Thoughts about REDD+ reference scenarios

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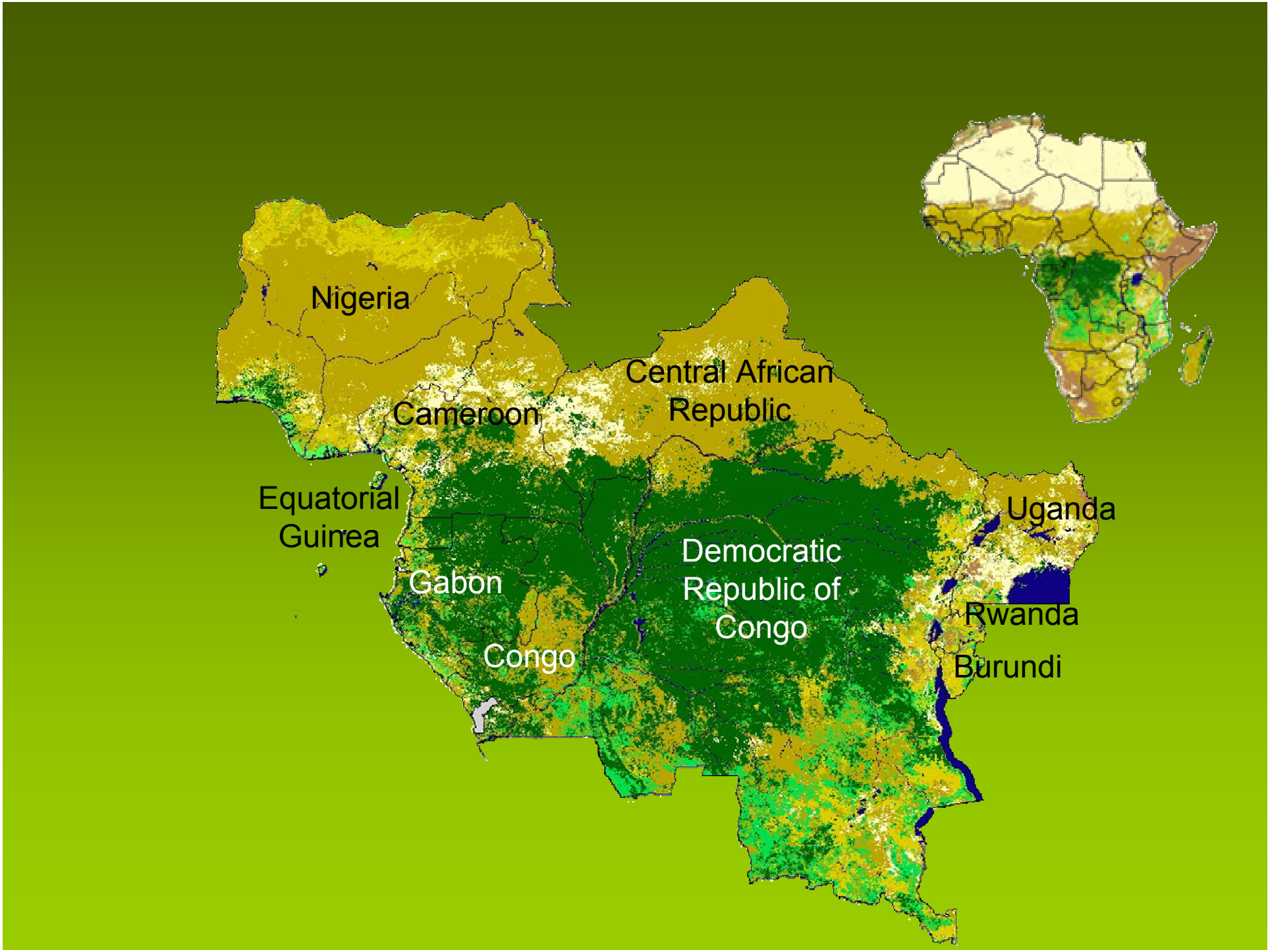
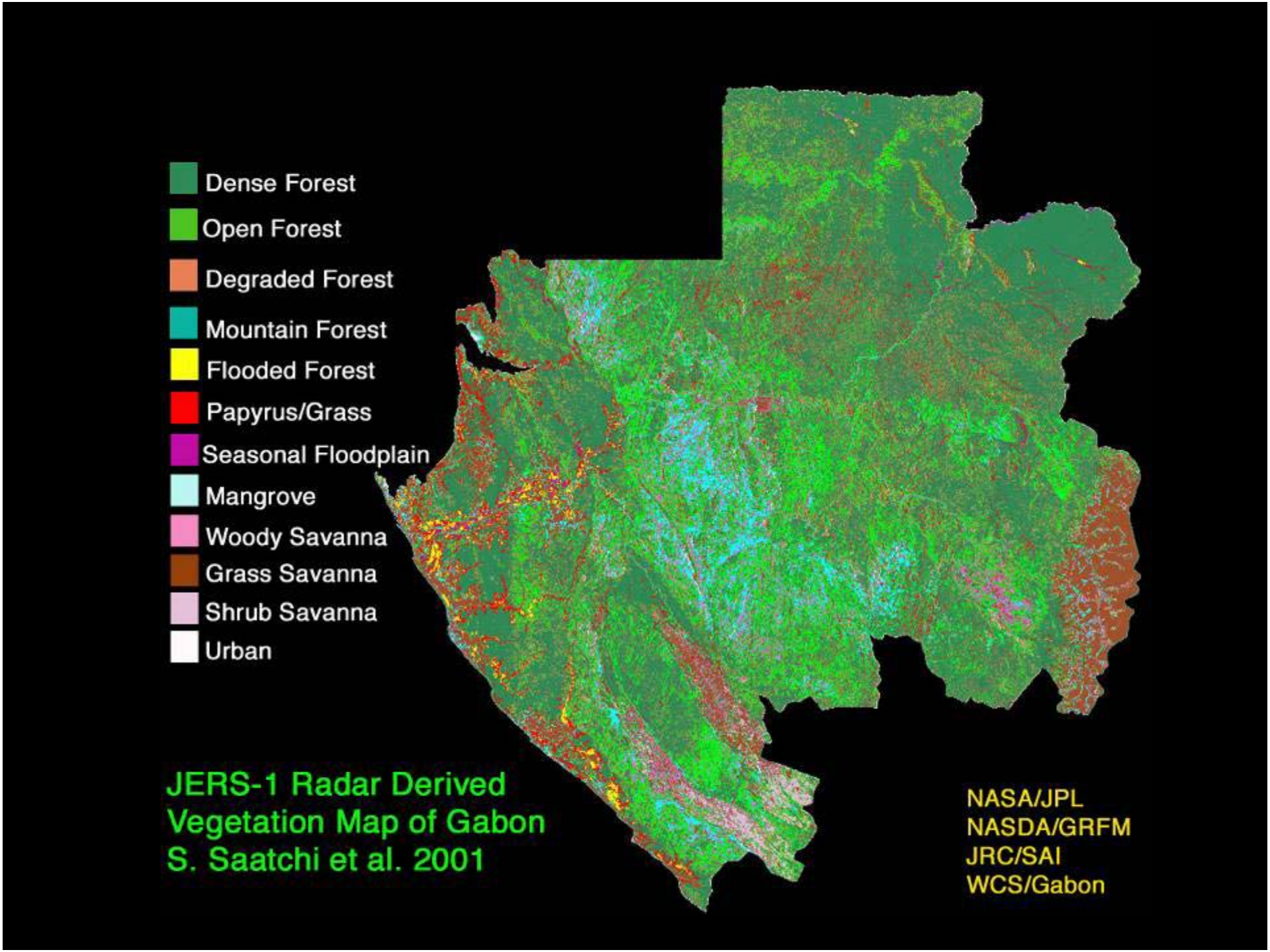

Nigeria
Cameroon
Central African Republic
Equatorial Guinea
Gabon
Congo
Democratic Republic of Congo
Uganda
Rwanda
Burundi

