

OLLI SG 497

Ancient DNA

Session 5 - October 26, 2022

Recap

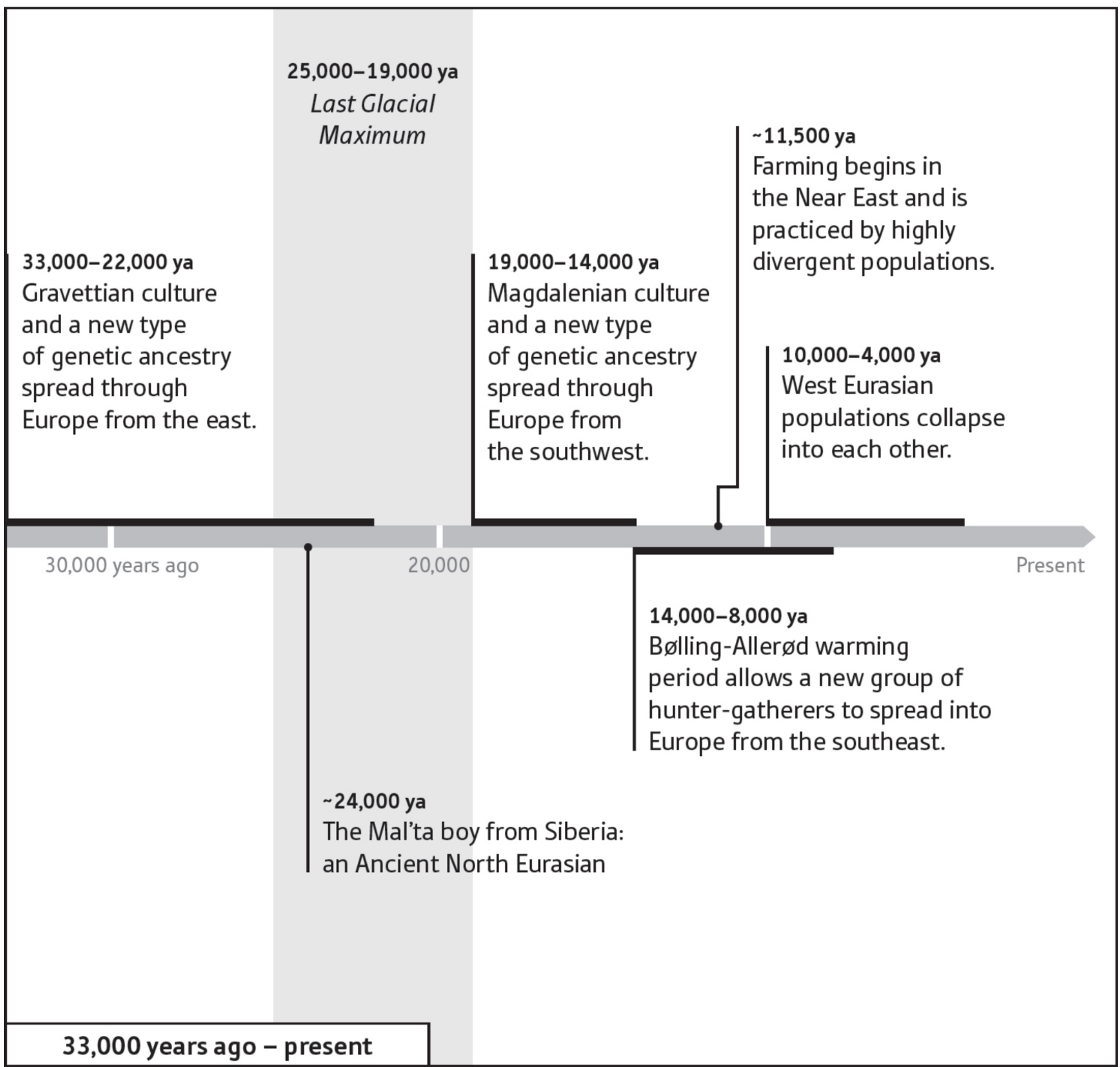
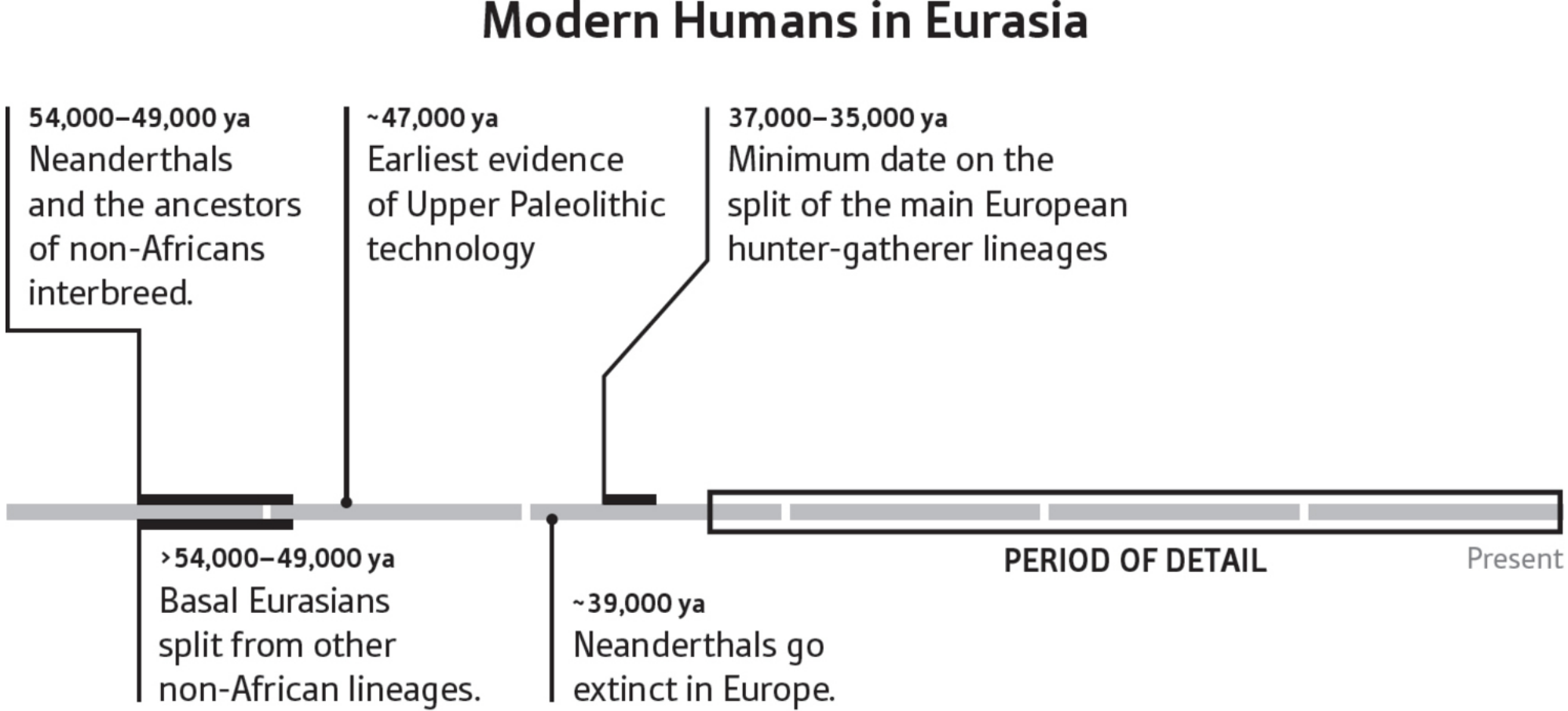
- Denisovans.
- Australo-Denisovans and New Guineans
- Ancestor of Neanderthals and Denisovans - Homo Heidelbergensis
- “Superarchaic” population - a ghost population
- Eurasia as a hothouse of human evolution - migration back to Africa

