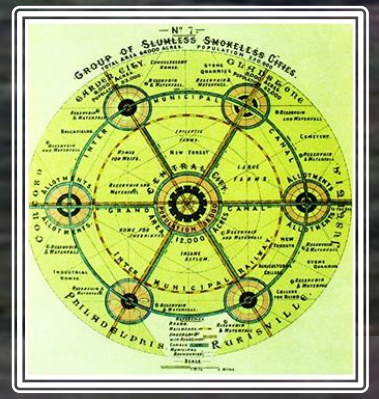
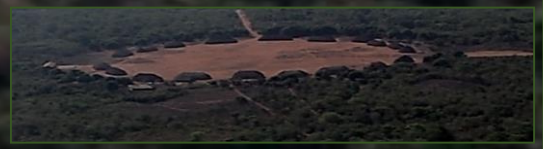
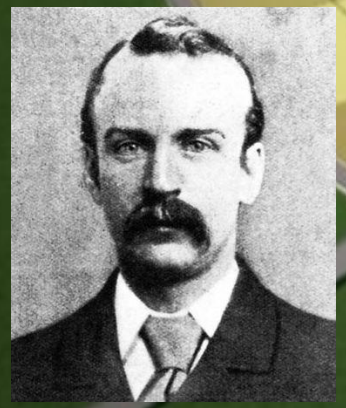