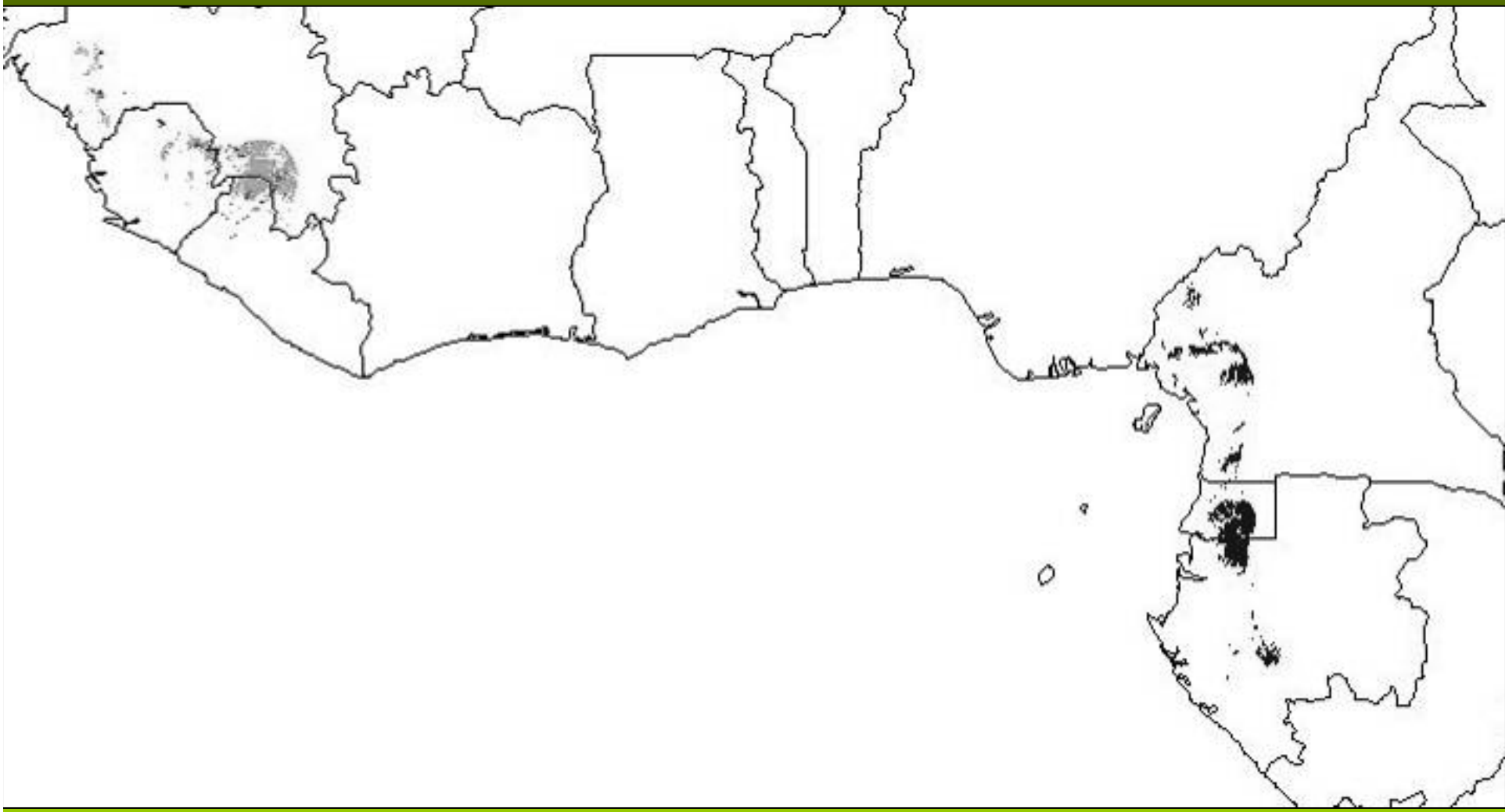

Dense Forest
Open Forest
Degraded Forest
Mountain Forest
Flooded Forest
Papyrus/Grass
Seasonal Floodplain
Mangrove
Woody Savanna
Grass Savanna
Shrub Savanna
Urban
JERS-1 Radar Derived
Vegetation Map of Gabon
S. Saatchi et al. 2001
NASA/JPL
NASDA/GRFM
JRC/SAI
WCS/Gabon

Equatorial savannas are naturally forested:

- 1994

- 2007

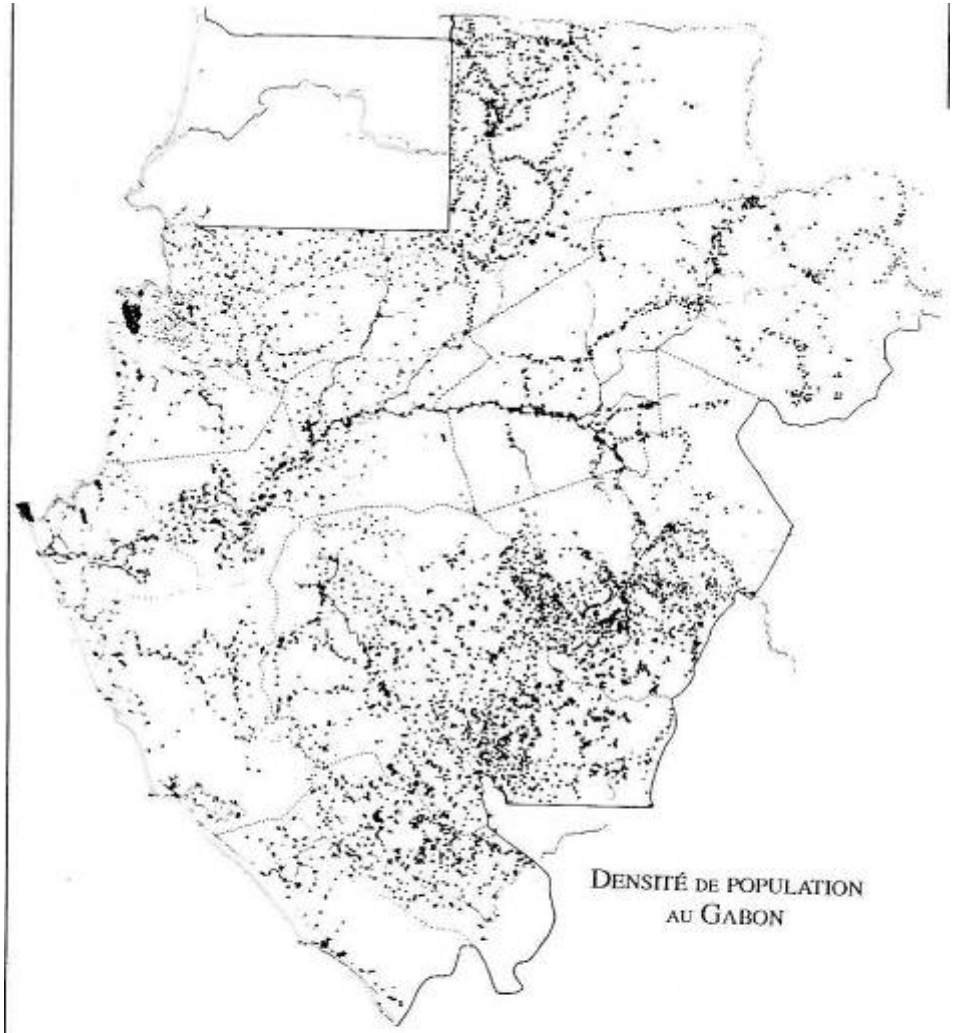
The origin of African Rainforests



- Pleistocene refugia in West / Central Africa mapped by Miguel Leal

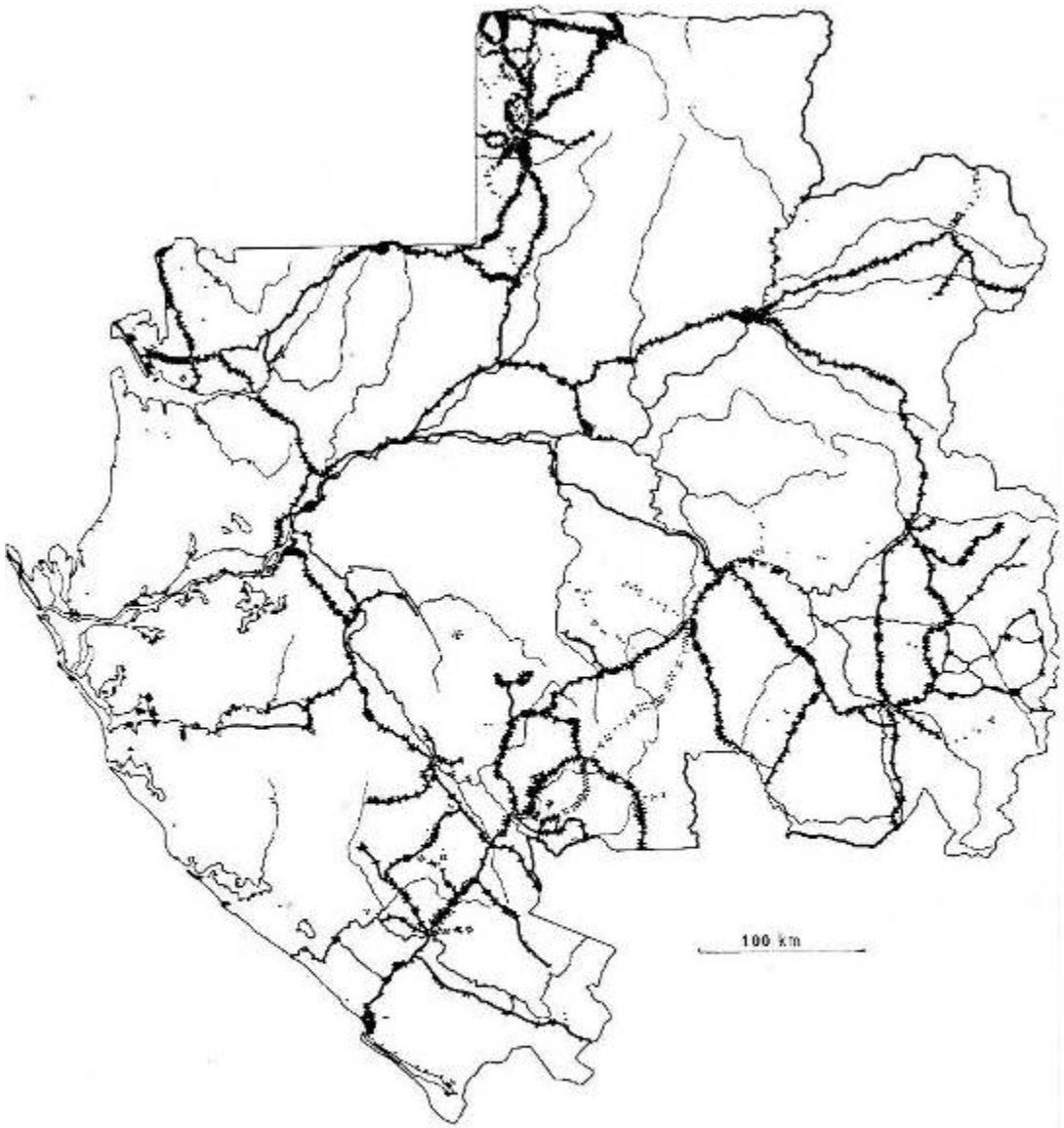
Forest peoples …

Pre-colonial human population distribution in Gabon



DISTRIBUTION DE LA POPULATION AU DÉBUT DES ANNÉES 1940.

Réduction de la carte établie par R. Delarozière et Y. Thierry. ORSC 1944.

