Steinzeitliche Jäger am Gletscherrand: Einblicke in die Umwelt-, Klima- und Menschheitsgeschichte im Äthiopischen Hochland

Alexander R. Groos, Geographisches Institut, Universität Bern

Prix de Quervain 2021 – Öffentliches Symposium

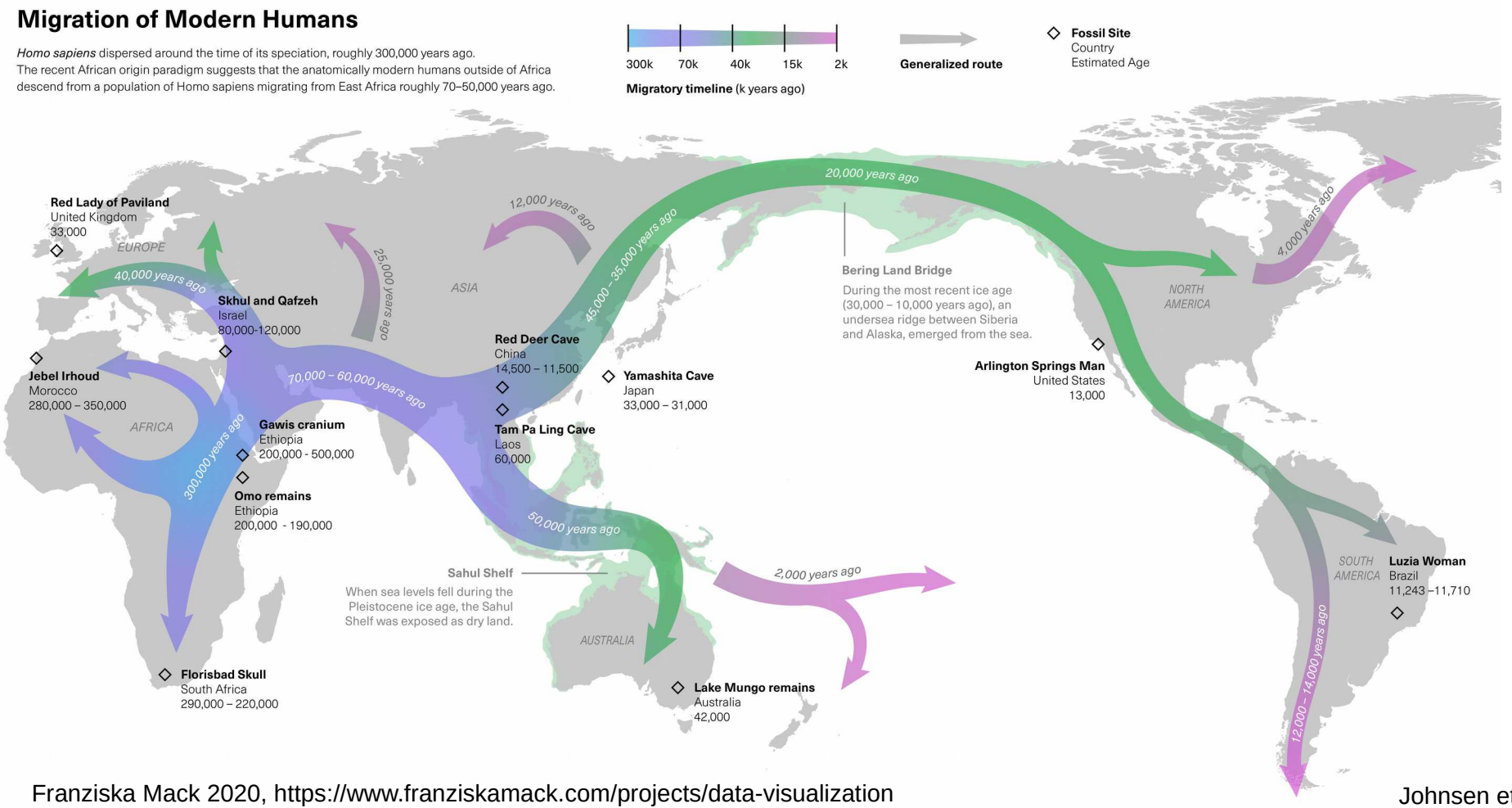
Donnerstag, 18. November, Alpines Museum Bern

UNIVERSITÄT BERN

DFG

FNSNF
FONDS NATIONAL SUISSE
SCHWEIZERISCHER NATIONALFONDS
FONDO NAZIONALE SVIZZERO
SWISS NATIONAL SCIENCE FOUNDATION

DigitalGlobe FOUNDATION

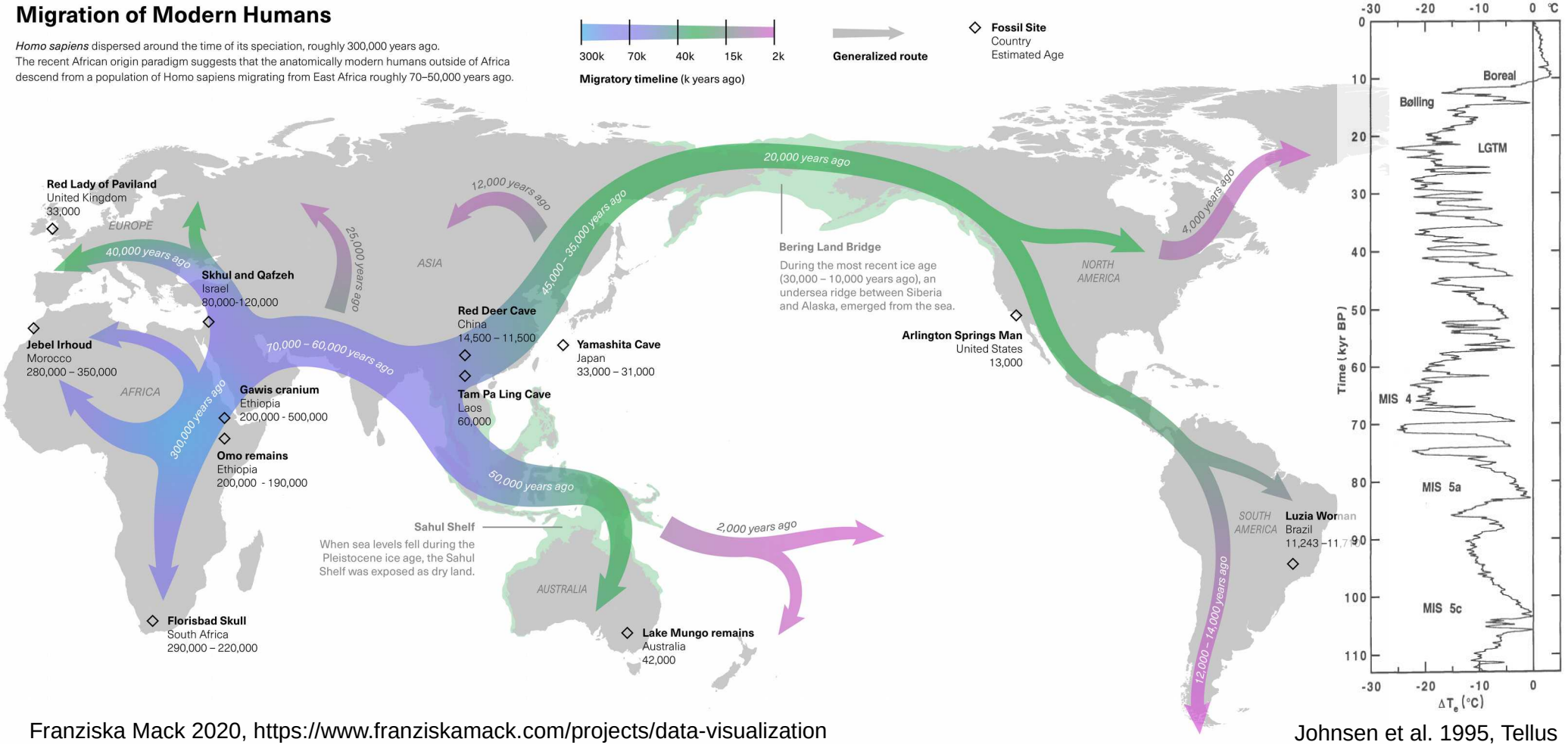


Franziska Mack 2020, https://www.franziskamack.com/projects/data-visualization

Johnsen et al. 1995, Tellus

Migration of Modern Humans

Homo sapiens dispersed around the time of its speciation, roughly 300,000 years ago.
The recent African origin paradigm suggests that the anatomically modern humans outside of Africa descend from a population of Homo sapiens migrating from East Africa roughly 70–50,000 years ago.



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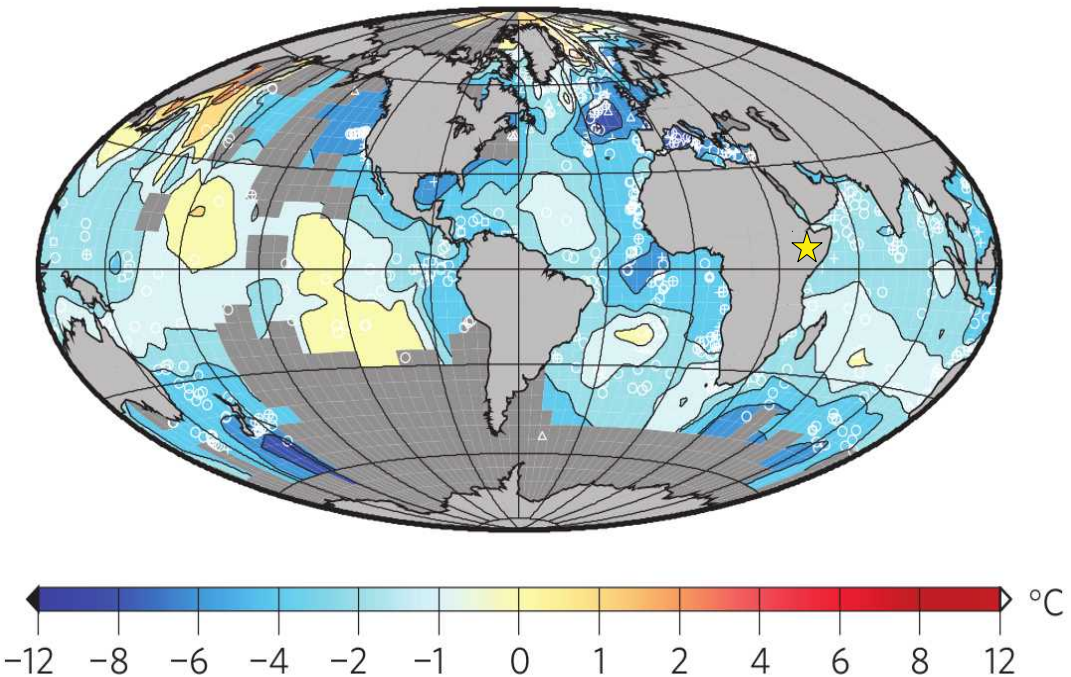
Cooling during the global Last Glacial Maximum (ca. 24-20 thousand years ago)



