

Prehistoric Archaeoastronomy An Overview

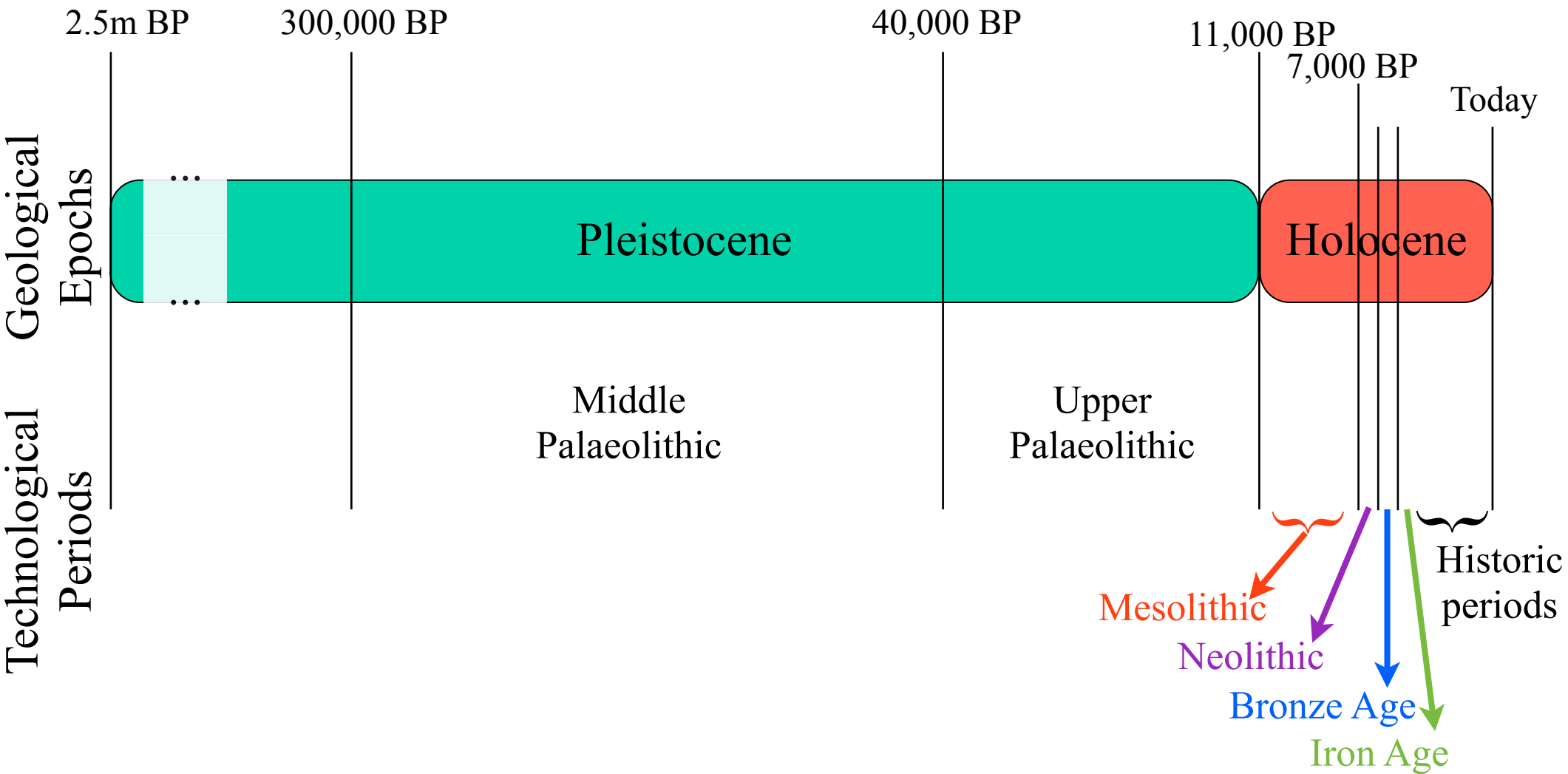
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Prehistoric Archaeoastronomy: an overview

Prehistory covers a very long time span



Prehistoric Archaeoastronomy: an overview

- Archaeological periods are defined by the presence or absence of key material culture, typically technology. E.g. the Neolithic is defined by the presence of pottery, polished stone tools and/or domesticates.
- Definitions, as well as date ranges, vary from region to region, from country to country, from continent to continent. E.g. the Mesolithic in the Americas is known as the Archaic.
- Some scholars use other terms that add complexity to the transition periods. E.g. Epipalaeolithic, Epimesolithic, Paraneolithic, Pre-Pottery Neolithic. Some of these rise and fall out of use quite quickly, others remain.

Upper Palaeolithic (c. 40,000 - 11,000 BP)

The Arrival of *Homo sapiens*

Homo sapiens arrives in Europe and quickly replaces the indigenous Neanderthals (whether actually replaces them or the two (sub)species mix is still open debate).

Quick and innovative adaptations to the cold climatic conditions.

Cold and warm periods (glacial and interglacial) culminate in the Last Glacial Maximum (c. 25,000 BP). Humans migrate to the warmer climates of the southern refugia, especially in the Iberian Peninsula.

Rock art thrived in this particularly cold period.

According to genetic evidence (mtDNA), most of Europe was then repopulated from this refuge in the post-glacial.

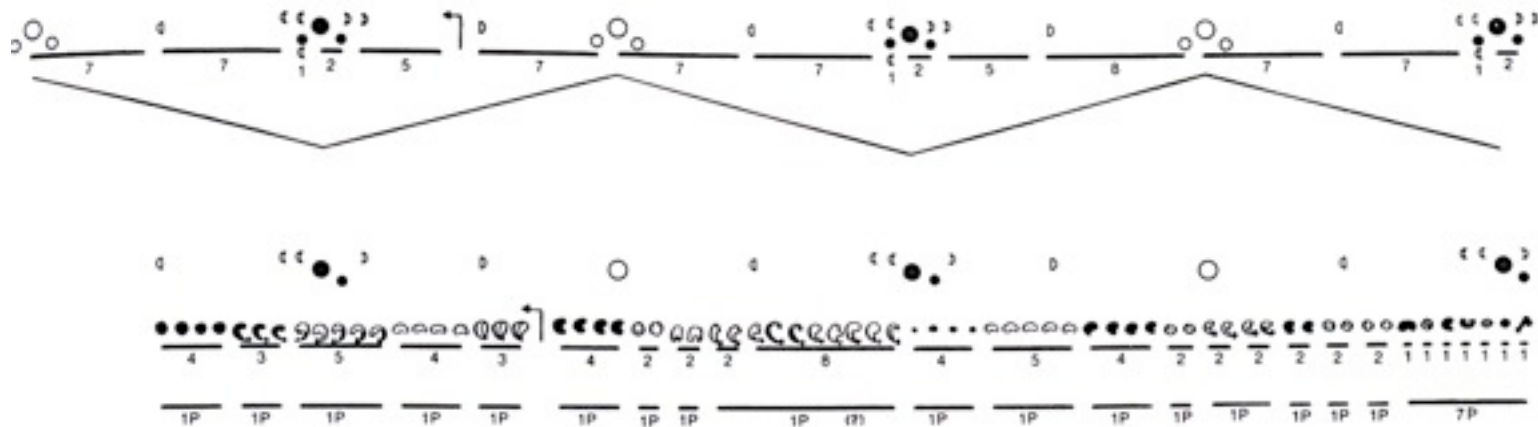
The Younger Dryas cold climate period (c. 11,000 BP) marks the end of the Pleistocene.