Today's Meeting

- Waves of population migrations and population displacements/replacements in West Eurasia.
- The Yamnaya culture. Population migration into West Eurasia, and replacement of indigenous populations.
- The origin and spread of Indo-European languages.

Modern Humans in Eurasia

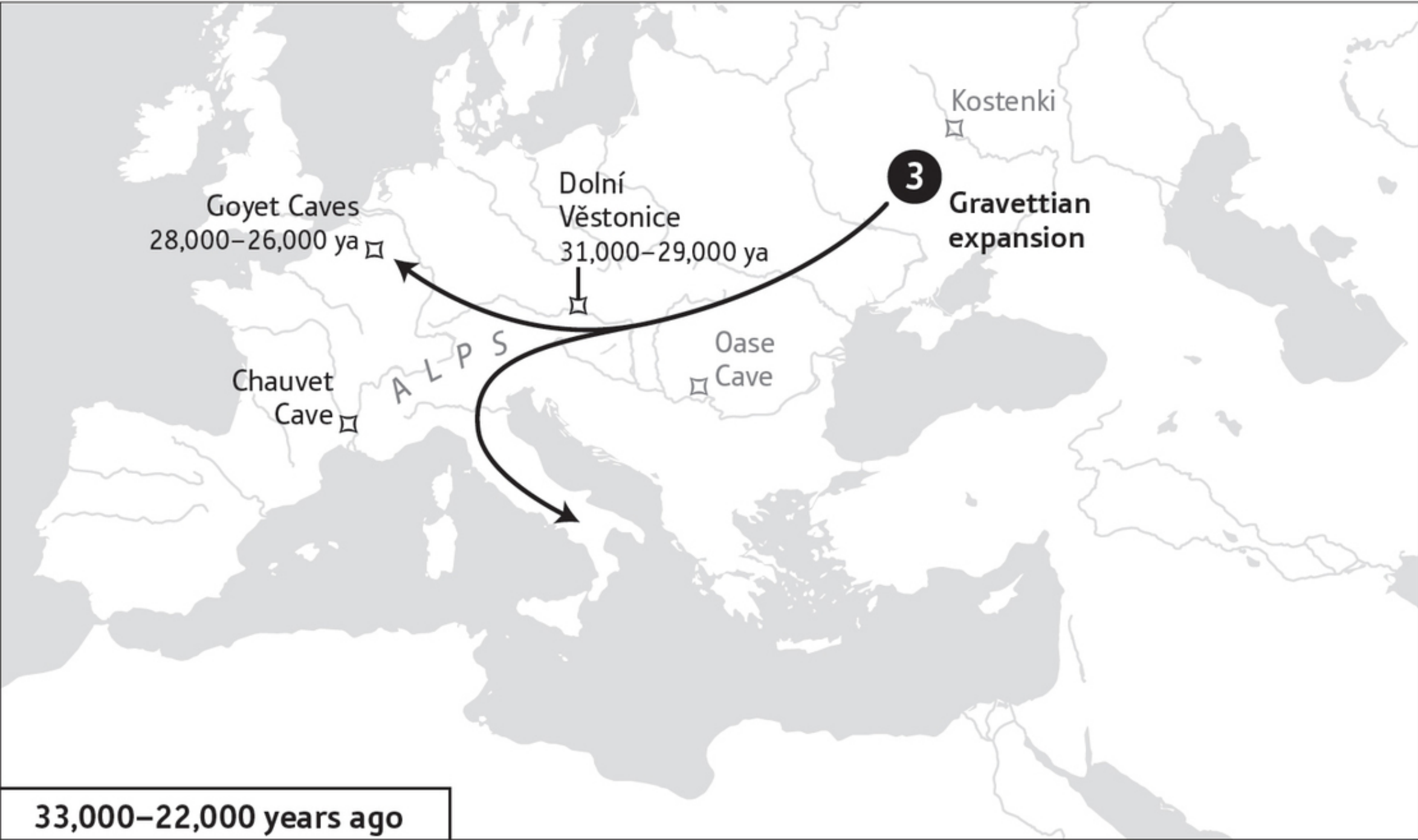
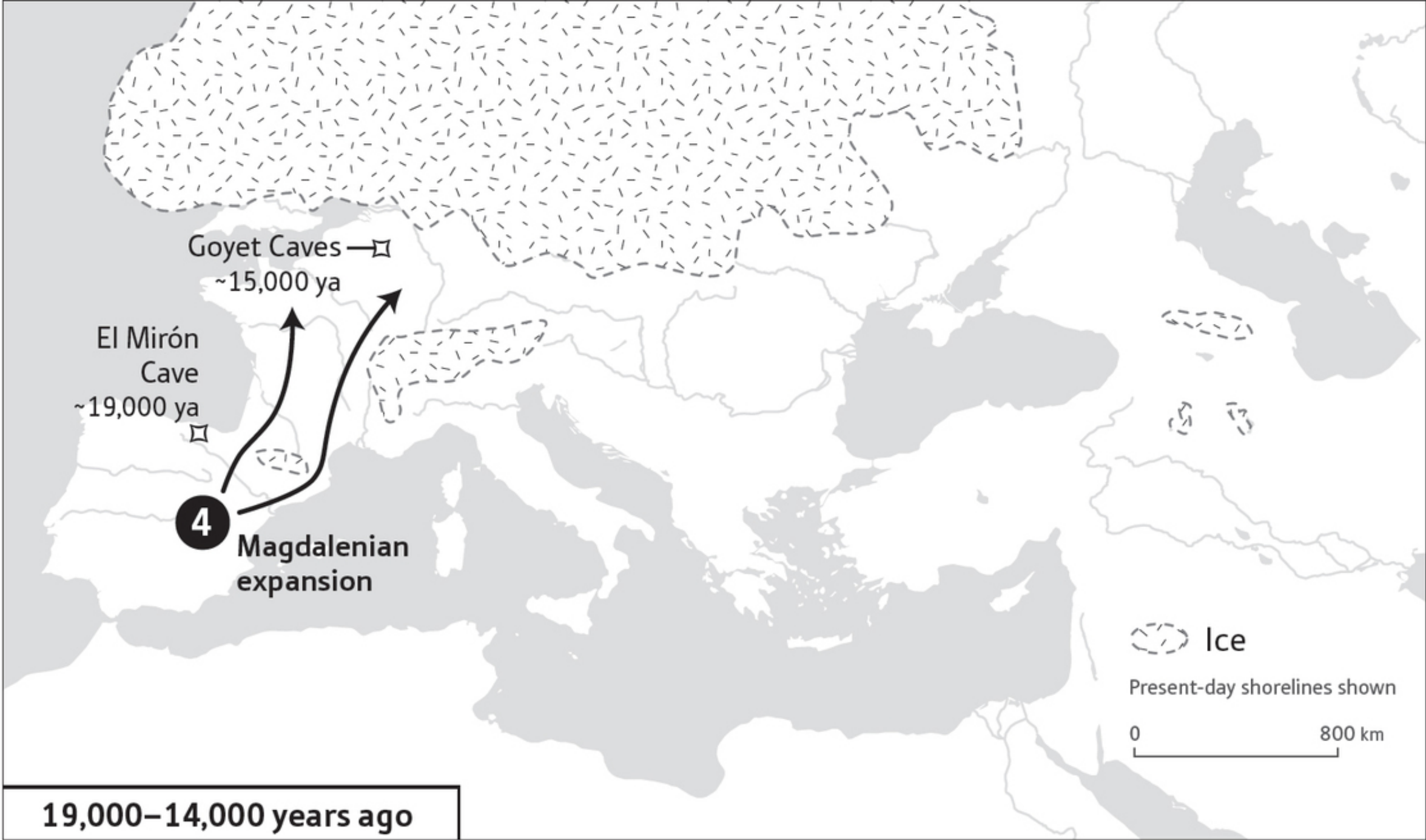
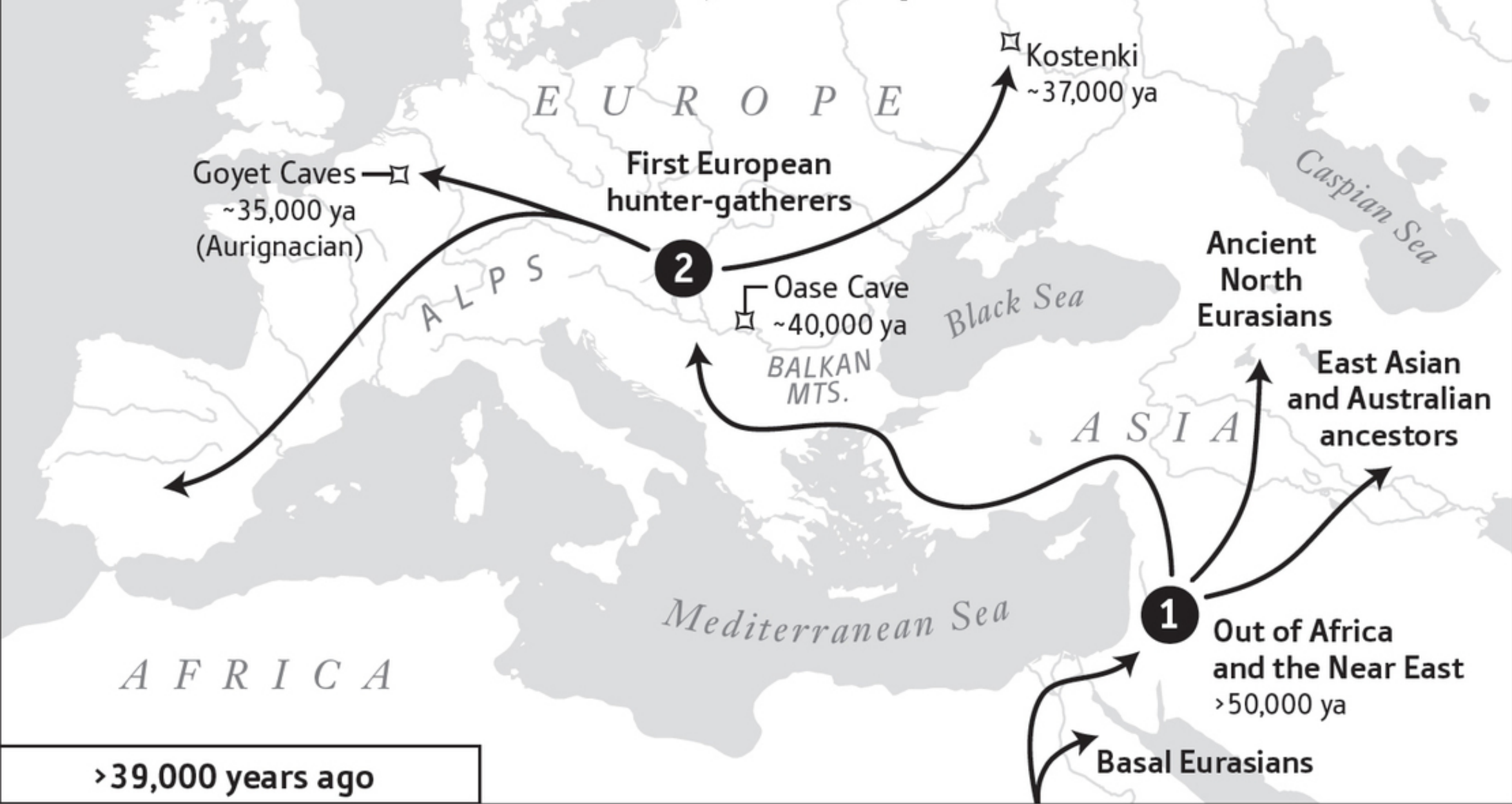
Waves of Population Migration and Replacement



