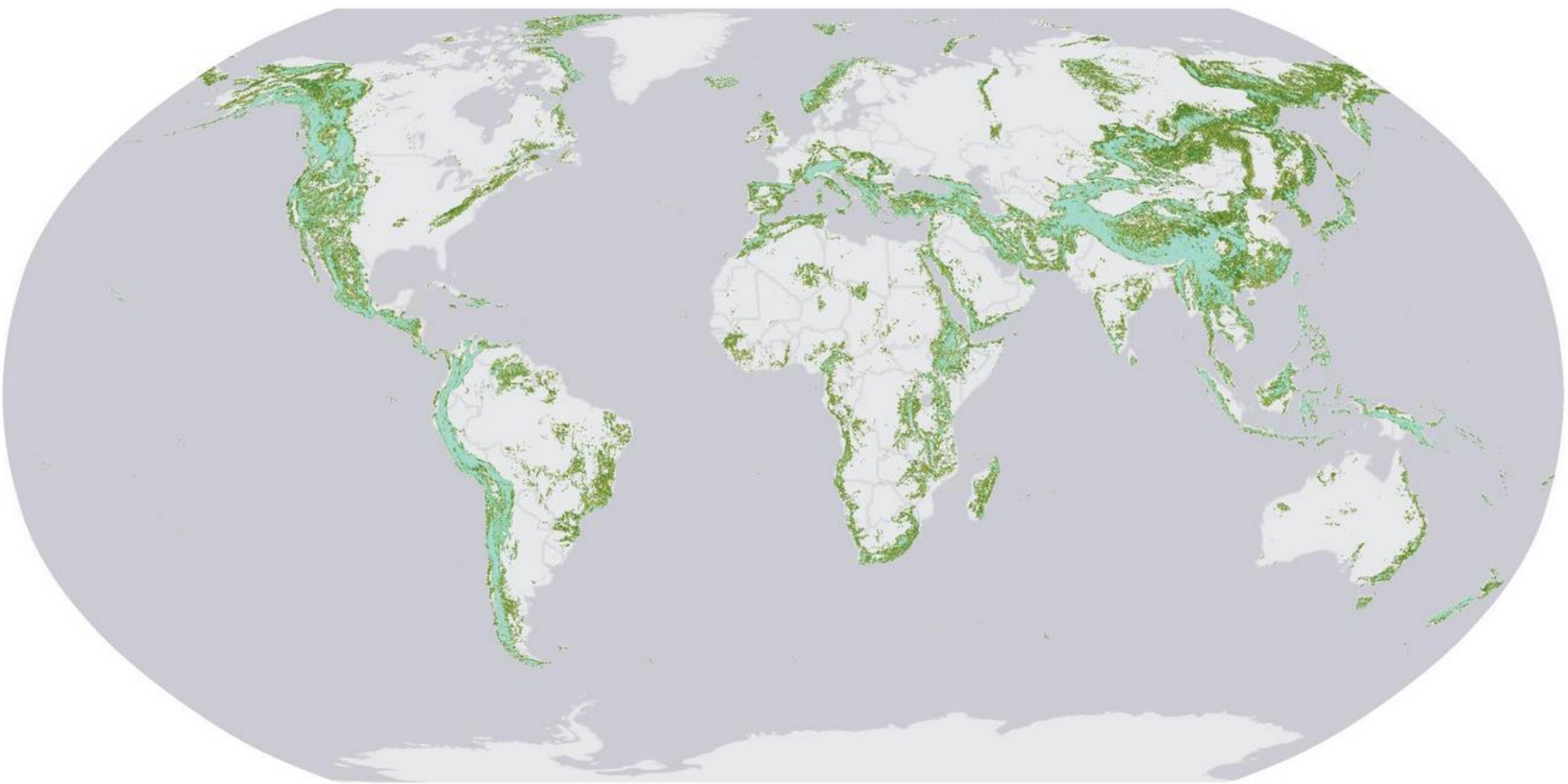


The deep prehistory of the human presence in the world's high mountains and plateaus

