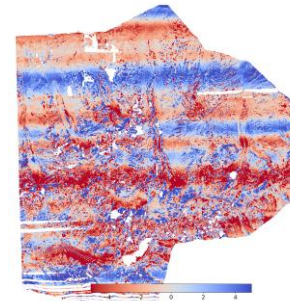
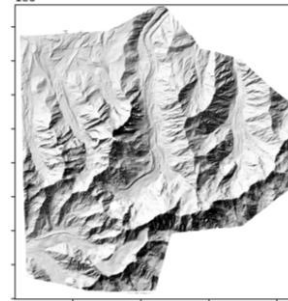
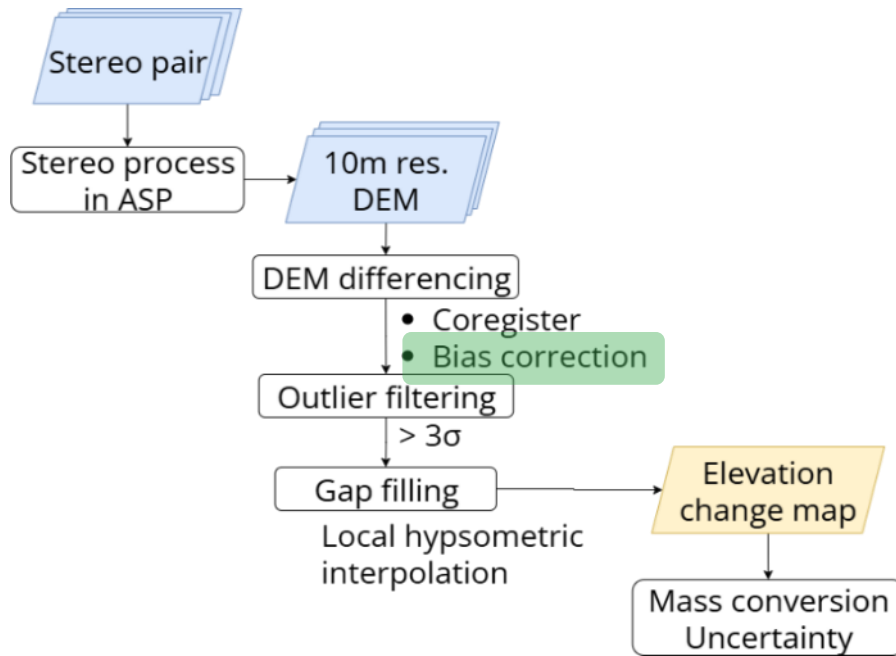


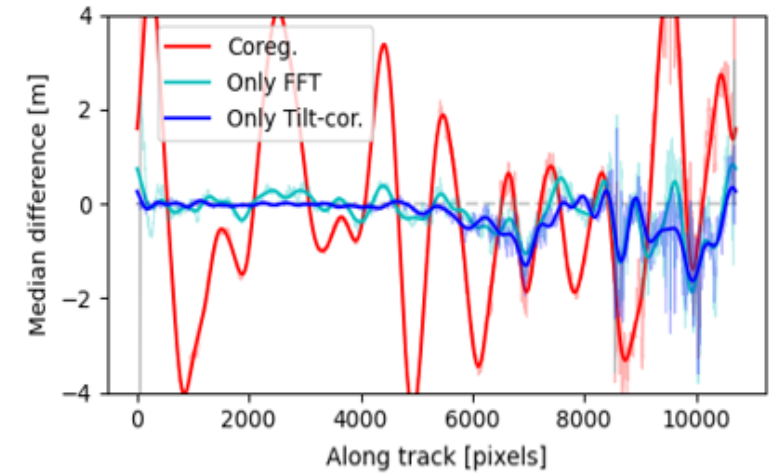
Building robust glacier time series

1. Jitter removal in bias correction
2. Seasonal snow correction
3. Mass balance conversion

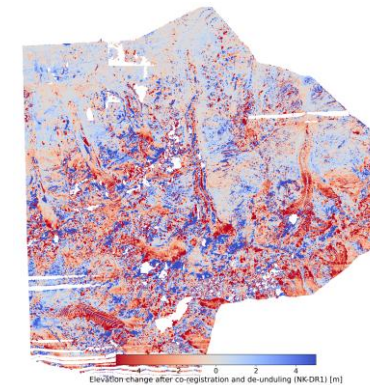


dDEM after coregistration

Along/cross track undulation (jitter)