Case Study 1: Ice Age Portable Art

Blanchard bone plaque
Aurignacian, c. 34,000 BP



Alexander Marshack, 1991. *The Roots of Civilization*. New York: Moyer Bell.



“... there was a common, basic tradition of notation in all the European Upper Palaeolithic cultures, and this notation was cumulative, ‘time-factored,’ and possibly lunar.” (p.108)

Case Study 2: Upper Palaeolithic Rock Art

Michael Rappenglück, 1996. “The Pleiades in the ‘Salle des Taureaux’, Grotte de Lascaux (France)” In Jaschek, C. and F. Atrio Barandela (eds.), *Astronomy and Culture*, Salamanca: Universidad de Salamanca, pp. 217-25.



Figure 4. The cluster of black dots near this bull's head bears a similar spatial relationship to the Pleiades star cluster in relation to the constellation Taurus, which a number of scholars have remarked upon (image courtesy of Jègues-Wolkiewiez).

“This study raises many new questions. Could the set of animals in the *Salle des Taureaux* be a ‘circle of animals’, a ‘zodiac’ in the proper sense of the word? Is the aurochs with the six spots the first constellation of the whole zodiac to be identified?” (p.6)

Upper Palaeolithic Archaeoastronomy in review

Hayden & Villeneuve concluded that “it seems highly probable that” (p.350):

“...[Upper Palaeolithic] groups used some type (or several) of notational system.”

“... highly probable that some of these notations resulted from and/or were used in monitoring solar and lunar movements.”

“... for the purpose of scheduling major events such as winter ceremonials, as seen in many ethnographic groups surveyed.”

Brian Hayden & Suzanne Villeneuve, 2011. “Astronomy in the Upper Palaeolithic?” *Cambridge Archaeological Journal* 21, 331-55.

On the other hand, they remark on the ethnocentrism implicit in those that see the modern constellations in the rock art paintings (p.341):

“... hunter-gatherer constellations are quite different as a rule from historic Western constellations ...”

“...ethnographically identified clusters of stars generally represent multiple players in events. (...) individual stars in a configuration tend to represent individual animals or people or features.”

“... this fact does not lead us to expect many individual cave images of animals to represent star configurations.

Mesolithic (c. 11,000 BP - 7,000 BP) The Prehistoric “Dark Ages”

Until quite recently considered to be a period of decline, when “nothing much happened”:

- material culture less “interesting” than in the Upper Palaeolithic or Neolithic
- stone tools get smaller
- art mostly mobile and in perishable materials (wood, bone tools, shells)

However:

- (semi)-sedentarization around coasts
- tool specialization: e.g. first appearance of bows and arrow
- monuments: e.g. shell middens, wooden poles

More recently, the Late Mesolithic is taking centre stage in Neolithic transition debates.

Mesolithic Archaeoastronomy is understudied

Neolithic (c. 7,000 - 5,000 BP) The Big Shift

Introduction of foreign elements to Western Europe:

- pottery
- polished stone tools
- domesticates (animals and plants)

Rise of monumentality, using earth, timber and stone.

Anthropic landscape changes: e.g. forest clearings by fire.

Previously assumed to be marked by an invasion of Near-Eastern farmers. Now understood to be a more complex mix of colonization and acculturation by Mesolithic hunter-gatherers.

However:

- hunting and gathering still main form of subsistence.
- groups were more mobile, and less dependent on marine resources, than in the Mesolithic
- “boom-and-bust” farming

Bronze Age (c. 5,000 - 3,000 BP)

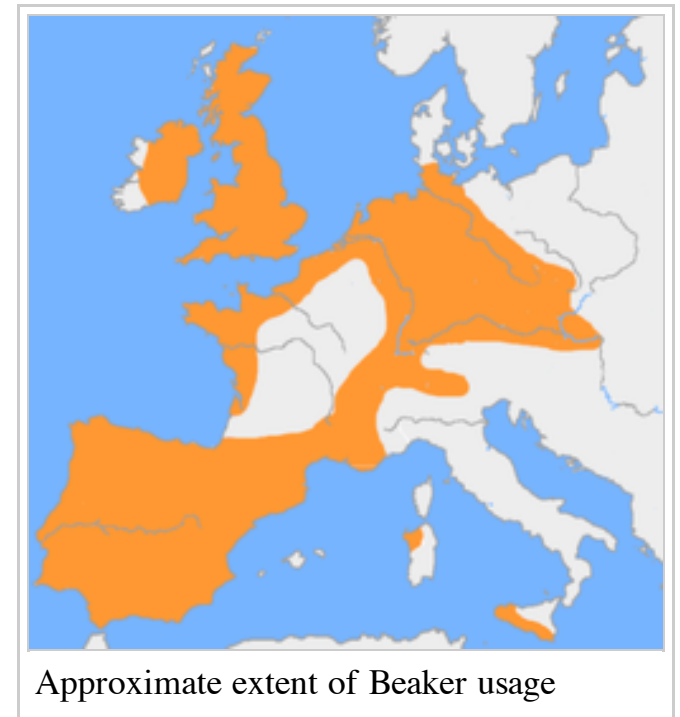
Farming is here to stay

This is the period when sedentarization and mixed farming become the norm.

Monumental construction continues, using the same material as in the Neolithic, but new monuments are considerably different, as are burial practices (which tend to be individual).

In some cases older, Neolithic monuments were reutilized during the Bronze Age.