Mark Aldenderfer
University of California, Merced

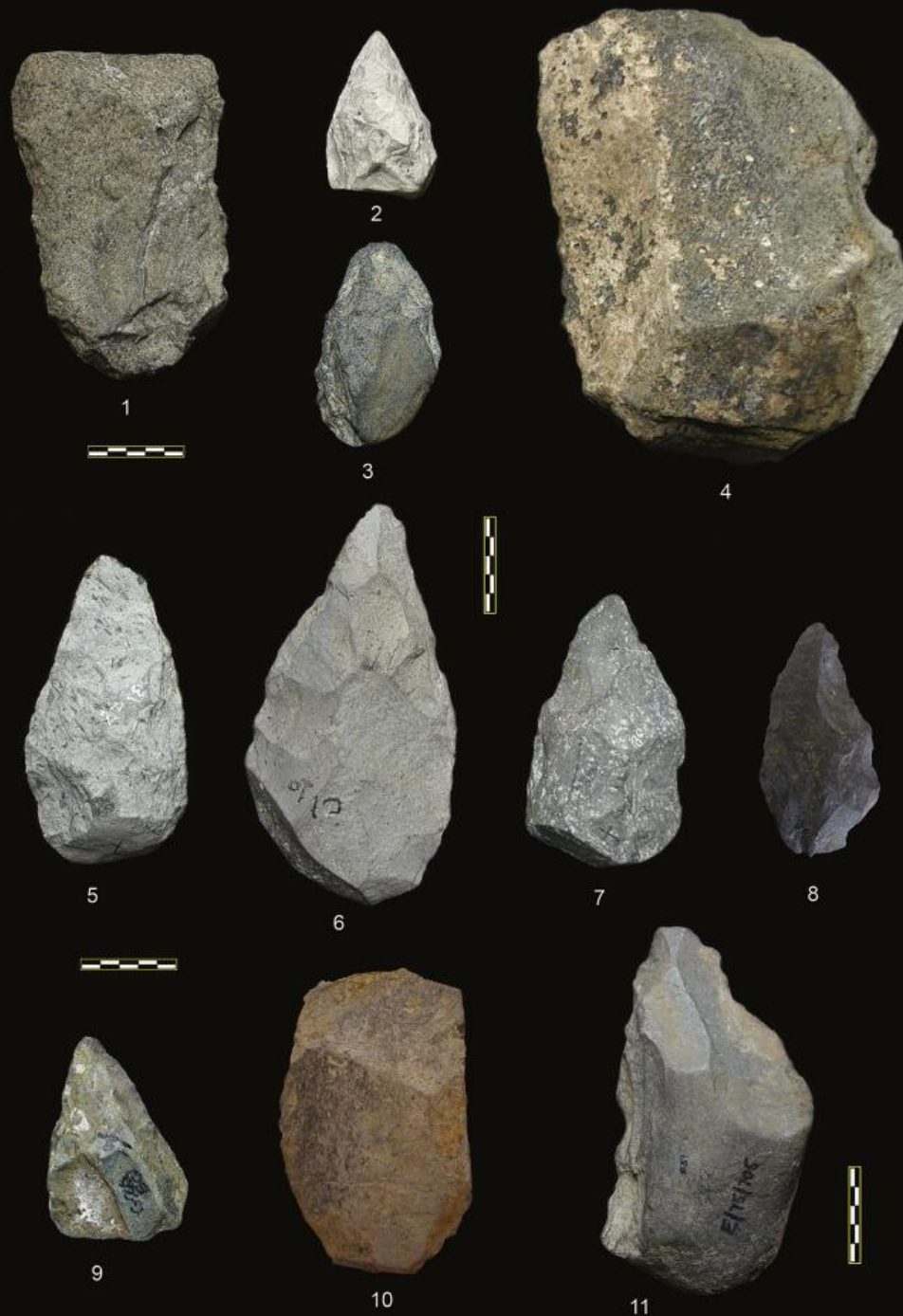
Keynote Presentation-- International Mountain Conference
Innsbruck, Austria