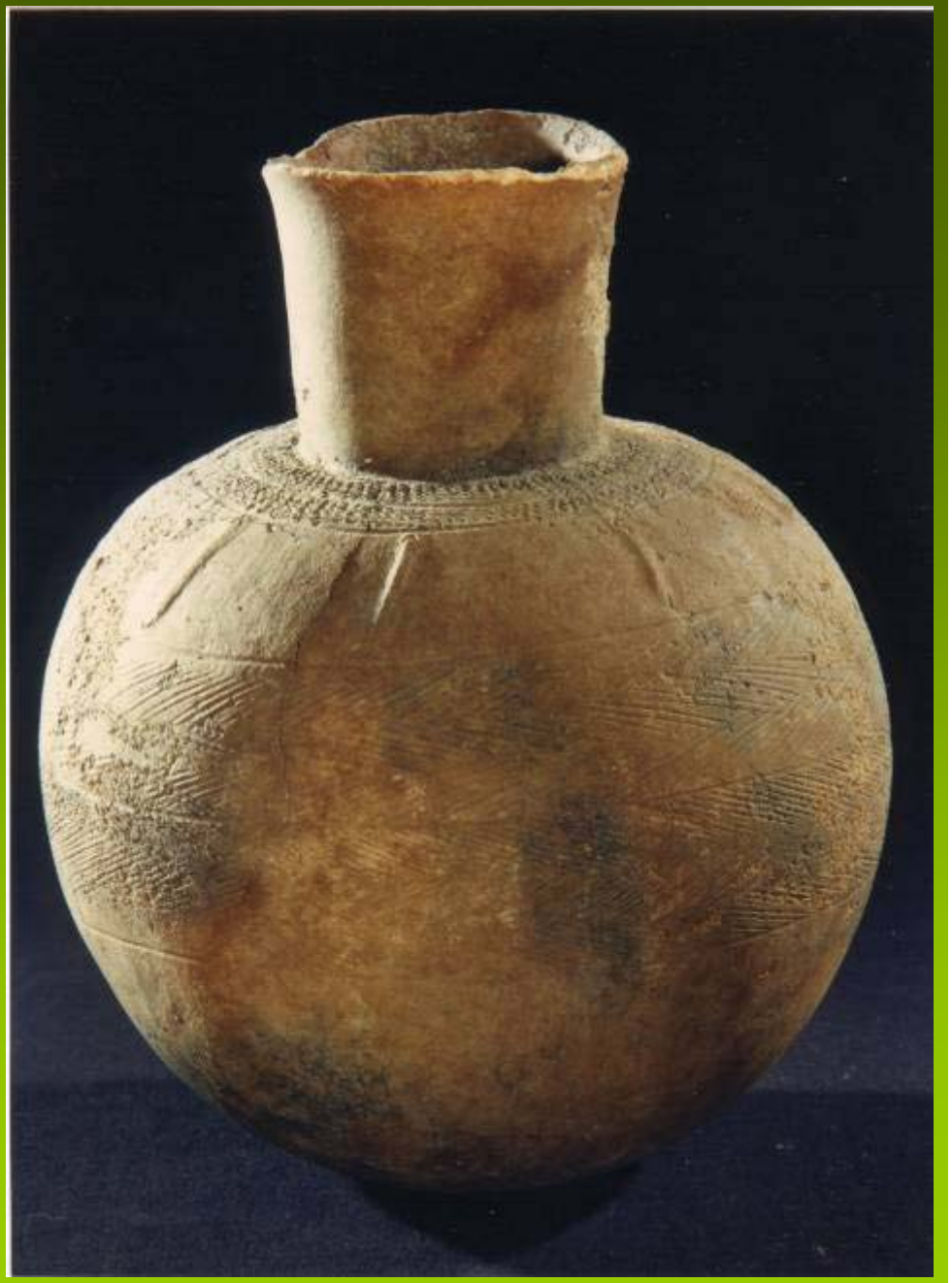


L'ESPACE LINÉAIRE CONTEMPORAIN.

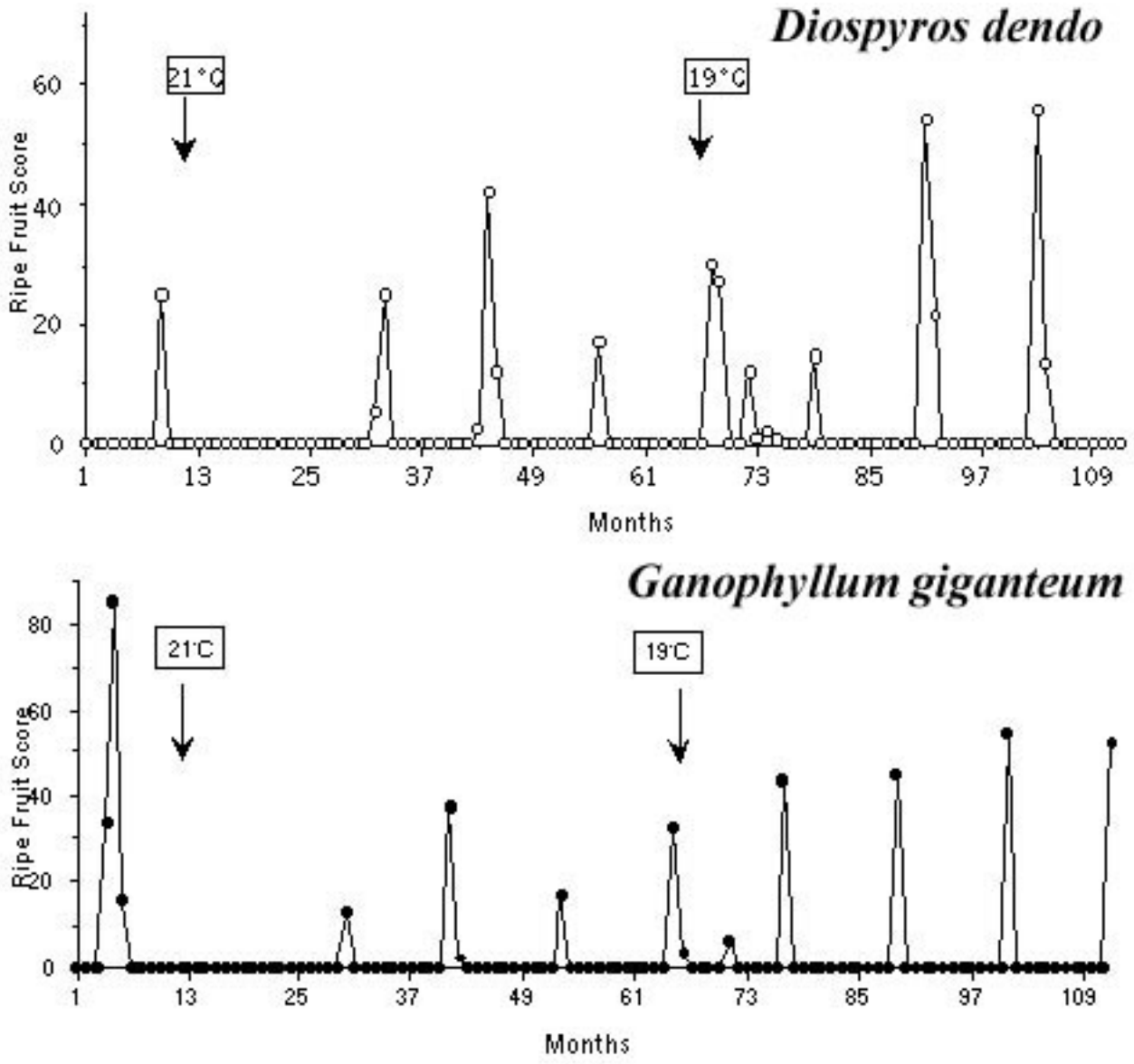
Répartition par points de 100 hab. de la population des villages.
Situation 1970.

- Vansina (1990) “nothing has had such a profoiund affect on the African rain forest as the humble banana”