MARGO Project Members 2009, Nature Geoscience

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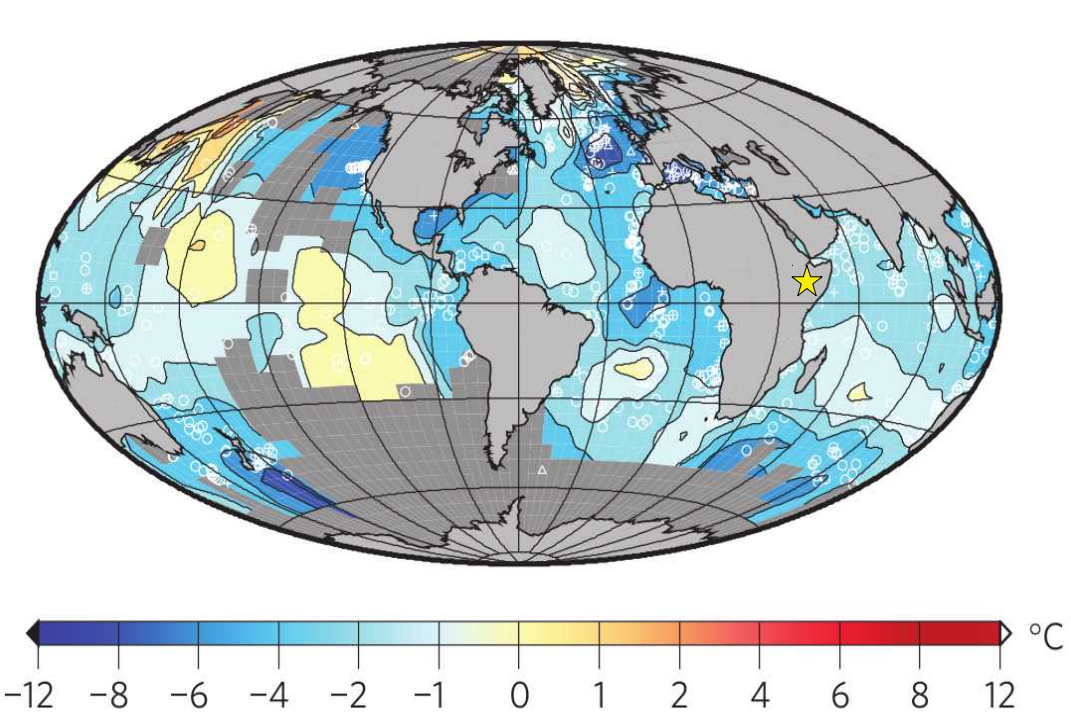

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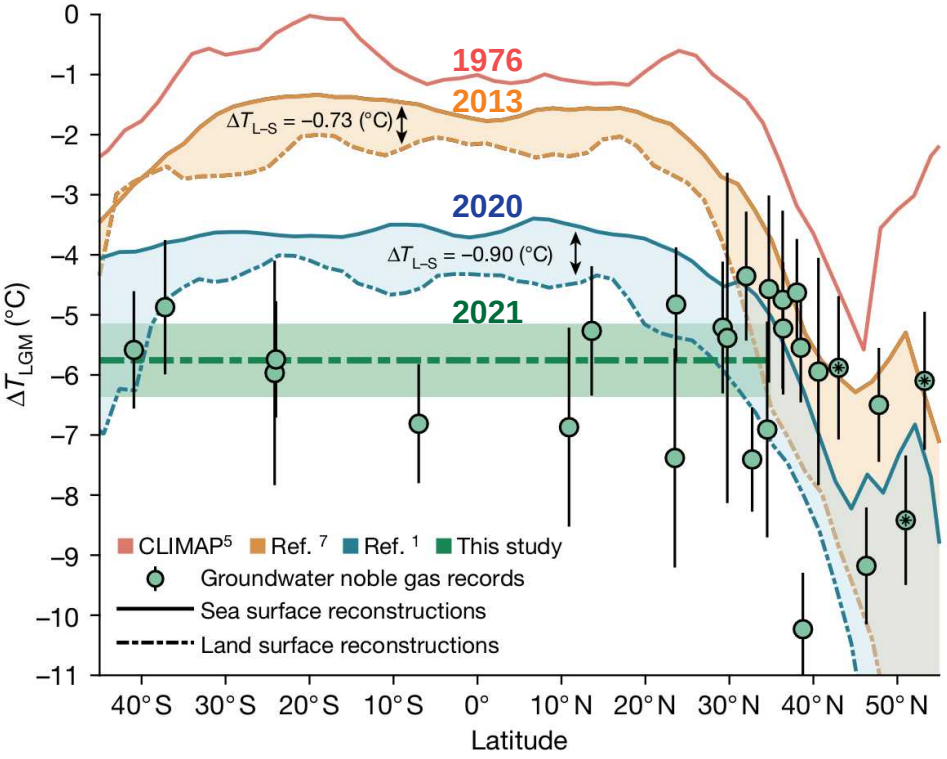
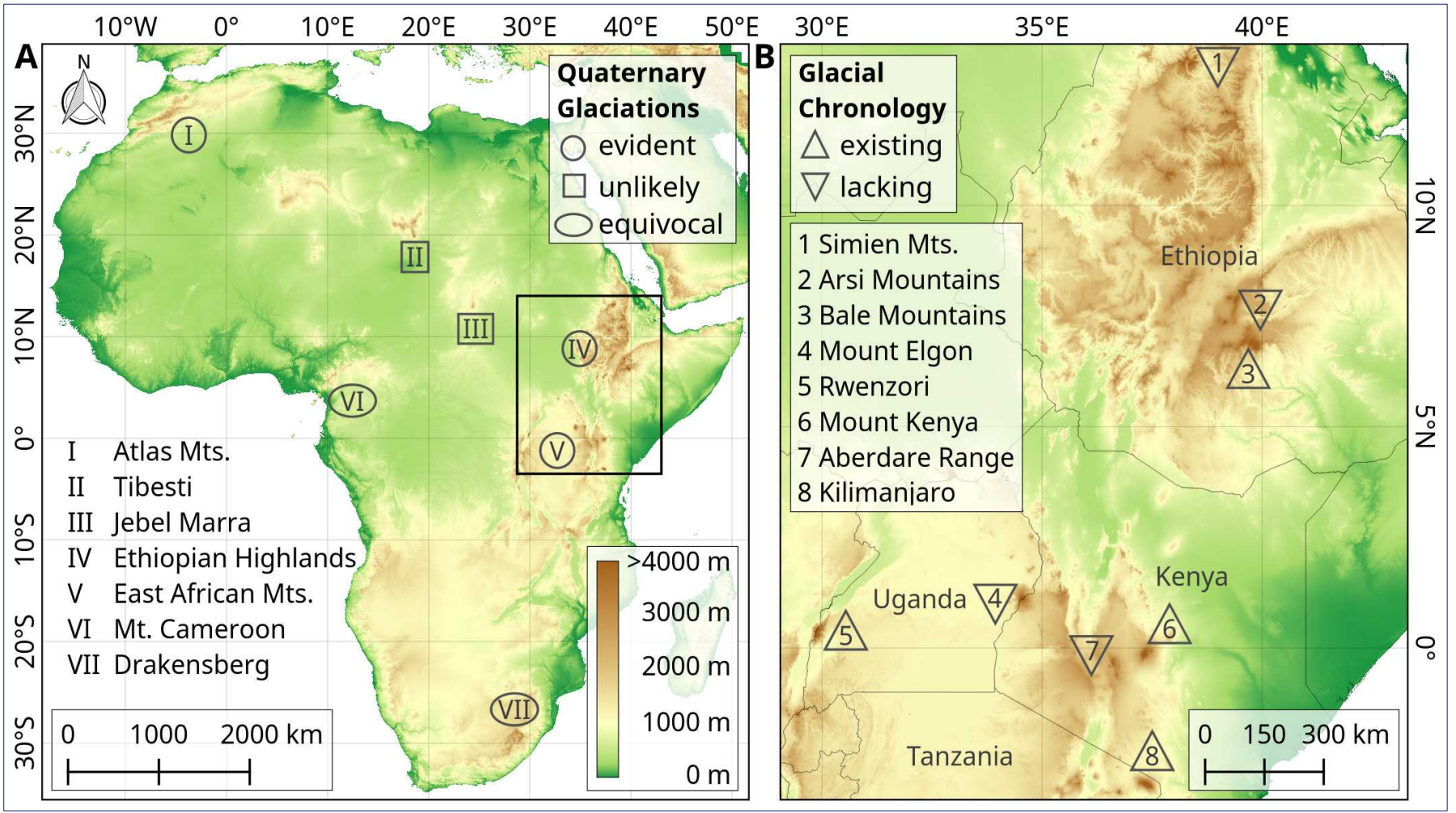


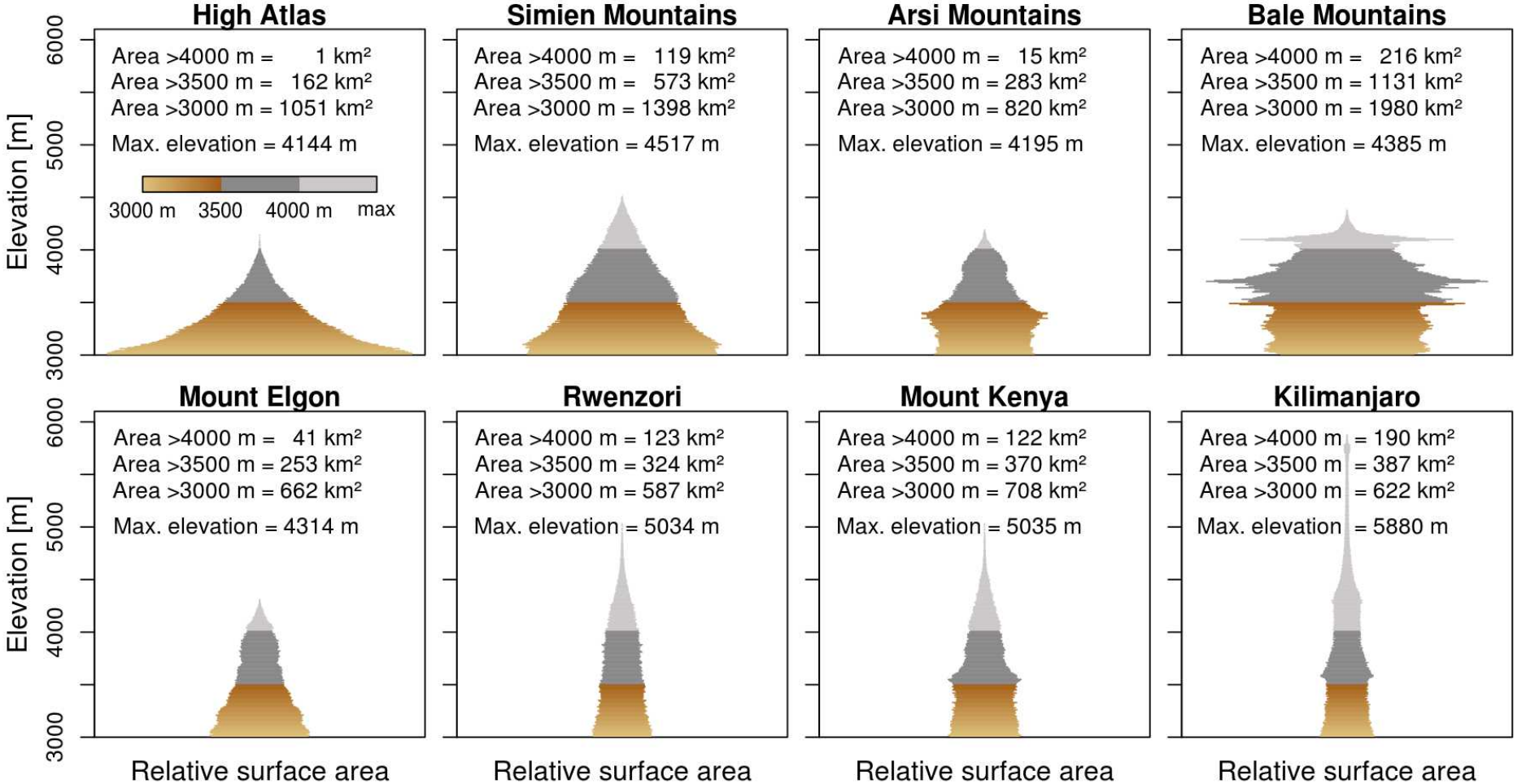
Seltzer et al. 2021, Nature (modified)