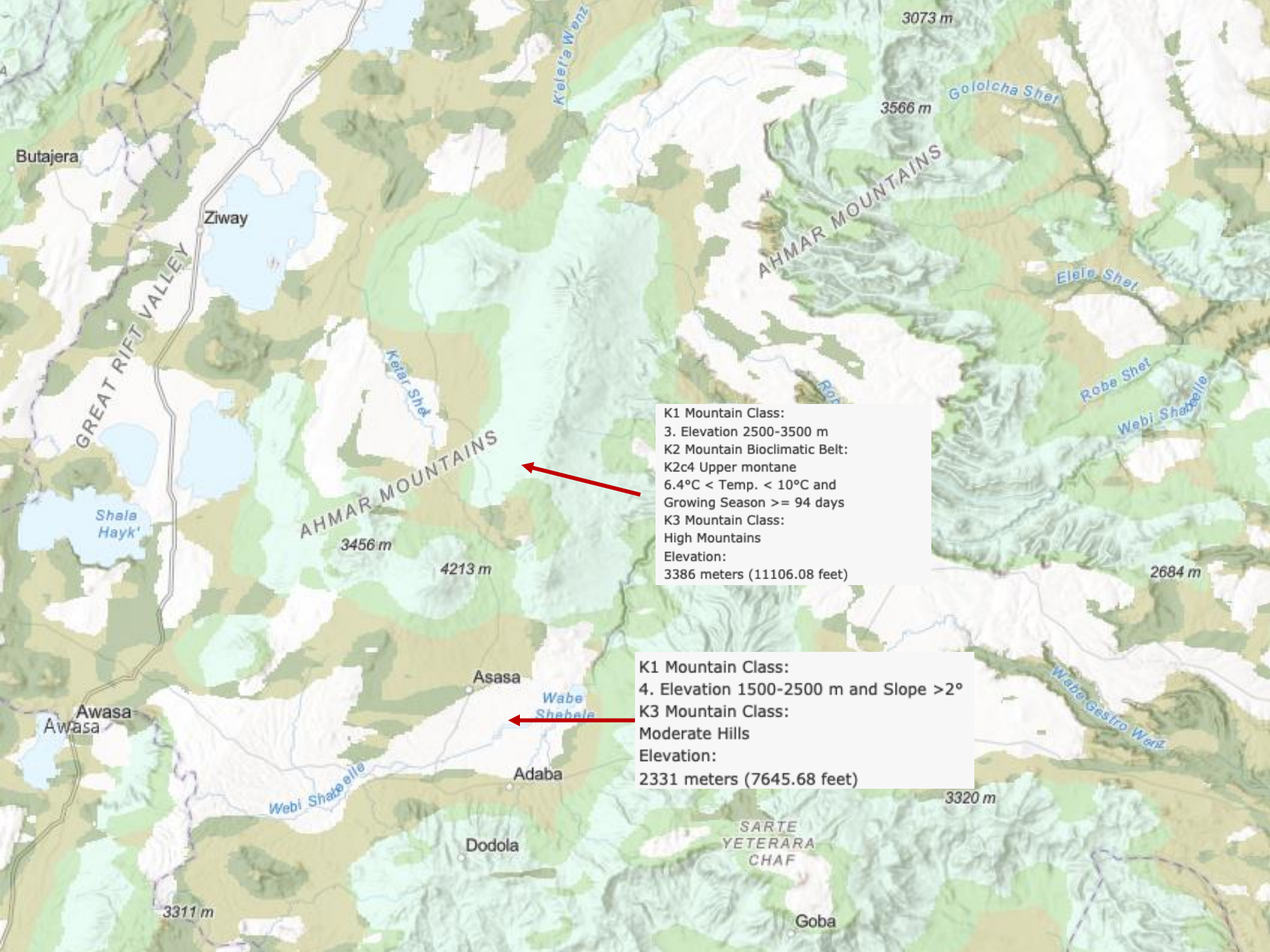
September 2019



Sources: Esri, DeLorme, NAVTEQ

Gadeb 1.5-0.7
ca. 2300-2400
Acheulian/De
Homo erectus

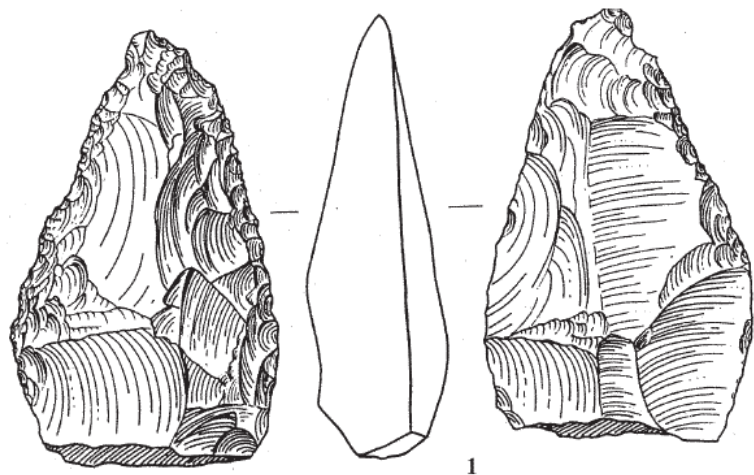




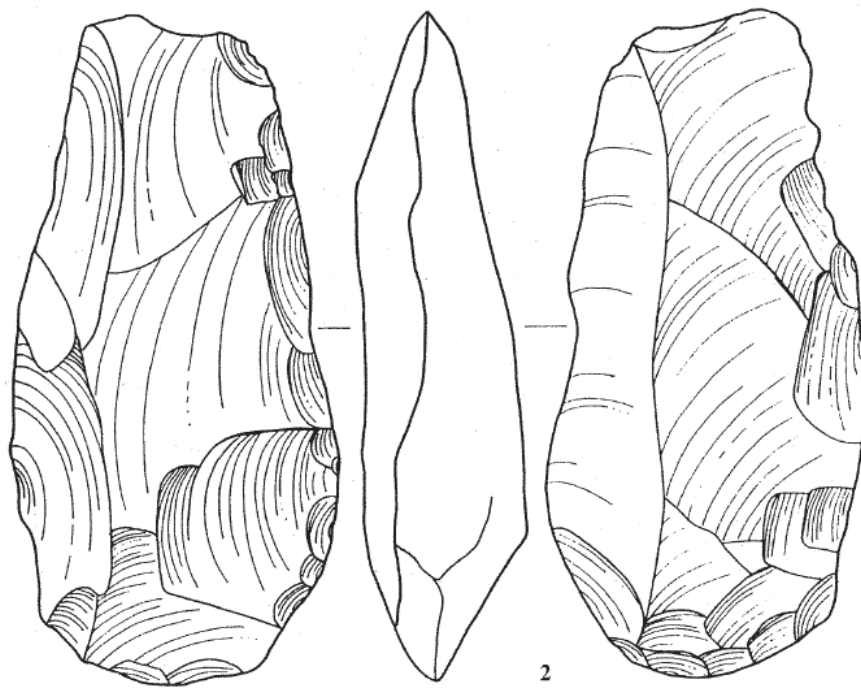
K1 Mountain Class:
3. Elevation 2500-3500 m
K2 Mountain Bioclimatic Belt:
K2c4 Upper montane
6.4°C < Temp. < 10°C and
Growing Season >= 94 days
K3 Mountain Class:
High Mountains
Elevation:
3386 meters (11106.08 feet)

