Combining linguistics, archaeology and palaeoecology to reconstruct prehistory; reconceptualising the earlier phases of the Bantu expansion

London, 18th June, 2014
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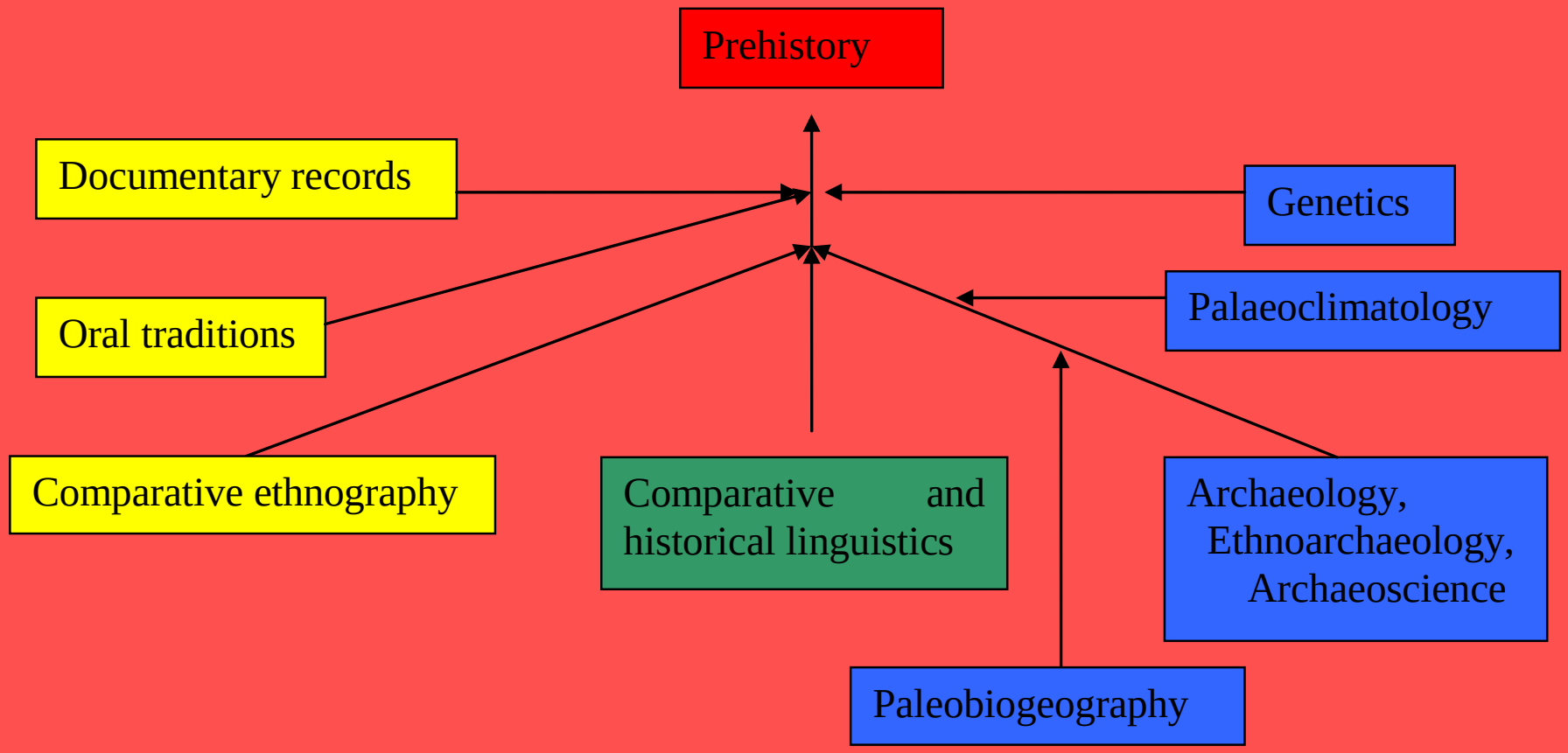
Introduction I

- The African continent is home to four large language families/groupings, which must have expanded in the Holocene
- We can say this partly because of the exceptional contrast with Melanesia and Amazonia where there is much greater diversity
- To interpret this linguistic situation, we will need to bring together a wide range of disciplines, notably archaeology, palaeoecology, anthropology, agronomy and others
- An ‘integrated prehistory’ approach

Integrated prehistory: a model



The Bantu expansion I

- The Bantu expansion is in some ways an ideal problem where this methodology can be applied, as the expansion of data in recent times has made hypothesis-building more than unanchored speculation.
- The approach I am summarising here derives strongly from my colleagues in Lyon, Montpellier and Gabon (where some of this emerged in a workshop at the University of Libreville in July 2013)
- Although the interpretation is strictly my own

➢ The Bantu speaking-peoples occupy almost all of Sub-Saharan Africa below the Equator, a vast land area

➢ They speak some 500 languages, all of which are relatively closely related

➢ This points to a relatively recent expansion, which must have taken place across the tropical forest

The Bantu expansion II

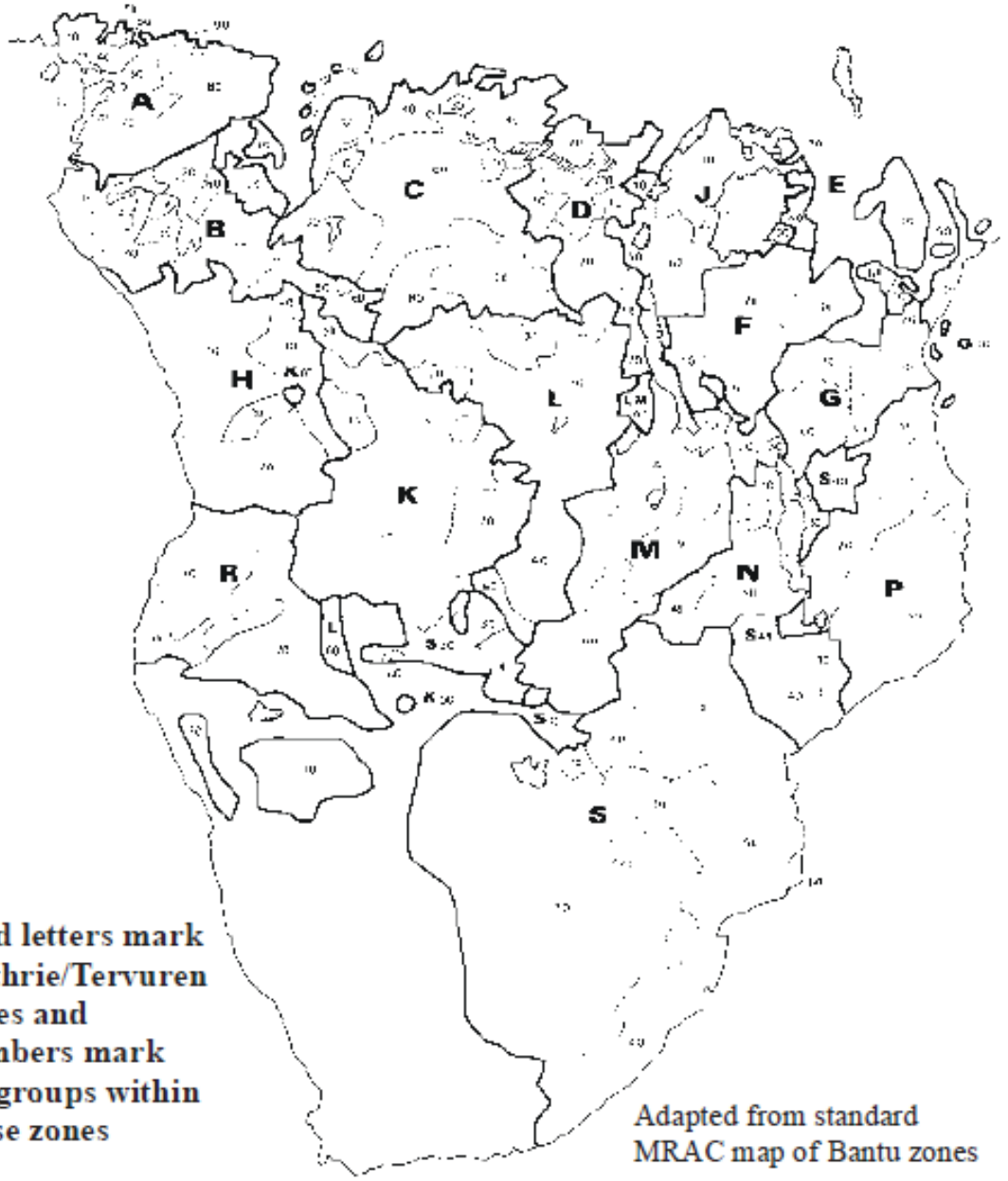
- And this pretty much must have been a migration initially, rather than assimilation of an *in situ* population
- As a consequence, the timing, causes and routes for this movement have been much debated
- The kinship of Bantu languages was first noticed as early as the seventeenth century, with traders noticing the language of the Kongo kingdom bore obvious resemblance to those in South Africa
- By the time of Wilhelm Bleek (mid-nineteenth century) the notion of a family was well established

The Bantu expansion III

- Our modern understanding of Bantu as a language family we owe to Malcolm Guthrie, who published a vast four-volume classification (1967-71)
- In the earlier literature it was not necessarily understood where Bantu originated due to a poor understanding of the linguistic relatives of Bantu
- We are now very clear that these are the Bantoid languages, a large complex of diverse languages spoken in Cameroun and adjacent Nigeria
- Greenberg (1963) first pointed out that given this, Bantu had to originate in the northwest of the region, i.e. in what is now southern Cameroun
- Exactly who lived in the forest zone prior to the Bantu is much debated, but clearly they were extremely low density foragers and the expansion of new populations with different subsistence strategies was a real demographic event

The Bantoid languages

The Bantu languages



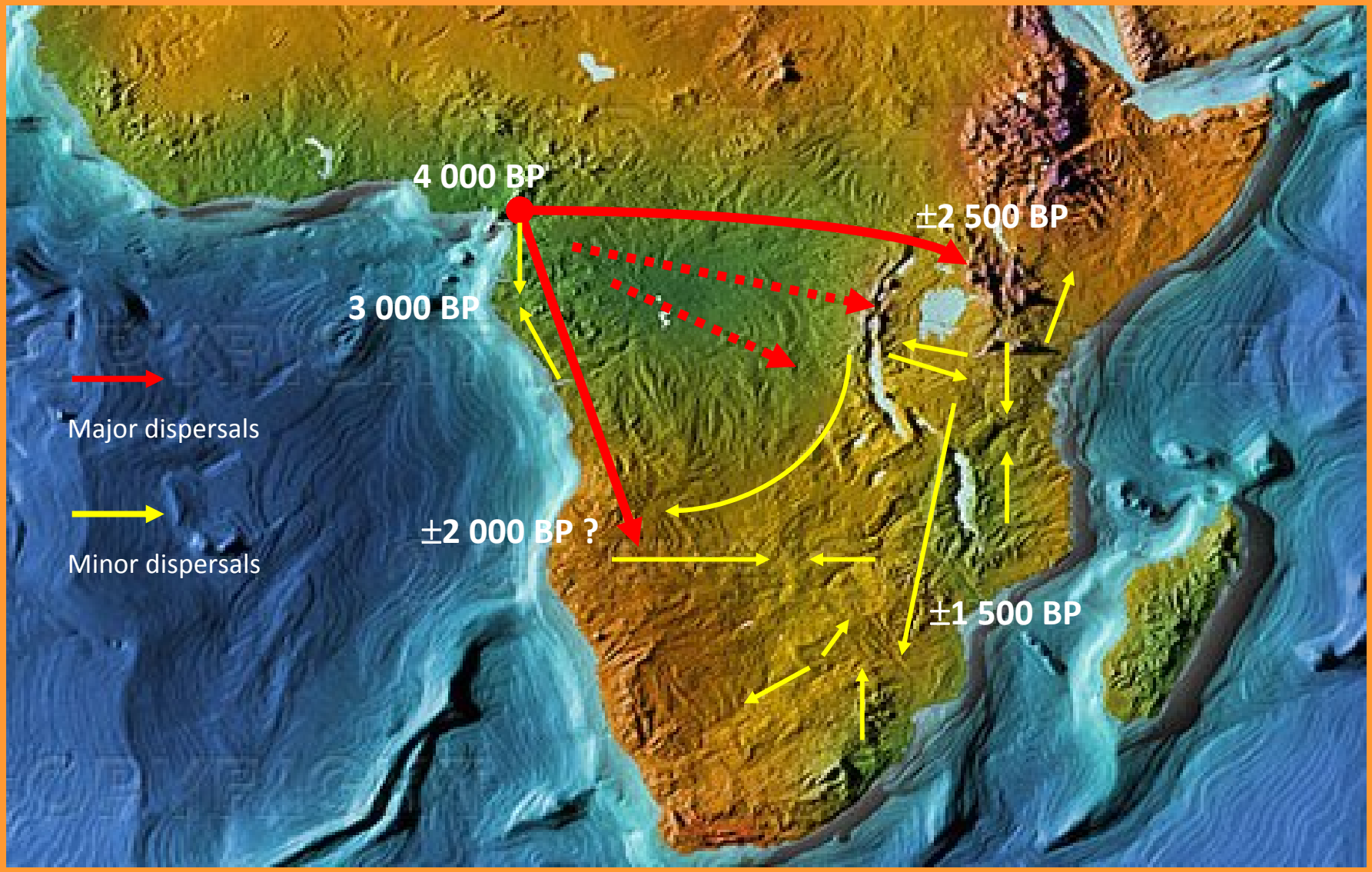
Bold letters mark Guthrie/Tervuren zones and numbers mark subgroups within those zones