Aucoumea klaineana (Okoumé / Gaboon) – illustration K. Abernethy



Effect of dry season temper-ature on fruiting patterns

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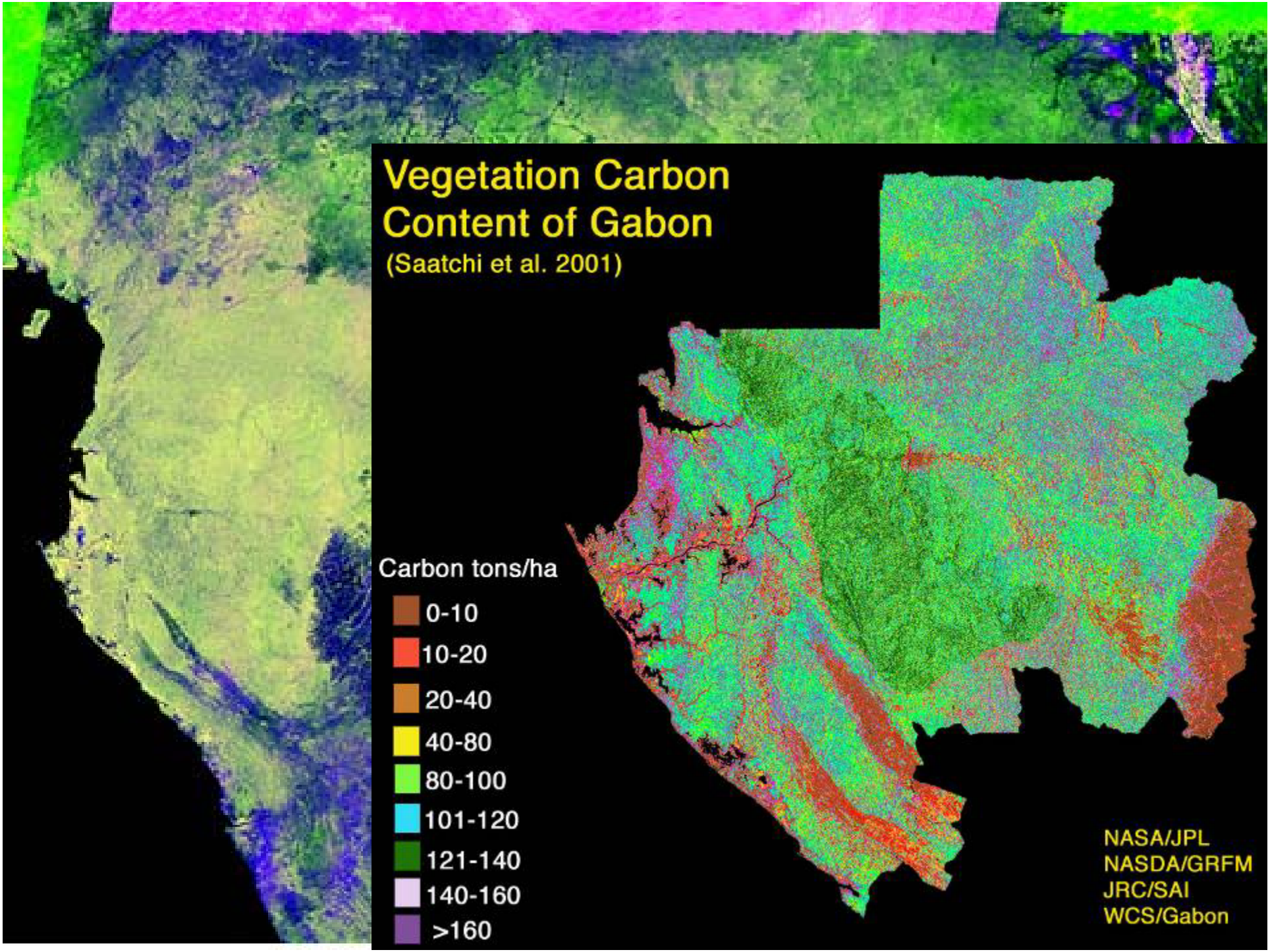
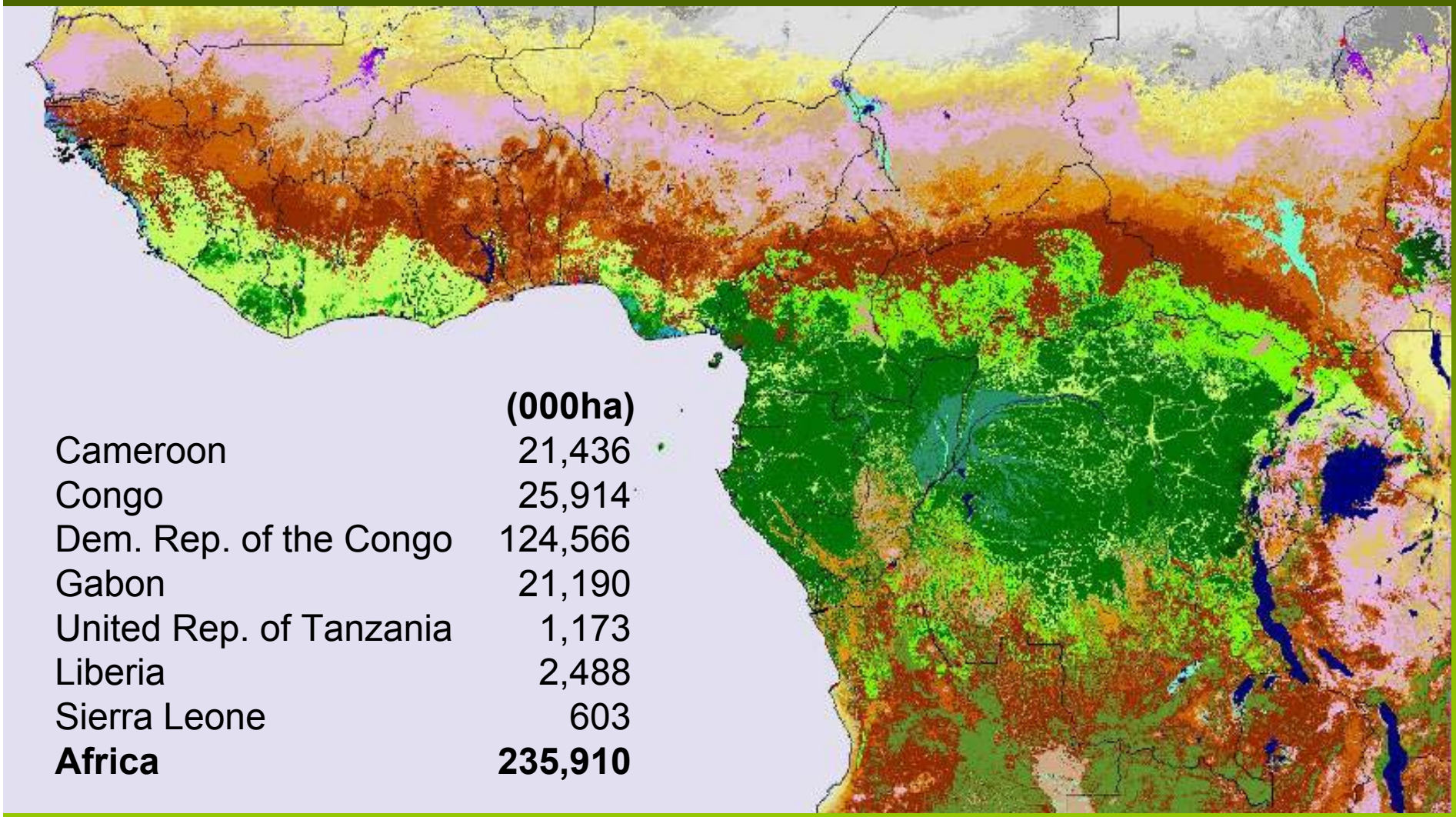

Vegetation Carbon Content of Gabon
(Saatchi et al. 2001)
Carbon tons/ha
0-10
10-20
20-40
40-80
80-100
101-120
121-140
140-160
>160
NASA/JPL
NASDA/GRFM
JRC/SAI
WCS/Gabon

The African rain forests in 2000

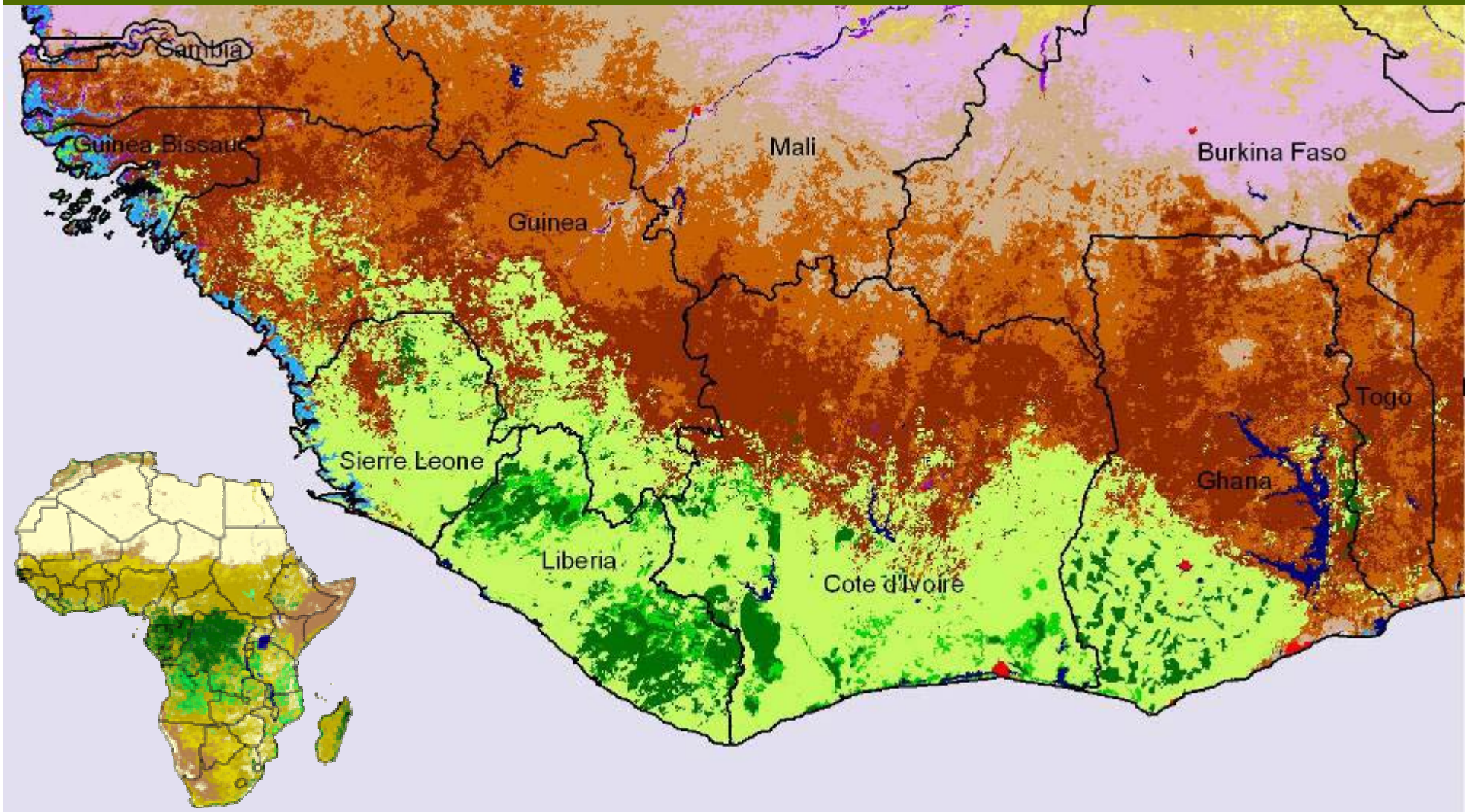


	(000ha)
Cameroon	21,436
Congo	25,914
Dem. Rep. of the Congo	124,566
Gabon	21,190
United Rep. of Tanzania	1,173
Liberia	2,488
Sierra Leone	603
Africa	**235,910**