K1 Mountain Class:
4. Elevation 1500-2500 m and Slope >2°
K3 Mountain Class:
Moderate Hills
Elevation:
2331 meters (7645.68 feet)

Dmanisi/Tsona
 ca. 1100 / 215
 1.8 mya/190 k
 “primitive” *Homo*
Homo sp.
 Mode 1 artifact



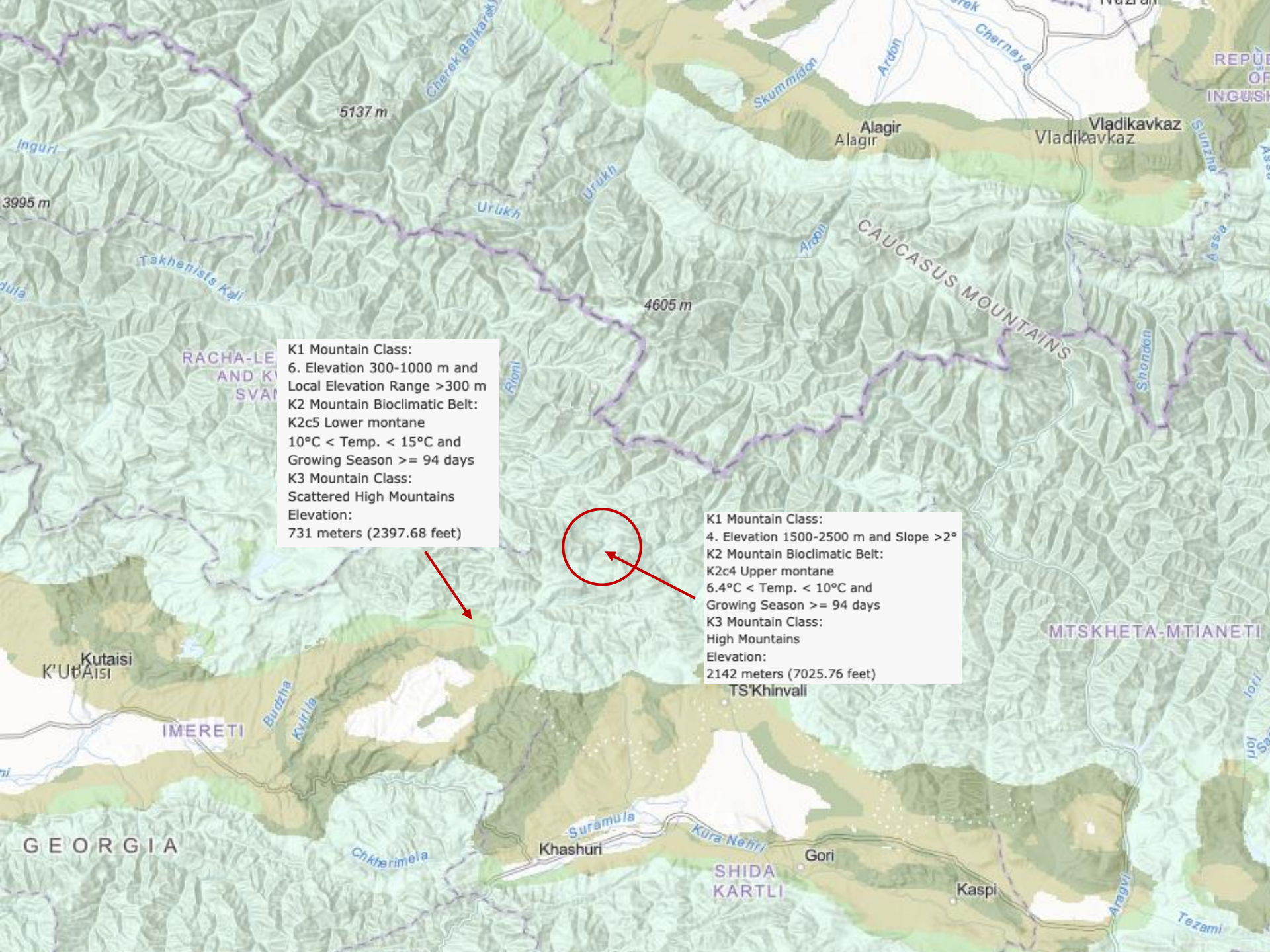
1



2

Figure 21. Tsona Cave: 1: sub-triangular biface with plane-convex retouch; 2: biface cleaver. Source of data: Liubin (1998a).