History of European Hunter-Gatherers

- Between 45,000 and 7,000 YA, there were repeated population transformations, replacements, migrations, and mixtures in western Eurasia.
- These transformations can be grouped into five events:
 - Event One: The spread of modern humans into western Eurasia.
 - Event Two: The spread of hunter-gatherers into Europe.
 - Event Three: The Gravettian tool culture.
 - Event Four: Migration into Europe of the Magdalenian culture.
 - Event Five: Migration of populations from southeastern Europe into southwestern Europe.

Five Great Events in the History of European Hunter-Gatherers



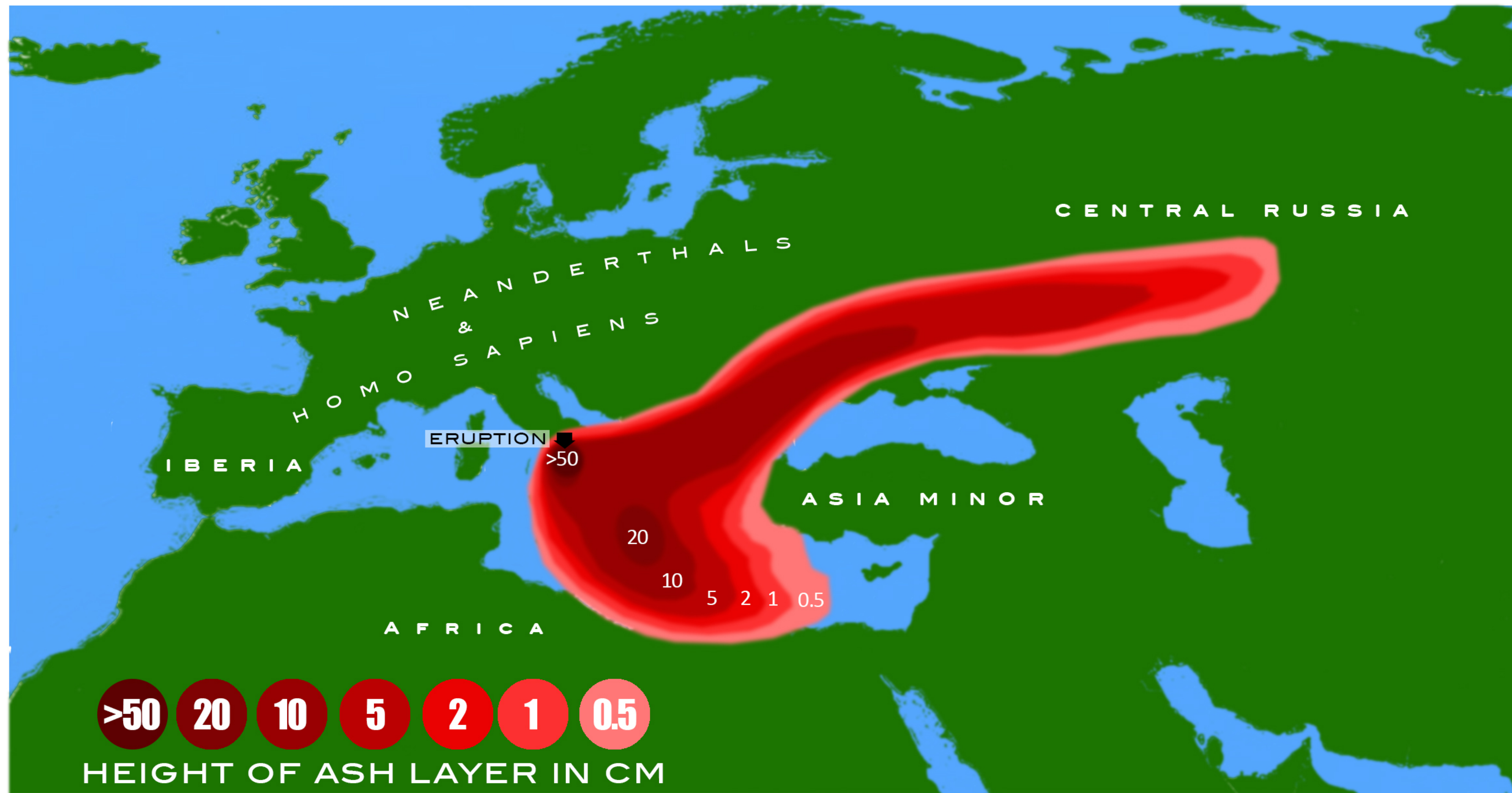
History of European Hunter-Gatherers

Event One: Pioneer Modern Human Populations

- Early modern humans moved into western Eurasia before 45,000 YA, and initially flourished.
- A supervolcano eruption around 39,000 YA proved catastrophic:
 - 300 cubic kilometers of ash covered Europe.
 - Contributed to the extinction of Neanderthals in Europe.
 - Modern human cultures also disappeared.

Campi Flegrei Supervolcano Caldera





**DISPERSAL OF DEPOSITS DURING THE CAMPANIAN
IGNIMBRITE ERUPTION AROUND 40.000 YEARS BP.**

History of European Hunter-Gatherers

Event Two: Spread of Hunter-Gatherers in Europe

- Later modern humans spread into Europe between 37,000 and 35,000 YA.
- Provided the ancestral population of all European hunter-gatherers until 14,000 YA.
- Made stone tools of the Aurignacian type, replacing previous tool-making styles.
- Indicates there were multiple independent migrations of modern humans into Europe.

History of European Hunter-Gatherers

Event Three: Gravettian Tool Culture

- People who made Gravettian tools dominated Europe between 33,000 and 22,000 YA.
- Produced statuettes of females, musical instruments, and cave art.
- Deliberate burial rites.
- Spread west and displaced the peoples who produced the Aurignacian tools.

