KØBENHAVNS UNIVERSITET
CENTRE FOR THE STUDY OF EARLY AGRICULTURAL SOCIETIES

THE ZAGROS IN PREHISTORY:
GEOGRAPHY, CHRONOLOGY, DEMOGRAPHY

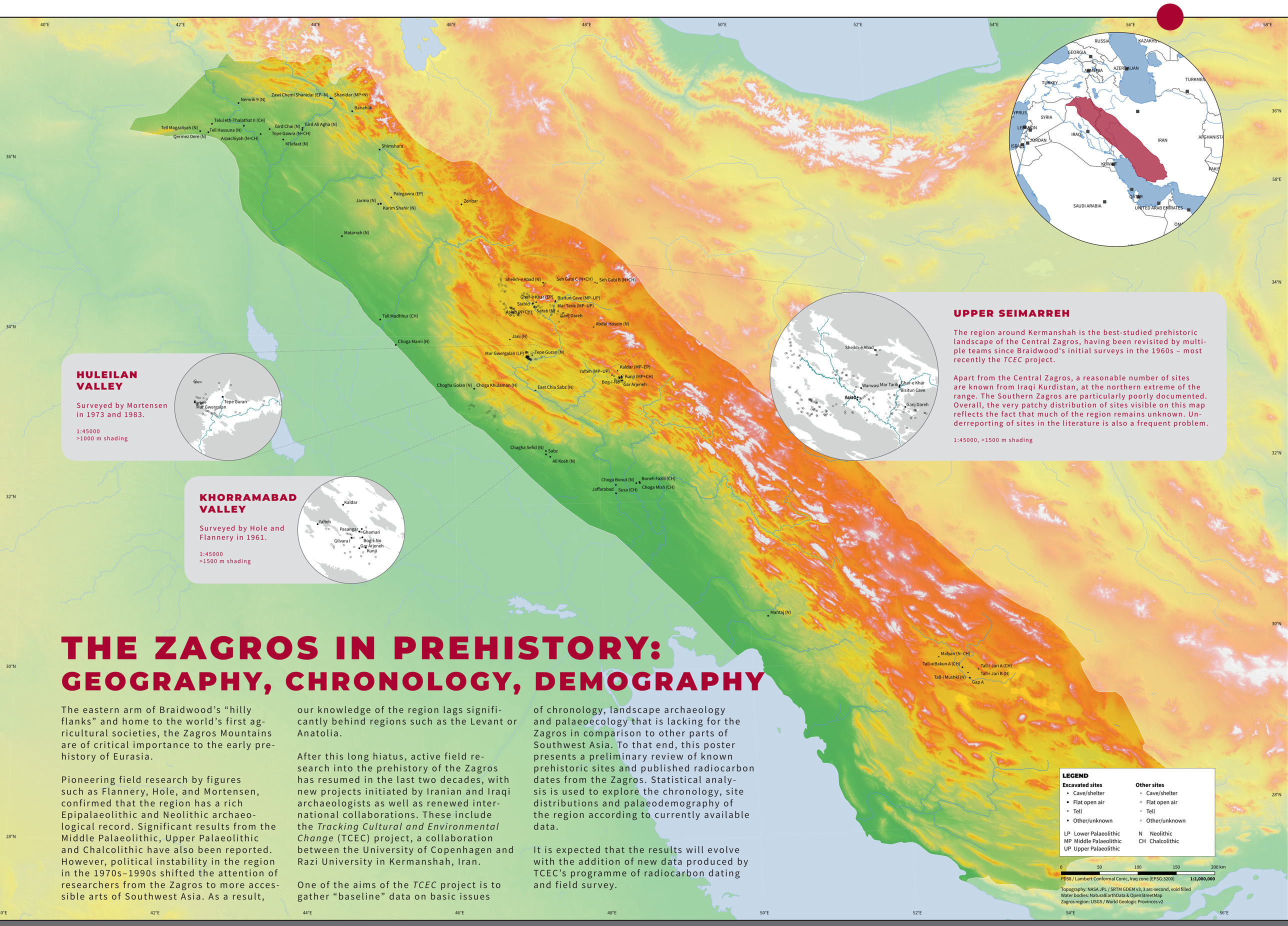
The eastern arm of Braidwood's "hilly flanks" and home to the world's first agricultural societies, the Zagros Mountains are of critical importance to the early prehistory of Eurasia.