Topography of Africa & the Ethiopian Highlands

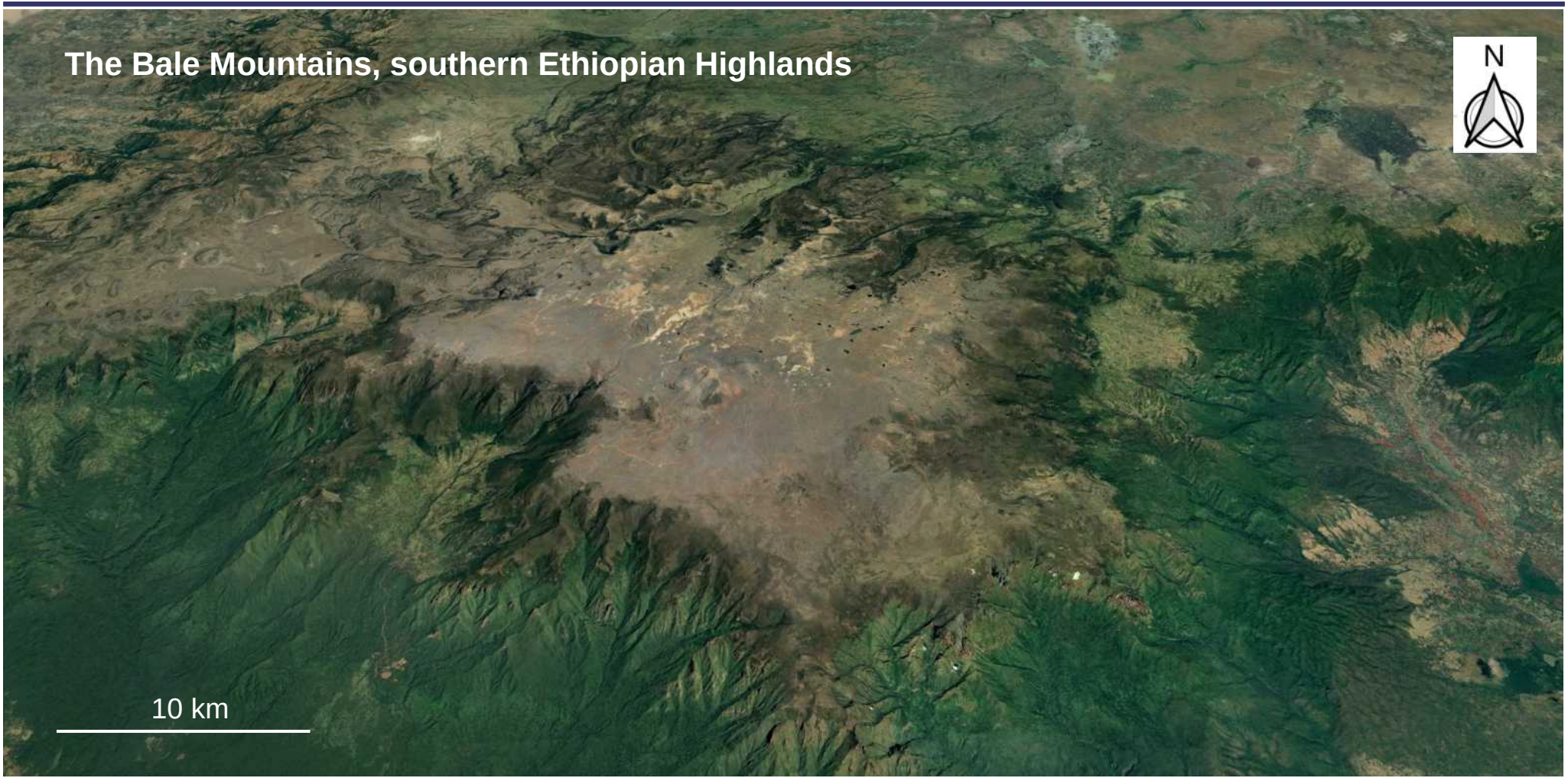


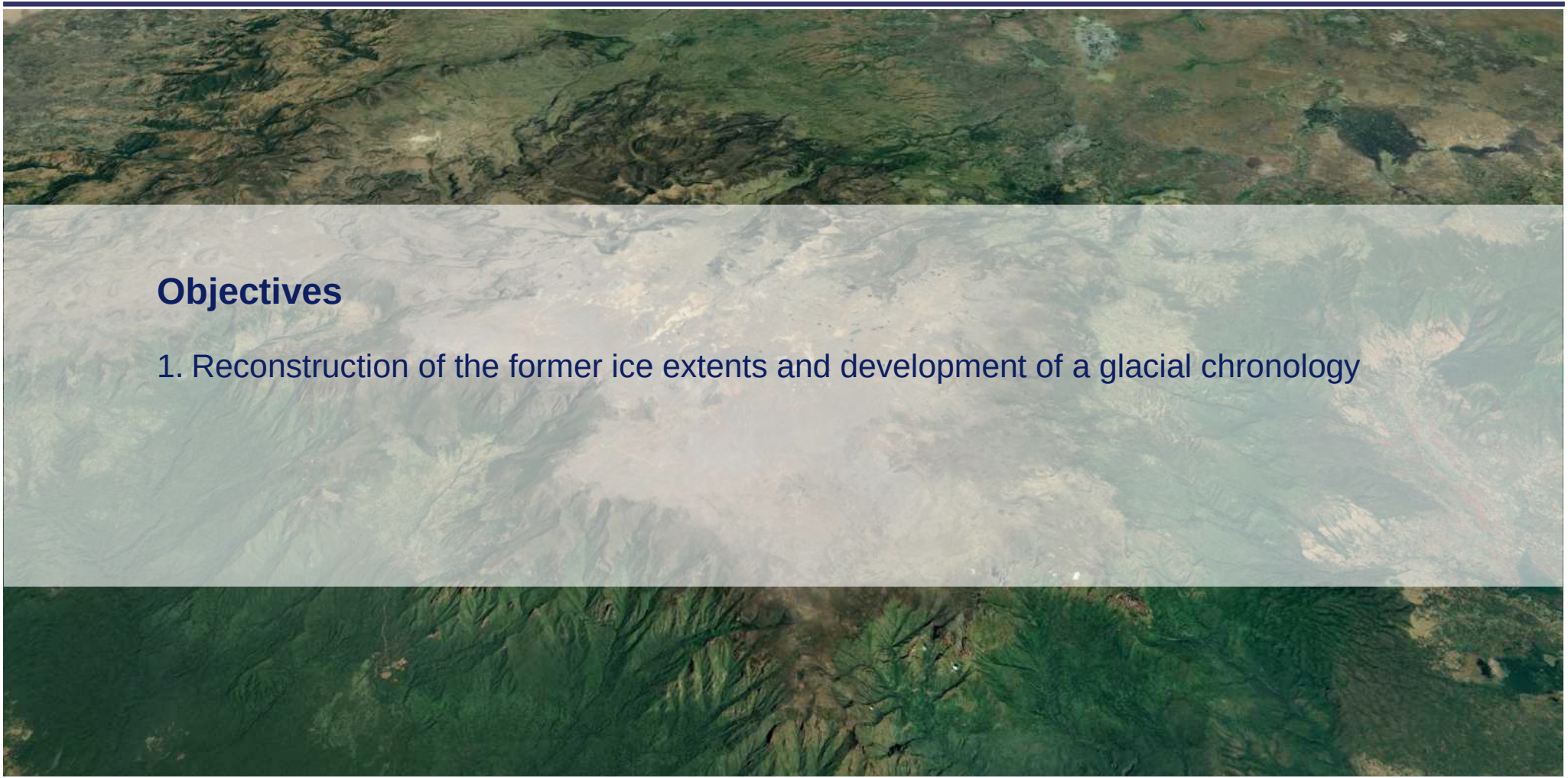
Groos et al. 2021, Science Advances

Hypsography of the East African Mountains



Groos et al. 2021, Science Advances


The Bale Mountains, southern Ethiopian Highlands
N
10 km



Objectives

1. Reconstruction of the former ice extents and development of a glacial chronology

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2. Investigation of present and relict periglacial landforms

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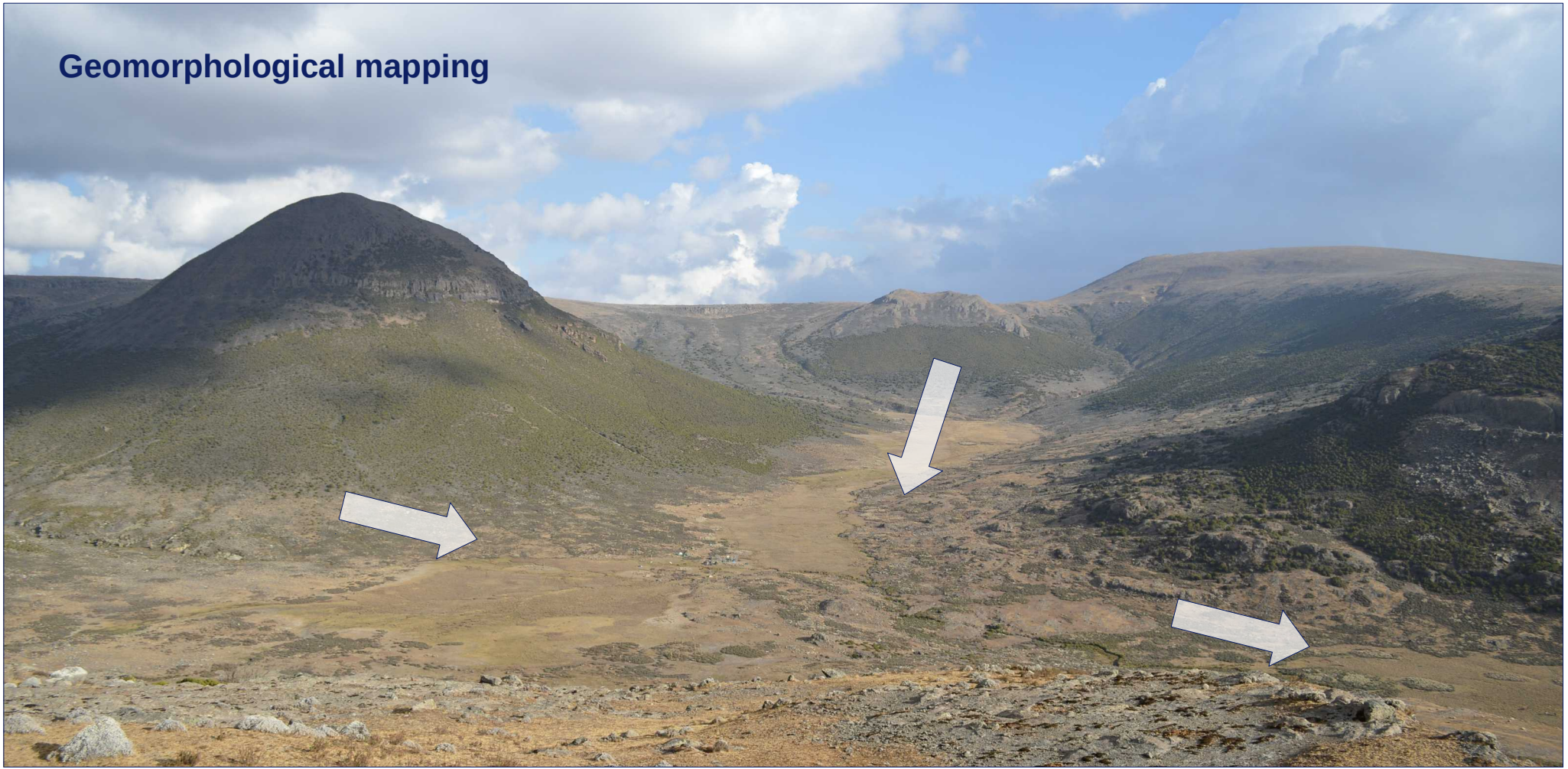
2. Investigation of present and relict periglacial landforms
3. Provision of a palaeoclimatic and environmental context for the settlement history






