Supporting Information for

Climate-driven topographic asymmetry enhanced by glaciers: Implication for drainage reorganization in glacial landscapes

Jingtao Lai[1] and Kimberly Huppert[1,2]

[1]Earth Surface Process Modelling, GFZ German Research Centre for Geosciences, 14473 Potsdam, Germany

[2]Department of Earth & Atmospheric Sciences, City College of New York, NY 10031, USA

Contents of this file

1. Table S1
2. Figures S1 to S3

References

Deal, E., & Prasicek, G. (2021). The Sliding Ice Incision Model: A New Approach to Understanding Glacial Landscape Evolution. *Geophysical Research Letters*, *48*(1), 1–15. doi: 10.1029/2020GL089263

Corresponding author: Jingtao Lai (lai@gfz-potsdam.de)

Table S1. Description of model parameters and values.[a]

Parameter	Description	Value	Unit
n	Fluvial erosion exponent	1, 2	1
m	Area exponent in the Stream Power model	$n/2$	1
K_f	Fluvial erosion coefficient	10^{-6}, 10^{-9}	$\mathrm{m}^{1-3\mathrm{m}}\ \mathrm{yr}^{-1}$
k_c	Fluvial Hack's law coefficient	2	1
h	Fluvial Hack's law exponent	2	1
ℓ	Glacial erosion exponent	1, 2	1
K_g	Glacial erosion coefficient	10^{-4}, 10^{-6}	$\mathrm{m}^{1-\ell}\ \mathrm{yr}^{\ell-1}$
c_c	Glacial Hack's law coefficient	2	1
η	Glacial Hack's law exponent	2	1
x_c	Critical hillslope length	500	m
δ	solid precipitation lapse rate	0.002	1

[a] We refer readers to Deal and Prasicek (2021) for a detailed description of the parameters used in the Sliding Ice Incision Model.

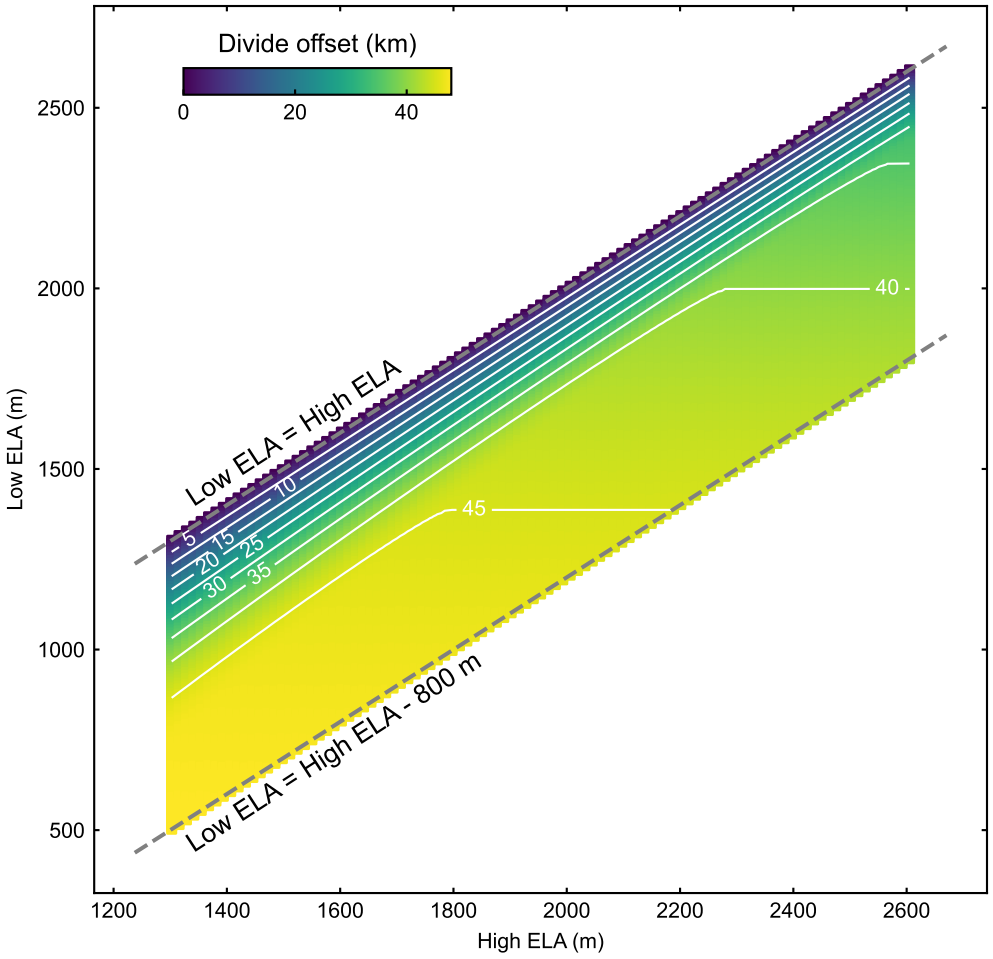

Figure S1. Divide offset distance as a function of the ELAs on the two sides of the divide.