Pioneering field research by figures such as Flannery, Hole, and Mortensen, confirmed that the region has a rich Epipalaeolithic and Neolithic archaeological record. Significant results from the Middle Palaeolithic, Upper Palaeolithic and Chalcolithic have also been reported. However, political instability in the region in the 1970s–1990s shifted the attention of researchers from the Zagros to more accessible arts of Southwest Asia. As a result, our knowledge of the region lags significantly behind regions such as the Levant or Anatolia.

After this long hiatus, active field research into the prehistory of the Zagros has resumed in the last two decades, with new projects initiated by Iranian and Iraqi archaeologists as well as renewed international collaborations. These include the *Tracking Cultural and Environmental Change* (TCEC) project, a collaboration between the University of Copenhagen and Razi University in Kermanshah, Iran.

One of the aims of the *TCEC* project is to gather "baseline" data on basic issues of chronology, landscape archaeology and palaeoecology that is lacking for the Zagros in comparison to other parts of Southwest Asia. To that end, this poster presents a preliminary review of known prehistoric sites and published radiocarbon dates from the Zagros. Statistical analysis is used to explore the chronology, site distributions and palaeodemography of the region according to currently available data.

It is expected that the results will evolve with the addition of new data produced by TCEC's programme of radiocarbon dating and field survey.



HULEILAN VALLEY

Surveyed by Mortensen in 1973 and 1983.

1:45000
>1000 m shading

KHORRAMABAD VALLEY

Surveyed by Hole and Flannery in 1961.

1:45000
>1500 m shading

UPPER SEIMARREH

The region around Kermanshah is the best-studied prehistoric landscape of the Central Zagros, having been revisited by multiple teams since Braidwood's initial surveys in the 1960s – most recently the *TCEC* project.

Apart from the Central Zagros, a reasonable number of sites are known from Iraqi Kurdistan, at the northern extreme of the range. The Southern Zagros are particularly poorly documented. Overall, the very patchy distribution of sites visible on this map reflects the fact that much of the region remains unknown. Underreporting of sites in the literature is also a frequent problem.

1:45000, >1500 m shading

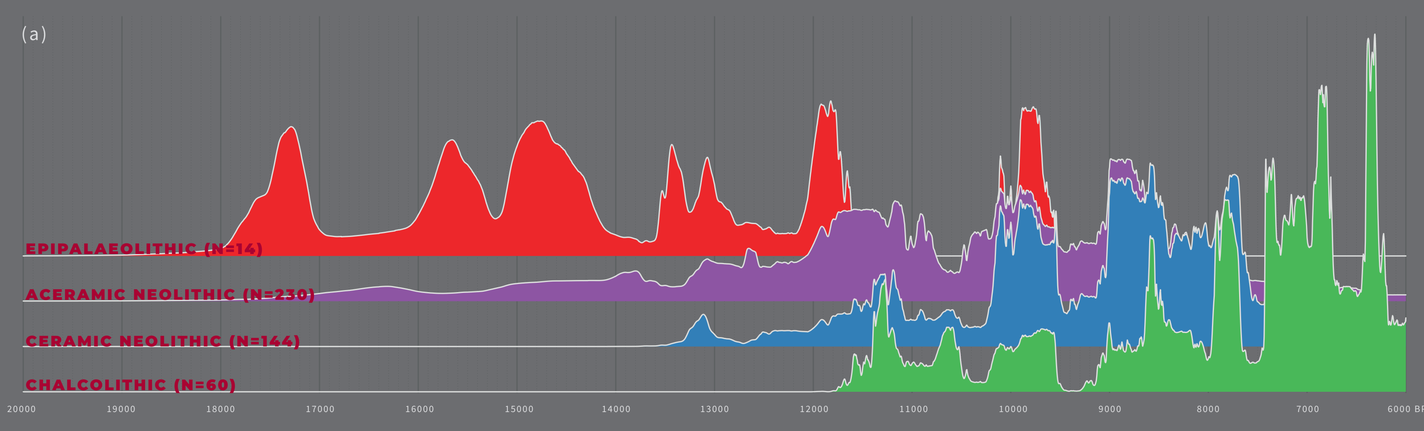
CHRONOLOGY

Our radiocarbon database currently contains 409 dates, compiled from existing databases (CONTEXT, PPND, and Roberts et al. 2017), as well as a literature review, and unpublished dates from the sites excavated by the *TCEC* project and our collaborators.