Adapted from standard MRAC map of Bantu zones

Overview

- The map shows a synthesis of current thinking to help you focus
- The following slides will present some of the different types of evidence supporting this

A synthesis of the Bantu expansion

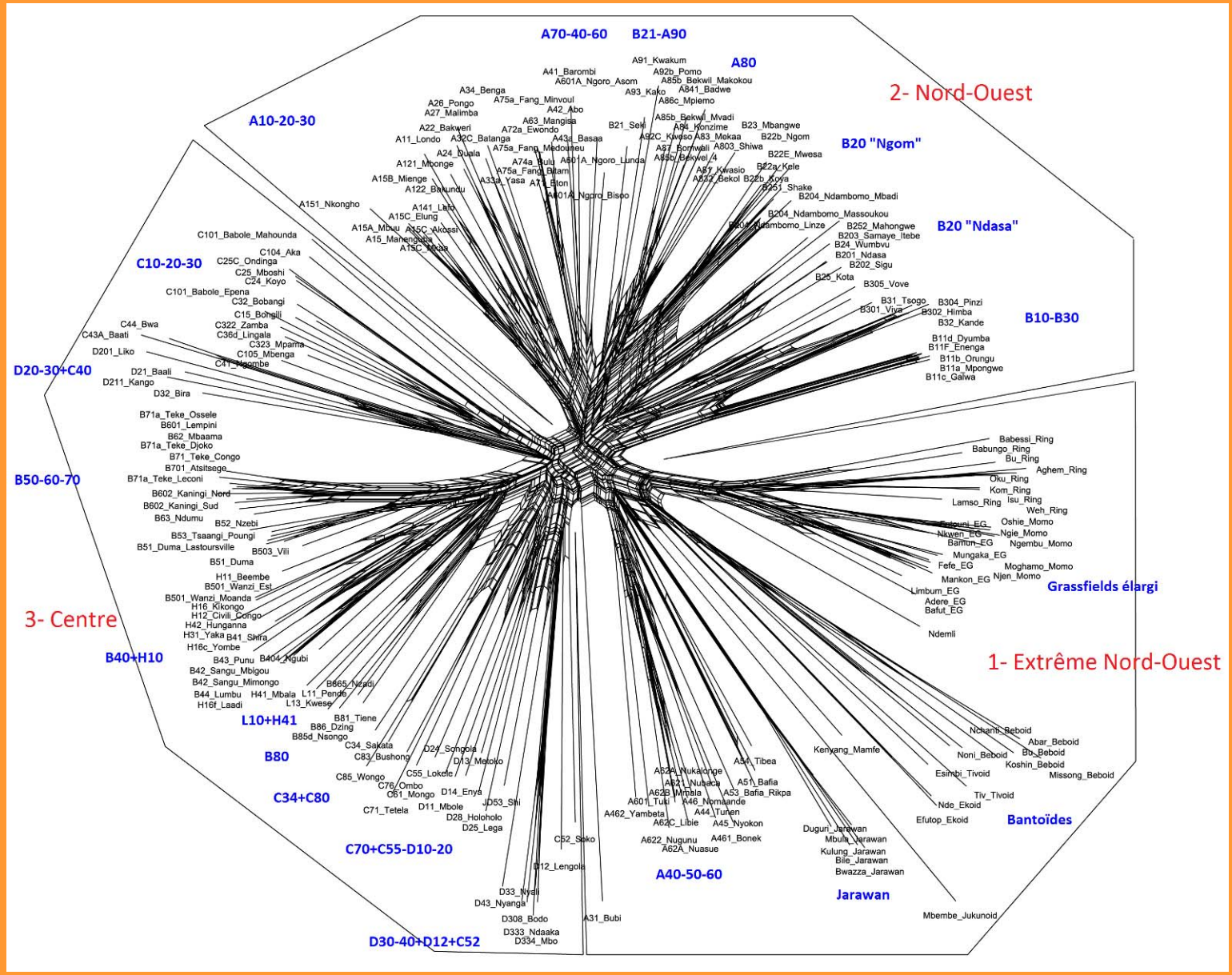


Linguistic classification

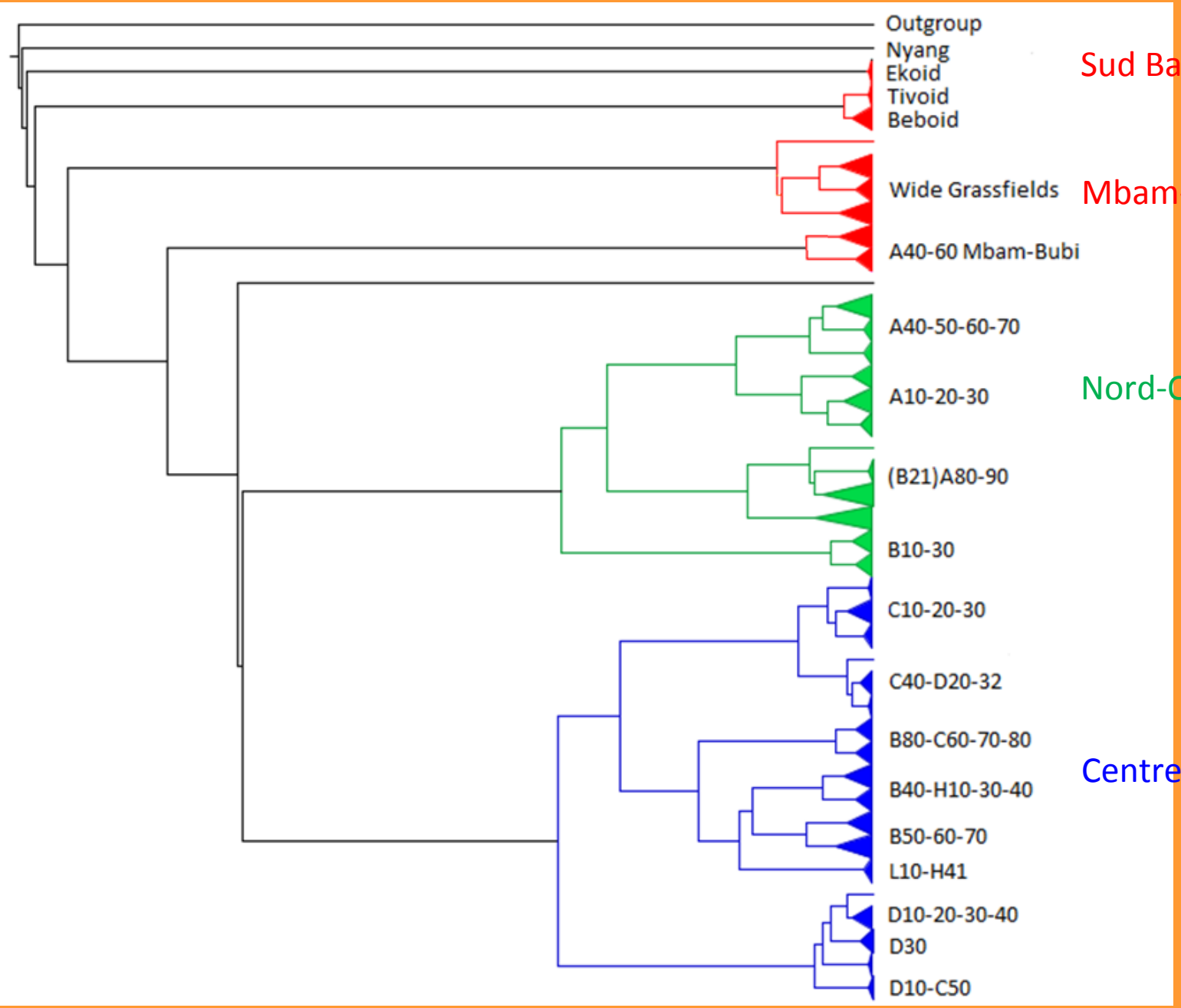
- There have been various attempts to classify all the Bantu languages and their relatives
- In recent times, the approach has been to use network analysis which produces somewhat hard to use starburst type graphics
- Tree-like outputs are easier to make sense of
- But the key findings are;

  - Clear separation of Bantoid and Bantu
  - Early divisions, with a coastal stream, a ‘north of the forest’ stream, and a less well defined movement into the equatorial forest

Bantu languages (starburst)



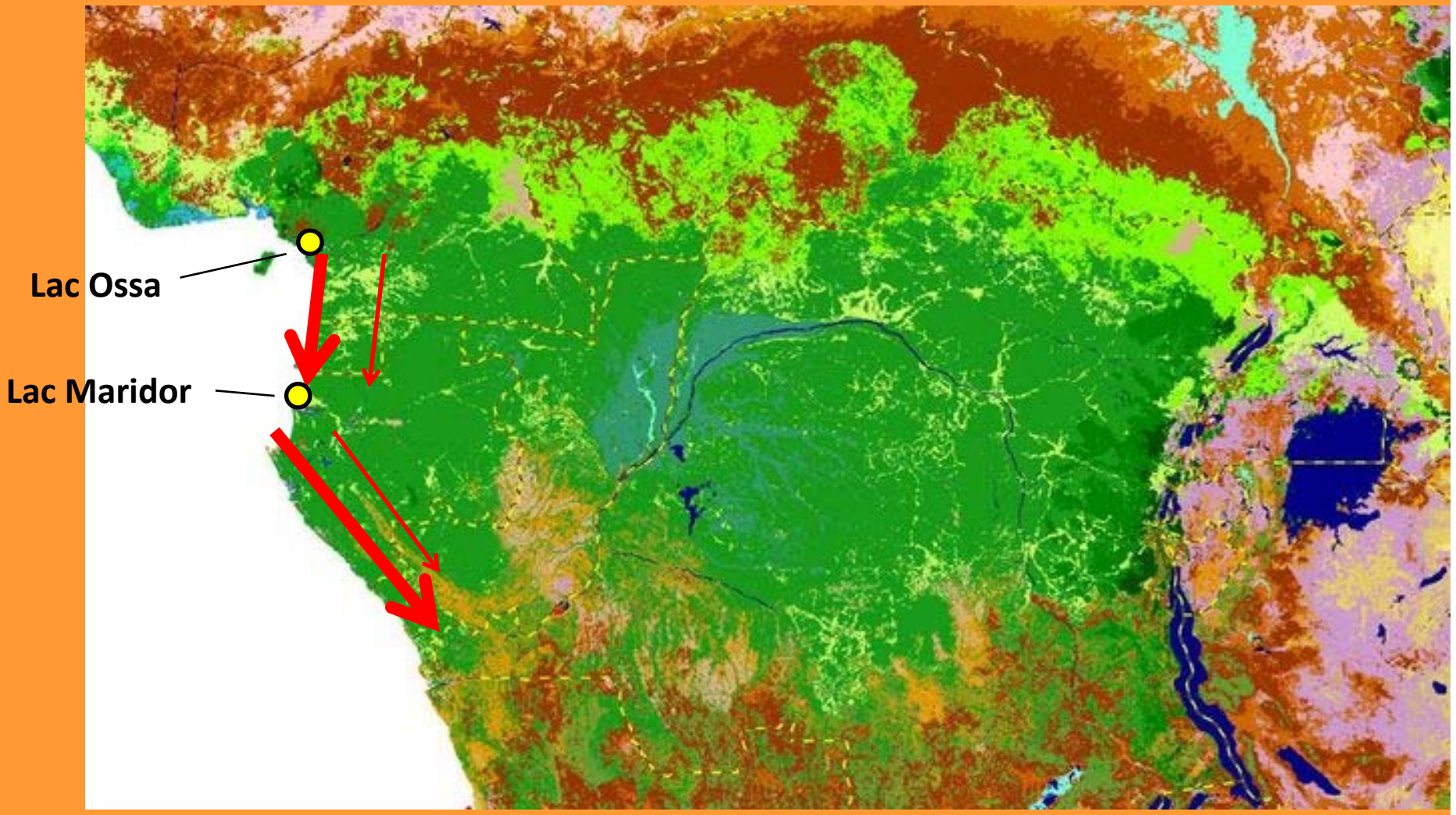
Bantu languages first stage (tree)