Cidades Jardins



Arqueologias do Futuro Amazônico

Michael Heckenberger

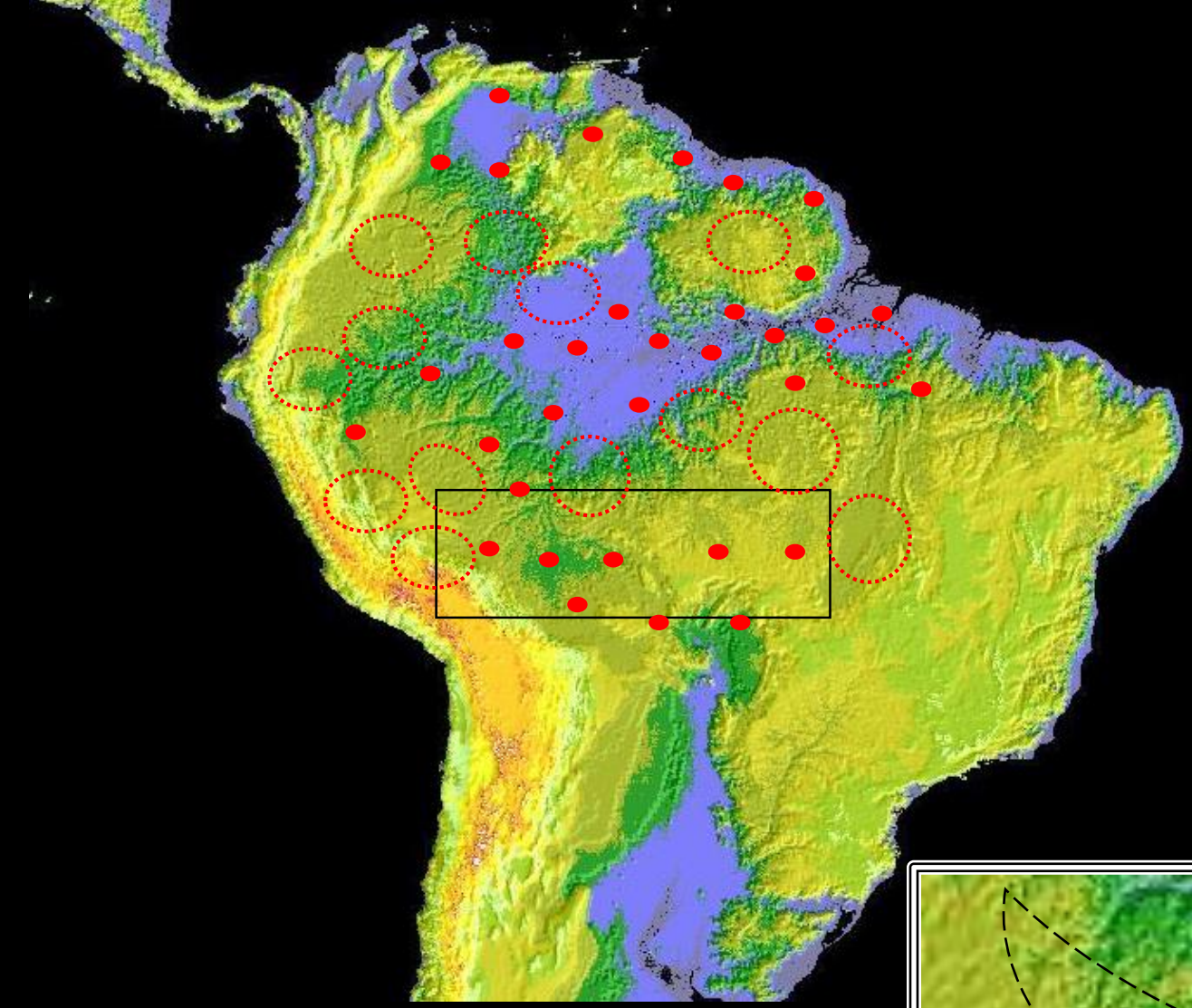


Part I: Cidades Jardins

Uma pequena diferença: o assentamento central é menor, uma praça basicamente


Quito
Ecuador
Peru
Lima
La Paz
Bolivia

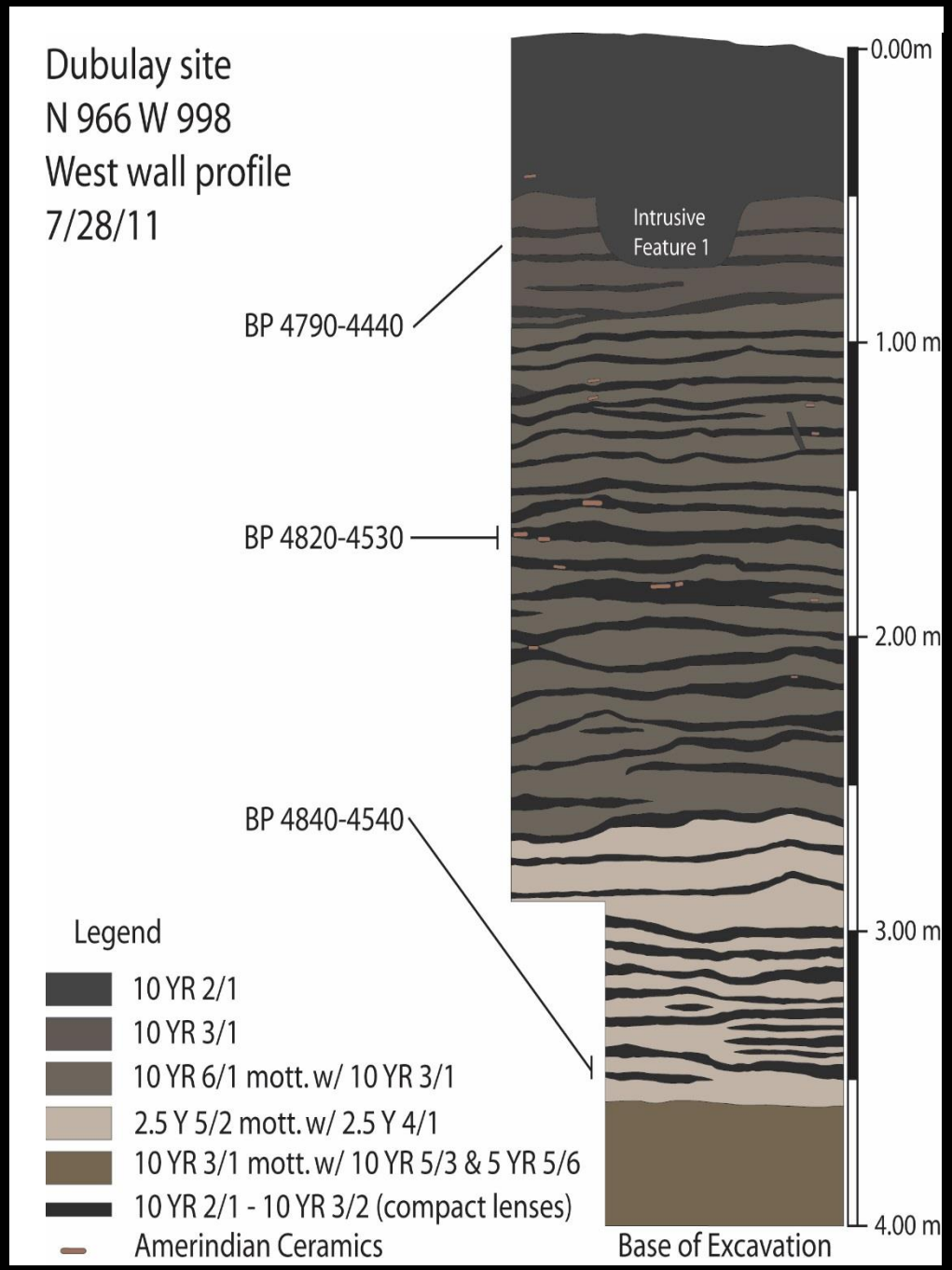
Heterogeneity:
Spheres, Networks and Hybrids