Figure *a* (top right), shows the summed radiocarbon probability distribution of sites grouped according to their conventional chronotypological designation. A binning algorithm (Roberts et al. 2017) is used to compensate sites with a disproportionately large number of dates.

These preliminary results show a significant degree of overlap, seemingly indicating that the conventional typologies offer poor chronological control. However, this may be improved by re-examining the available data on site phasing and using it to construct Bayesian models, and assessing the "chronological hygiene" of individual dates (the analyses presented here included all available dates regardless of age or quality).

We also plan to produce new dates from our own and other sites in the region. Targeting Epipalaeolithic sites is a priority, as there are currently very few that are radiocarbon dated.

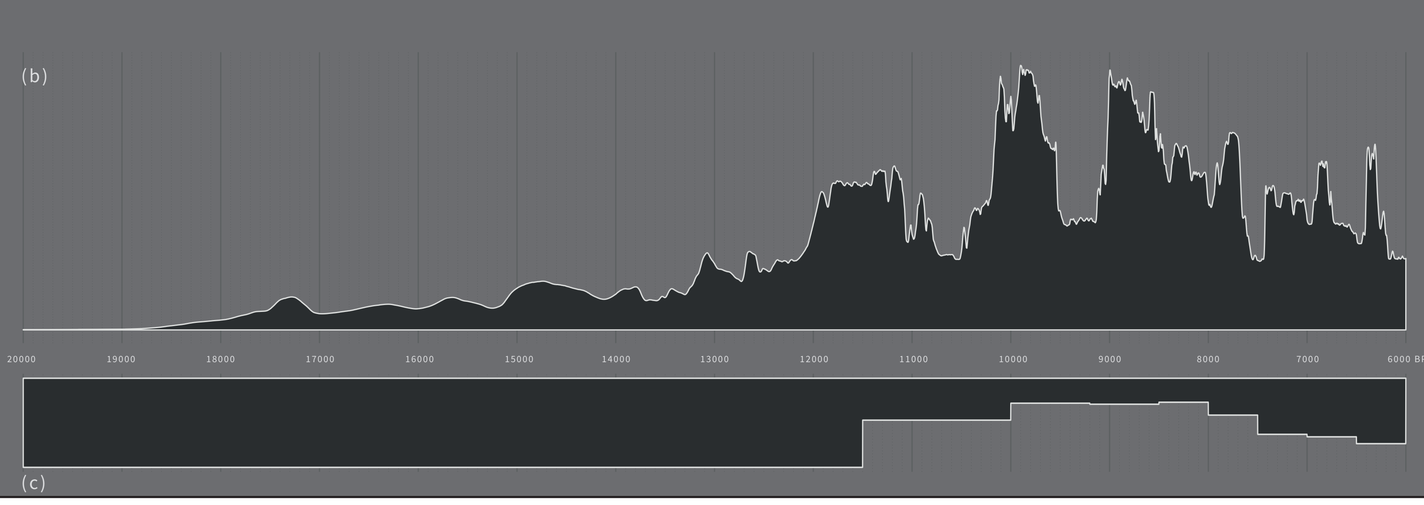


DEMOGRAPHY

Summed radiocarbon probability distributions (SPDs) are increasingly also used as a proxy for demographic trends (Shennan et al. 2013). Figure *b* shows the SPD for the Zagros region, with higher values theoretically being proportional to higher populations.

As above, dates from the same site that were close in absolute age were merged, to compensate for sites with a disproportionate number of sites. Although again no quality control has been applied to this analysis, the results do appear to suggest a number of "boom" and "bust" events, similar to those seen in other regions using this method. To formally assess the statistical significance of these trends, we need to develop a null model of expected variation due to random chance and the effects of the calibration curve. More dates, Bayesian calibration, and better chronological hygiene should also clarify this picture.

Figure *c* presents an aoristic analysis, similar to the above but incorporating conventionally dated sites. The result appears to be significantly affected by differential sampling, reinforcing the need for tighter chronotypological control.



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DAVIDS SAMLING

REPRODUCIBLE RESEARCH

The maps on this poster were produced using QGIS 3.0.1. The radiocarbon analyses were conducting in R using the c14bazAAR and rcarbon packages. Complete data, references, and source code for producing the figures on this plot are available on GitHub:

https://github.com/joeroe/zagrosc14

A digital copy of the poster itself can also be downloaded from the same page.

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