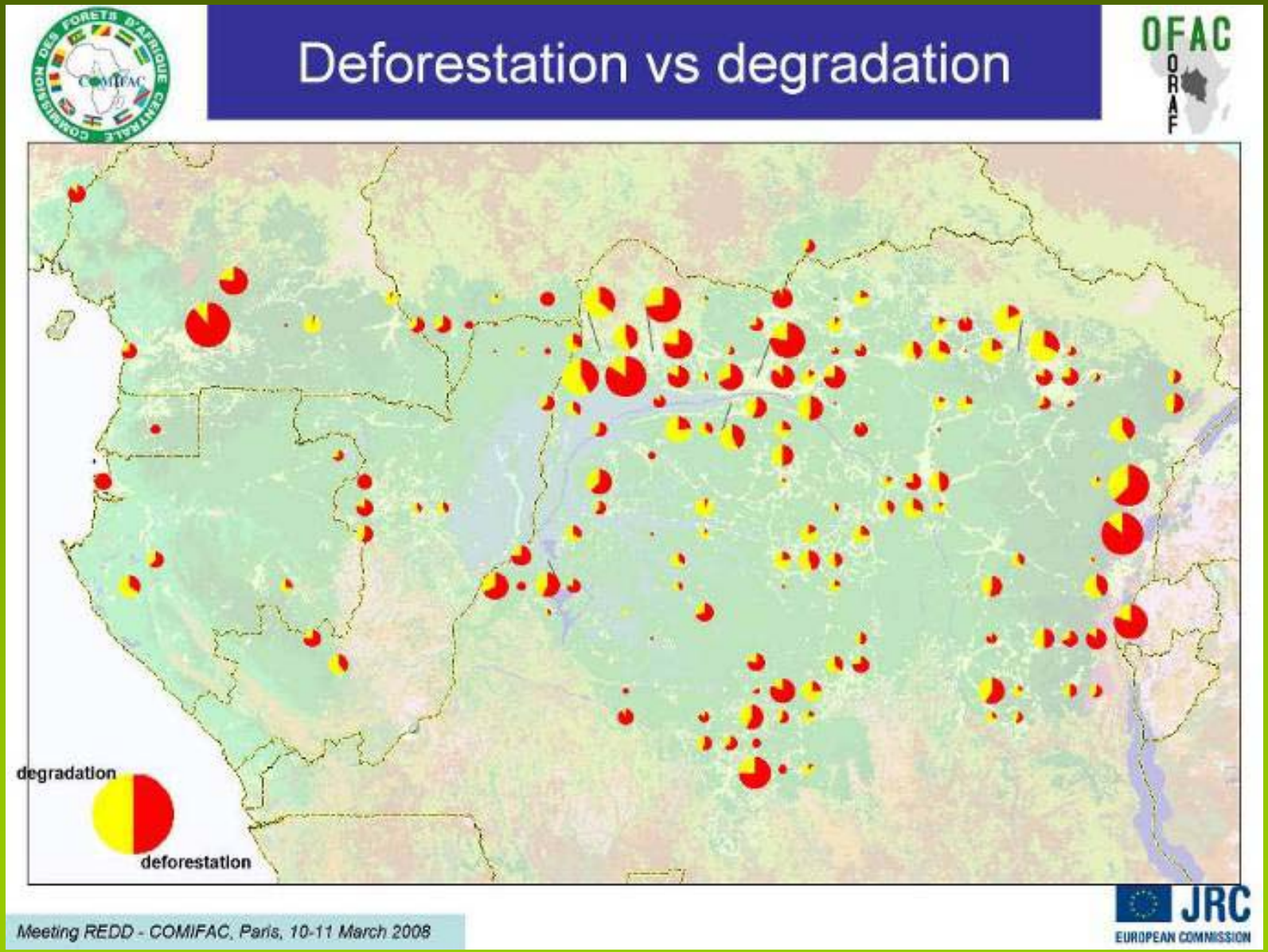
>100 billion tons CO_2 in standing carbon bank

1.2 billion tons CO2 sequestered annually by these forests (Lewis et al., Nature, 2009)