The “beaker culture”



Approximate extent of Beaker usage

Prehistoric Archaeoastronomy: an overview

Neolithic and Bronze Age Archaeoastronomy is a constantly thriving, highly contested field

Some archaeologists (maybe even most) disregard archaeoastronomical claims. Others, most recently Parker Pearson, take them into the archaeological fold (more on this later).

There's so much work on this that it is difficult to pick case studies.

By now you should be reading Clive Ruggles' *Astronomy in Prehistoric Britain and Ireland*, which includes several important case studies.

Other case studies will be highlighted throughout this seminar series.

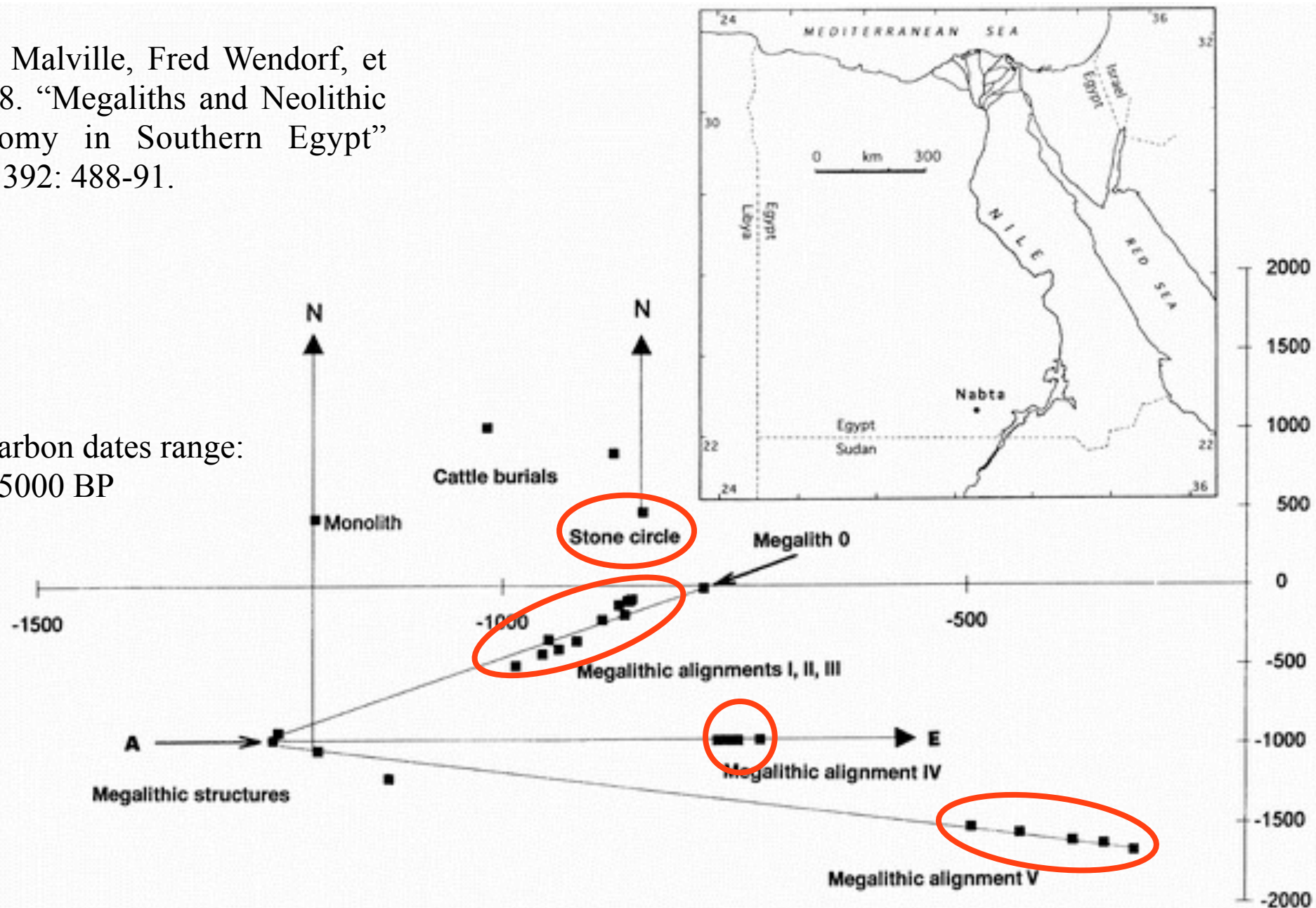
Here I picked three representative ones, for their age, approach and importance.

Prehistoric Archaeoastronomy: an overview

Case Study 3: Nabta Playa

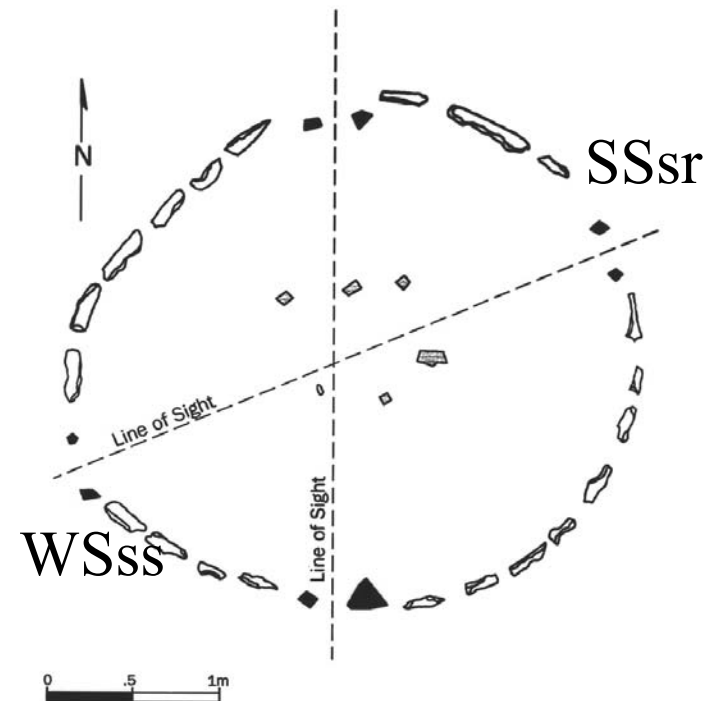
J. Kim Malville, Fred Wendorf, et al. 1998. "Megaliths and Neolithic Astronomy in Southern Egypt" *Nature* 392: 488-91.