History of European Hunter-Gatherers

Event Four: Magdalenian Culture

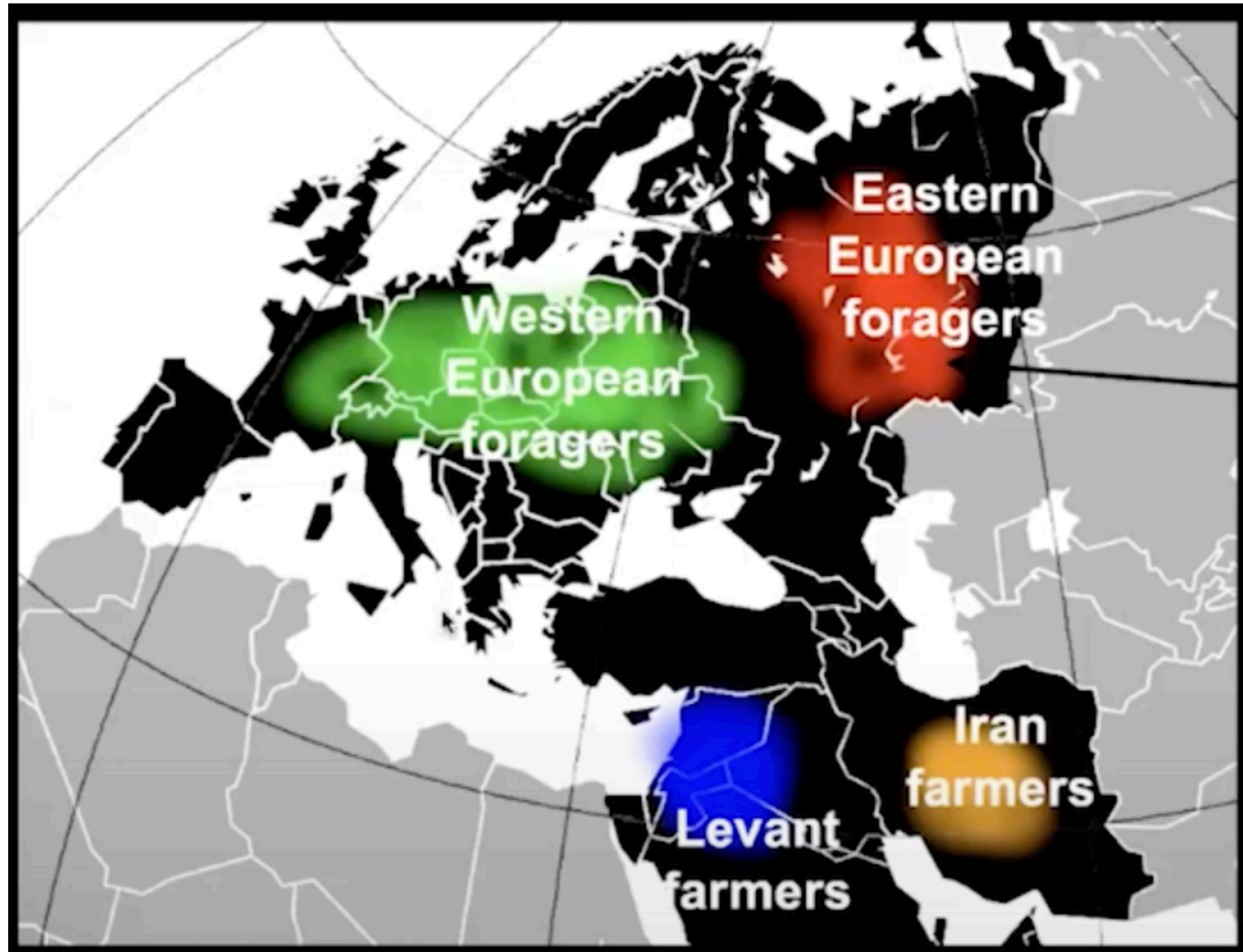
- Prospered between 19,000 and 14,000 YA.
- Migrated northeast out of the Iberian peninsula.
- Not related to the Gravettians who preceded them.
- Related to the Aurignacian tool makers.

History of European Hunter-Gatherers

Event Five: Replacement By Near Eastern Hunter-Gatherers

- 14,000 YA the Alpine glacial wall that extended to Nice, France, melted, opening a migration path from southeast Europe into western Europe.
- Hunter-gatherers from southeast Europe and the Near East migrated into western Europe.
- They displaced the preceding Magdalenian culture peoples.
- Western European hunter-gatherers became more closely related to present-day Near Easterners.