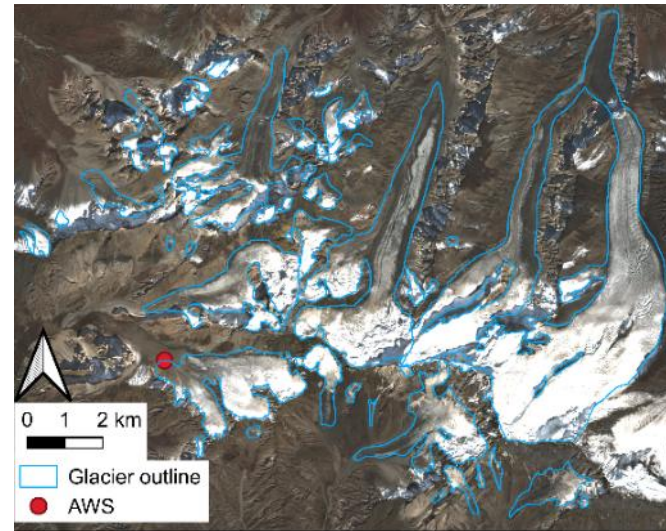
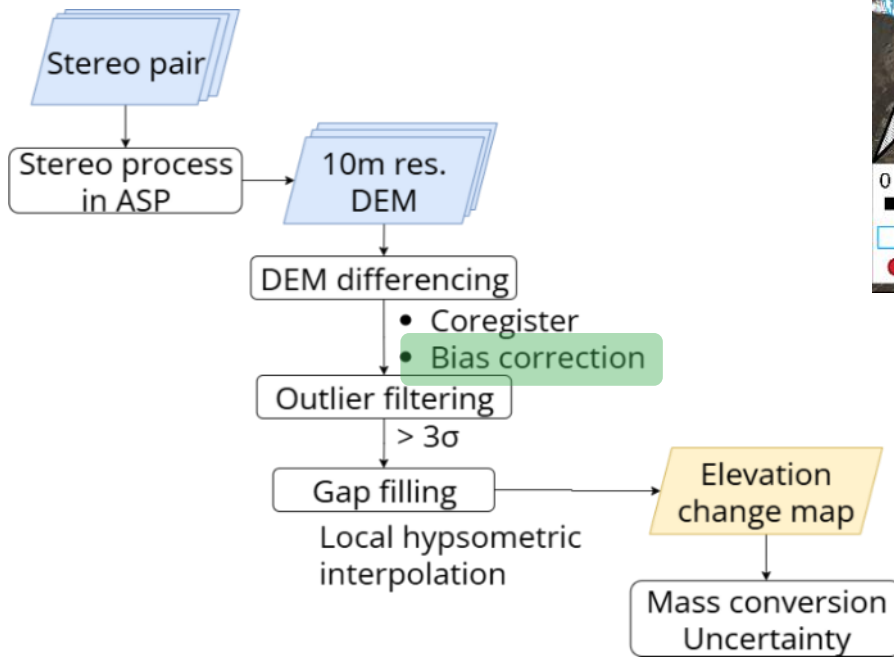
Estimate the angle and magnitude of jitter and subtract them directly.