Radiocarbon dates range:
9000 - 5000 BP



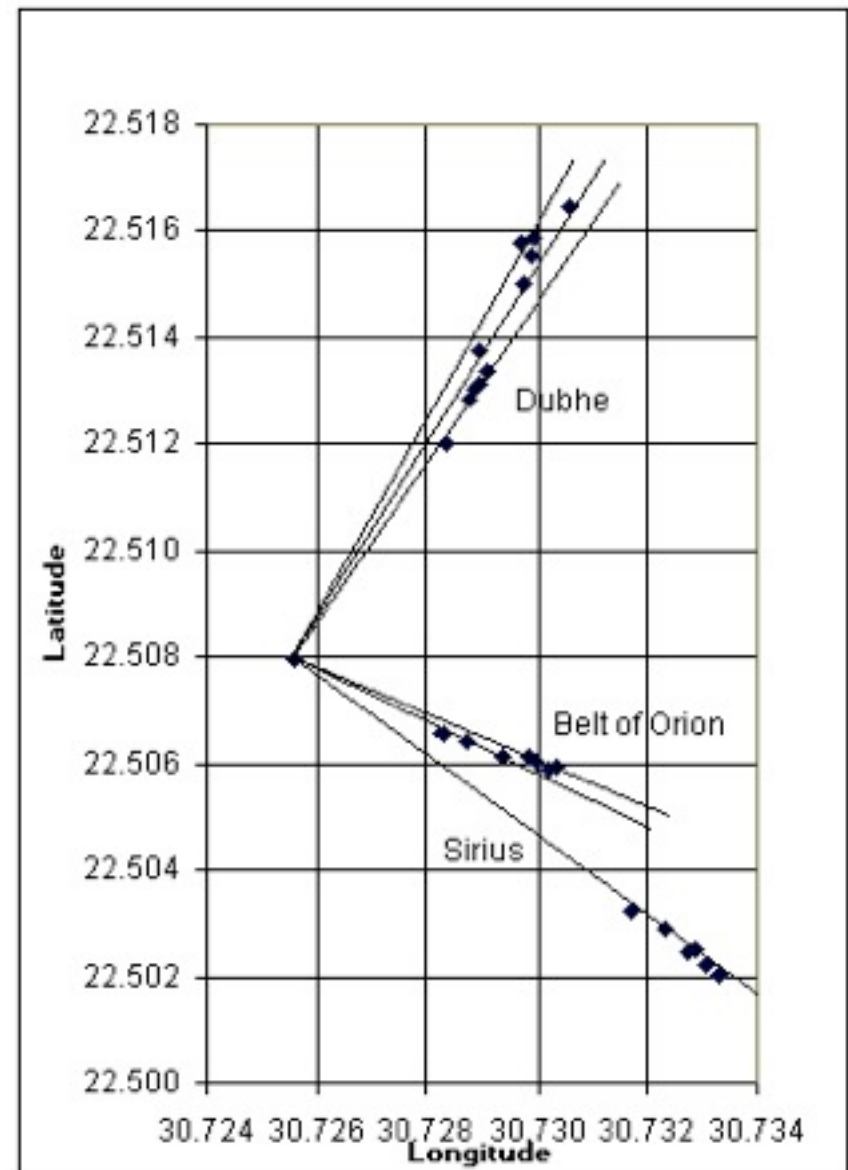
Prehistoric Archaeoastronomy: an overview

Case Study 3: Nabta Playa



Prehistoric Archaeoastronomy: an overview

Case Study 3: Nabta Playa



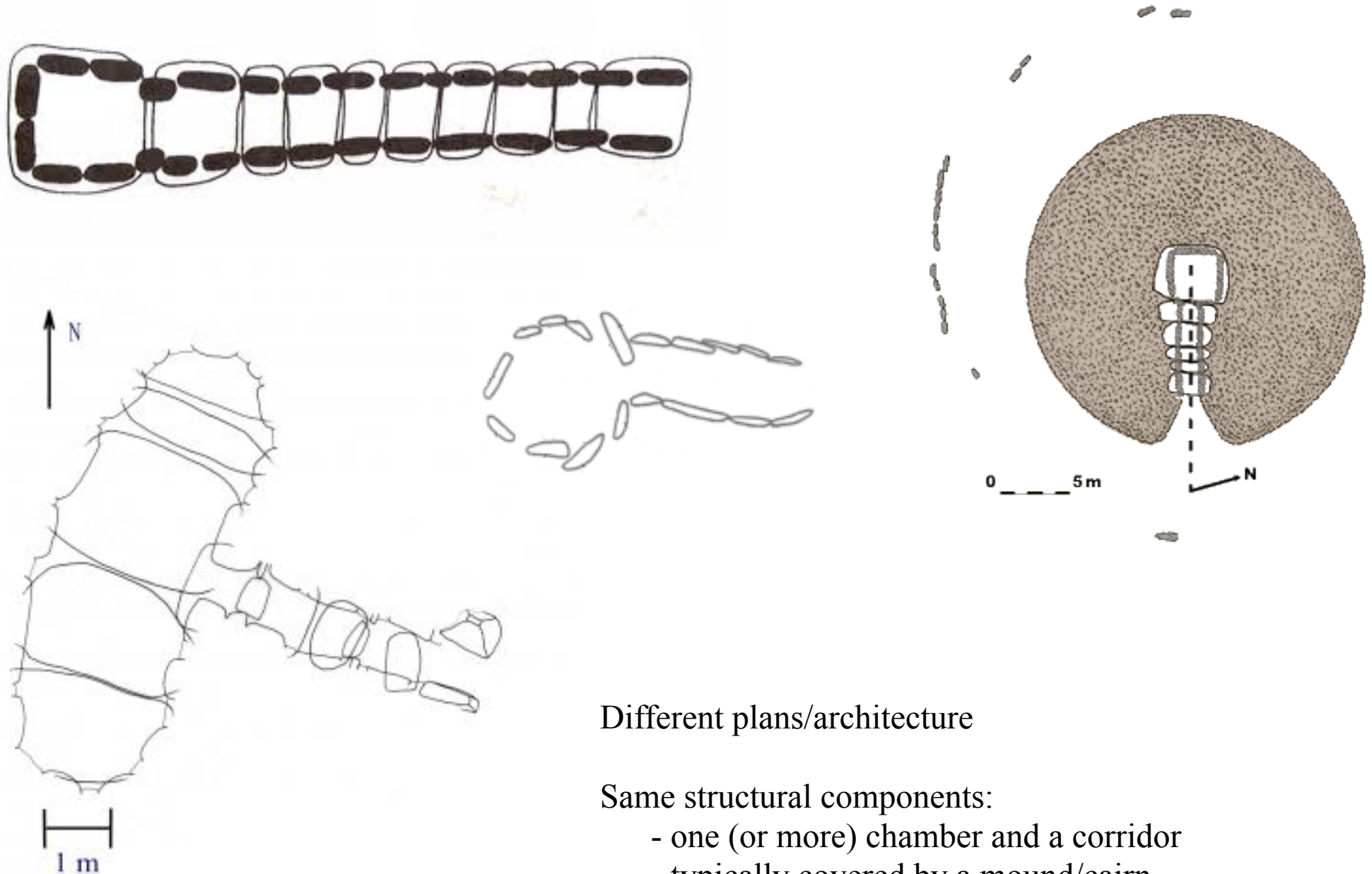
Case Study 4: Mediterranean Dolmens / Passage Graves