Lake cores in the NW Bantu area

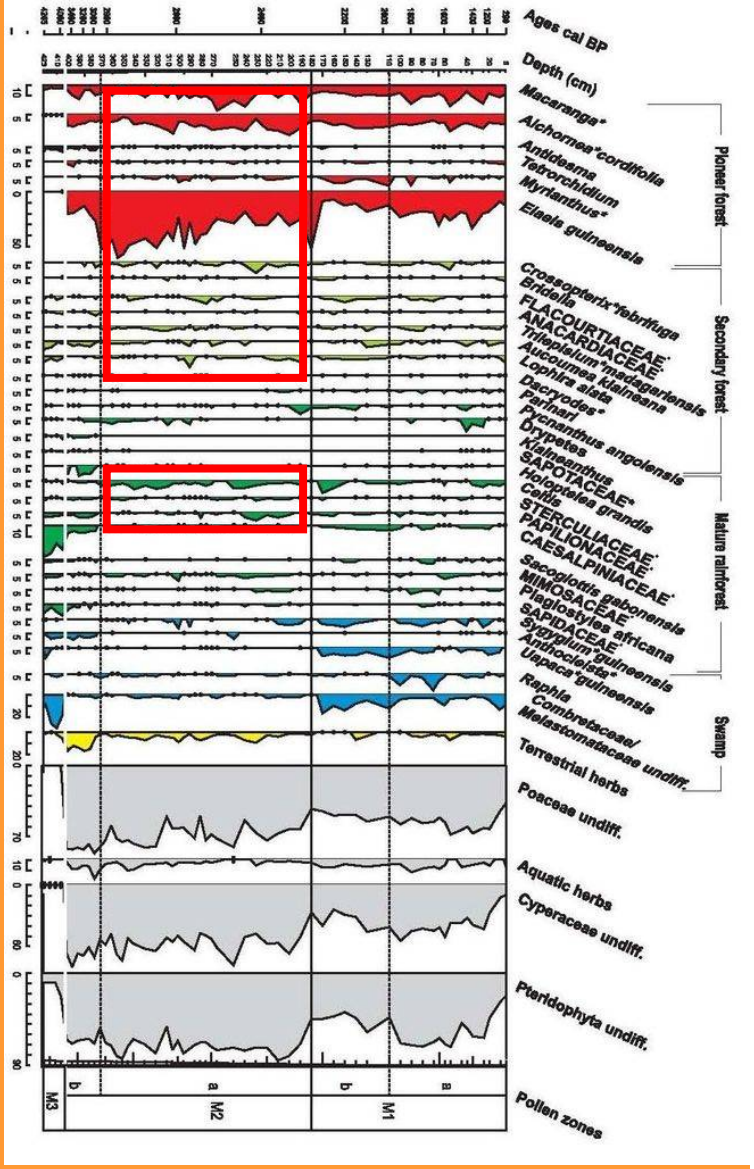
- If the earliest phase of the Bantu expansion was into the forest, then this should leave a mark on the vegetation profiel, either due to opening spaces for cultivation or introducing anthropic species
- There are now a number of lake cores in the NW Bantu area with published profiles
- These point to two rather different episodes of forest disturbance, beginning around 3800 BP
- And in particular a striking disjunct distribution of some species on either side of the 'Sangha gap'
- Which is correlated with vernacular names for tree species
- And points to two distinct phases of Bantu expansion

Profile sites



Lac Maridor (Gabon)

- 4300-4000 years BP : Forest cover, but abrupt change at the end of this period
- From 3500 years BP, rapid decline of the forest, extension of savanna, expansion of pioneer species
- **2900—2300 years BP : much greater expansion of savannas** (Poaceae) forest disturbance (*Elaeis*, pollens of semi-deciduous forests). Climate probably more seasonal than today.
- Forest fragmentation between 2500 and 2300 BP : more arid, more marked dry season.
- Corresponding expansion in number and density of Bantu peoples (linguistically)

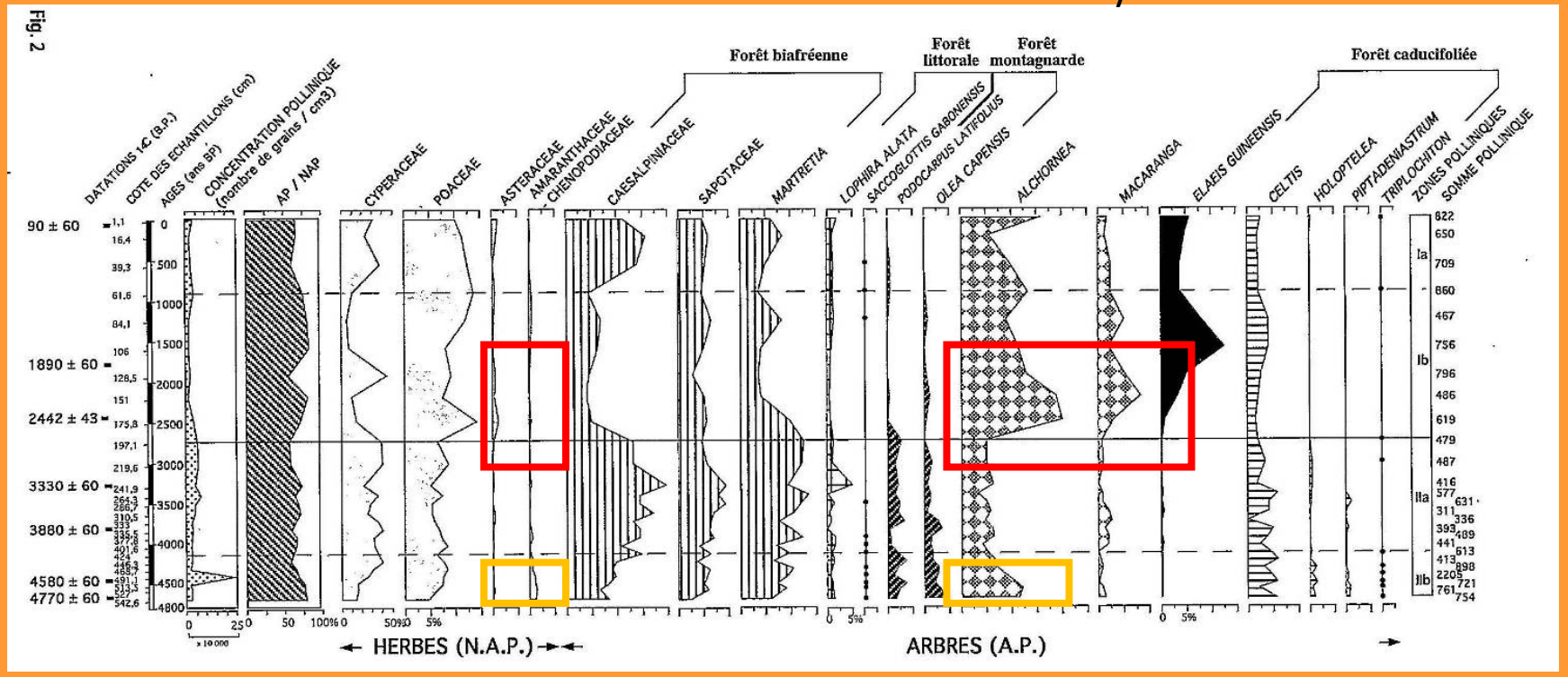


Ngomanda et al. 2009

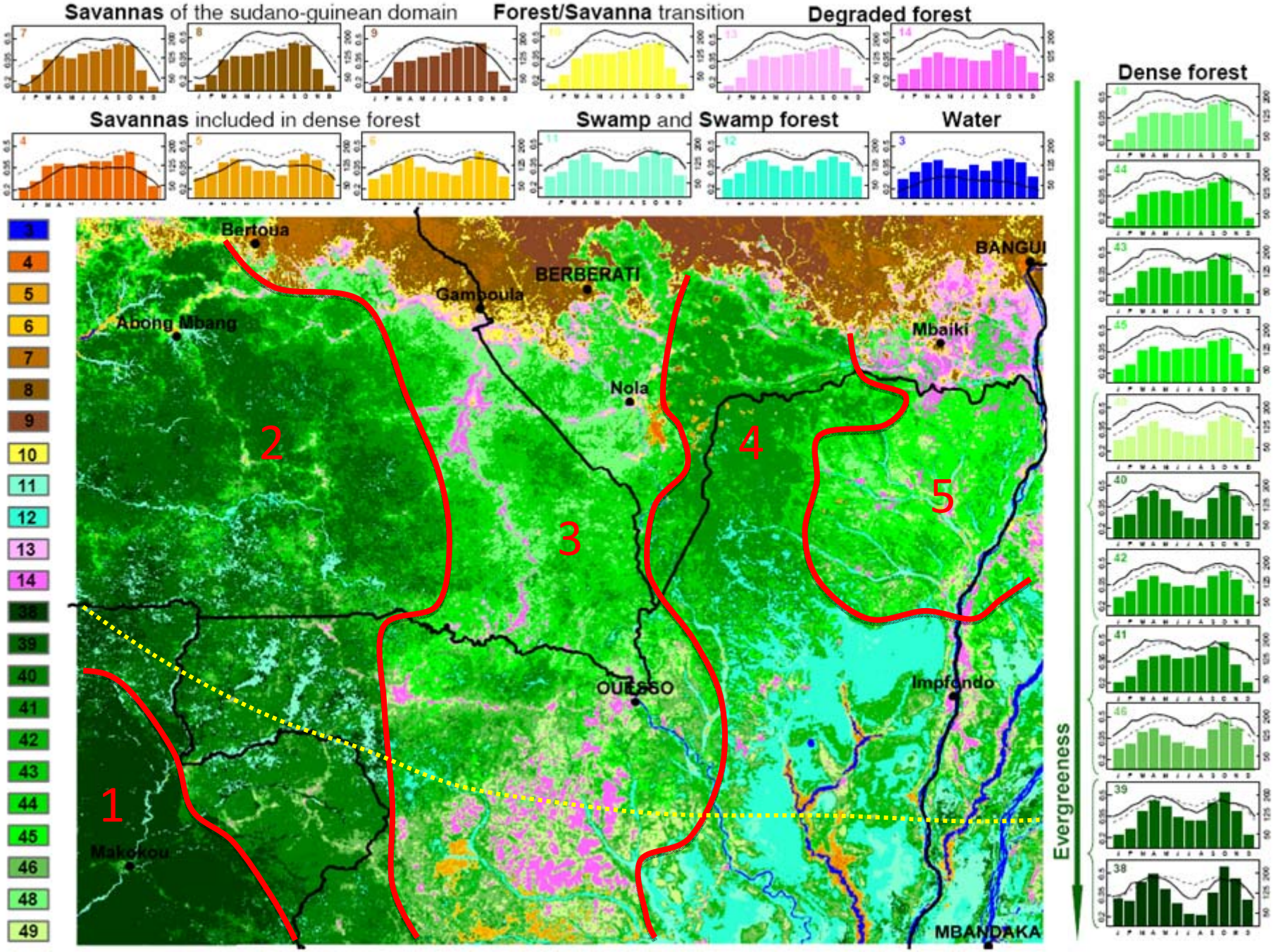
Lake Ossa (Cameroun)