Geomorphological mapping



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^{36}Cl surface exposure dating

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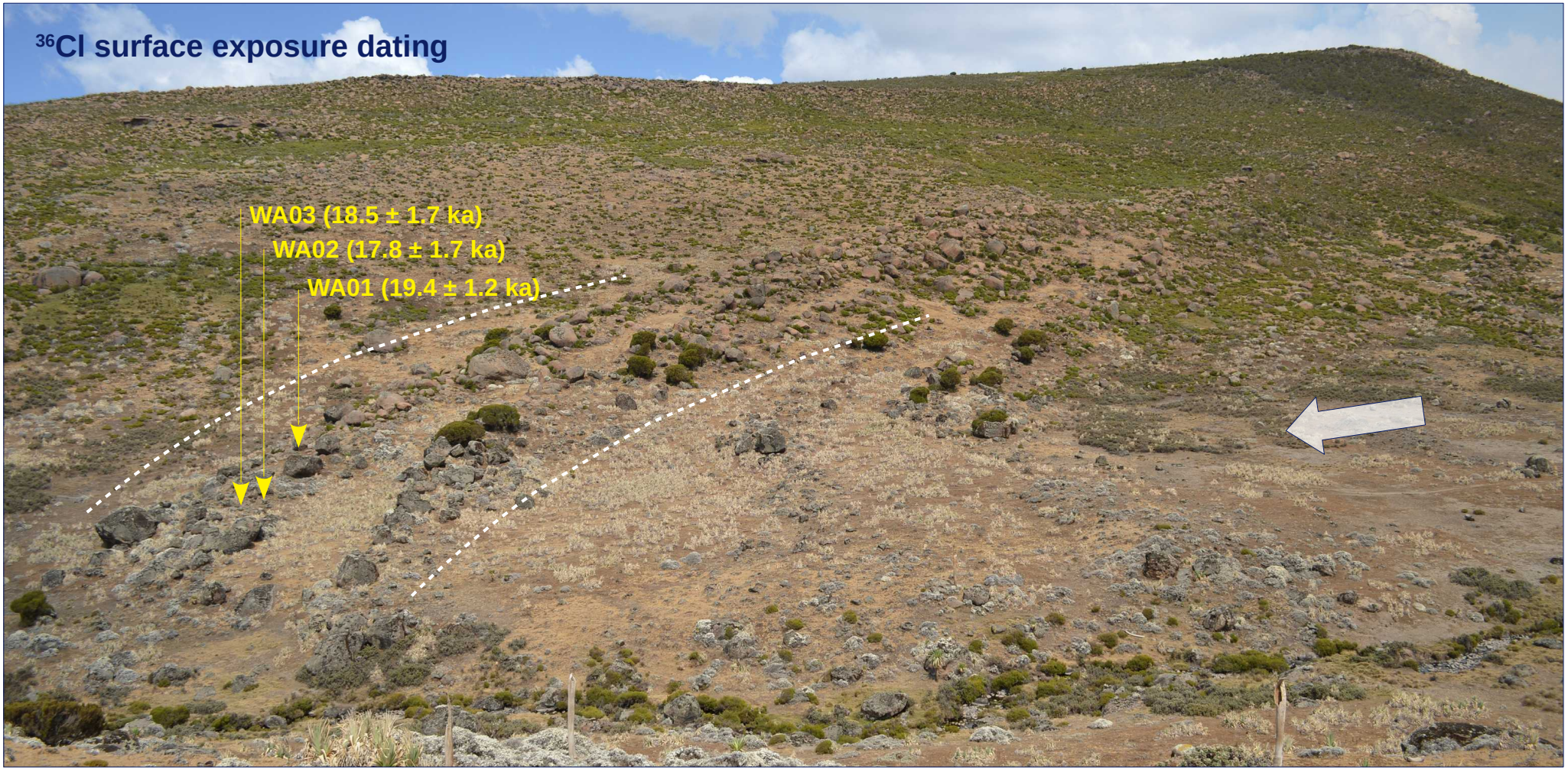
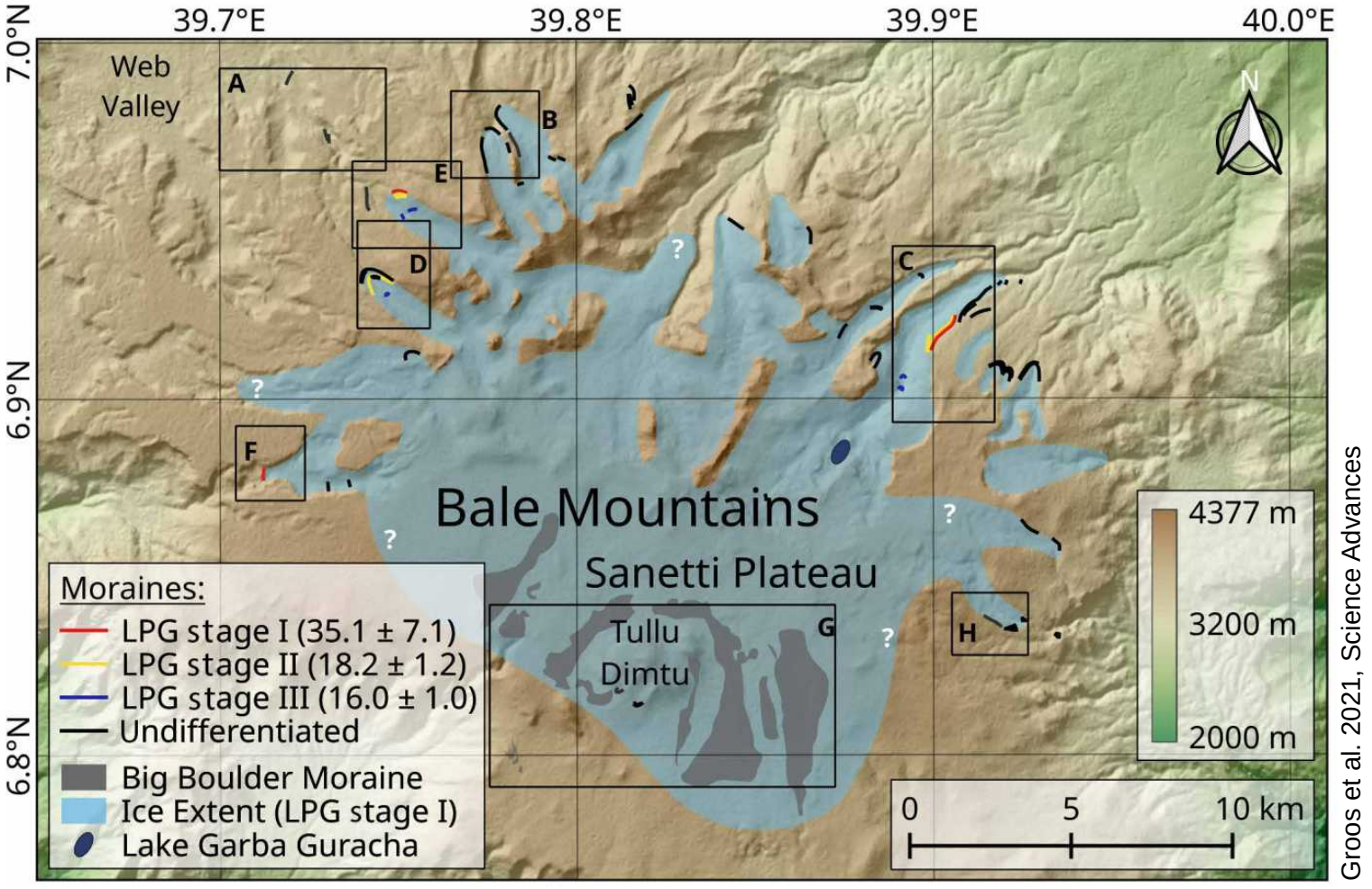