All over the Atlantic façade of Europe (and beyond)

Built throughout the Neolithic



Case Study 4: Mediterranean Dolmens / Passage Graves



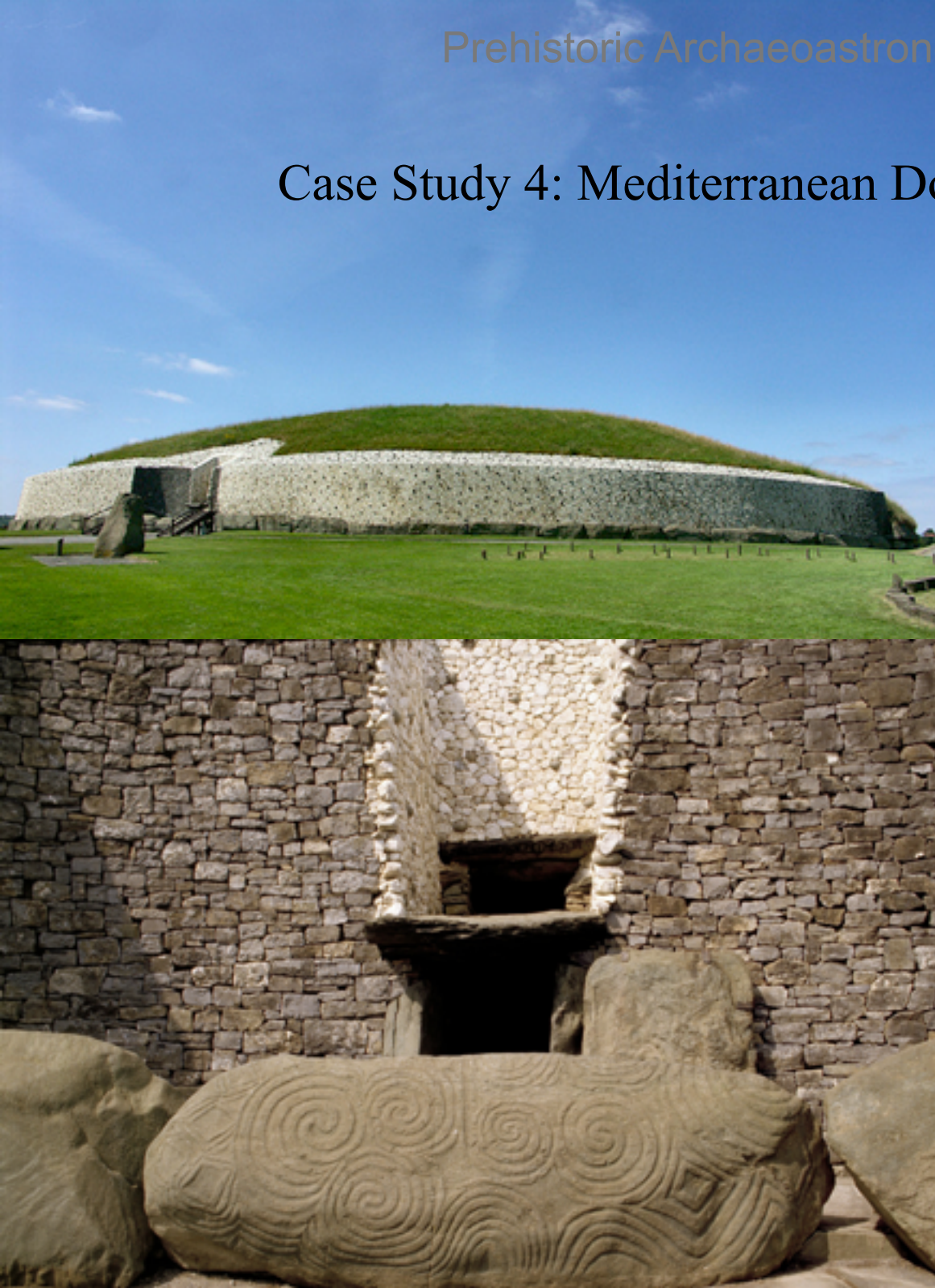
Different plans/architecture

Same structural components:

- one (or more) chamber and a corridor
- typically covered by a mound/cairn

Case Study 4: Mediterranean Dolmens / Passage Graves

Newgrange
Built around 5150 BP



Case Study 4: Mediterranean Dolmens / Passage Graves



Case Study 4: Mediterranean Dolmens / Passage Graves

Michael Hoskin surveyed over 1,500 prehistoric tombs, temples and monuments in Mediterranean Europe.

Analysed his measurements statistically by grouping sites into regions.