K1 Mountain Class:
6. Elevation 300-1000 m and
Local Elevation Range >300 m
K2 Mountain Bioclimatic Belt:
K2c5 Lower montane
10°C < Temp. < 15°C and
Growing Season >= 94 days
K3 Mountain Class:
Scattered High Mountains
Elevation:
731 meters (2397.68 feet)

K1 Mountain Class:
4. Elevation 1500-2500 m and Slope >2°
K2 Mountain Bioclimatic Belt:
K2c4 Upper montane
6.4°C < Temp. < 10°C and
Growing Season >= 94 days
K3 Mountain Class:
High Mountains
Elevation:
2142 meters (7025.76 feet)

Baishiya K
ca. 3250 m
165 kya
“Denisovan
“Paleolithic

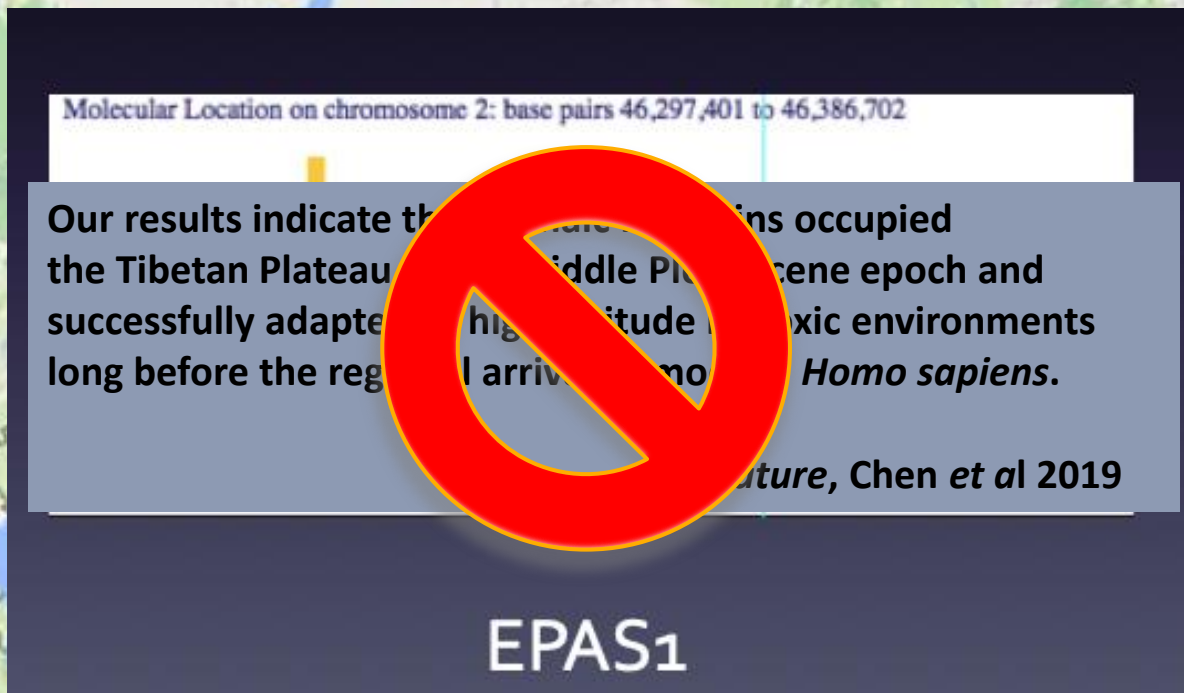
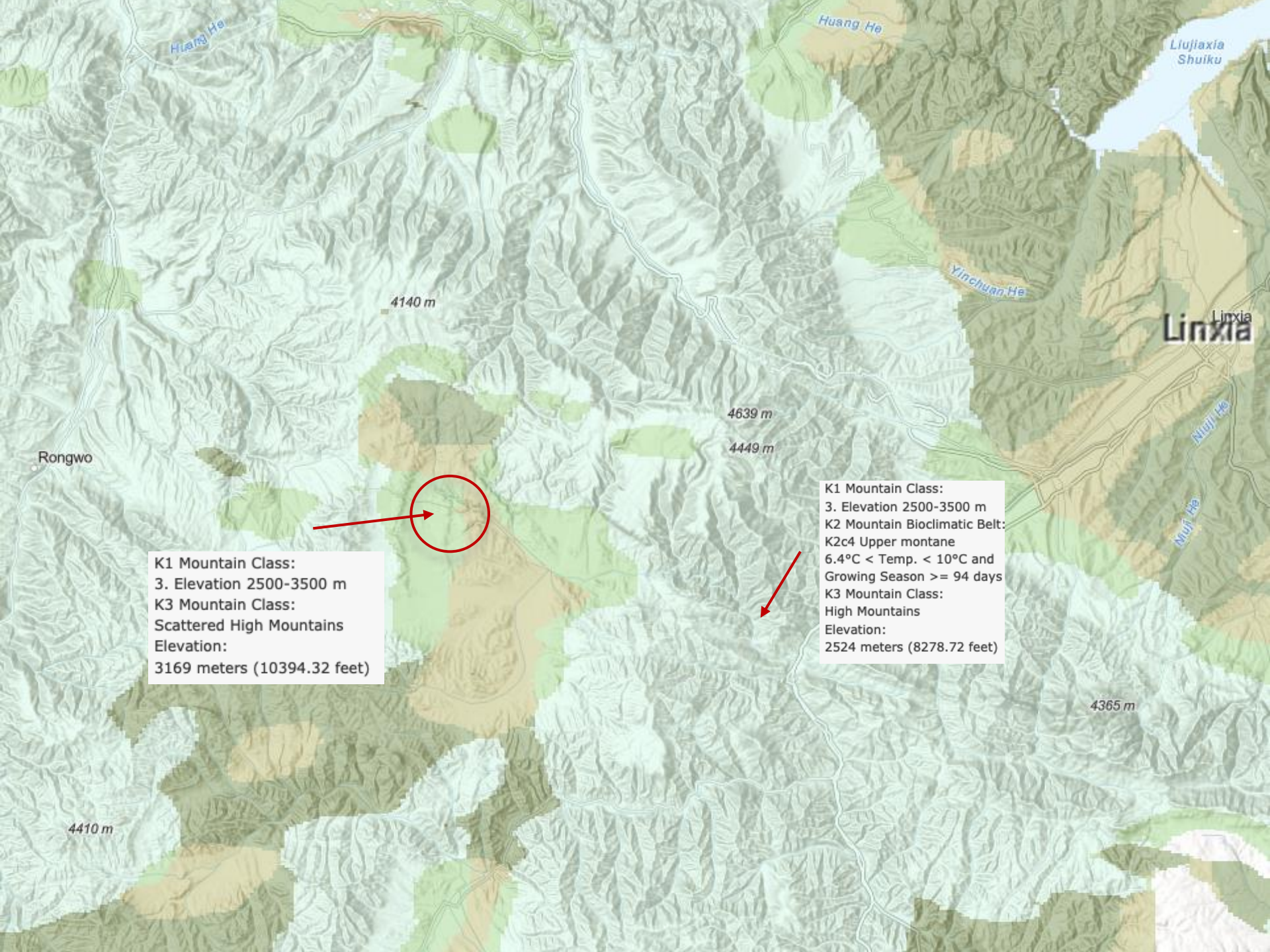