- 4770 - 2730 BP. Forests, both high-altitude and lowland dominant, grass species minimal. Signs of perturbation **4150 BP** : *Alchornea* spp. in semi-deciduous forests.
- **2730 BP : phase of strong perturbation begins** (rise of Poaceae to 15 %, **maximum** of *Alchornea* and *Macaranga* **entre 2500 et 2000 ans BP**. Extension of *Elaeis* from 2200 and maximum ca. 1600 BP.
- From 950 BP : forest returns, in particular Caesalpinaceae

Reynaud-Farrera *et al*. 1996



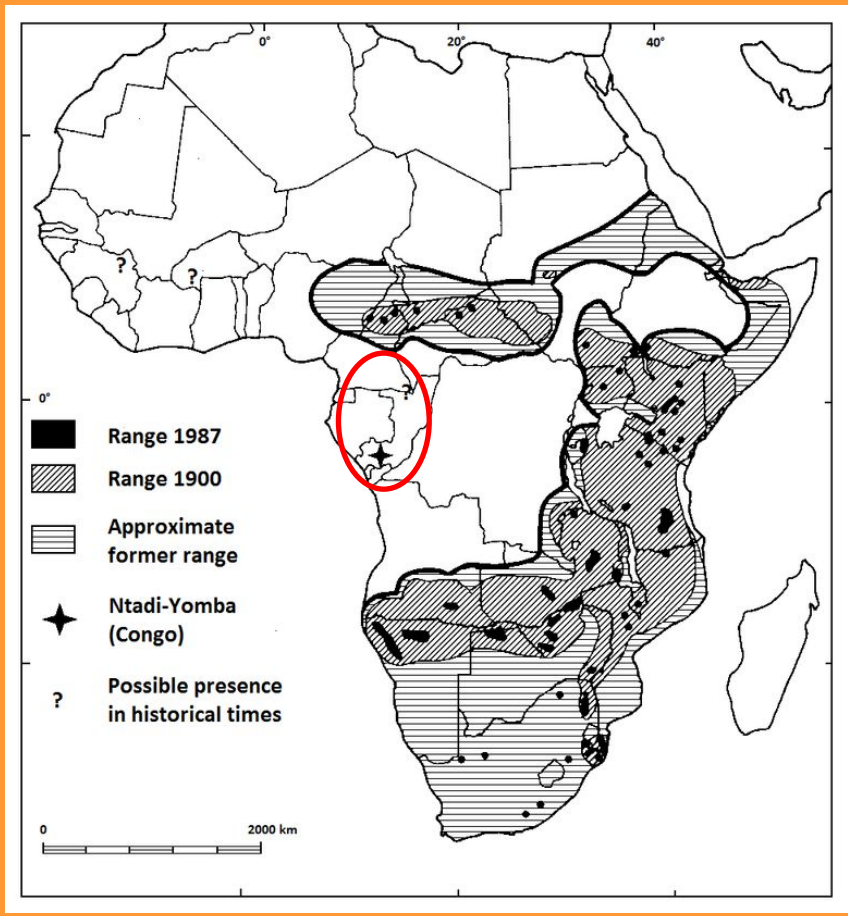
Gond *et al.* 2013



Animal distributions suggesting repeated invasions at times of savanna corridors

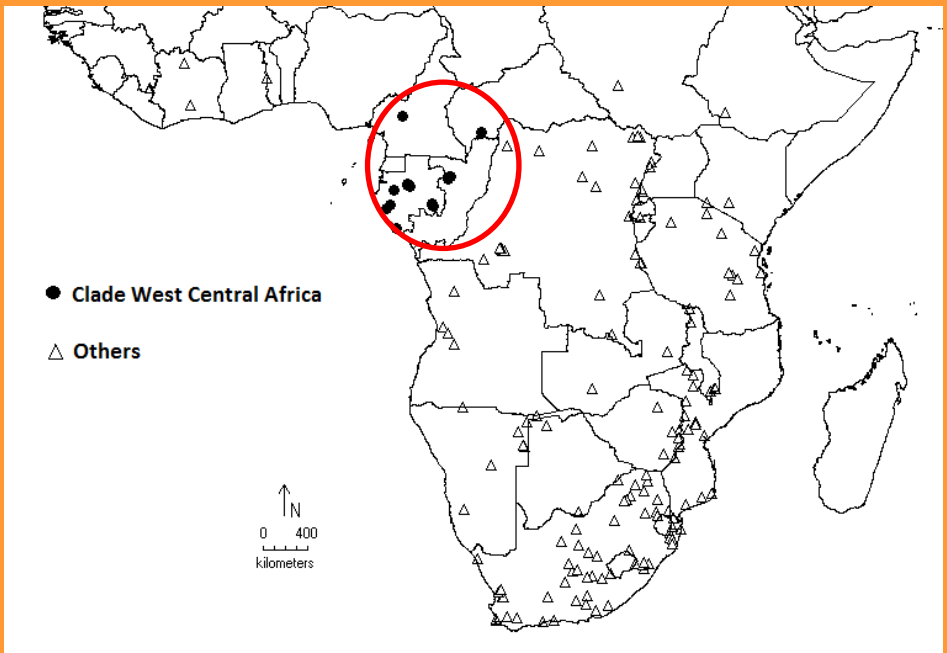
- The forest boundaries are not static and savanna corridors have been opening and closing over millions of years
- Drier-zone species moved in and occupied these regions and then became trapped in the forest when it recolonised
- They could survive by specialising in particular habitats such as the patches of savanna that remained, along the littoral etc.
- Sometimes we only know this from archaeozoology but species such as hyenas still survive
- The most dramatic example of this is the forest elephant, *Loxodonta cyclotis*, now known to have separated from the bush elephant more than 2 million years ago
- But there are other species

Diceros bicornis black rhino



- Black rhino tooth at 7000 BP (Ntadi-Yomba shelter; Van Neer & Lanfranchi 1985).
- Black rhino prefers edges of forest savanna mosiacs
- Known as the ‘browse’ rhino and eats leaves and shoots of trees and shrubs, in onctrast to the white or grass rhino
- No evidence for its presence in Angola or the left bank of the Congo : the rhinoceros of Ntadi Yomba must have entered from the savannas further north.

Mus minutoides (Muridae)



- Strictly a savanna species
- Central African Atlantic clade diverged around 140,000 BP.
- Populations are genetically very homogeneous despite the current fragmentation of the savannas : this argues for a recurrent connection between the savanas of Gabon-Congo and those of the north since the Pleistocene (Mboumba *et al*. 2011).

An attractive reservoir of naïve huntable fauna

- The movements of the forest acted as a pump to push savanna species southwards, creating a reservoir of huntable fauna which seems to have little experience of human predators
- When the savanna corridors opened around 4000 BP, probably a natural succession, this could have attracted human populations southwards

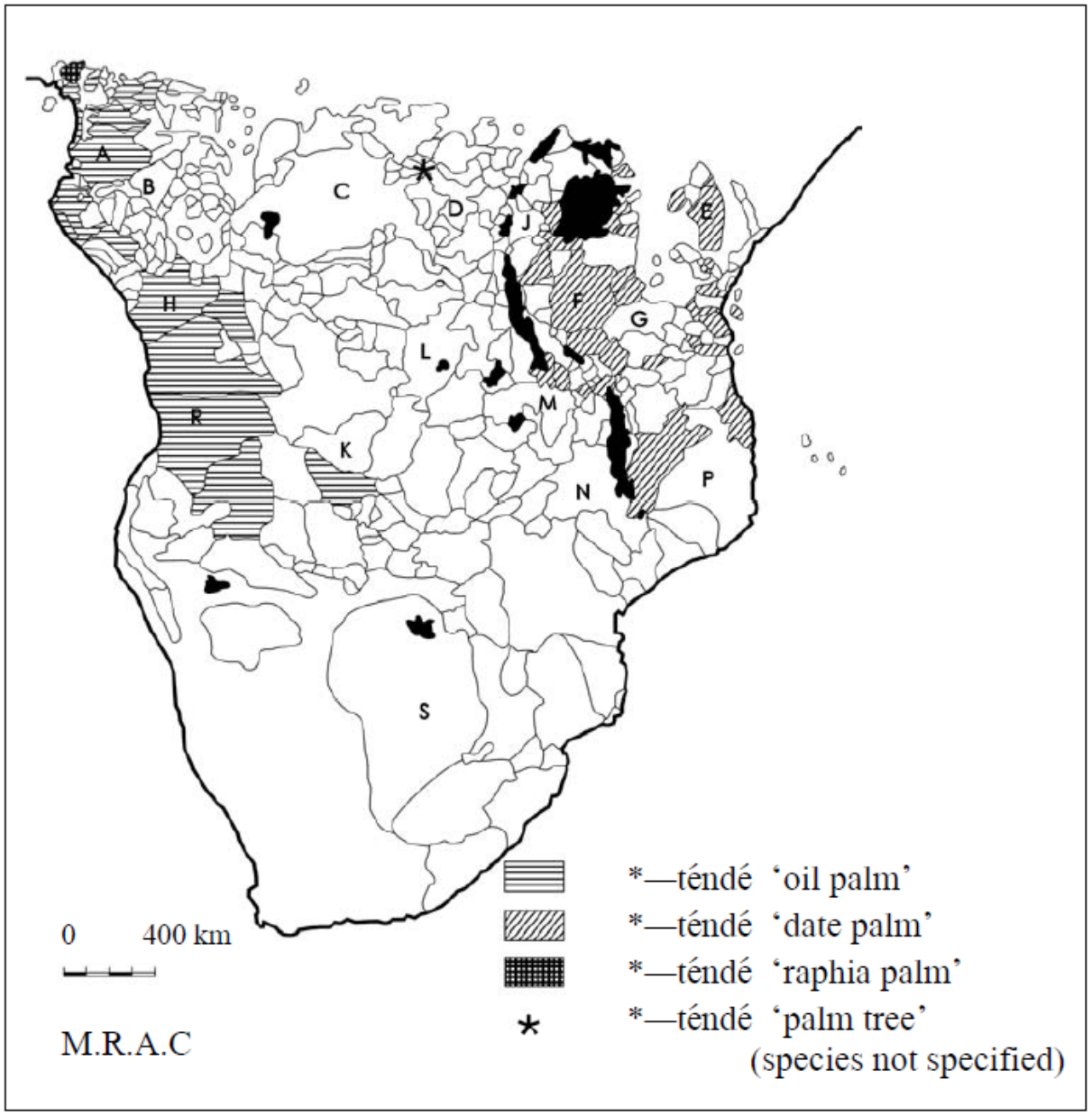
How do tree distributions reflect episodes of forest disturbance?

- There are a variety of tree species which are not normally considered cultivated or domesticated but which have distributions in the Bantu area which make it seem that humans were in part responsible either for their dispersal or their elimination
- Sometimes there is also linguistic evidence for this and the pattern of vernacular names maps against the two postulated phases of expansion
- Some examples;

The oil-palm *Elaeis guineensis*

- The oil-palm is a major component of forest subsistence. Althoug indigenous to Africa, it is probably naturally at quite low densities, it is typically encouraged by humans and many cores show increase in pollen from 5000 bp onwards.
- Bostoen (2005) has mapped the distribution of reflexes of Bantu names for oil-palm. The major reconstructed forms for the oil-palm are **-bá*, **-bídà*, **-tende*.
- The map shows the distribution of the major roots for oil-palm, spreading south on a coastal trajectory from the northwest
- But also, with a changed referent, much further east
- Pointing to an elimination of a key proto-Bantu root in the central region

Map 5: The distribution of *-*téndé* inside the Bantu domain



Human populations in the Sangha gap

- More carbonised palm-nuts in the open forest than in the dense forest, at all depths.
- Signs of the oldest ceramics and metallurgy at 2160-1407 BP in forests heavily populated with Marantaceae
- In open forests highest densities of palm-nuts **2146-1055** and **558-347 BP**.