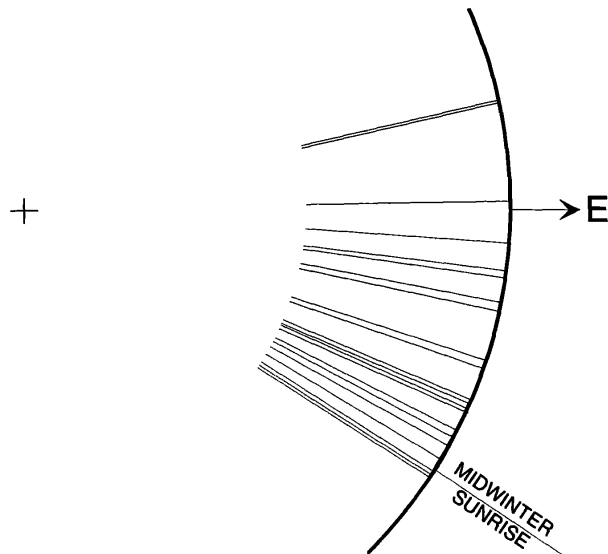
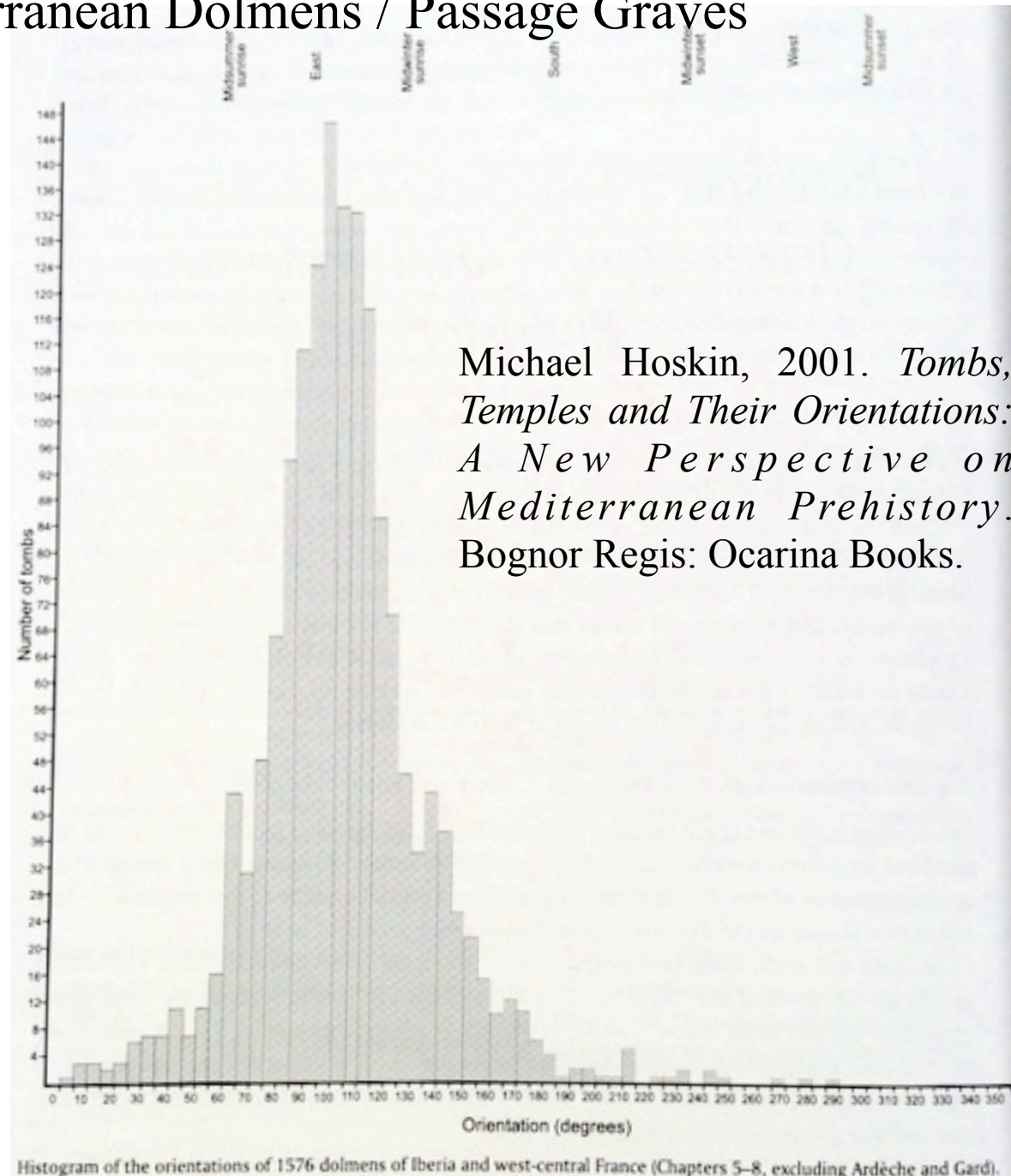


FIG. G2. Orientations of 21 megalithic tombs of the Mondego basin.



Michael Hoskin, 2001. *Tombs, Temples and Their Orientations: A New Perspective on Mediterranean Prehistory*. Bognor Regis: Ocarina Books.

Case Study 4: Mediterranean Dolmens / Passage Graves

“... I have emerged from this fieldwork a **solarist** as far as tombs of the west Mediterranean are concerned.” (p.216)

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“This is most easily explained on the hypothesis that tombs were laid out to face sunrise on the day that construction began.” (p.213)

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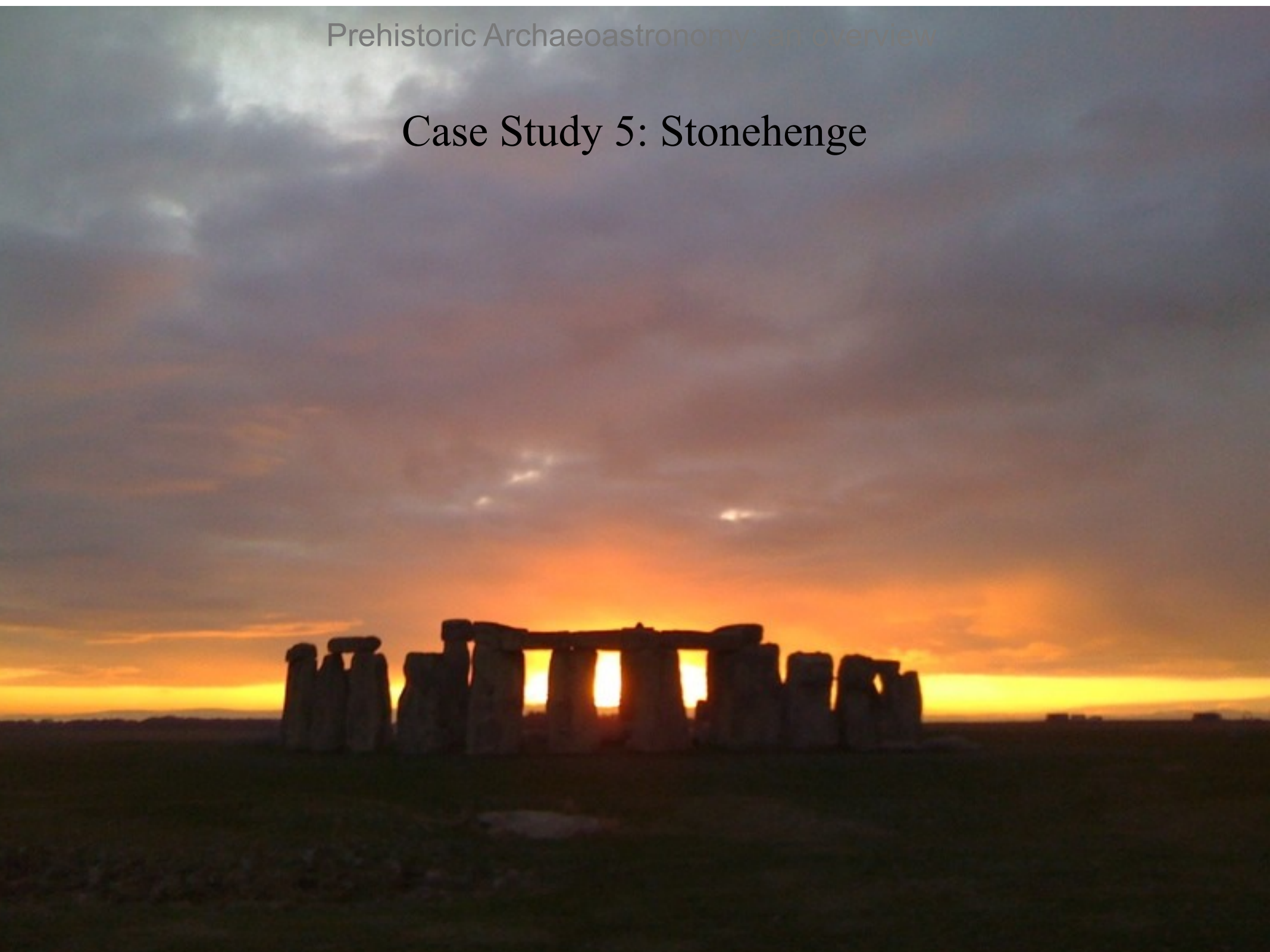
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Post-‘Hoskian’ approaches:

