### Can Low-Temperature Thermochronology Constrain Quaternary Glacial Erosion? A Case Study from the Tauern Window, Eastern European Alps

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### Motivation

Quantify Pliocene-Quaternary glacial erosion in a study area that records recent exhumation with low-temperature thermochronology

### Aims

In the recently exhumed Tauern Window we:

- Improve constraints on tectonic exhumation using large published dataset
- Investigate the data's ability to resolve glacial landscape incision at various scales
- Compare <sup>4</sup>He/<sup>3</sup>He results to (U-Th)/He results

### Study Area



700000

750000

800000

850000



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# <figure>

## production inflection age (Ne) <sup>2</sup> : Amplification (%) <sup>3</sup> : 2nd uplift inflection age (Me) <sup>4</sup> : 2nd uplift inflection ag

#### **1D Thermal Modelling per sample** Stronger incision along valley bottom (HeFTy)

8 10	Pecube — 2 tectonic stages — 3 tectonic stages	HeFTy GOF 1	0 2 AT23-10; 1179m	4 6 8 10 - 125 - 75 - 50 - 25 0
			AT23-04; 1756m	150 - 125 - 75 - 50 - 25
	AT22-21 AT22-20	AT23-03	AT23-03; 2040m	0 150 - 125 - 75 - 50
	AT22-01 0 AT22-04 AT22-0	AT23-01 AT22-05 AT22-07	AT23-01; 2382m	- 25 0 150 - 125 - 75
		AT22-07; 1713m	AT22-05; 2585m	- 50 - 25 0 150
	AT22-08: 1269m			- 125 - 75 - 50 - 25
8 10			8 10 0 2	4 6 8 10
Time (Ma)				



### **Conclusions & Outlook**

Overlooking effect of landscape change results in overestimated tectonic uplift rates

Glacial incison is elevation- & valley scaledependent; this signal is drowned out in studies using large datasets

<sup>4</sup>He/<sup>3</sup>He significantly constrains exhumation