**Western Eurasian
Populations
10,000 YA**



History of European Farmers

Early Migrations

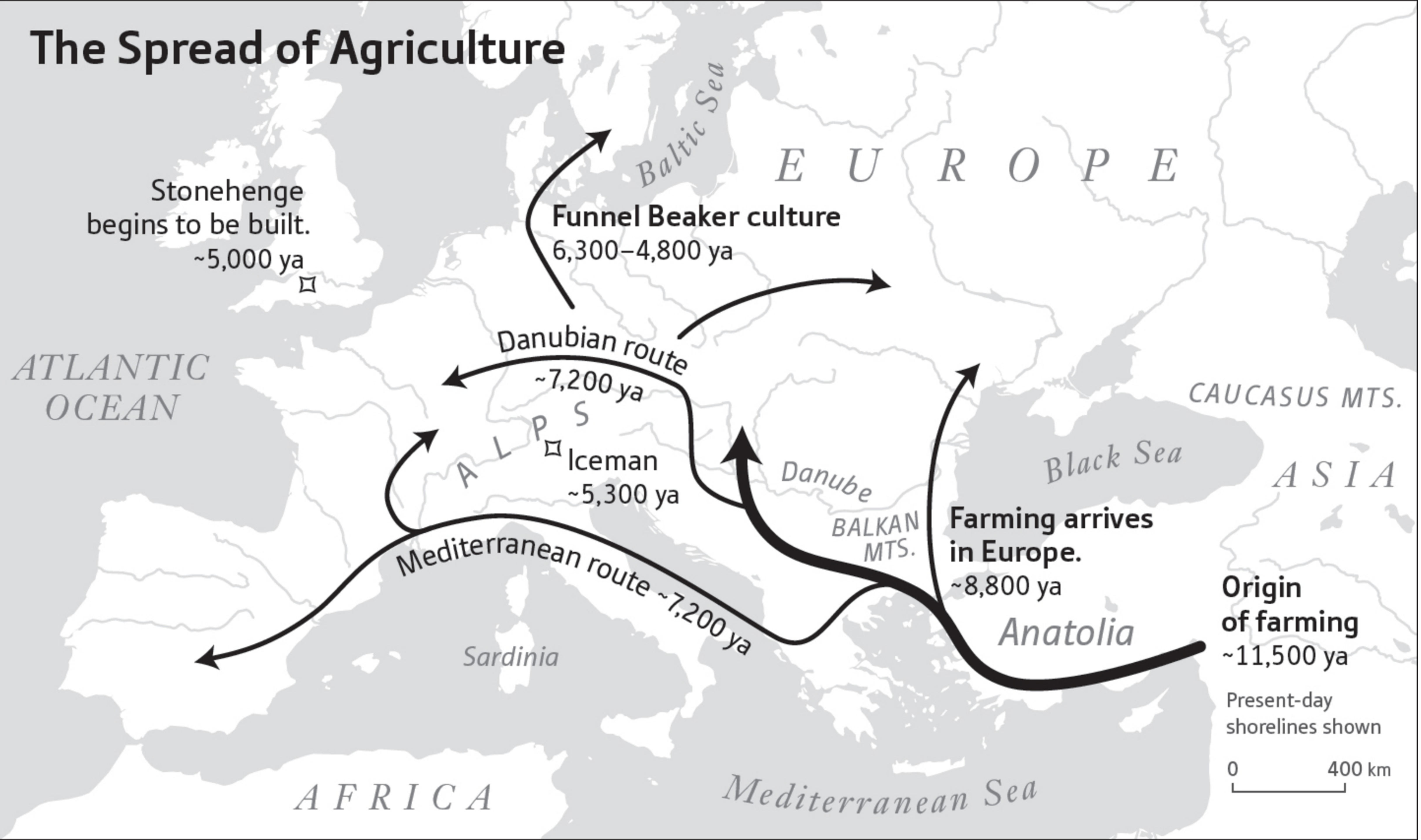
- Between 8800 and 4500 YA ancient farmers migrated from Anatolia, and spread across southern Europe to Iberia.
- They then spread north to Germany.
- Early farmers retained 90% of their DNA from ancestral sources.
- Initially, they mixed minimally with the hunter-gatherers they encountered.
- Subsequently, they acquired a 20% hunter-gatherer ancestry.

History of European Farmers

Continued Migrations

- Northern Baltic-area soils halted the migration of early farmers northward.
- The Funnel Beaker culture were hunter-gatherers and megalith builders.
- They had a thousand year interval to adapt farming to their environment, while retaining their hunter-gatherer culture.
- Between 6000 and 5000 YA further migrations of farmers overtook the Funnel Beaker culture population.
- The resulting population had a large Anatolian farmer ancestry.