- look at other, non-solar astronomical events
(e.g. Equinoctial Full Moons in southern Iberia and Scandinavia)
- combine methodologies from landscape archaeology and archaeoastronomy
(e.g. Aldebaran heliacal rising in NW Iberia)

Case Study 5: Stonehenge



Case Study 5: Stonehenge

Earliest evidence goes back to the Early Mesolithic: postholes, lithic spreads

Continued use, and re-structuring for over 1,500 years

First stage (4,950 - 4,570 BP):

- ditch and bank, wooden posts and stakes in centre, Aubrey holes possibly with bluestones or wooden posts;
- cremation burials in ditch, bank and Aubrey holes.



Stage 1 (4,950 - 4,570 BP)

Revised chronology reference: T Darvill, P Marshall, M Parker Pearson & G Wainwright, “Stonehenge remodelled” *Antiquity* 86 (2012): 1021-1040.

Case Study 5: Stonehenge

Second stage (4,570 - 4,430 BP):

- trilithon horseshoe; double bluestone circle; sarsen circle.

Third stage (4,430 - 4,230 BP):

- bluestones arranged as inner circle; ditch recut; avenue constructed;
- beaker-style inhumation burial in ditch.

Fourth stage (4,230 - 3,970 BP):

- bluestone circles dismantled and rebuilt as inner oval and outer circle.

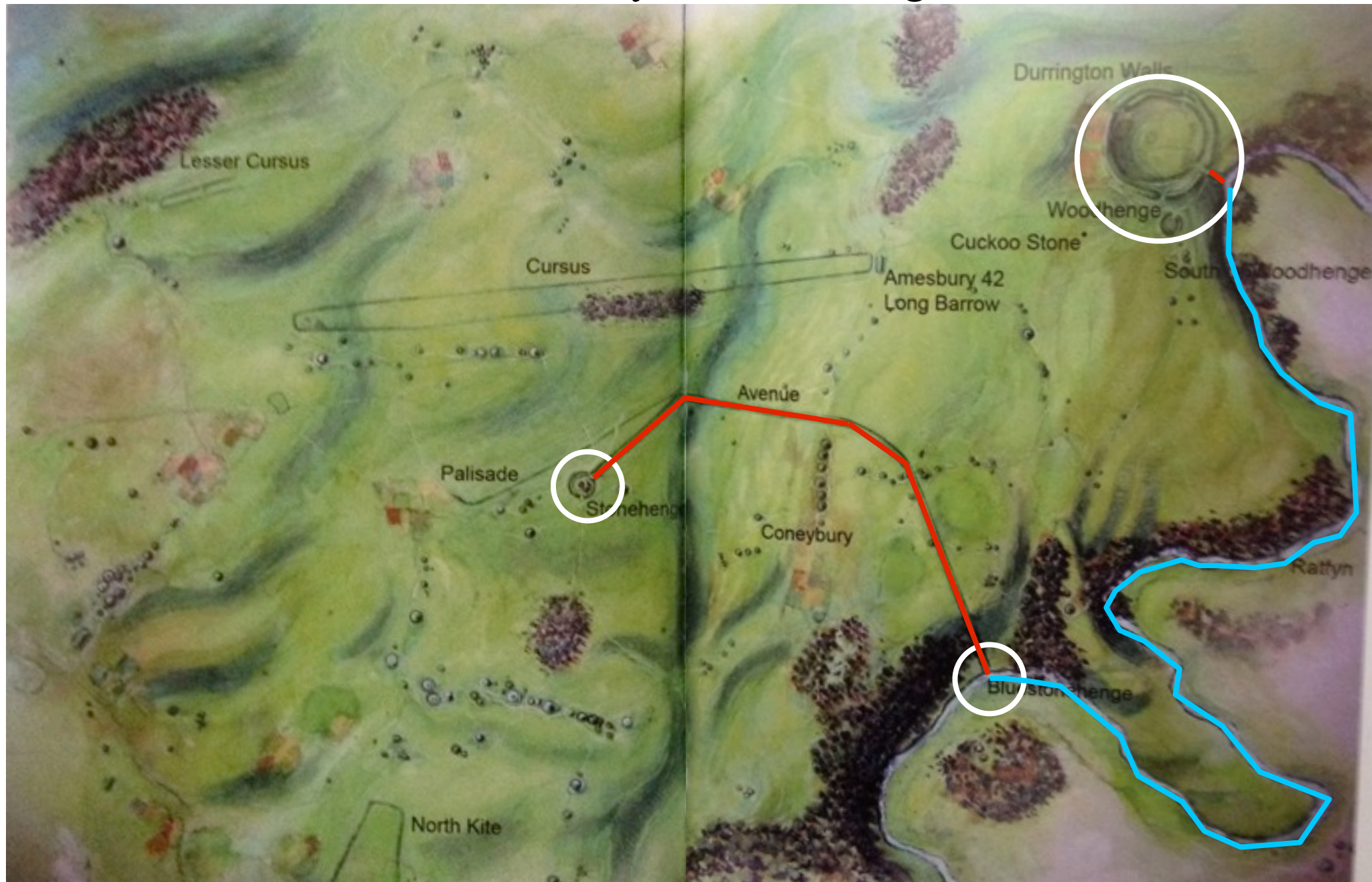
Fifth stage (3,970 - 1,520 BP):

- rock art applied; construction of Y and Z holes;
- round barrow cemeteries built in the surrounding landscape.