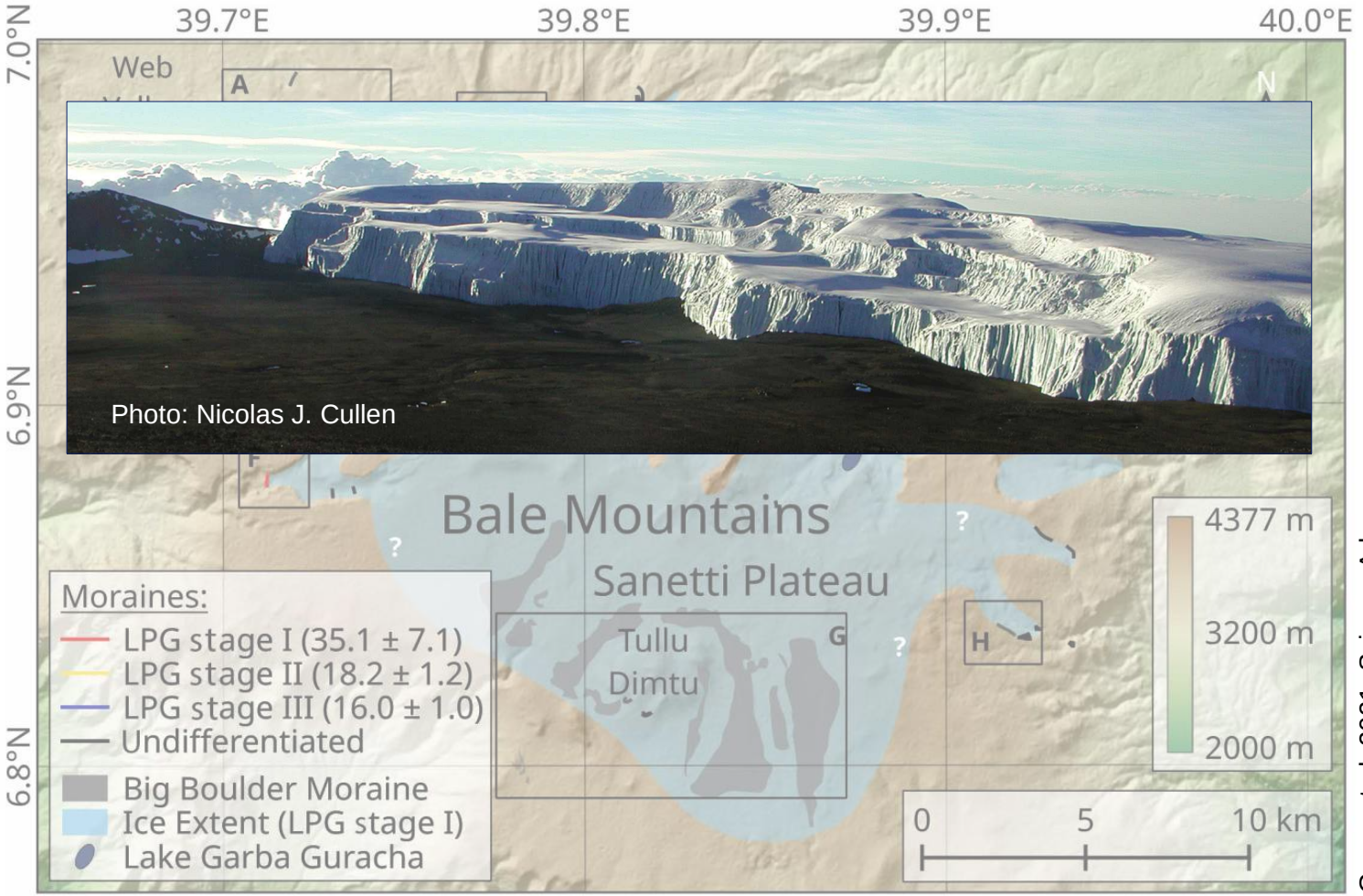


Last Glacial Period

Local LGM:
42-28 thousand years ago

Glaciated area:
265 km²

Local LGM temperature decrease:
ΔT ~ >5-6 °C



Groos et al. 2021, Science Advances

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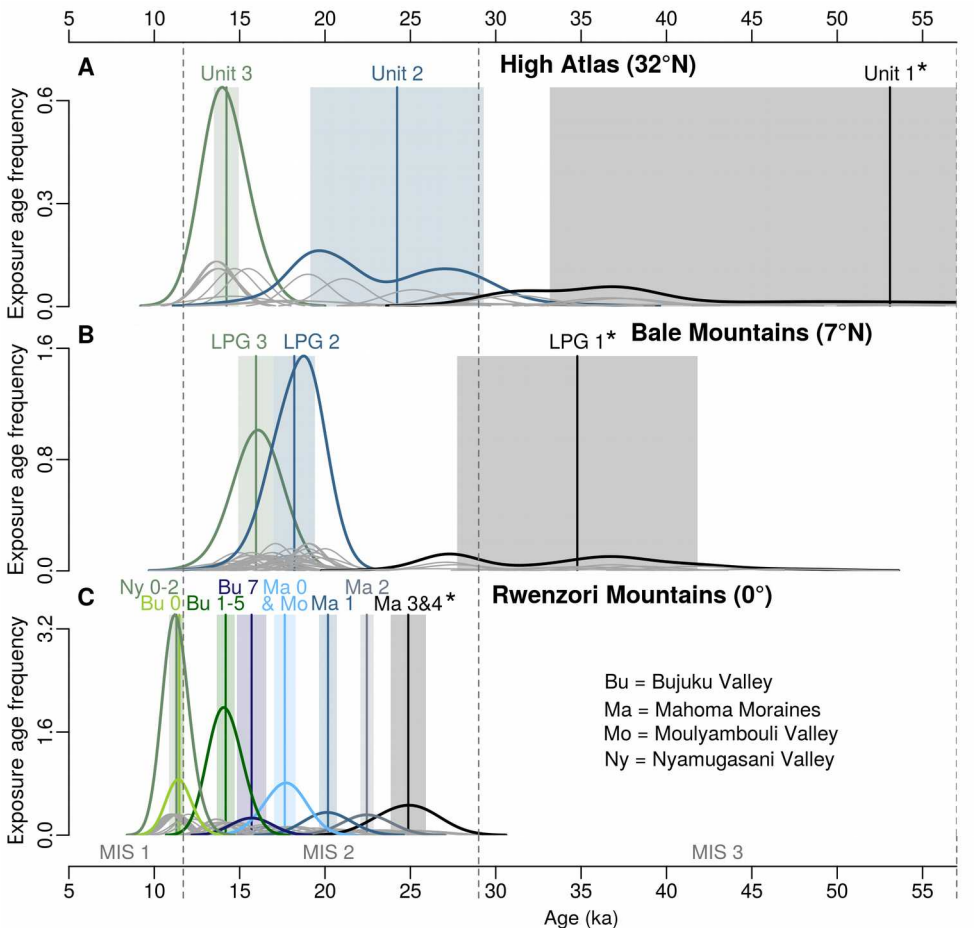
Quaternary glacier fluctuations in Eastern Africa



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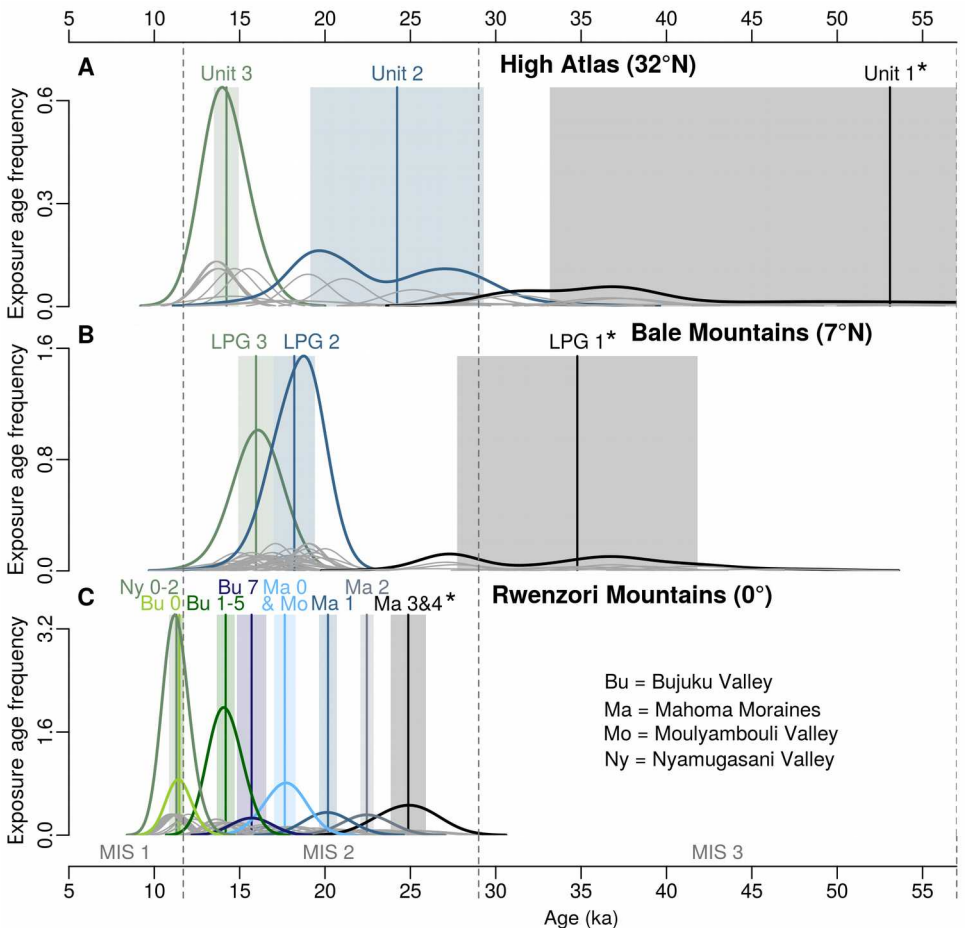
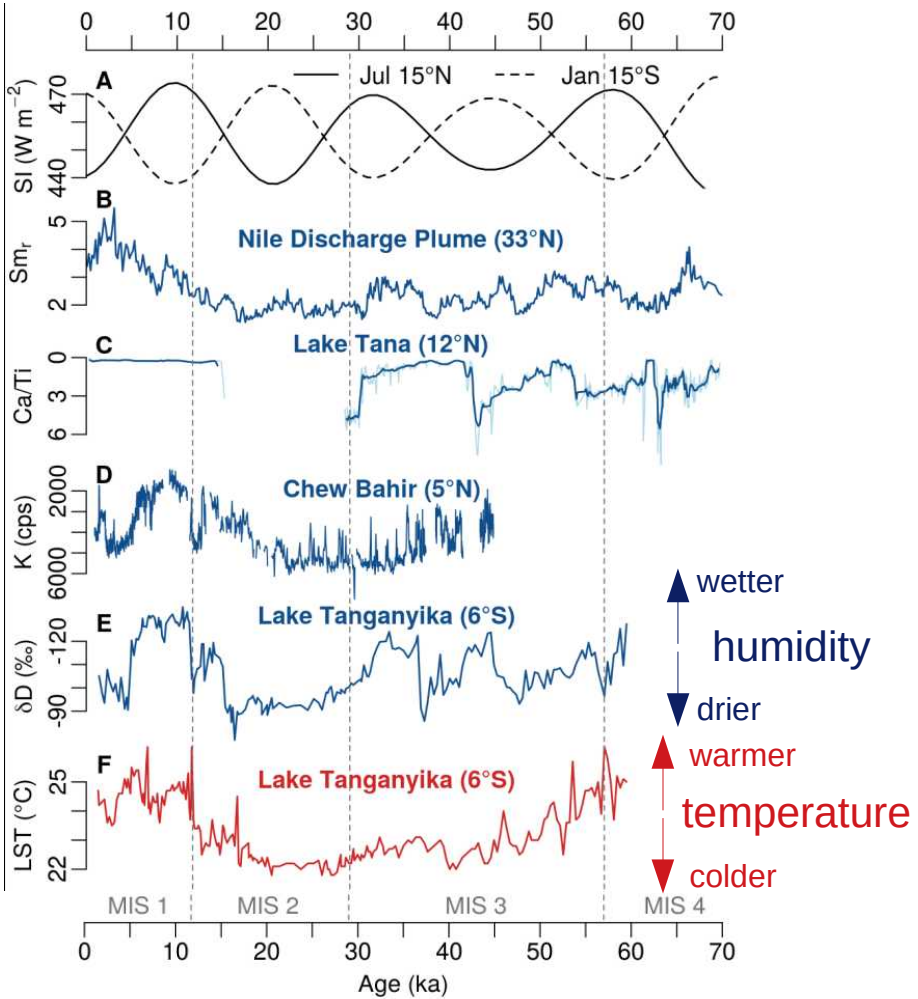