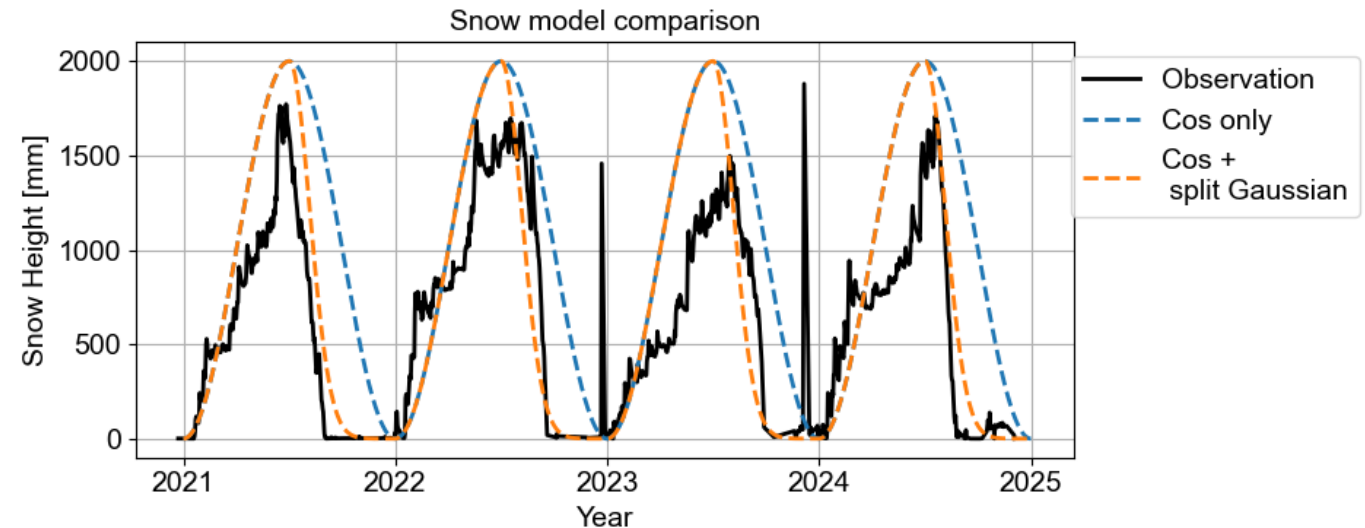
Building robust glacier time series

1973.11.22
2003.07.06
2011.11.29

1. Jitter removal in bias correction
2. Seasonal snow correction
3. Mass balance conversion

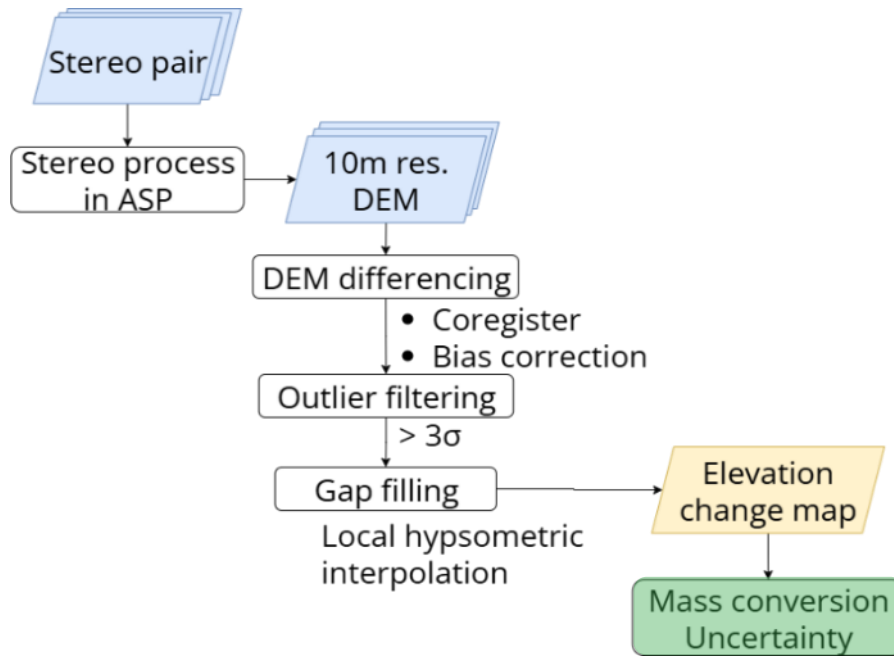


- For DEMs in 1973, 2003, and 2011
- In-situ data of snow height at the Nissai Glacier since 2021
- Modeled the seasonal snow by Cos+split Gaussian.
- Subtracted the amount from dhdt and added the term in the uncertainty



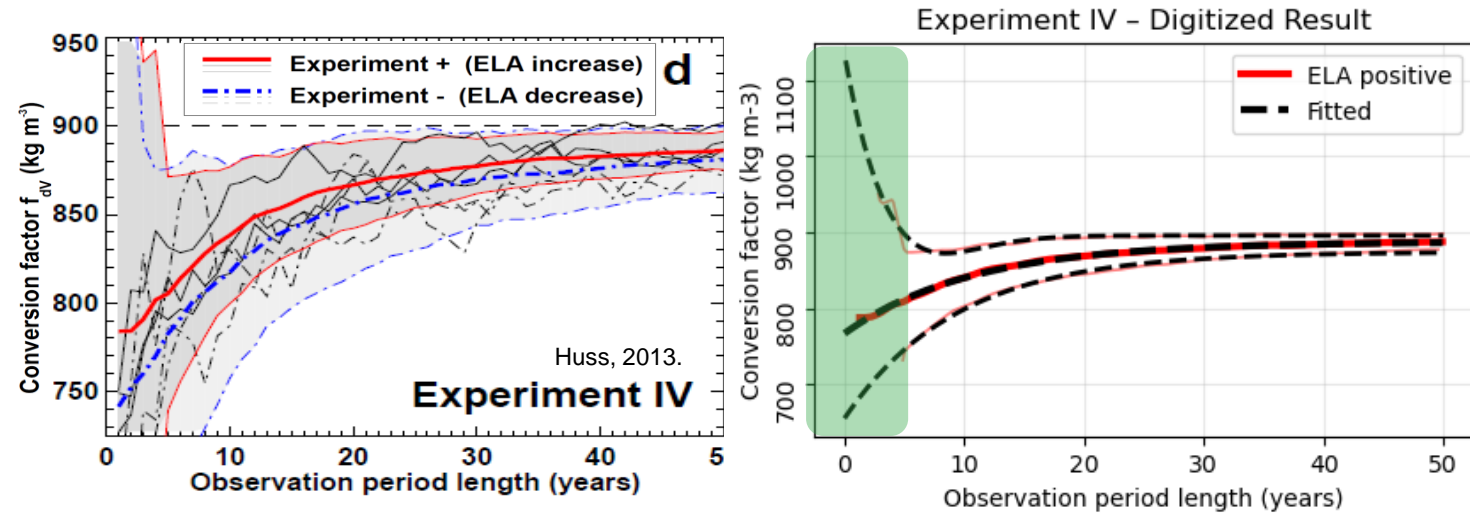
Building robust glacier time series

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Huss2013 suggests:

- $850 \pm 60 \text{ kg m}^{-3}$ (>3 yr)
- $0-2000 \text{ kg m}^{-3}$ (≤ 3 yr) and beyond



Approximation relative to ELA positive under natural conditions

- Values are determined by the fitting functions.

For example: $777.8 (+278/-100) \text{ kg m}^{-3}$ for 1 year period