Fig. 1 | The Xiahe mandible. (c, d) and internal (e) views of the specimen. a, b, d, e, Views after digital removal of the adhering carbonate matrix. The preservation of the

virtual reconstruction of the two sides of the mandible. Mirrored parts are in grey. The symphyseal section and the infradentale–gnathion angle are displayed in e.



K1 Mountain Class:
3. Elevation 2500-3500 m
K3 Mountain Class:
Scattered High Mountains
Elevation:
3169 meters (10394.32 feet)

K1 Mountain Class:
3. Elevation 2500-3500 m
K2 Mountain Bioclimatic Belt:
K2c4 Upper montane
6.4°C < Temp. < 10°C and
Growing Season >= 94 days
K3 Mountain Class:
High Mountains
Elevation:
2524 meters (8278.72 feet)

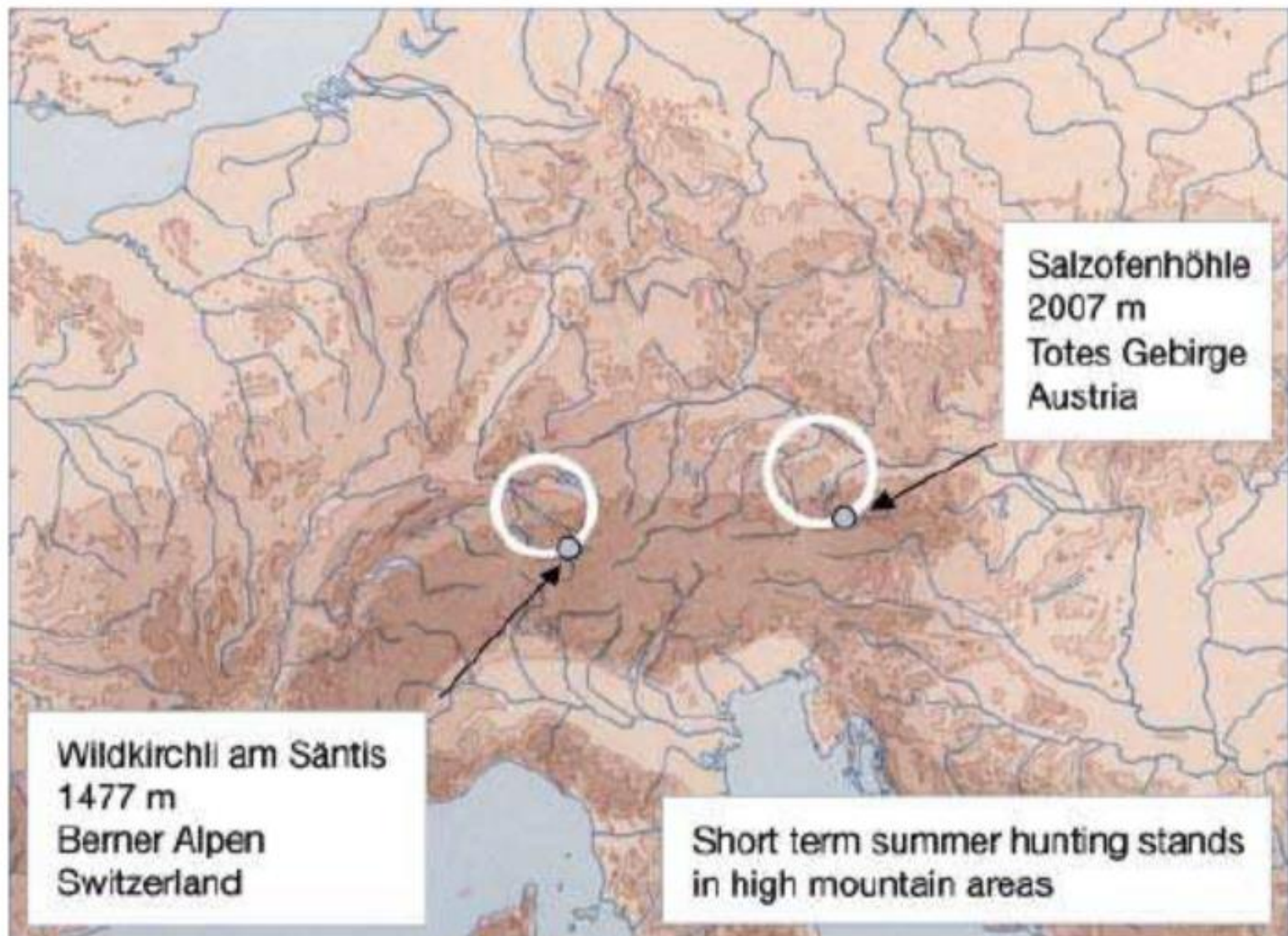


Figure 18. Late Middle Palaeolithic summer huntings stands in the Northern Alps. White circles indicate possible annual territories of 100 km.