Groos et al. 2021, Science Advances

Quaternary climate changes in Eastern Africa



Relict large sorted stone stripes on the Sanetti Plateau

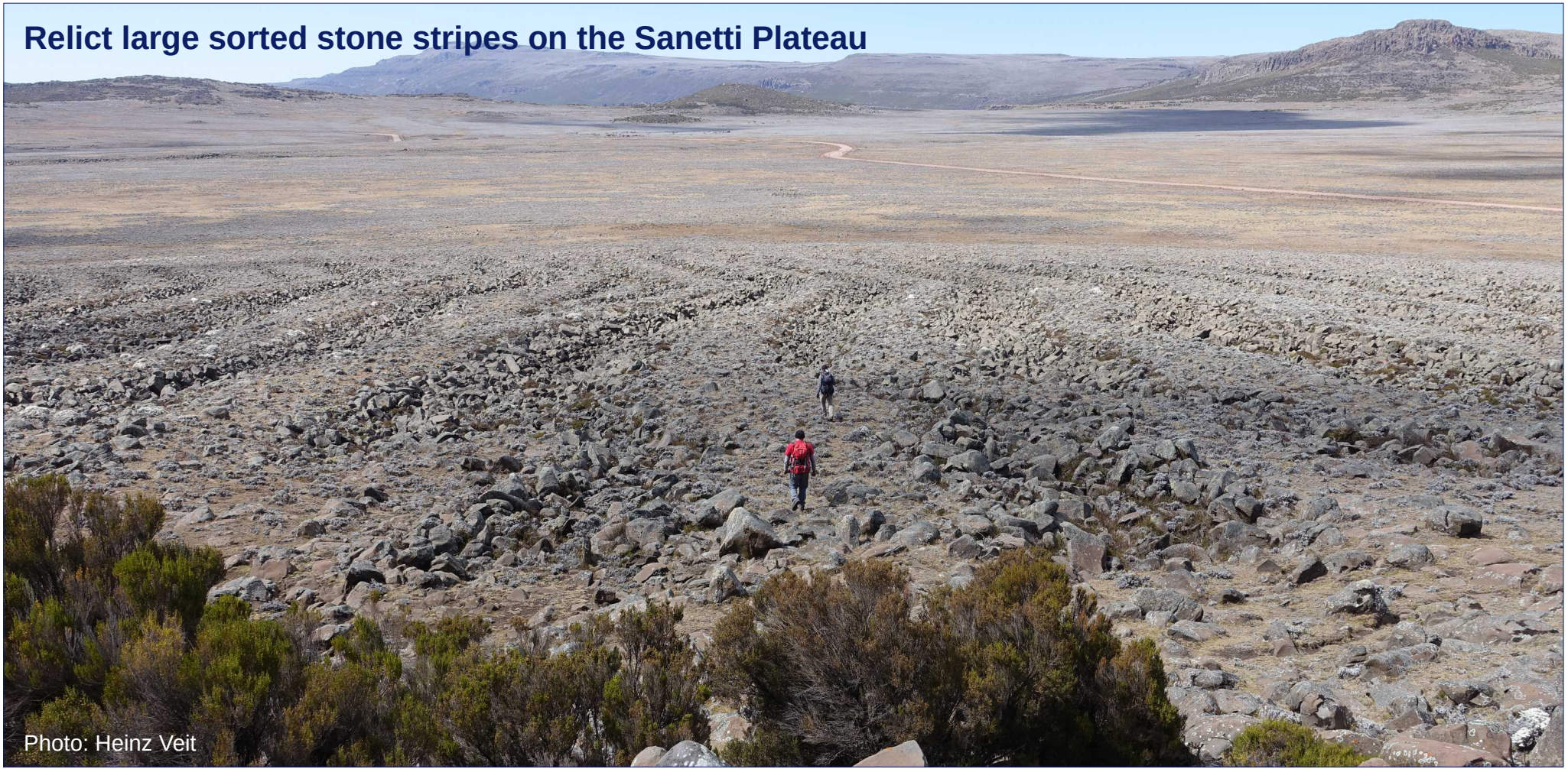


Photo: Heinz Veit

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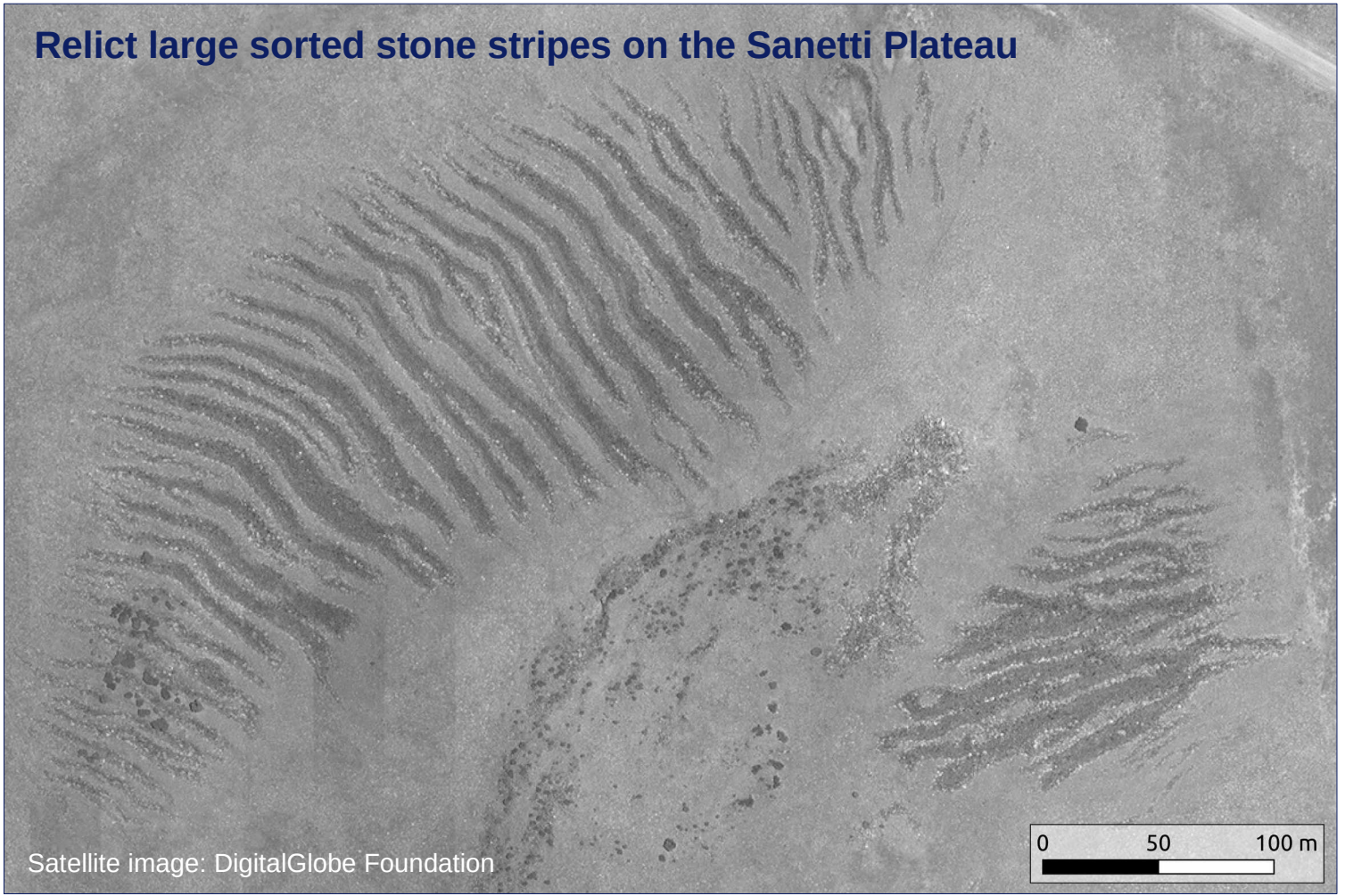
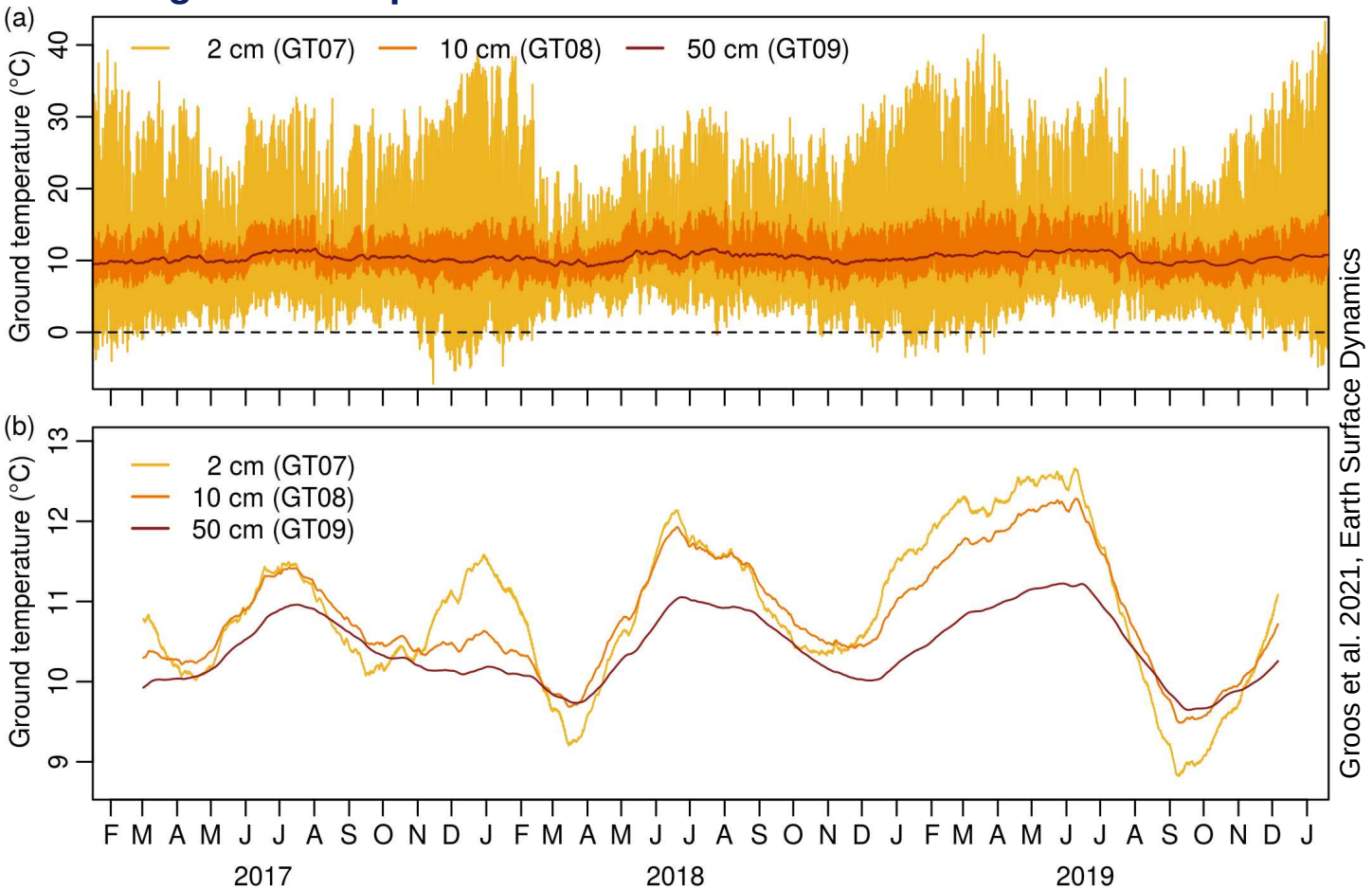
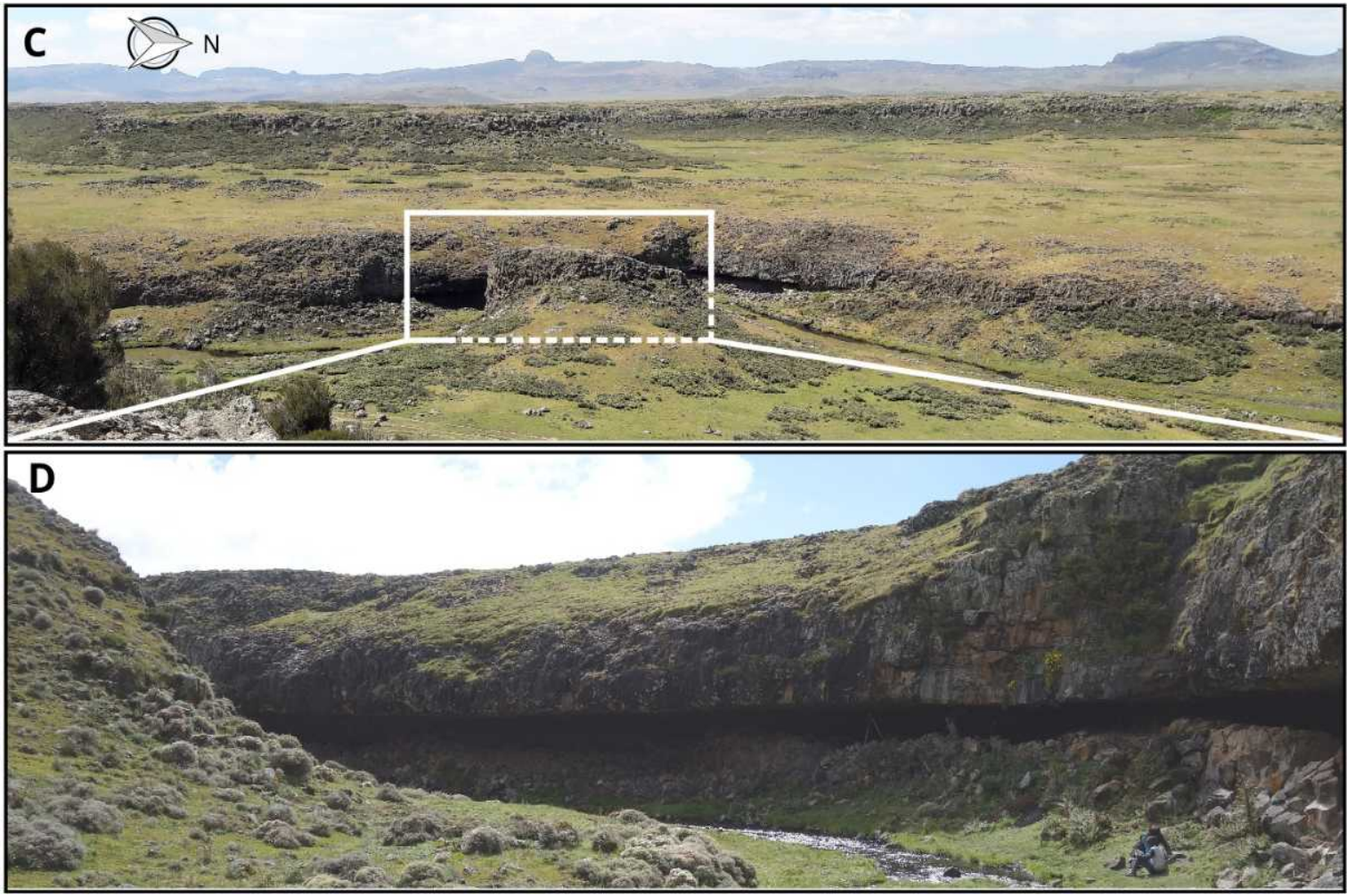