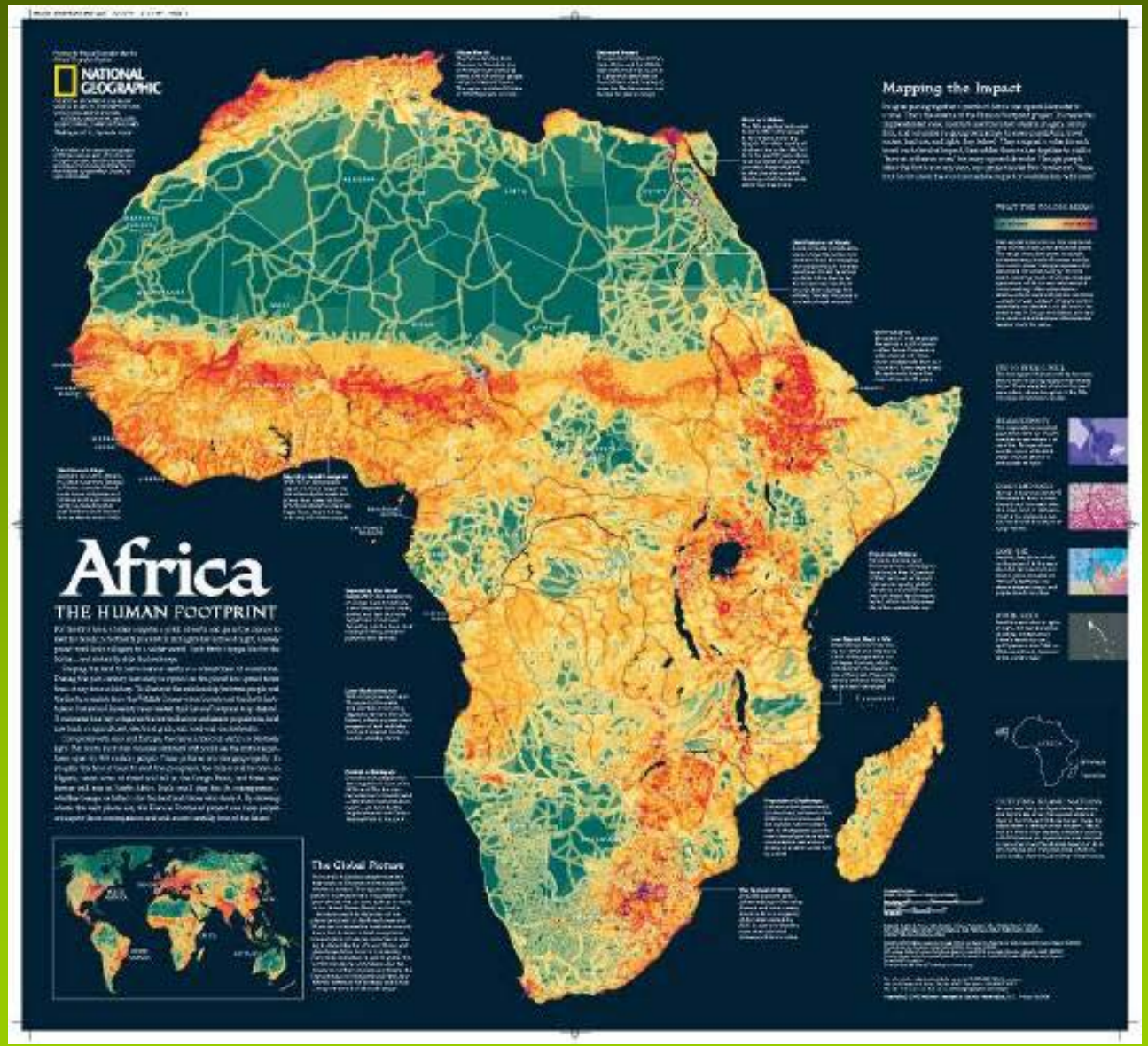
Lessons from West Africa



Deforestation in the African rain forests

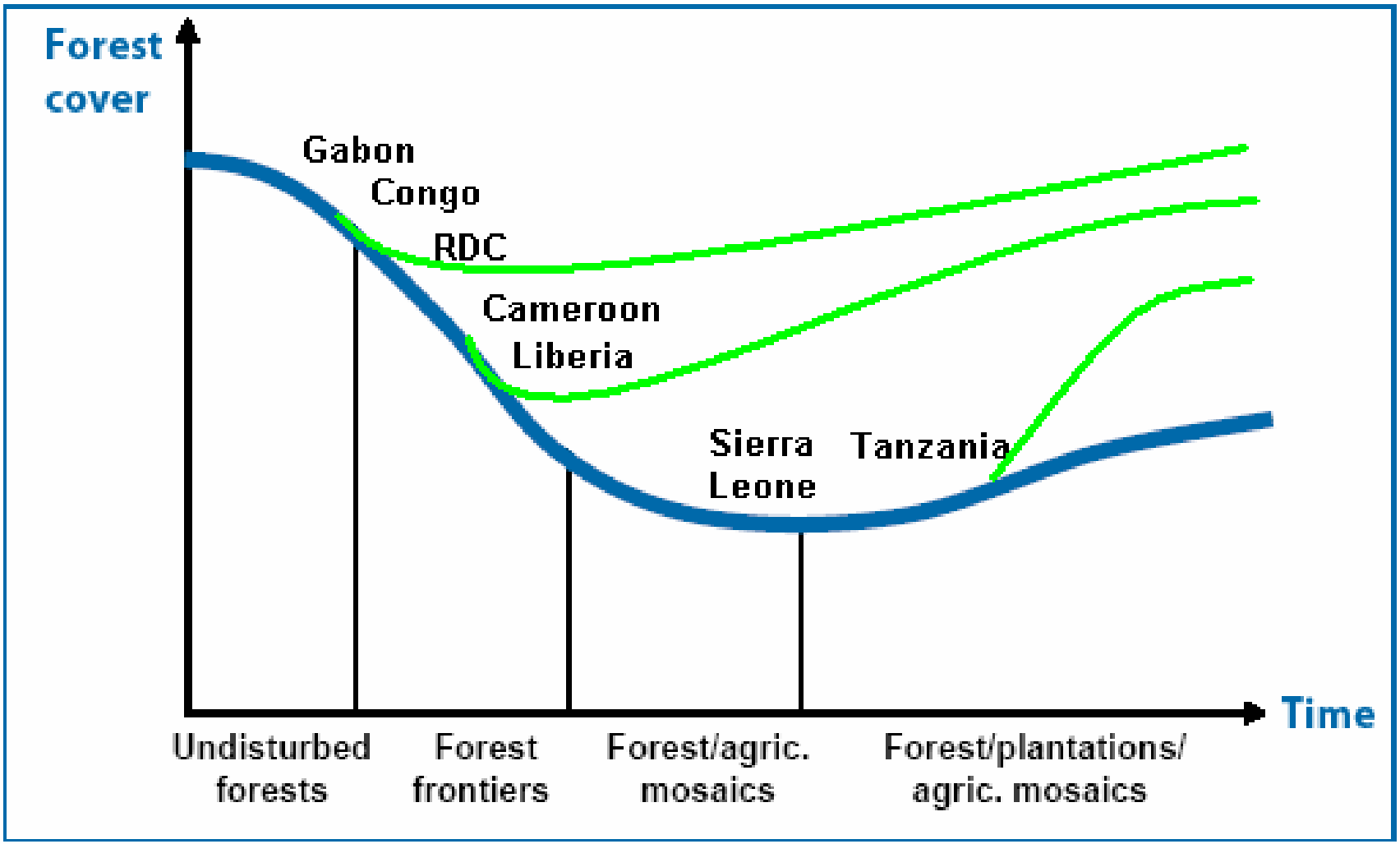


The ‘Human Footprint’ in 2000

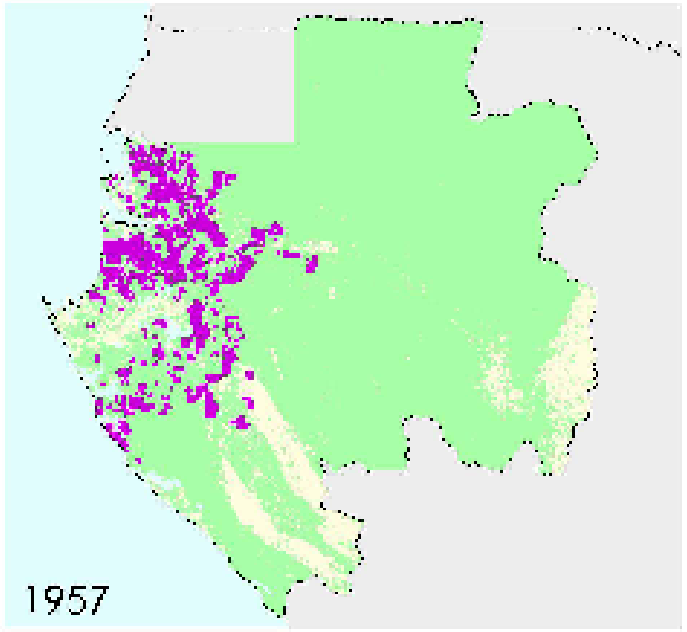


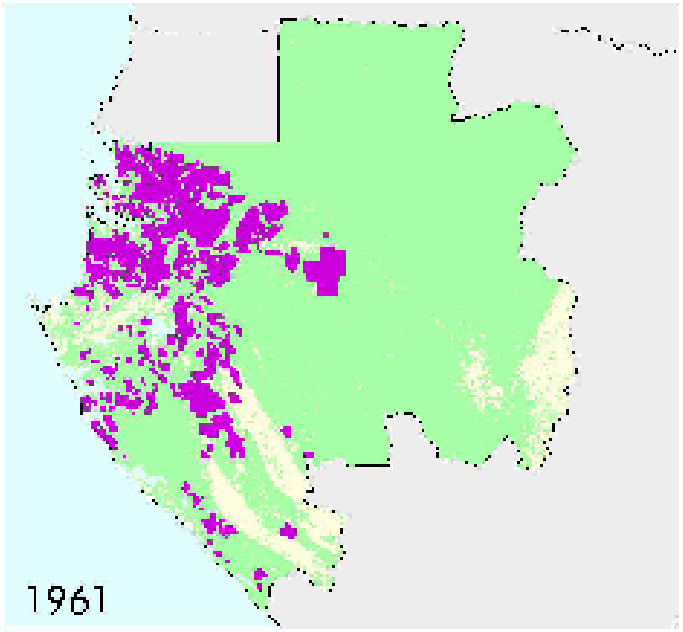
People live throughout this ecosystem, at varying population densities