Richter 2006

CHOKE
MOUNTAINS

Dese

Fincha Habesha
3469 masl
47-31 kya
Residential b

C

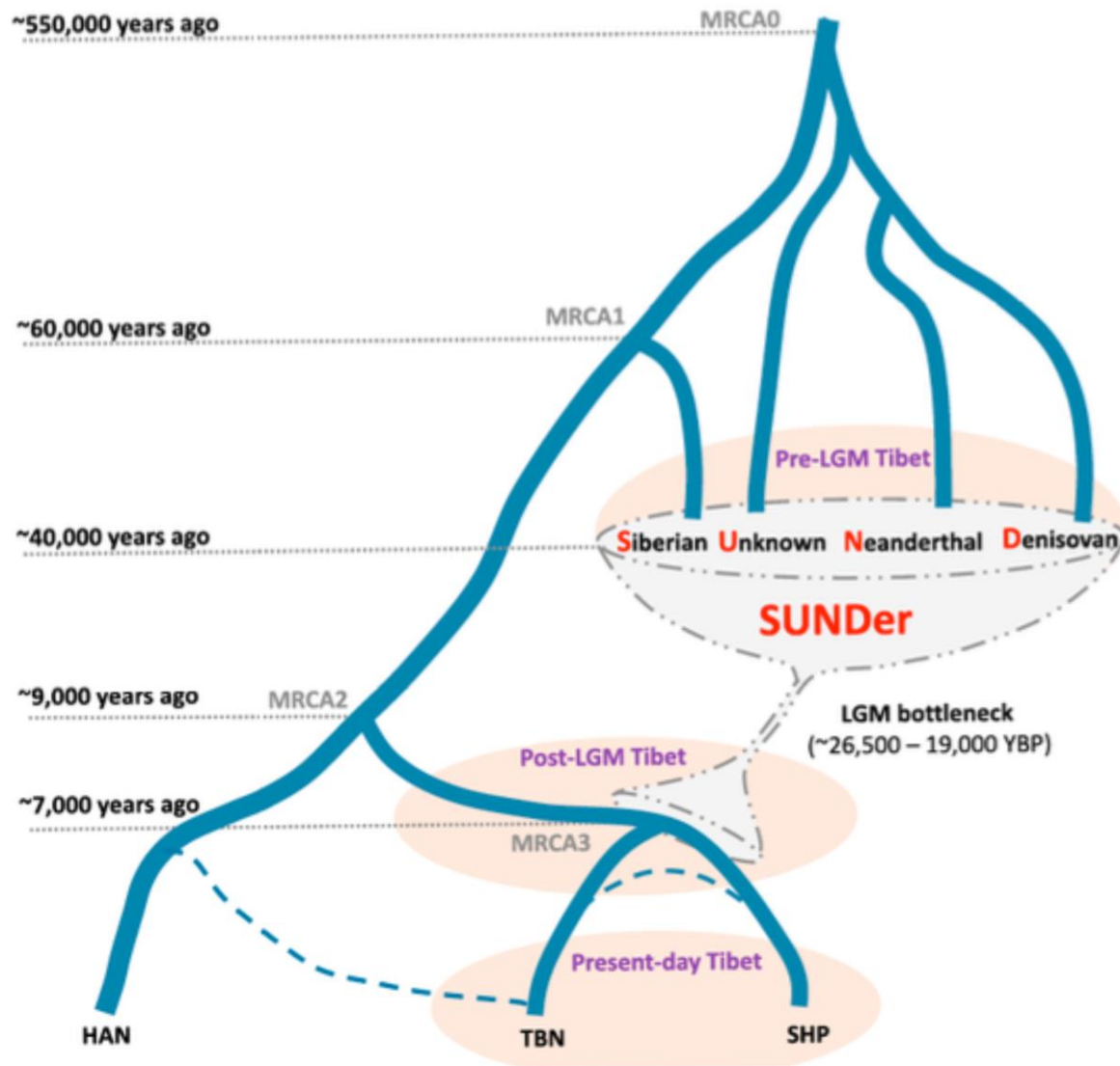


D



Hargeysa
Hargeysa

Webi Shabe



**Routes into the Americas
Coastal vs. “ice-free corridor”**

ca. 14 kya (?)

**ca. 16-15 kya
or earlier (?)**





Folsom 10,900-10,200 rcybp



PIDBA



Folsom (n = 2141)

- 1 - 7
- 8 - 22
- 23 - 50
- 51 - 100
- 101 - 240

Pitblado 2017

Proposed Routes into South America < 15 kya



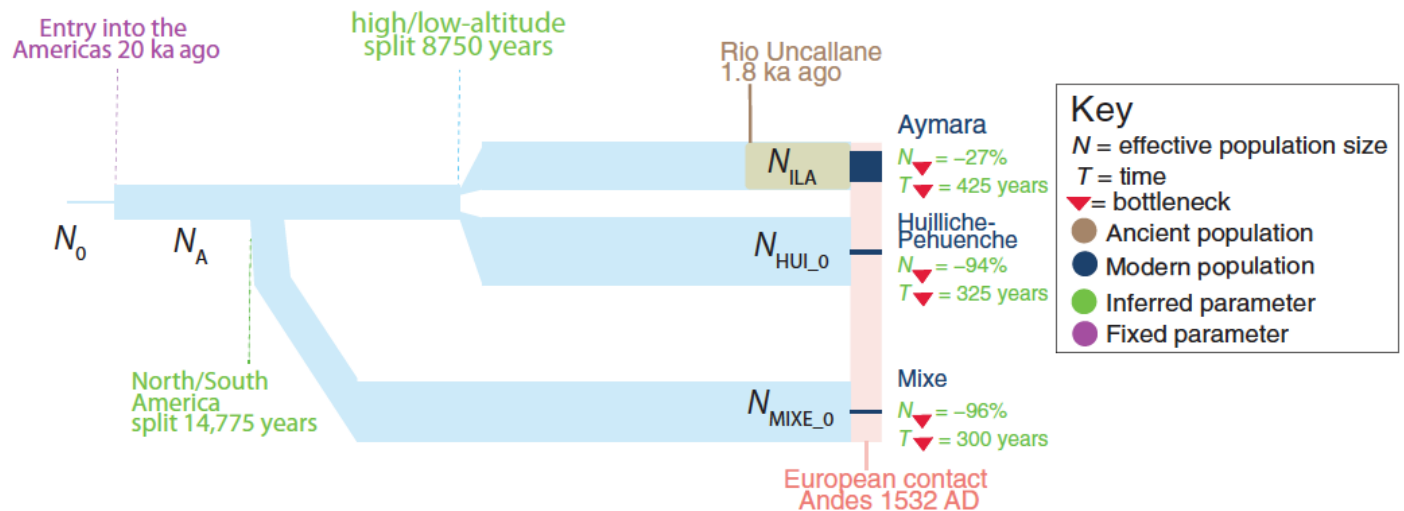


Fig. 4. Demographic model of the Andes. ILA, Rio Uncallane.



Observations

The data are clear: *H. erectus* had the behavioral flexibility to navigate and use low mountain terrain

Discounting Baishiya Karst Cave, only *H. sapiens* (including Neanderthals) had the behavioral flexibility to exploit high mountain environments

Only *H. sapiens s.* has had the behavioral flexibility to exploit the highest elevation zones on the planet; thus **permanent occupation** on them is late in the history of our species

We have no clear understanding of the origins and evolutionary trajectory of the genetic basis of the varied phenotypic responses to hypoxia seen in modern populations of highlanders

Final remarks

**Our history with mountains is best seen as
a series of processes of encounter**

**Mountains have challenged our the
evolution of our lifeways and our genomes**

**Mountains have created a vision of the
sacred for cultures worldwide despite
their challenges**



Thanks to

National Geographic Society

National Science Foundation

The Henry Luce Foundation

The North Face

The Government of Nepal, Department of Archaeology

Many Nepali, Indian, Chinese and western colleagues

And of course the organizers of this wonderful conference