Satellite image: DigitalGlobe Foundation

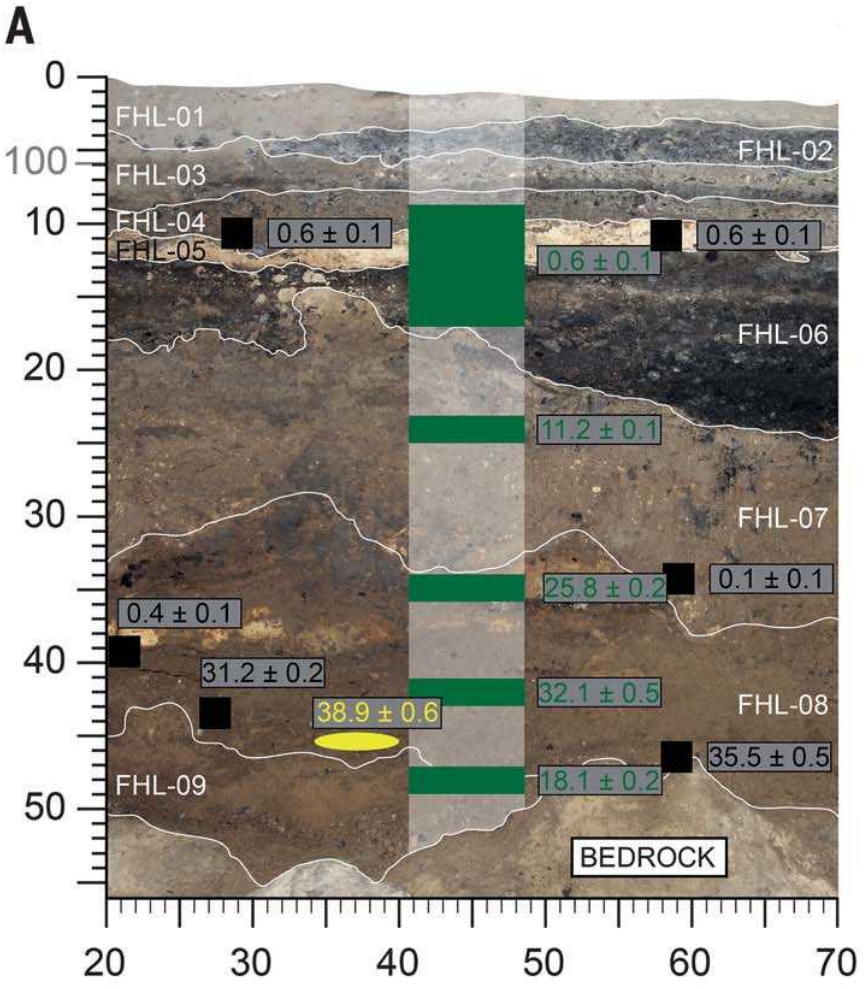
Recent ground temperature variations on the Sanetti Plateau at 3800 m



Fincha Habera Rock Shelter, Bale Mountains



Ossendorf et al. 2019, Science



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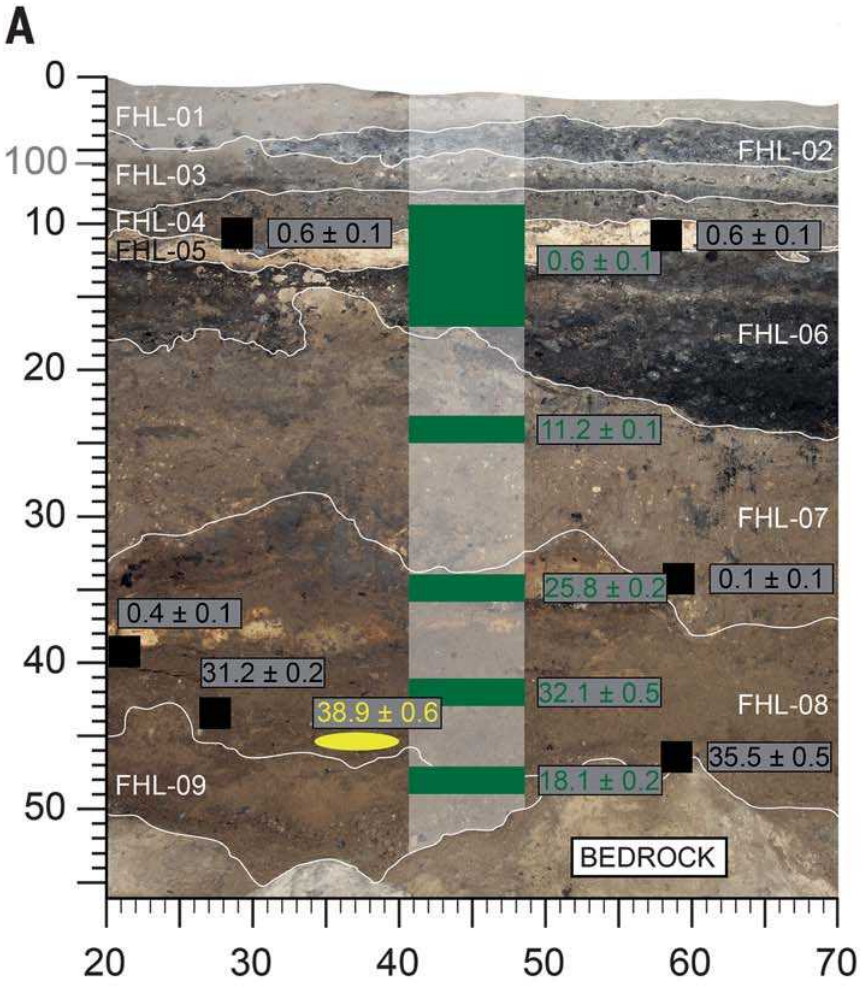