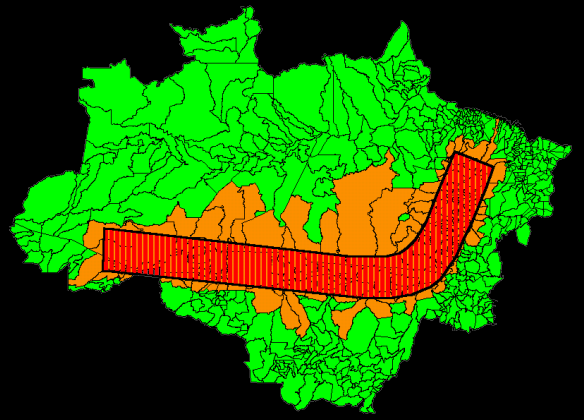
Southern Amazonian Fringe:
Anthropogenic Forests and Cultural Borderlands

Early Holocene Tropical Forest Foragers (9,000-6,000 BP)

Mid-Holocene
(6,000-3,000 BP)



LATE HOLOCENE



northern borderlands

northern uplands

várzea

southern uplands

western uplands

southern borderlands

AMAZON 2012
PROTECTED AREAS
INDIGENOUS TERRITORIES

VENEZUELA
COLOMBIA
Bogotá
Georgetown
Paramaribo
GUYANA
SURINAME
G. FRANÇAISE
Atlantic
Quito
ECUADOR
BRASIL
Lima
PERU
BOLIVIA
Pacific
Brasilia
Sucre
0 100 200 400 km

RAISG

Indigenous Territories
- areas of traditional occupation and use *officially recoognized*
- areas of traditional occupation and use *not officially recognized*
- territorial reservations
- proposed territorial reservations

