Climatic and Cultural Changes in the Congo Basin over the past 5,000 years

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Study Area & Forestory succession stages

Secondary forest

Mature Forest

Savanna

Mayaux 1997
## Summary of events since 10,000 yrs BP

<table>
<thead>
<tr>
<th>Ages in years BP</th>
<th>Climatic phases</th>
<th>Main events</th>
<th>Sea Level</th>
<th>Humans</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Kibangien B2</td>
<td>Forest colonisation</td>
<td>Sea level 0</td>
<td>Iron working and farmers</td>
</tr>
<tr>
<td>1400</td>
<td>Kibangien B1</td>
<td>Savanisation</td>
<td>Sea level -1m</td>
<td>Farmers, pottery, hoe, polished axe</td>
</tr>
<tr>
<td>2000</td>
<td></td>
<td>Anthropic Influences</td>
<td>Sea level 0</td>
<td>Hunters gatherers,</td>
</tr>
<tr>
<td>3000</td>
<td>Kibangien A</td>
<td>Maximal level of the expansion of the rain forest</td>
<td>Sea level 0</td>
<td>Stone tools</td>
</tr>
<tr>
<td>4000</td>
<td></td>
<td></td>
<td>Sea level -40m</td>
<td></td>
</tr>
<tr>
<td>5000</td>
<td></td>
<td></td>
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<tr>
<td>10 000</td>
<td></td>
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</tbody>
</table>
Localisation of coring sites in Africa forestry Atlantic
The arid phase: 3000/2500 to 1300 yrs BP

Related to:
* Fall of SST in the Gulf of Guinea (1°C)
* Higher seasonility of rain distribution in relation with North-Eastern wind intensification
* Southwards ITCZ migration

→ much localised  Fragmentation of the Forest

(Oxford conference 4-6 January 2012)
Evolution of biomes and variation of the levels of the lake Nguène - Gabon

Water plants

Savannah

Semi Deciduous Forests

Evergreen Rainforest

~1300 BP

~2400 BP

3200 BP

Index lake level

Biome scores

BP

Lake level

BP
Forestry recovery from 1400 yrs BP to Present

Results from Kamalété lake (Ngomanda 2005)
Cultural changes from stone knapping to Iron Age

SMA 3 500 – 2000 yrs BP
Important cultural change in central Africa rainforest

Late Stone Age (LSA) 40 000 - 3500 BP
Stone to Metal Age (SMA) 3500 - 2000 BP
Early Iron Age (EIA) 2500 - 1300 BP
Axis A

Littoral Neolithic Stage

- Bantu Homeland
  - Neolithic coast stream (Protobantu)
  - Iron Age hinterland stream (Bantu)

Map showing the regions of Nigeria, Cameroon, Congo, Gabon, and Kinshasa with marked points and arrows indicating the movement and distribution of the Bantu Homeland.
Malongo Tradition 3200 - 2100 yrs BP
Distribution and archaeological evidence of pearl millet *pennisetum glaucum*
Expansion of iron reduction technics from Niger to RDC (BC *Before Christus*)

2200 km from Marandet to Sakuzi

Speed average 2, 8 km/year
Axis B

Hinterland Iron Age

- Mosaic forest savanna
- Rain forest
- Iron ore formations

1. Neolithic coast stream (Protobantu)
2. Iron Age hinterland stream (Bantu)
Offoué area (Lopé NP): mine extraction of iron ore
Step 1  
Furnace with tuyeres

Step 2  
Alternate layers of charcoals and iron ore
Step 3
Heat and reduction operations

Step 4
Final phase, slags and loupe
Iron Age: increase of Human impact on the forest

Preparation of charcoals for iron reduction

Preparation of slash and burn agriculture

Village construction on hilltops
Human occupations in 2000 yrs BP
Human occupations in 1500 yrs BP
Human occupations in 1000 yrs BP
Human occupations in 500 yrs BP
215 datings for Gabon and 85 datings for Lopé

Oxford conference
4-6 January 2012

Lopé crash

OsliSly 1998
Pipe Line Exxon Cotco - 44 datings between Kribi and Belabo
Hypothesis

H1 Northward population migration mouvements

H2 Climatic transition > new epidemics, sources of death
Late Iron Age  1000 / 900 yrs BP to colonial period

Arrival of new iron workers ca XI° - XII° centuries

New technics to iron ore reduction
Appearance of low shaft furnaces with banana stalk XV° – XVI° centuries
Humid period, high lake level
Forest in progress
Increase of T°C

Dry period, low lake level
Forest regression
Decrease of T°C

High human density
Crash people in the hinterland

High human density
Human migrations first on the littoral after in the hinterland

Climate Vegetation
Demography
Thank you for your kind attention