Fragments of oil-palm nuts ca. 2000 BP recovered at 50 cm.

Gillet & Doucet (2012)

Phoenix reclinata, wild date palm

- Savanna palm species
- Important for humans, for leaves, palm-wine etc.

- Normally absent in dense forest
- But will grow on sandy soils behind the mangrove line

Phoenix reclinata (Arecaceae)

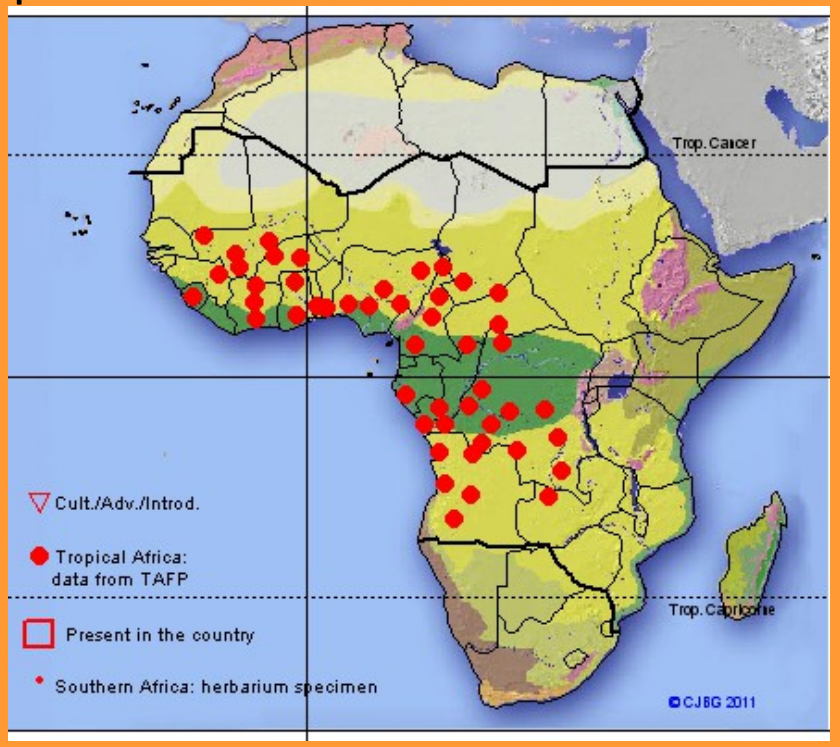
- Has a split distribution in the northwest, both along the littoral and down the riverline in the interior

- Suggesting anthropic colonisation during the first wave of forest disturbances

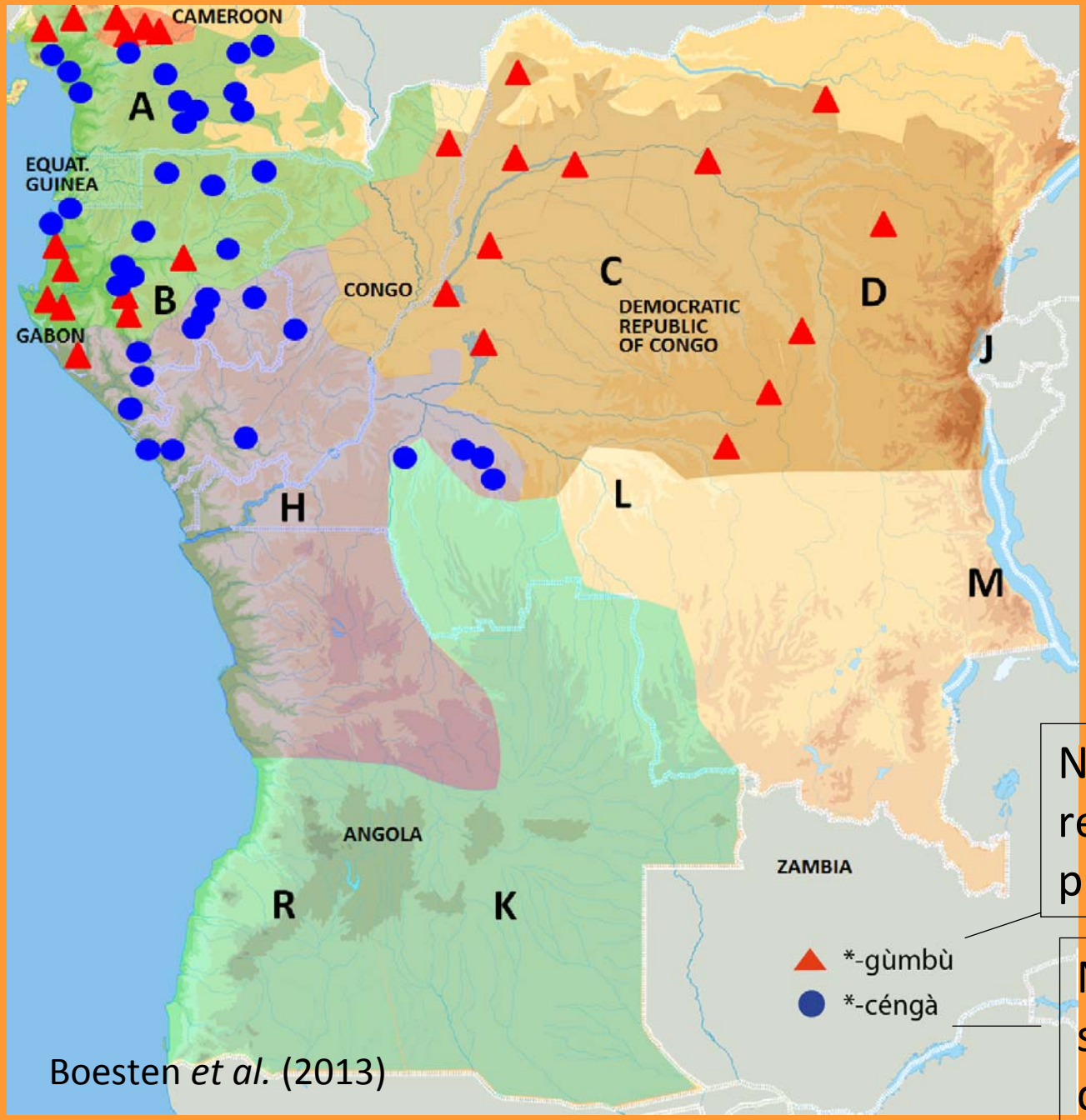
Doumenge et al. (2012)

Bridelia ferruginea (Euphorbiaceae)

- Tree or shrub characteristic of savannas and gallery forest. Important medicinal plant
- Occurs both north and south of the forest bloc, though usually absent form thick forest
- Occurs in the anthropic savannas of the Sangha gap (Dzanga-Sangha, Odzala) but also in the savannas of Lopé in Gabon.



Distribution of vernacular names of *Musanga cecropioides*, umbrella tree



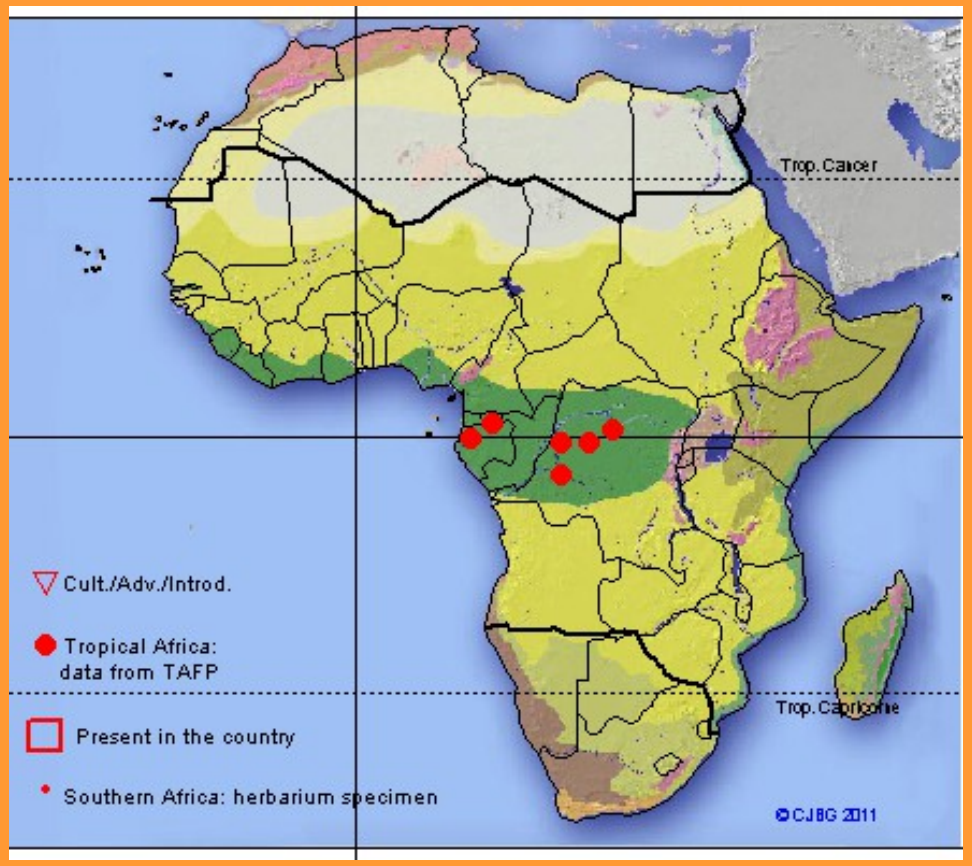
Boesten *et al.* (2013)

Name which can be reconstructed in proto-Bantu

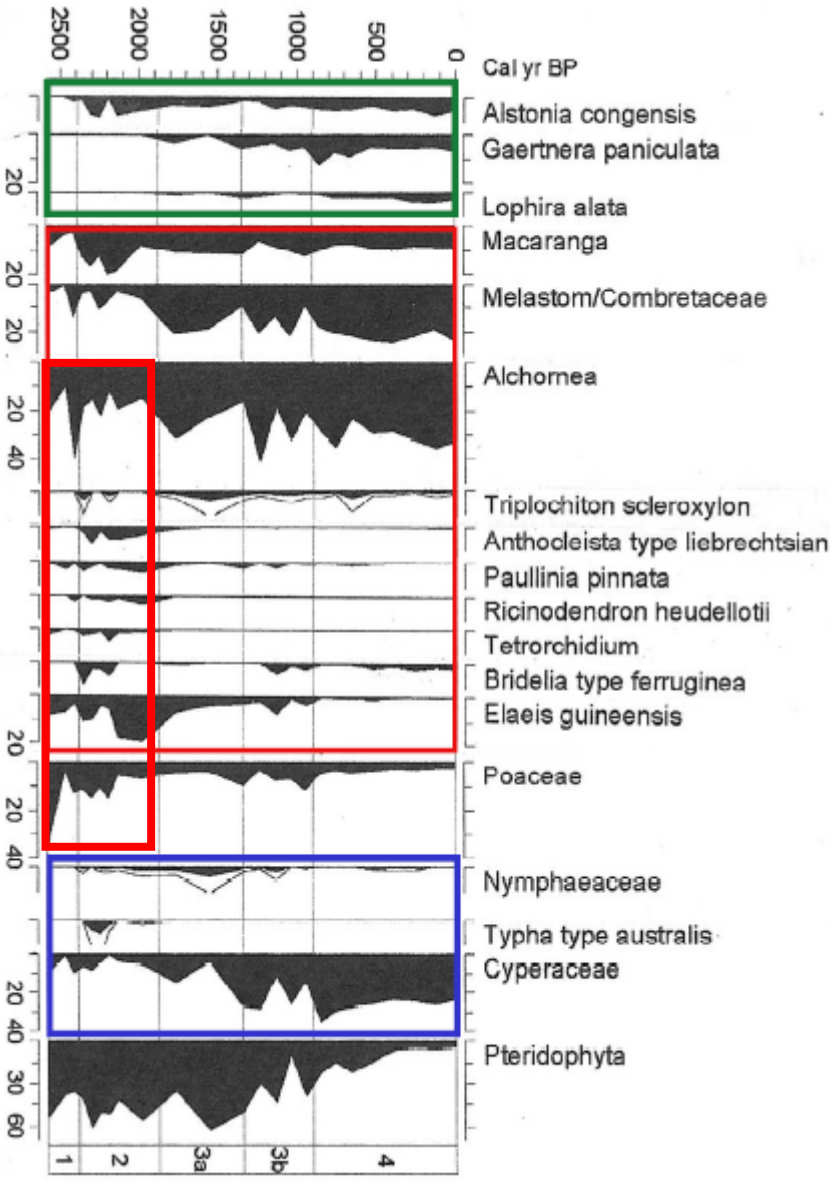
Name which subsequently developed

Aphanocalyx djumaensis
(Fabaceae-Caesalpinioideae)