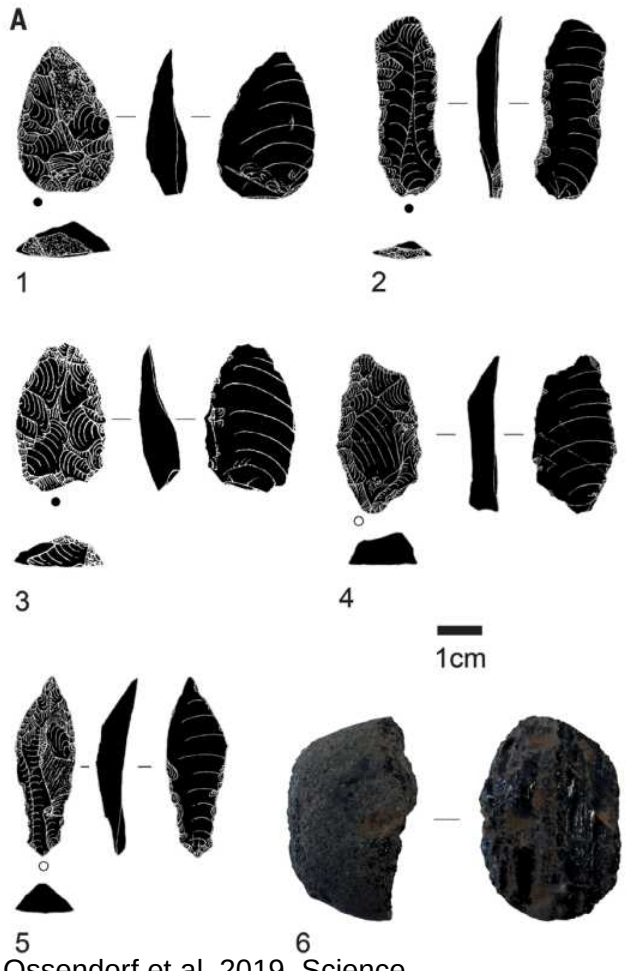

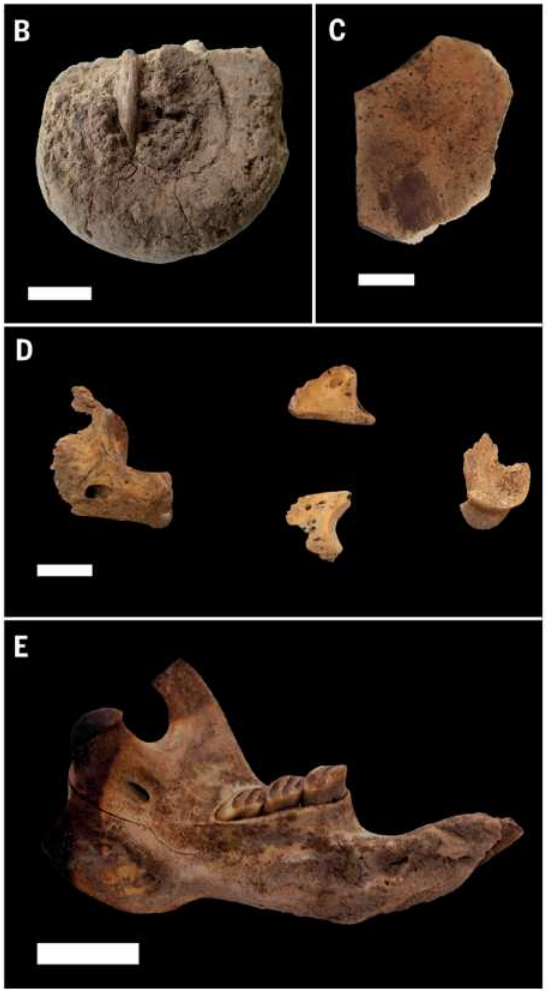

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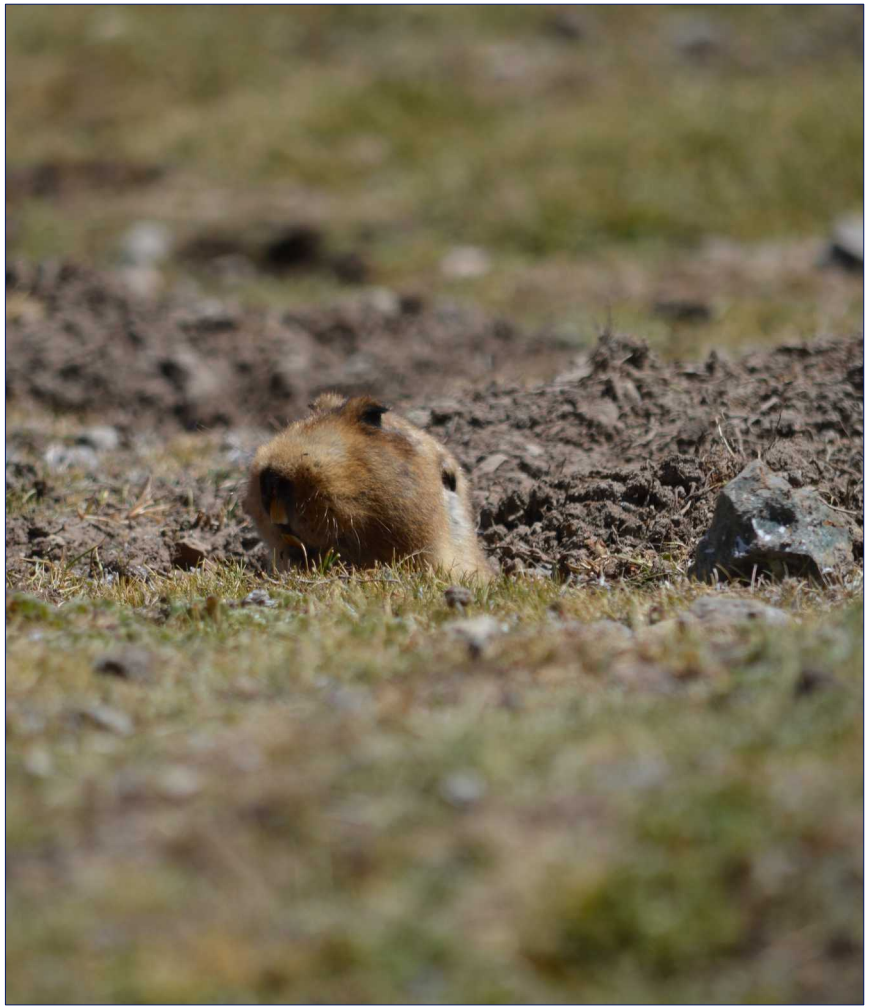

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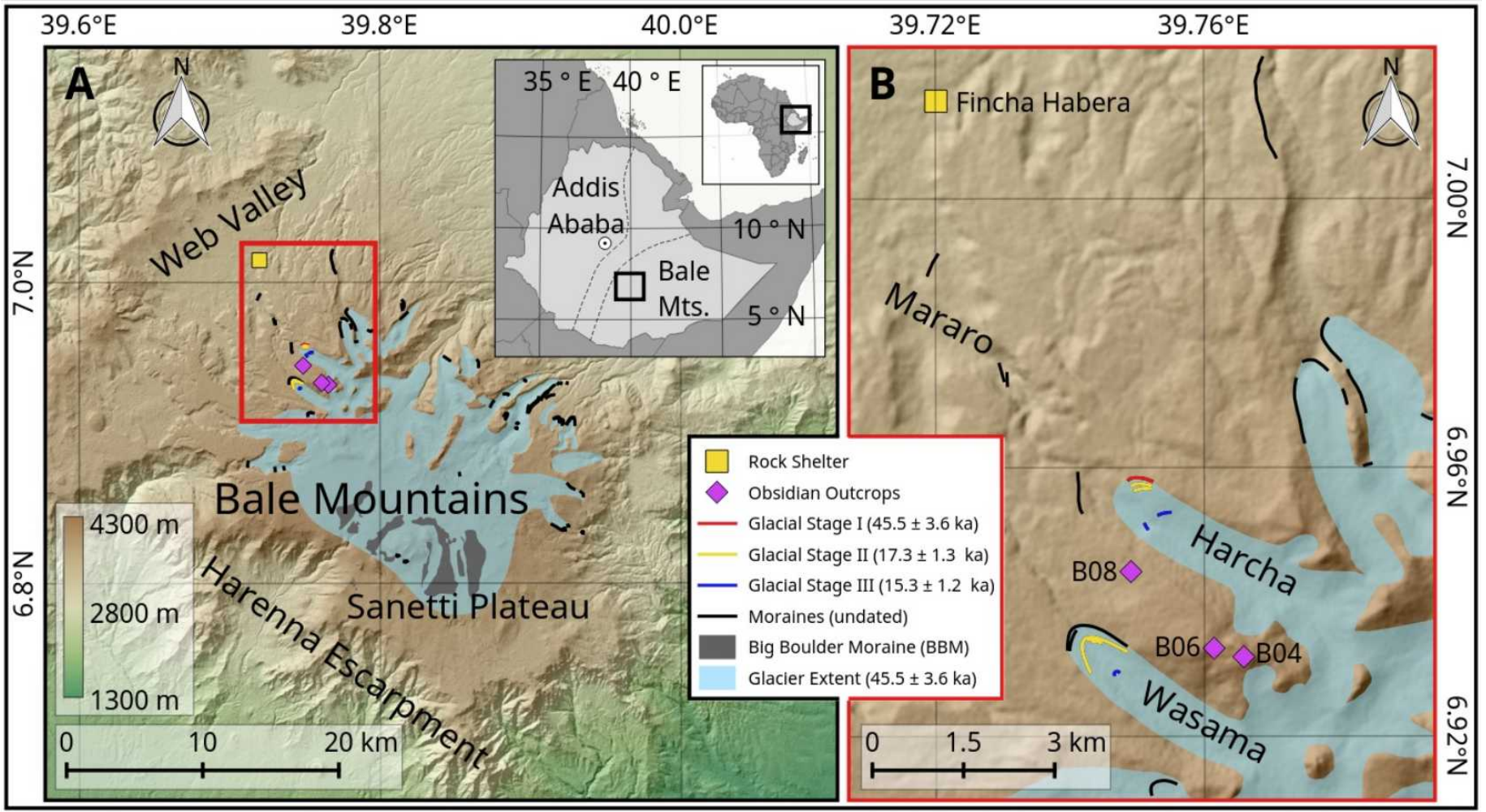
39.6°E
39.8°E
40.0°E
39.72°E
39.76°E
7.0°N
6.8°N
7.00°N
6.96°N
6.92°N
A
B
N
Web Valley
35 ° E
40 ° E
Addis
Ababa
10 ° N
Bale
Mts.
5 ° N
Bale Mountains
Harenna Escarpment
Sanetti Plateau
4300 m
2800 m
1300 m
0
10
20 km
Fincha Habera
Mararo
Harcha
B08
B06
B04
Wasama
0
1.5
3 km
Rock Shelter
Obsidian Outcrops
Glacial Stage I (45.5 ± 3.6 ka)
Glacial Stage II (17.3 ± 1.3 ka)
Glacial Stage III (15.3 ± 1.2 ka)
Moraines (undated)
Big Boulder Moraine (BBM)
Glacier Extent (45.5 ± 3.6 ka)
Ossendorf et al. 2019, Science

Conclusions

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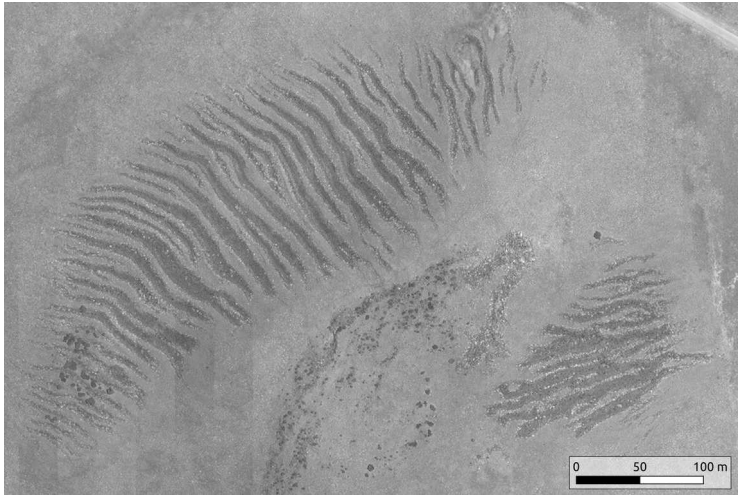

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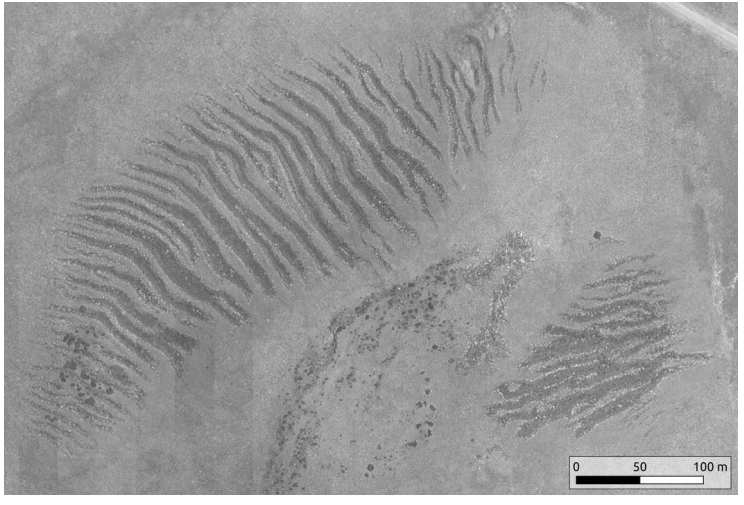

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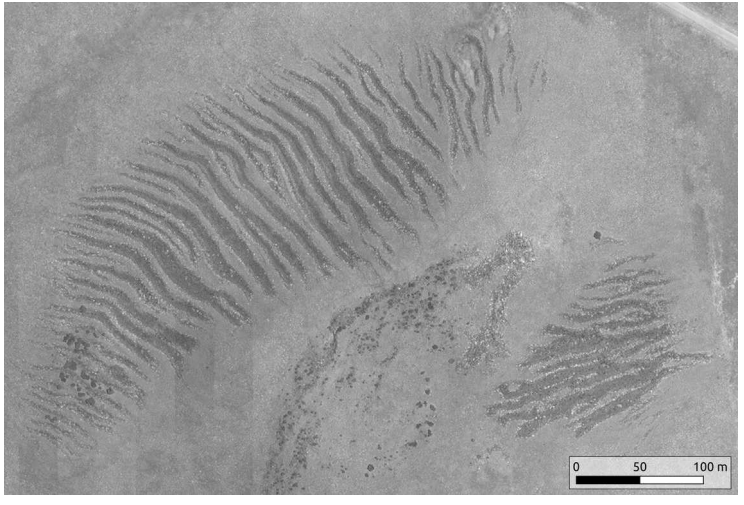
- Early occupation and utilisation of afro-alpine resources by Middle Stone Age foragers



Thank you!


January 2017

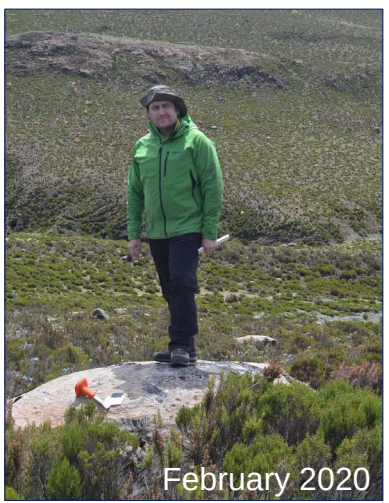

February 2017


December 2017


January 2018


June 2018


June 2018


February 2020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