The Spread of Agriculture



History of European Farmers

Funnel Beaker Culture



Yamnaya Culture

Overview

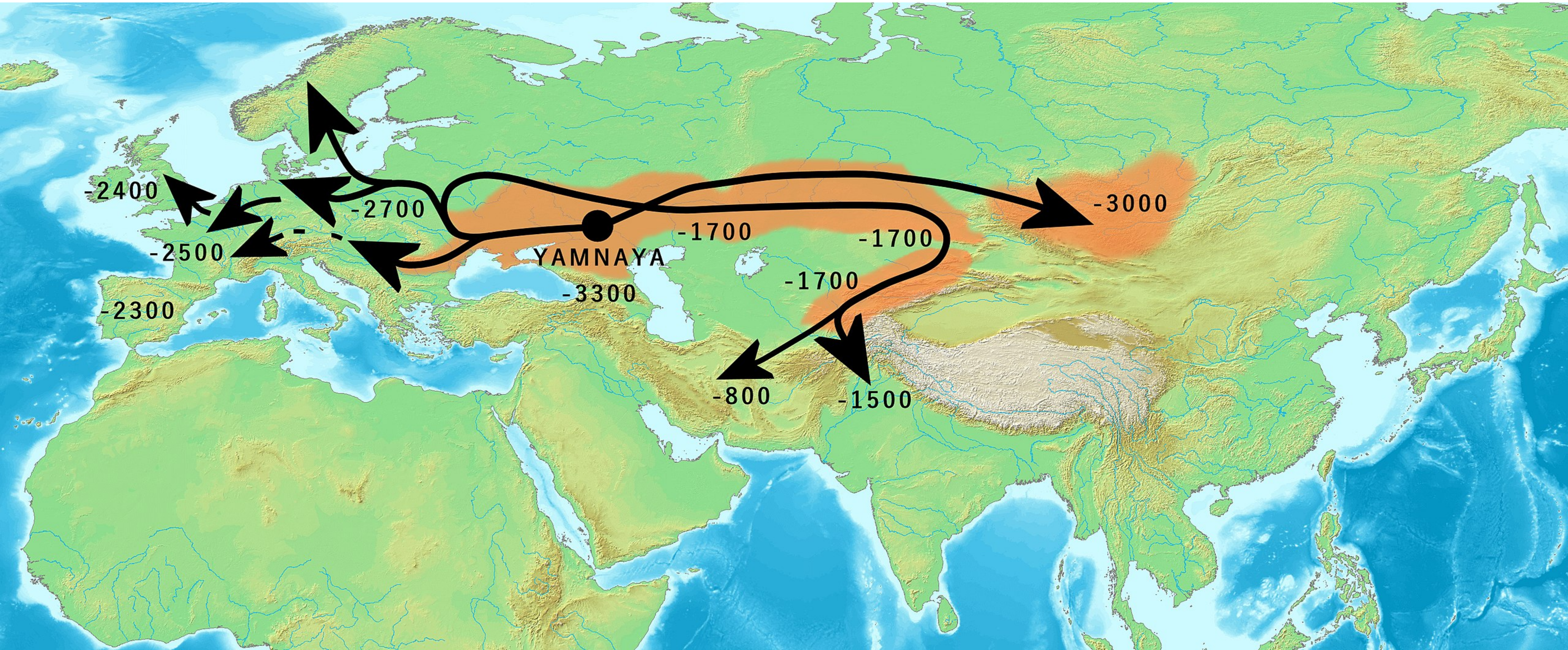
- Emerged 5000 YA from previous cultures of the steppes north of the Black and Caspian Seas.
- Utilized new inventions - the wheel and cart - and newly domesticated animals - the horse - to spread from the steppes to Hungary in the West and the Altai Mountains in the East.
- They replaced the indigenous populations.
- Origin of the Yamnaya from a mixture of Armenian and Iranian ancestry.
- Important contributor to the ancestry of present-day Europeans.

Yamnaya Culture - Original Extent



Yamnaya Culture

Extent of Migrations



Yamnaya Culture

Extent of Migrations

Expansion of Yamnaya-related people, according to Anthony (2007),^[54] 2017;^[59] Narasimhan et al. (2019);^[60] Nordqvist and Heyd (2020):^[10] * 3000 BC: Initial eastward migration initiating the [Afanasievo culture](#), possibly [Proto-Tocharian](#). * 2900 BC: North-westward migrations carrying [Corded Ware culture](#), transforming into [Bell Beaker](#); according to Anthony, westward migration west of Carpatians into Hungary as Yamnaya, transforming into [Bell Beaker](#), possibly ancestral to [Italo-Celtic](#) (disputed). * 2700 BC: Second eastward migration starting east of Carpatian mountains as Corded Ware, transforming into [Fatyanovo-Balanova](#) (2800 BC) → [Abashevo](#) (2200 BC) → [Sintashta](#) (2100–1900 BC) → [Andronovo](#) (1900–1700 BC) → [Indo-Aryans](#).

Yamnaya Culture

Corded Ware Culture

- A westward extension of the Yamnaya.
- Around 4900 YA, artifacts of the Corded Ware culture spread from Switzerland to European Russia.
- Beginning with the Corded Ware culture, individuals with ancestry similar to present-day Europeans first appeared.
- Shared characteristics with the Yamnaya:
 - Construction of large burial mounds.
 - Male-centered culture that celebrated violence.

Corded Ware Culture

Extent of Habitation



Yamnaya Culture

Bell Beaker Culture

- Spread out of Iberia 4700 YA, and reached Britain 4500 YA.
- Initial spread of the culture was mediated by the spread of ideas.
- Once the culture reached Central Europe, it spread through migration, spreading steppe ancestry.
- The migration into Britain and Ireland resulted in a population replacement.

Bell Beaker Culture

Extent of Habitation



Indo-European Languages

Steppe Hypothesis

- Origin of most Indo-European languages is not likely to have occurred before 6000 YA, based on their shared vocabulary.
- All Indo-European languages descend from a language spoken by an ancient population that used wagons.
- This population could not have lived earlier than 6000 YA, ruling out the Anatolian farmer migrations that occurred between 9000 and 8000 YA.
- Most likely for dispersing Indo-European languages are the Yamnaya.

Indo-European Languages

Homeland

- Most likely location of the population that spoke an Indo-European language was south of the Caucasus Mountains.
- Possibly in Armenia or Iran.
- Potential source population for both the Yamnaya and ancient Anatolians (Hittites).

Next Up

- Chapter 6: The Collision That Formed India