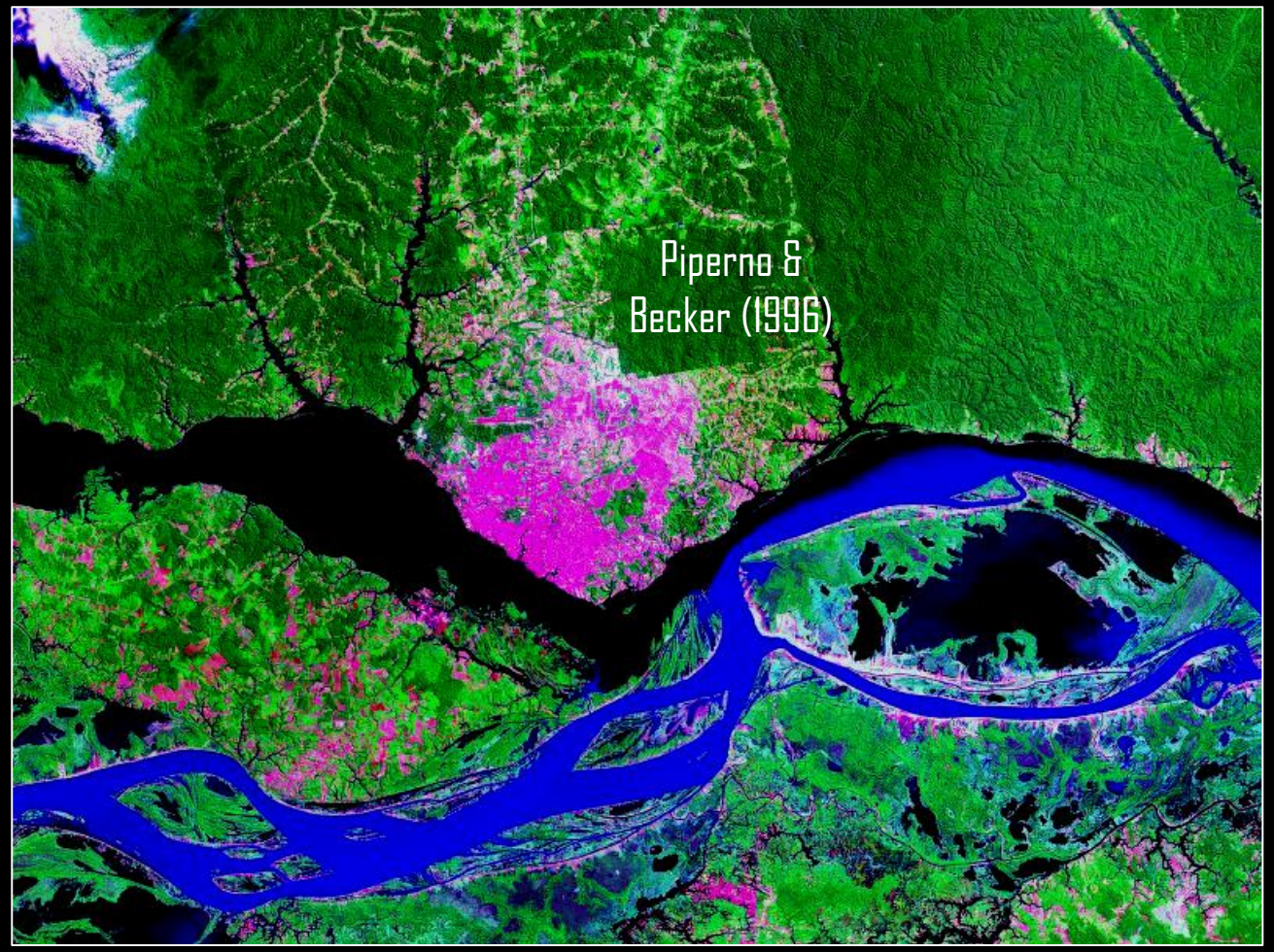
Protected Areas
- indirect use
- direct use
- direct/indirect use
- transitional categories