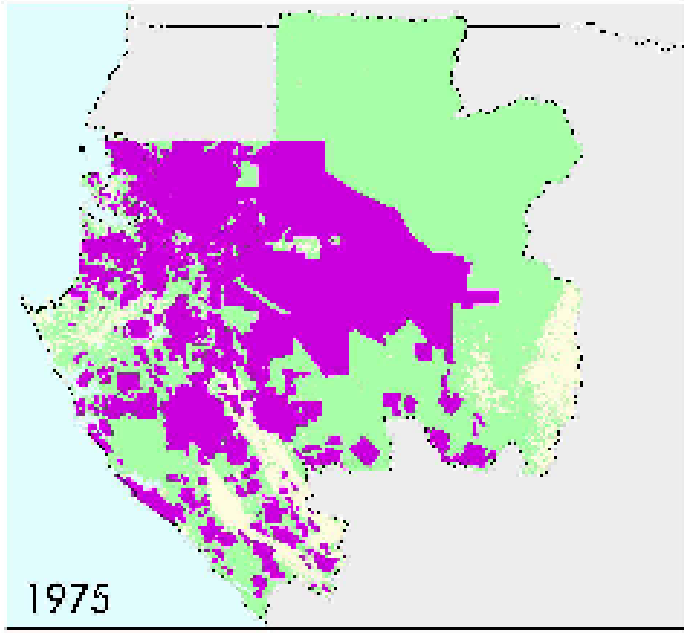
Scenario Analysis

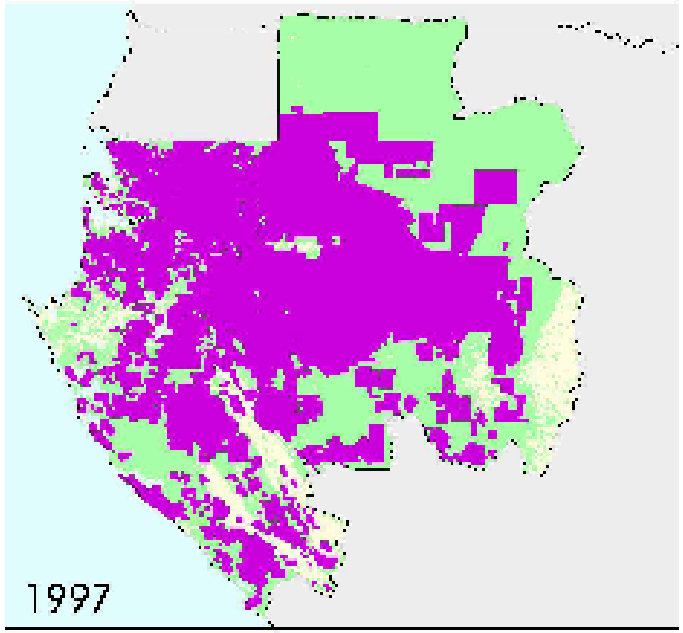


GABON Cumulative Area in Forest Concessions, 1957-97







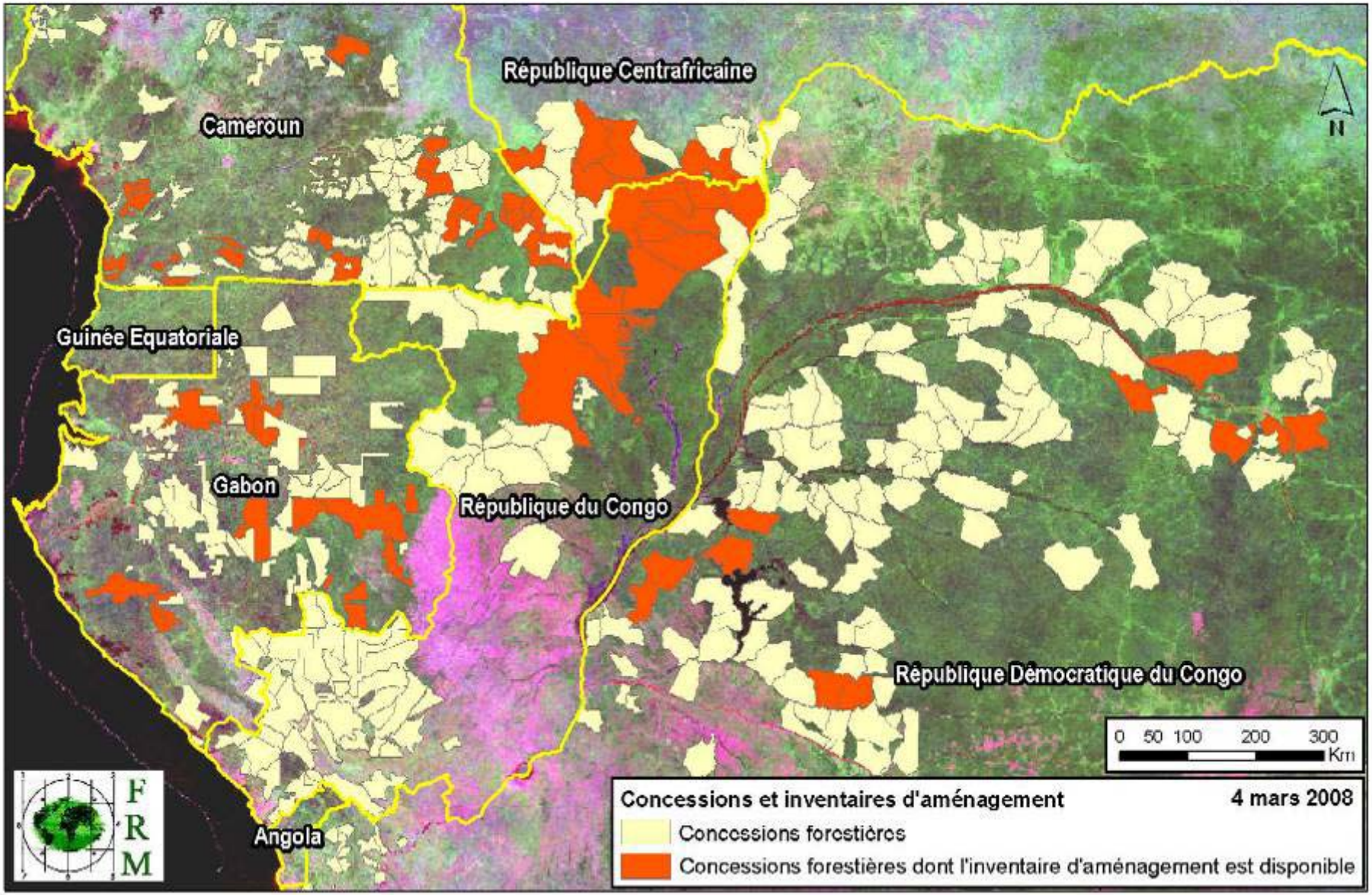


Legend

- Cumulative area designated as logging concessions
- Forested area
- Nonforest

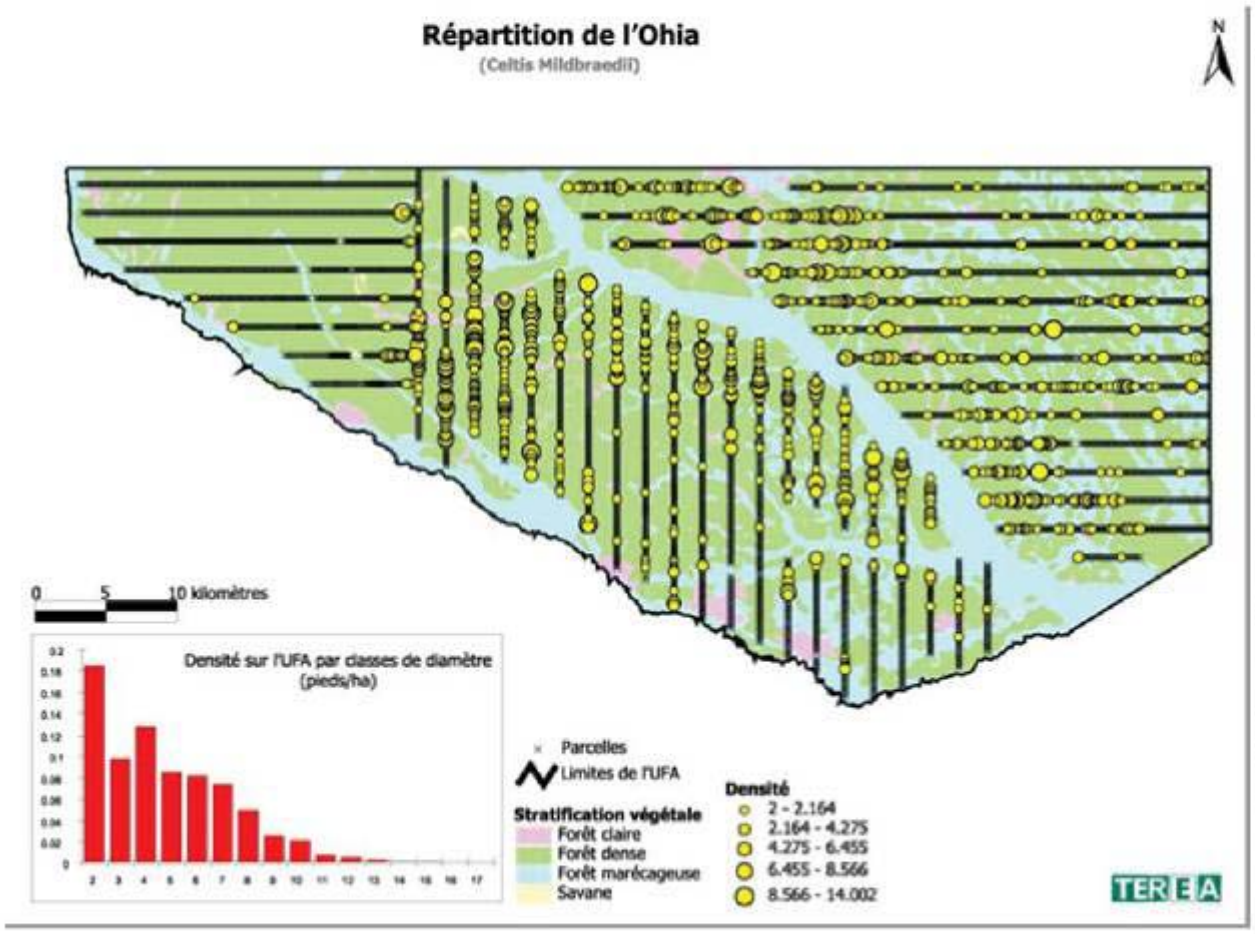
Sources: Concession data from Journal Officiel du Gabon, WCMC, Pourtier 1989. Land cover from TREES (EC Joint Research Centre), derived from 1992-93 AVHRR imagery; forested area includes dense moist forest and secondary forest classes.

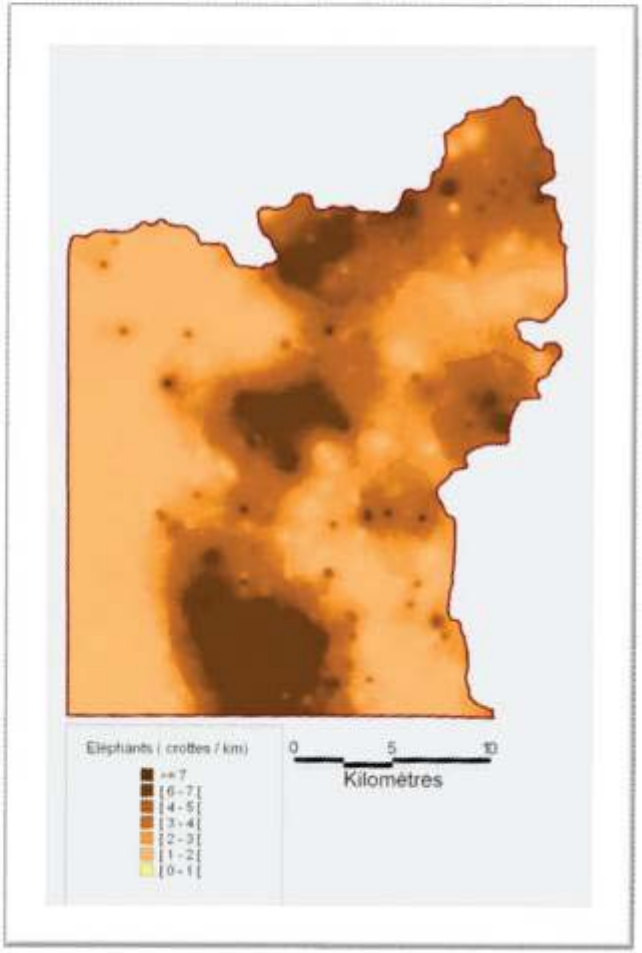
Etat des lieux partiel des concessions forestières en Afrique Centrale et de leur inventaire d'aménagement



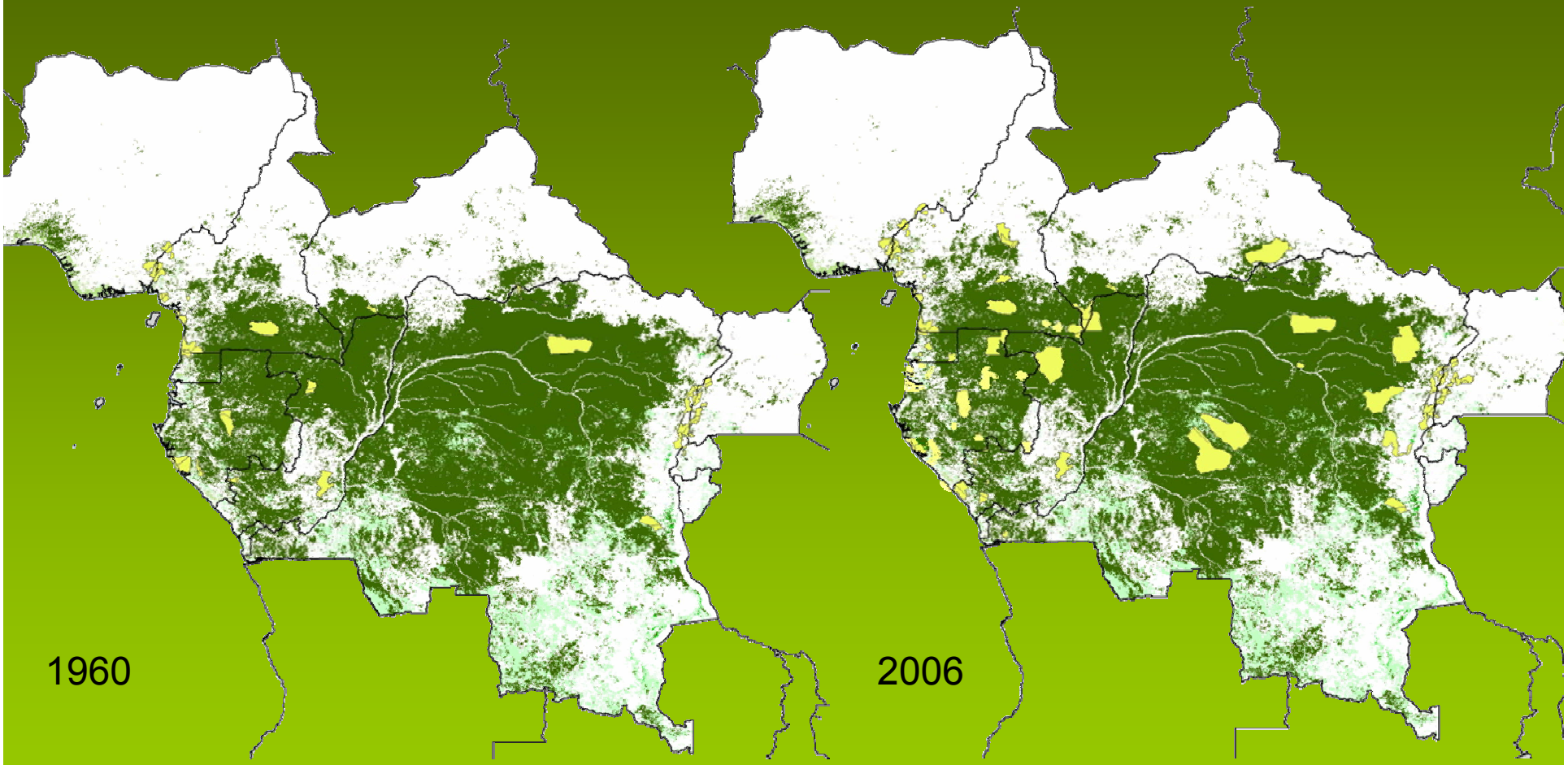
Inventaires d'aménagement – INTERPRÉTATION