- Dense forest species, tolerates shade
- Weak dispersal capacity
- Occurs both east and west of the Sangha gap



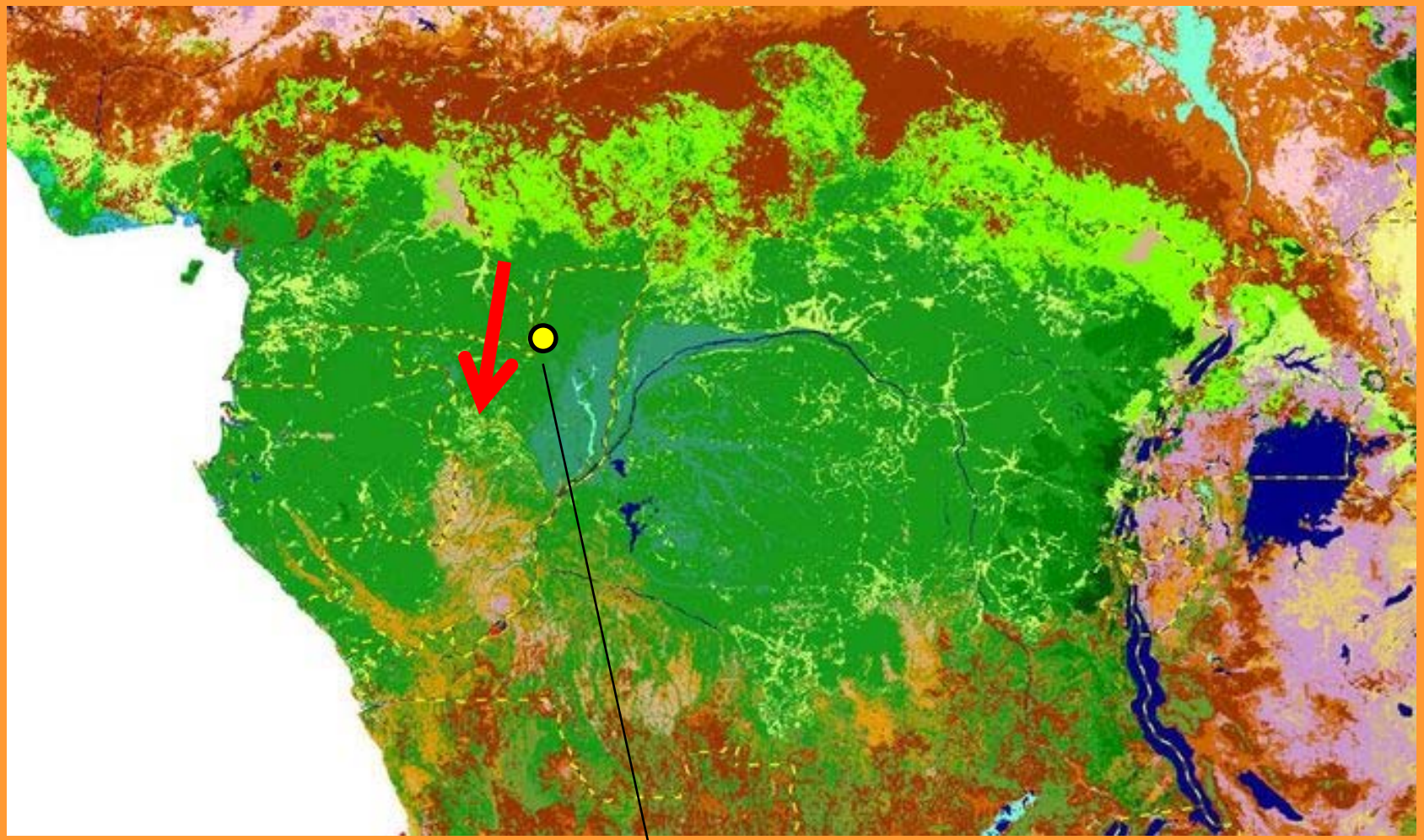
Evolution of the vegetation at Mopo (2600 BP – present)



- Strong perturbation at the lowest level (ca. 2500 BP) : 36% of Poaceae pollen.
- Followed by another phase of perturbation **2400-1900 BP** : and the appearance of pioneer taxa (*Alchornea*, *Macaranga*, *Elaeis*…).
- Virtual disappearance of *Elaeis* ca. 900 BP and corresponding development of mature high forest species

Brncic *et al*. 2009 ; Maley & Willis 2011

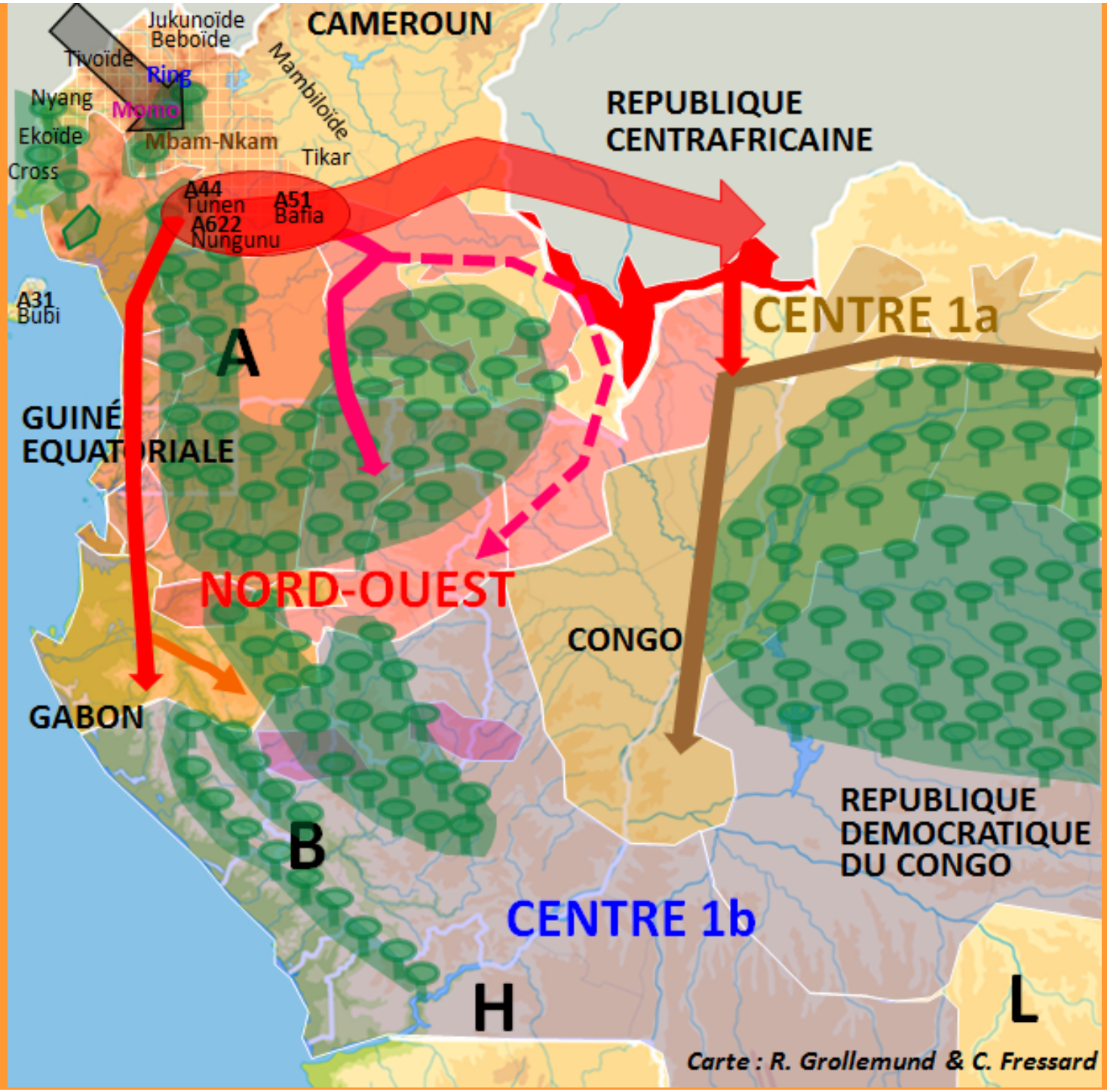
The Sangha gap and Mopo



Gabon derived savanna

Lope derived savanna burning

Gabon: Iron Age petroglyphs


Jukunoïde
Beboïde
CAMEROUN
Tivoïde
Ring
Nyang
Momo
Mambiloïde
Ekoïde
Mbam-Nkam
Tikar
Cross
REPUBLIQUE
CENTRAFRICAINE
A44
Tunen
A51
Bafia
A622
Nungunu
A31
Bubi
CENTRE 1a
A
GUINÉ
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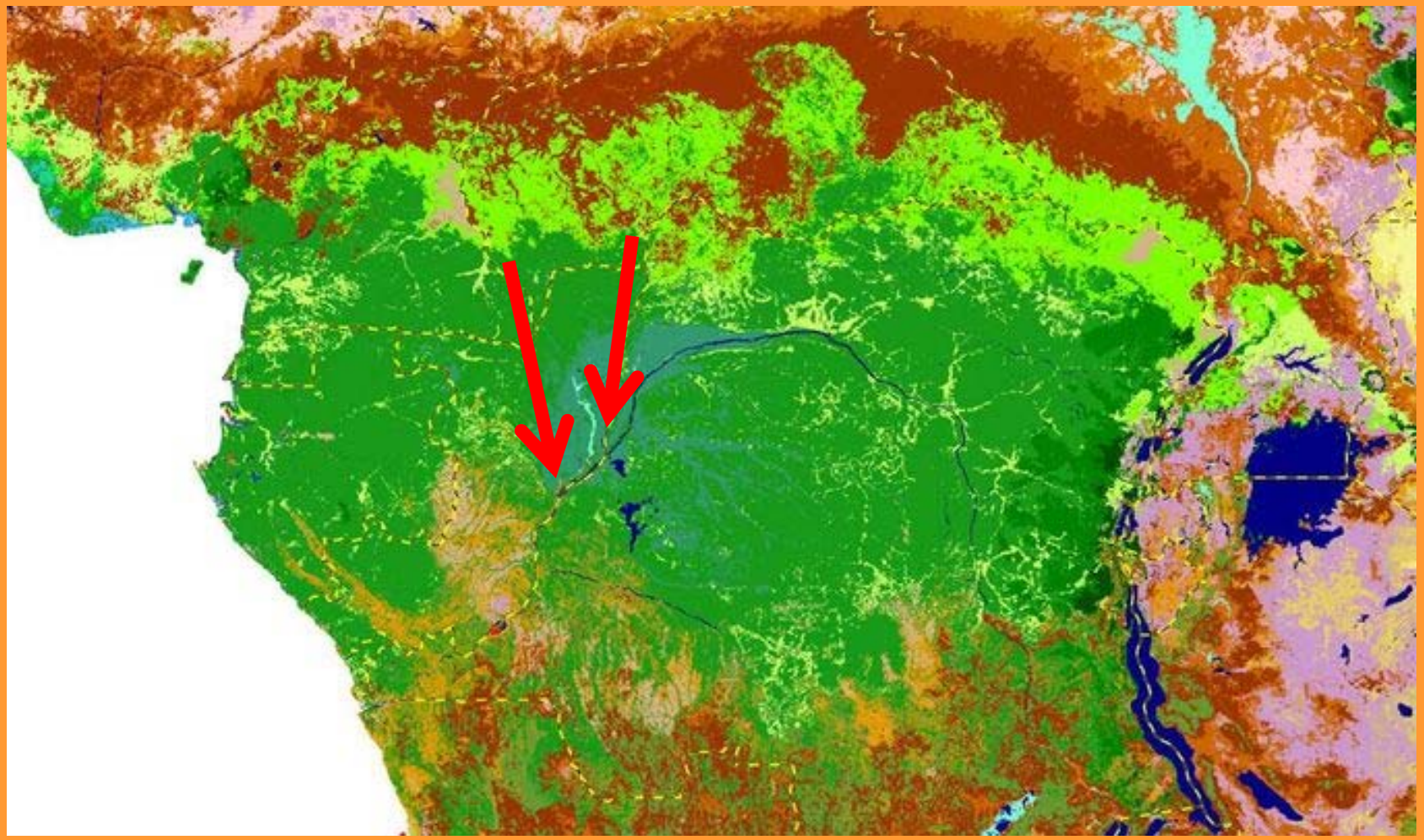
Carte : R. Grollemund & C. Fressard

Was there a coastal route?