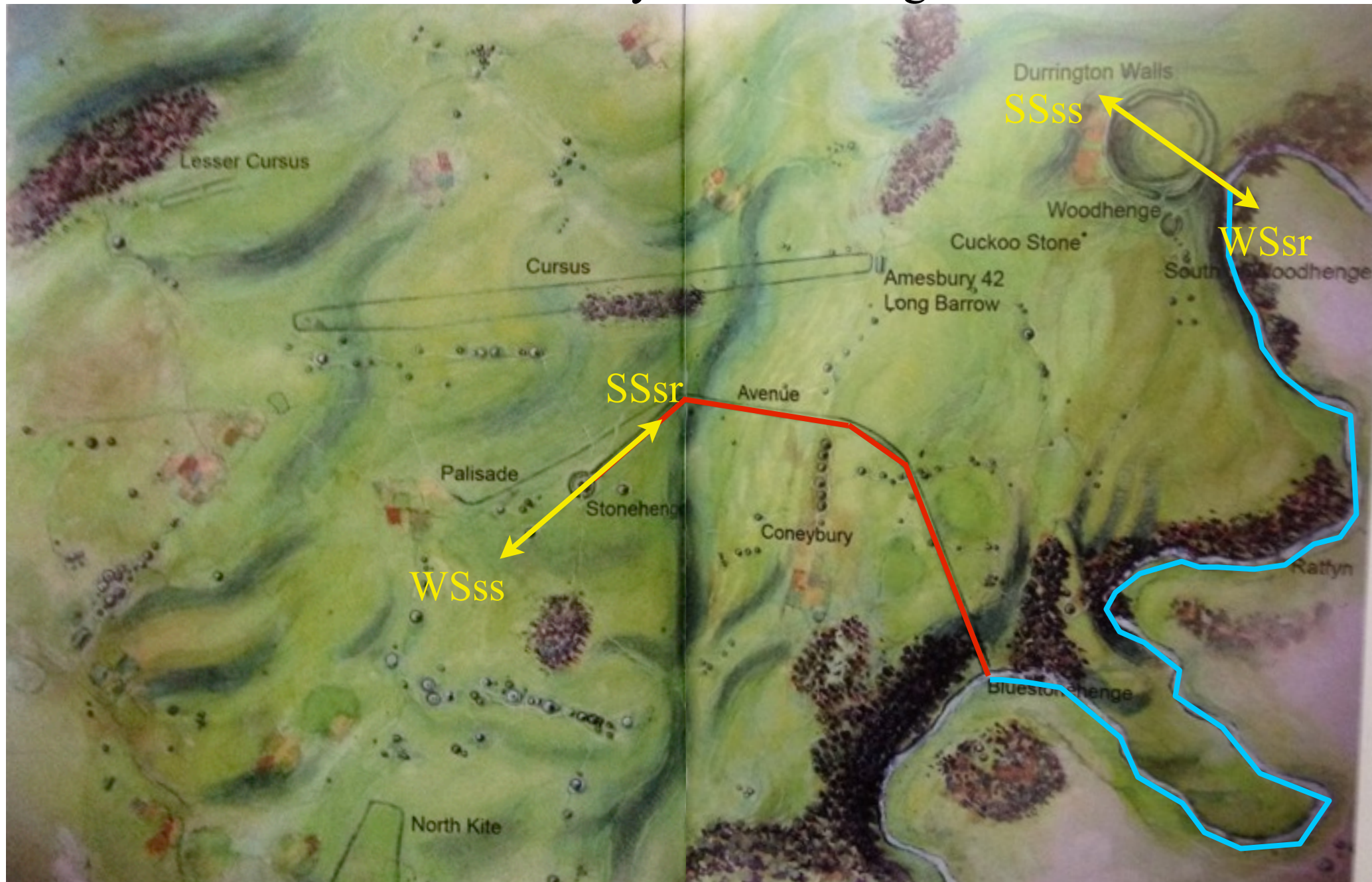


Stage 3 (4,430 - 4,230 BP)

Case Study 5: Stonehenge



Case Study 5: Stonehenge



Case Study 5: Stonehenge

Mike Parker Pearson,
*Stonehenge: Exploring the
greatest stone age mystery.*
London: Simon & Schuster 2012

Importance of procession: landscape, movement

Most animals found at Durrington Walls were reared miles away from Wessex: Cornwall, Devon and even west Wales.

Pigs' bones found at Durrington Walls indicates most were killed at 9 months old. As pigs farrow in the spring, this suggests that pigs were culled around the winter solstice. (Now there's also evidence of cullings in the summer solstice, but to a lesser degree).

Several dualities found:

Durrington Walls : Stonehenge
wood : stone
living : dead

Stonehenge as a temple for the ancestors

Case Study 5: Stonehenge

Lionel Sims, 2006. “The ‘Solarization’ of the Moon: Manipulated Knowledge at Stonehenge.” *Cambridge Archaeological Journal* 16 (2).

Stonehenge at the crossroads between hunter-gatherer (lunar) and farmer (solar) cosmologies

Knowledge being manipulated by a (male) elite in order to effect a ‘solarization of the moon’

Dual alignment, of sunset at Winter Solstice and dark moonset at minor Lunar Standstill occurs once every 19 years



Stonehenge as an instrument of social revolution

In Conclusion Current Trends

Archaeoastronomy in Prehistoric Europe is:

- 1) mostly focused on Neolithic and Bronze Age monumentality;
- 2) mostly focused on stone monuments;
- 3) split between:
 - the statistical analysis of large numbers of similar monuments (quantitative, thin description);
 - triangulation of data from various sources (archaeology, anthropology, phenomenology) to create hypotheses for unique monuments, such as Stonehenge (mostly qualitative, thick description);
- 4) struggling when it comes to the interpretation of proposed alignments.

In Conclusion Future Trends

Future Trends:

- statistics is important, but numbers can “blind” people;
- more phenomenological approaches;
- further emphasis on the combination of landscape archaeology and archaeoastronomy;
- combining the statistical and data triangulation approaches to study “monumental land- and skylscapes”.