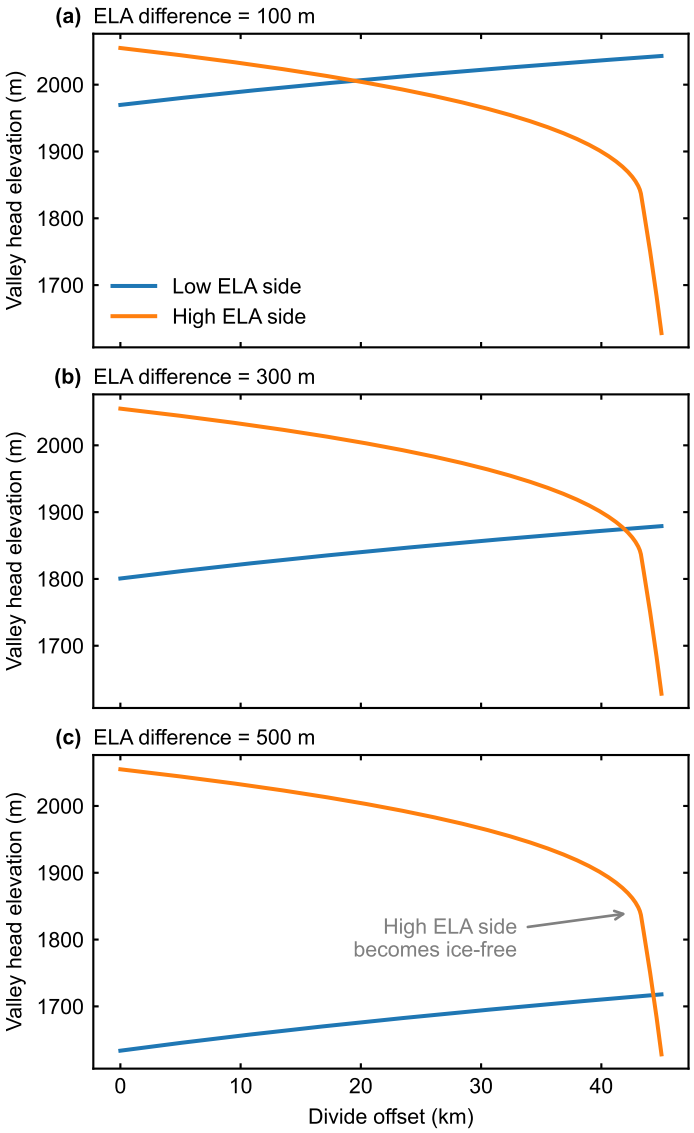

Figure S2. The change of valley head elevation as a function of divide offset distance in cases with different cross-divide ELA differences.

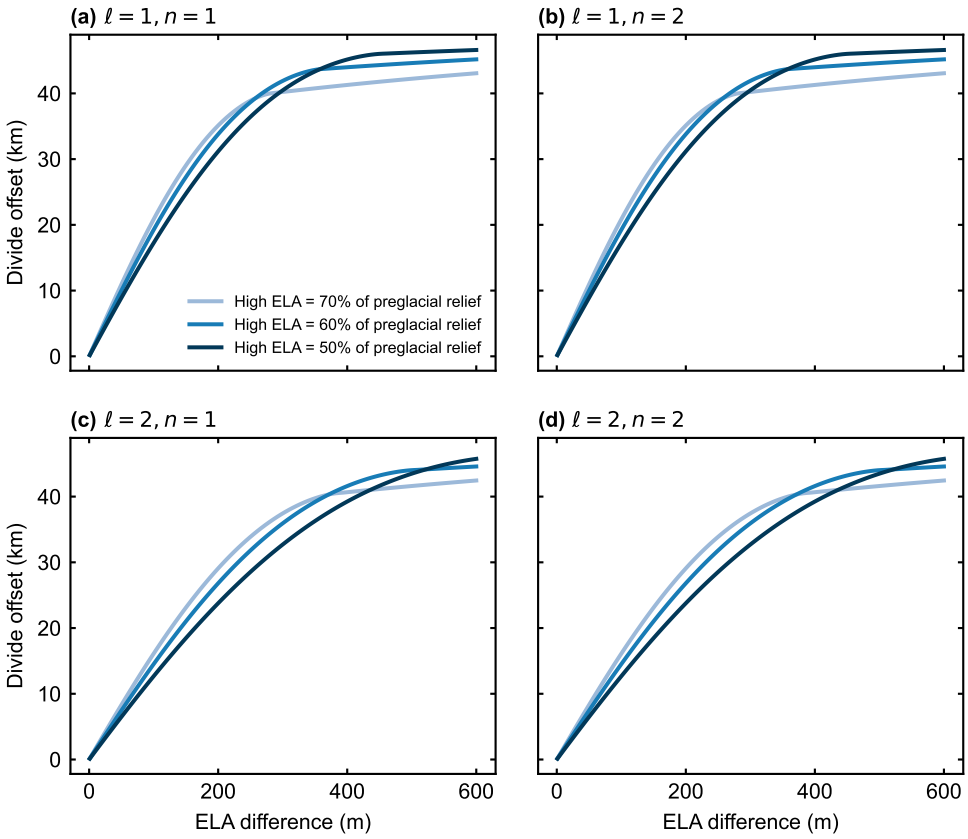

Figure S3. Divide offset distance as a function of cross-divide ELA differences in cases with different erosion parameters.