Répartition de la ressource





Increasing protected areas

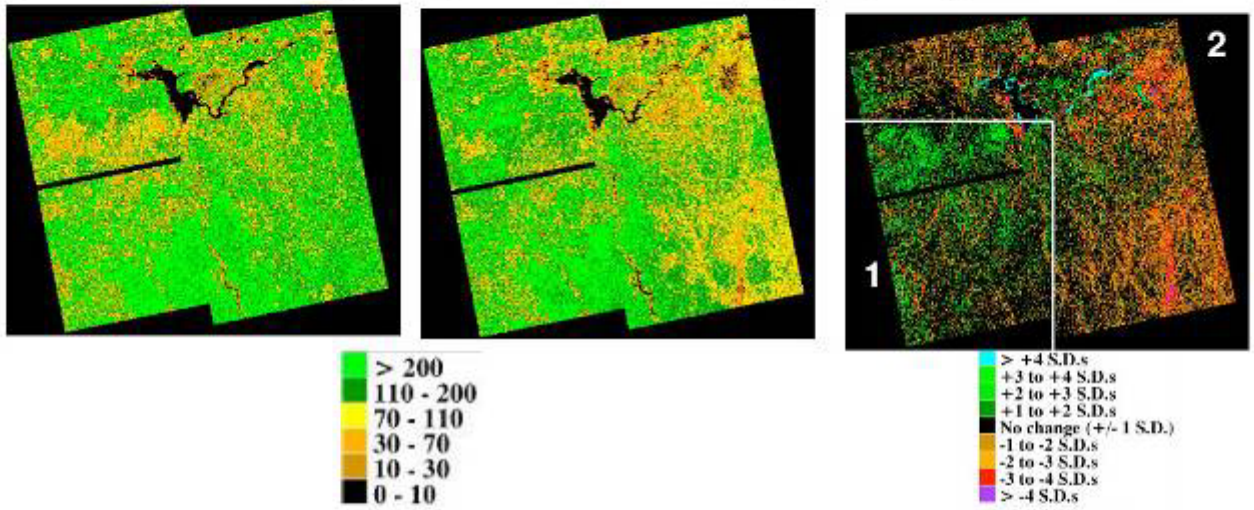


Assessment of Biomass Change Measurement from Disturbance and Recovery (ALOS & JERS-1)

a) JERS 1996 biomass class image

b) ALOS 2007 biomass class image

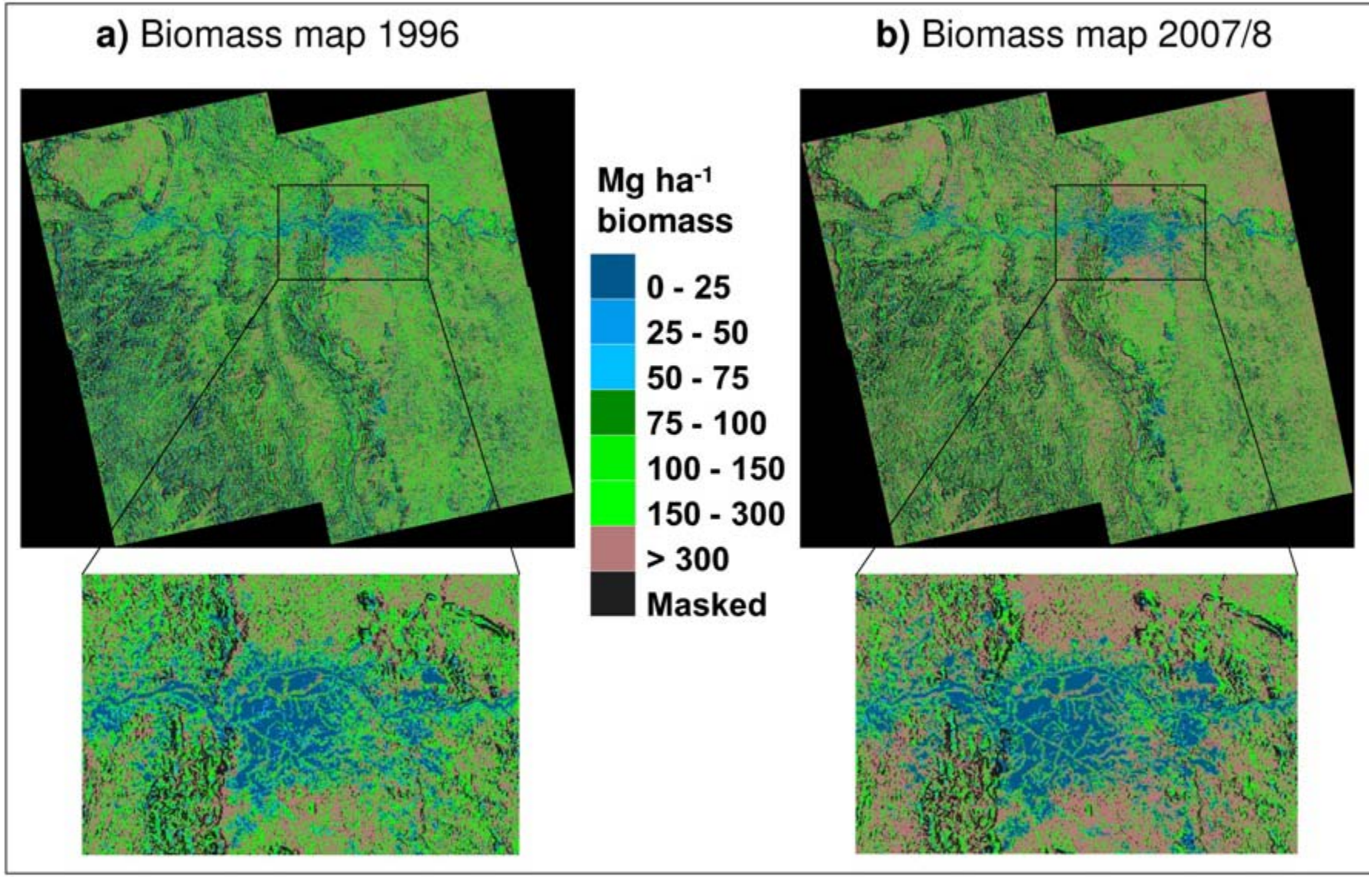
c) Change, in standard deviations



	Minimum spatial scale at which change can be detected **annually**			Minimum spatial scale at which change can be detected **decadally**		
Biomass Range	±1 Mg ha^{-1} yr^{-1}	±5 Mg ha^{-1} yr^{-1}	±10 Mg ha^{-1} yr^{-1}	±1 Mg ha^{-1} yr^{-1}	±5 Mg ha^{-1} yr^{-1}	±10 Mg ha^{-1} yr^{-1}
< 100 Mg ha^{-1}	1 km	200 m	100 m	100 m	25 m	12.5 m
100-200 Mg ha^{-1}	2.5 km	500 m	250 m	250 m	50 m	25 m
> 200 Mg ha^{-1}	4 km	800 m	400 m	400 m	100 m	50 m

Saatchi et al., 2008

Figure 4



1996-2007, mean accumulation 9.5TCO$_2$e/ha/yr over 14,500km^2

(Mitchard et al., in prep.)

Towards a low carbon economy

- REDD+ must be integrated into our National Development Strategy – it will not work as an isolated project and needs buy-in from Government at the highest level, as well as Planning and Finance Ministries in addition to Environment and Forestry.
- There is a need both to invest in slowing and reversing deforestation and degradation in HDHF countries AND to ensure standing forests are maintained in LDHF countries AND to encourage re-growth in HDLF / LDLF countries
- A long-term mechanism should be based on total stable carbon stocks, not changes in deforestation or degradation rates

Back of an envelope calculation

- Annual T CO_2 sequestered by Gabonese rain forests = 47,520,000
- Annual T CO_2 sequestered by savannas = 17,200,000
- Loss to deforestation (0.08%) = 7,920,000
- Loss to sustainable logging = 13,500,000
- Loss to unsustainable logging = 31,500.000

Net – 11,800,000 T CO_2 sequestered /yr

Early action in Gabon (figures are approximate, to be refined by on-going studies)

- 1990 baseline – all forests covered in logging, lower % losses but logging every 5 years or so; net C = **-33,200,000**
- 2007 – 4 million ha protected areas, 9 million ha sustainable forestry, net C **+11,800,000**

- **Change = 45,000,000 TCO_2e/yr avoided emissions**