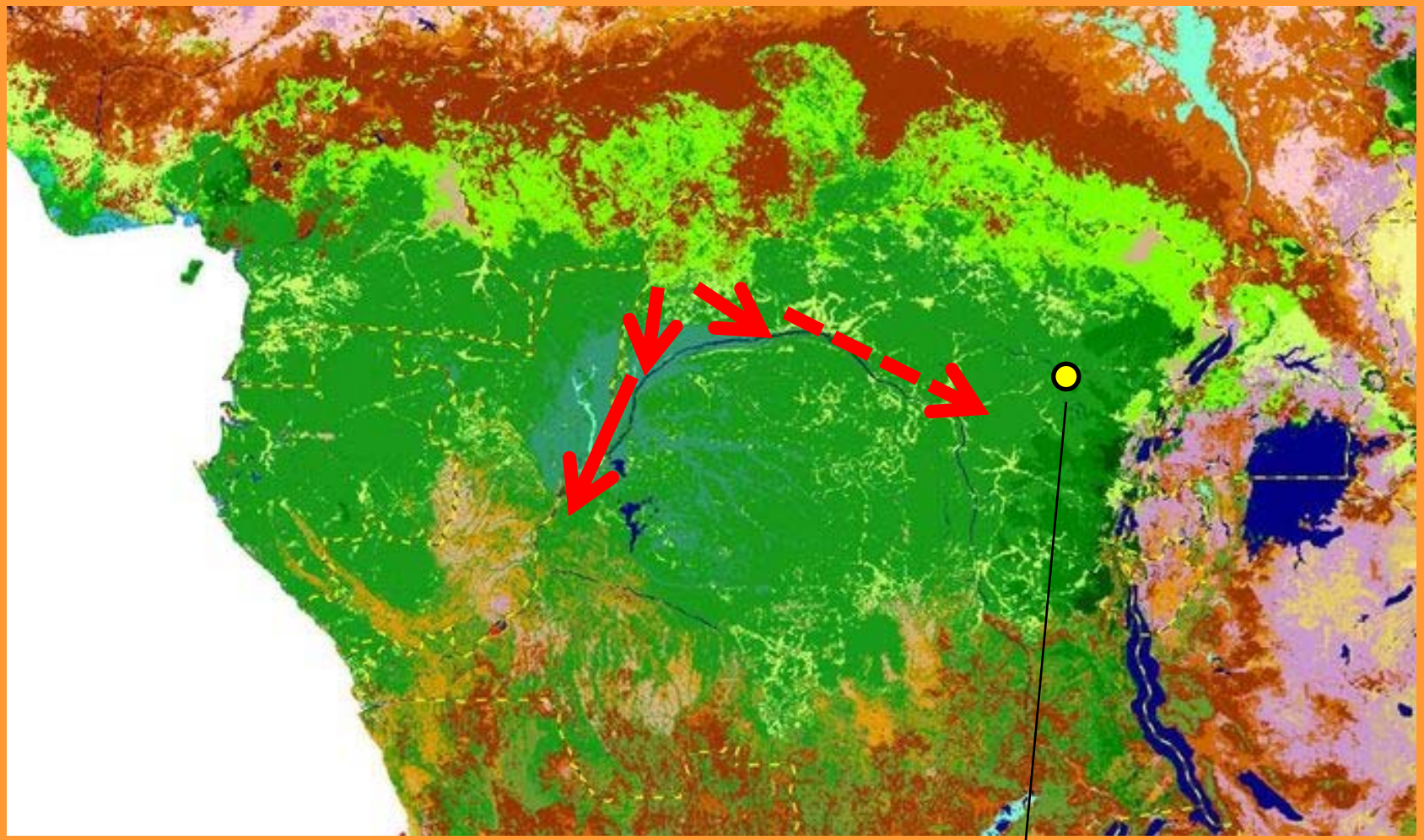
- Both archaeological and linguistic evidence suggests that there was also a primary dispersal down the coast, driven by a developing specialisation in pelagic and inshore fishing

Specialised sea-fishing communities in Cameroun

The interior route: Sangha and Oubangui



Down the Congo



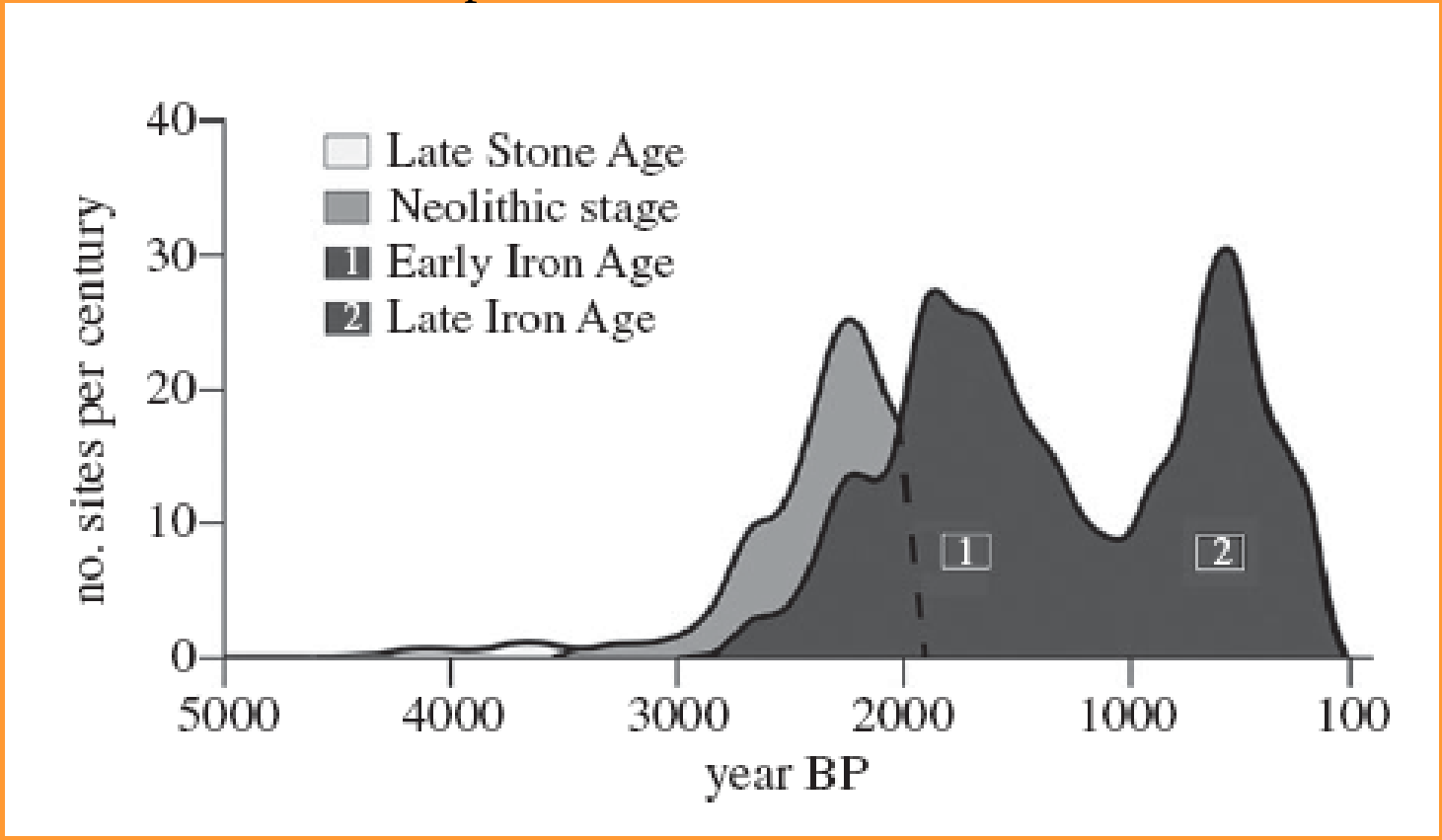
Some archaeology

We now have as many as 586 radiocarbon dates relating to Atlantic Central Africa (Oslisly et al. 2013)

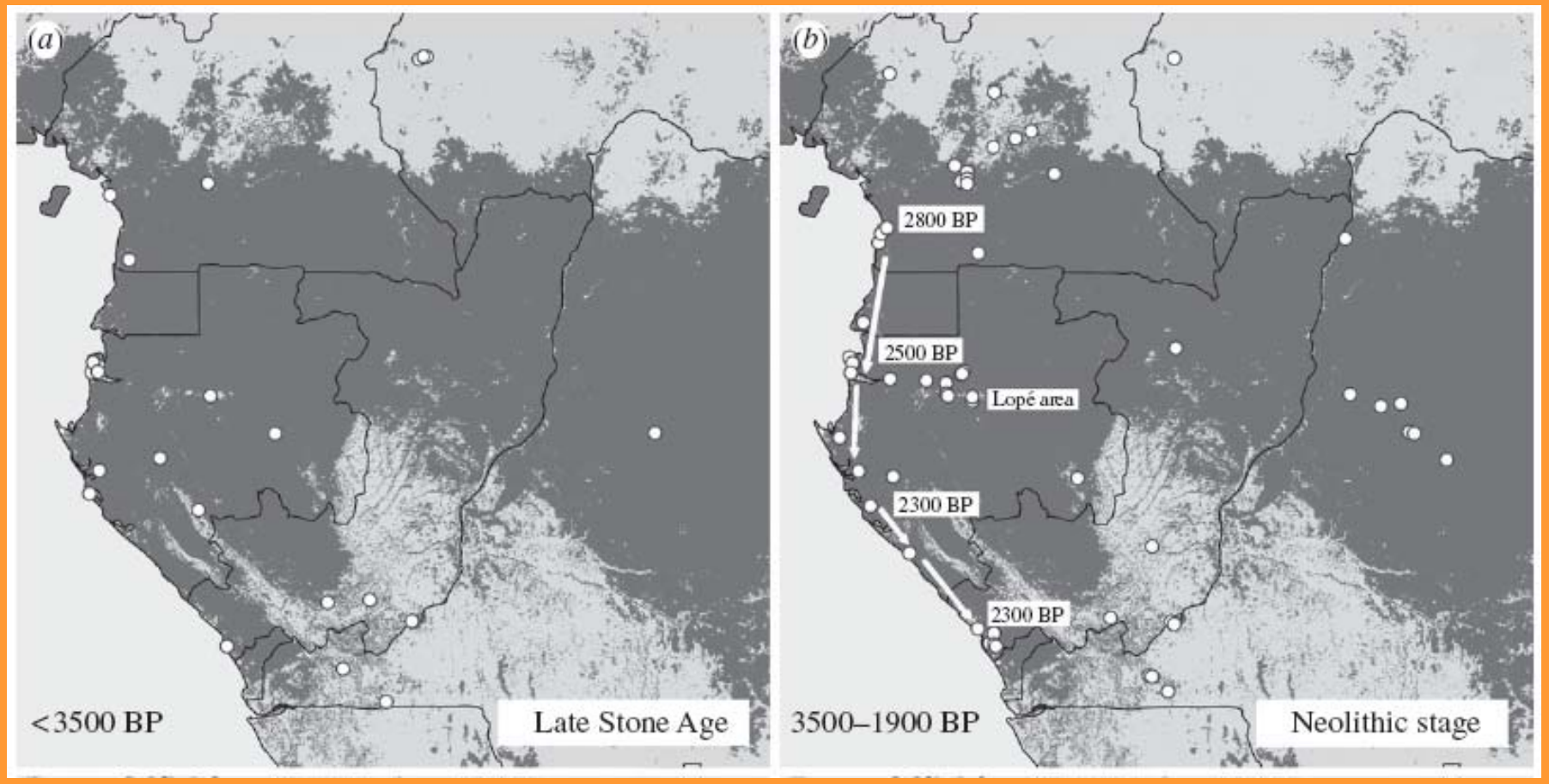
These show;

Takeoff at ca. 3500 BP

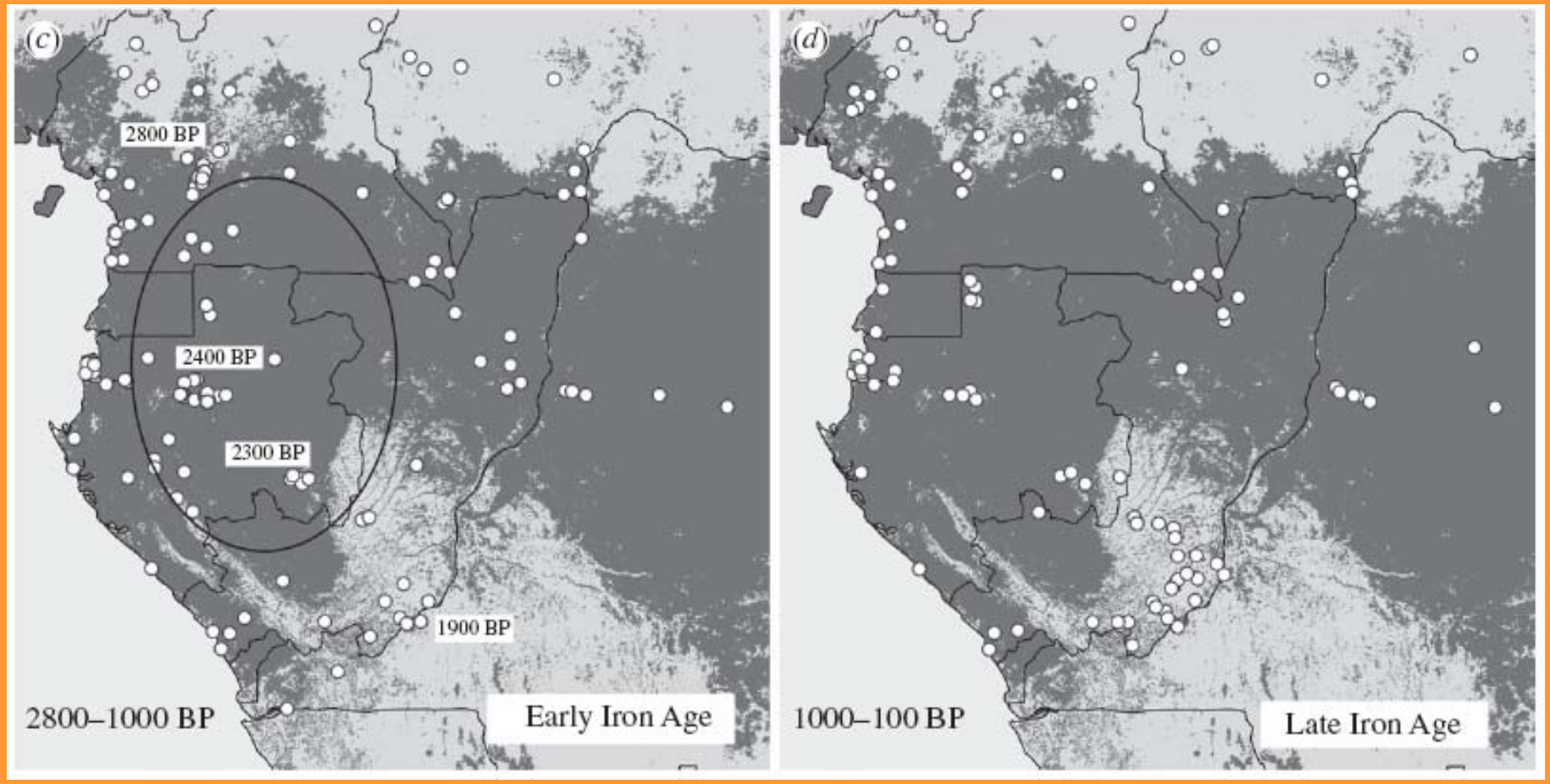
Two clear peaks



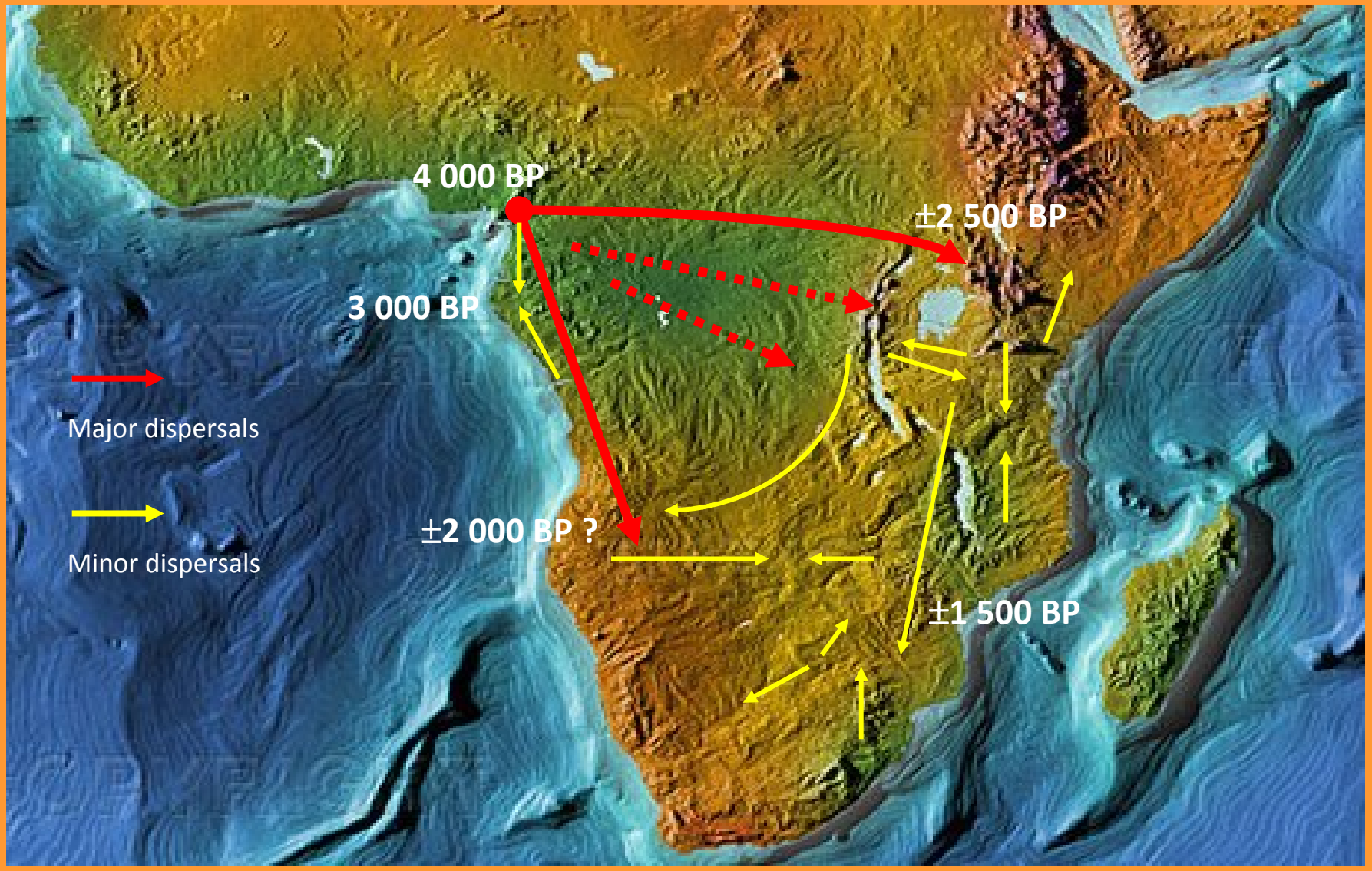
Evolution of sites I



Evolution of sites II



A synthesis of the Bantu expansion



So what does all this come to?

- The archaeological and the palynological data and point to two major peaks, roughly 3800-3500 and 2500-2000 BP, where we get forest disturbance and expansion of archaeological sites
- However, these show an important difference, as the second phase of disturbance seems to be associated with the appearance of pioneer species and (possibly) the eliminated of some tree species
- The first phase of the Bantu expansion is probably related to climate change, the opening up of savanna corridors made access to new territories easier and provided zones for a mixed hunting/fishing/arboriculture, in particular access to 'naive' megafauna isolated by prior episodes of forest recolonisation
- It would be perverse not to identify these with the early migrations of Bantu populations out of Cameroun

So what does all this come to II?

- The earliest threads follow three major corridors, one of which, down the coast, suggests a subgroup with expertise in pelagic fishing (confirmed by early settlement of Bioco)
- Incipient agriculture only (goats, yams (*D. dumetorum, D. bulbifera), Vigna subterranea, Elaeis*
- In equatorial forest, can only really access rivers due to difficulty in cutting vegetation on a larger scale
- And indeed we see fish names spread along rivers (i.e. longitudinally) rather than areally

So what does all this come to III?

- The second phase of the Bantu expansion is almost certainly related to the introduction of iron. We know iron-smelting is attested in nearby Nigeria around 2800 BP and it is likely it had begun to reach Southern Cameroun shortly afterwards
- Iron tools transform the ability to cut down vegetation, and made it possible to expand across the equatorial forest
- We know there is a major expansion of iron-smelting on the Teke Plateau from about 0 AD onwards. Presumably tools are being traded to non-smelting communities.
- Hence the new surge of forest disturbance, further extension of sites, the distinctive profile of the Sangha gap
- This is marked linguistically by the 'split' distribution of terms for pioneer woody species

So what does all this come to IV?

- And at a large-scale may be associated with the spread of the Mongo languages
- It is highly likely that this second expansion is associated with a more focused vegeculture, not unlike that in use today
- However, could it be that the agronomic engine of this second expansion was the arrival of the SE Asian ‘food kit’, Musa triploids, taro and *Dioscorea esculenta*?
- Hard archaeobotanical evidence for this event is largely absent and even the route by which such cultigens might have reached West Africa is mysterious
- But this is basically what is grown today and we would need to explain just what other plants constituted the base of agriculture

Where next?

- The Bantu languages do not constitute a neat expansion radiating out from a point, but rather a set of primary migrations, overwritten by a complex nexus of secondary movements (which might not be migration but cultural expansions, e.g. the Kongo and Luba kingdoms)
- We can increasingly see this in the languages as we detect episodes of language levelling with increasingly sophisticated historical linguistics
- The challenge is to tie these up with anthropic tree distributions, an archaeobotany yet to develop, archaeological horizons and more nuanced reading of the palaeoecological record

THANKS

- To Richard Oslisly, Jean-Marie Hombert, Patrick Mougiama-Dauda, Koen Bostoen and Charles Doumenge for information and discussions

- To Kay Williamson Educational Foundation for supporting the fieldwork