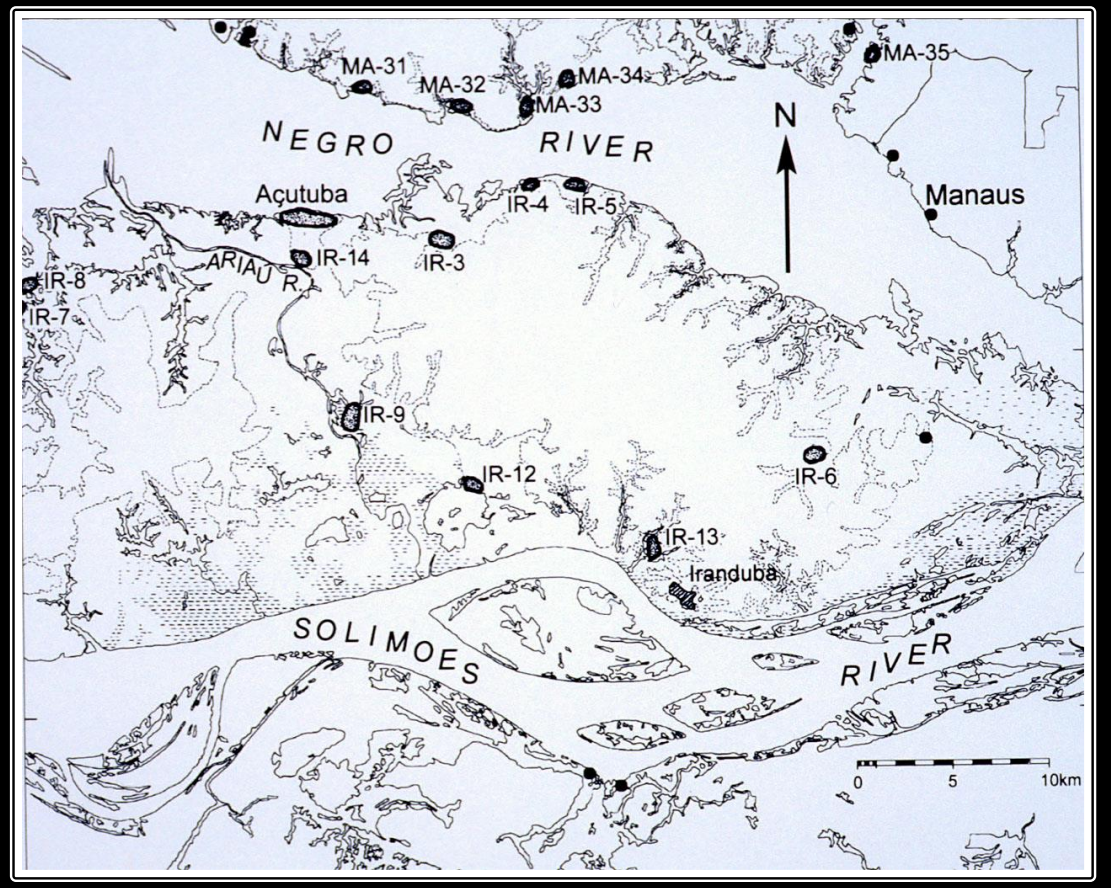
Reference boundaries
- international
- departmental/state/provincial
- limit in dispute/litigation

Amazon boundaries
- utilized by RAISG
- biogeographic
- hydrographic basin

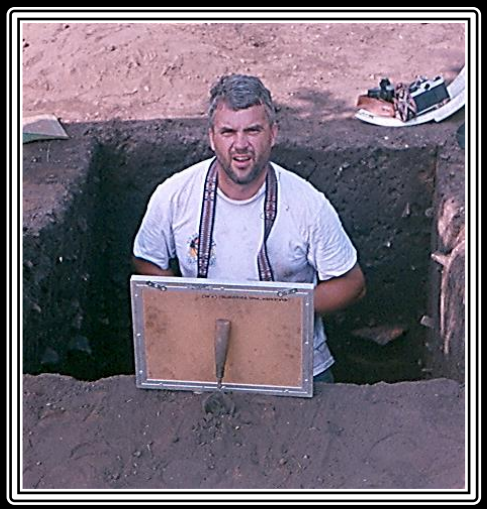
adapted of:
www.raisg.socioambiental.org
may 2012

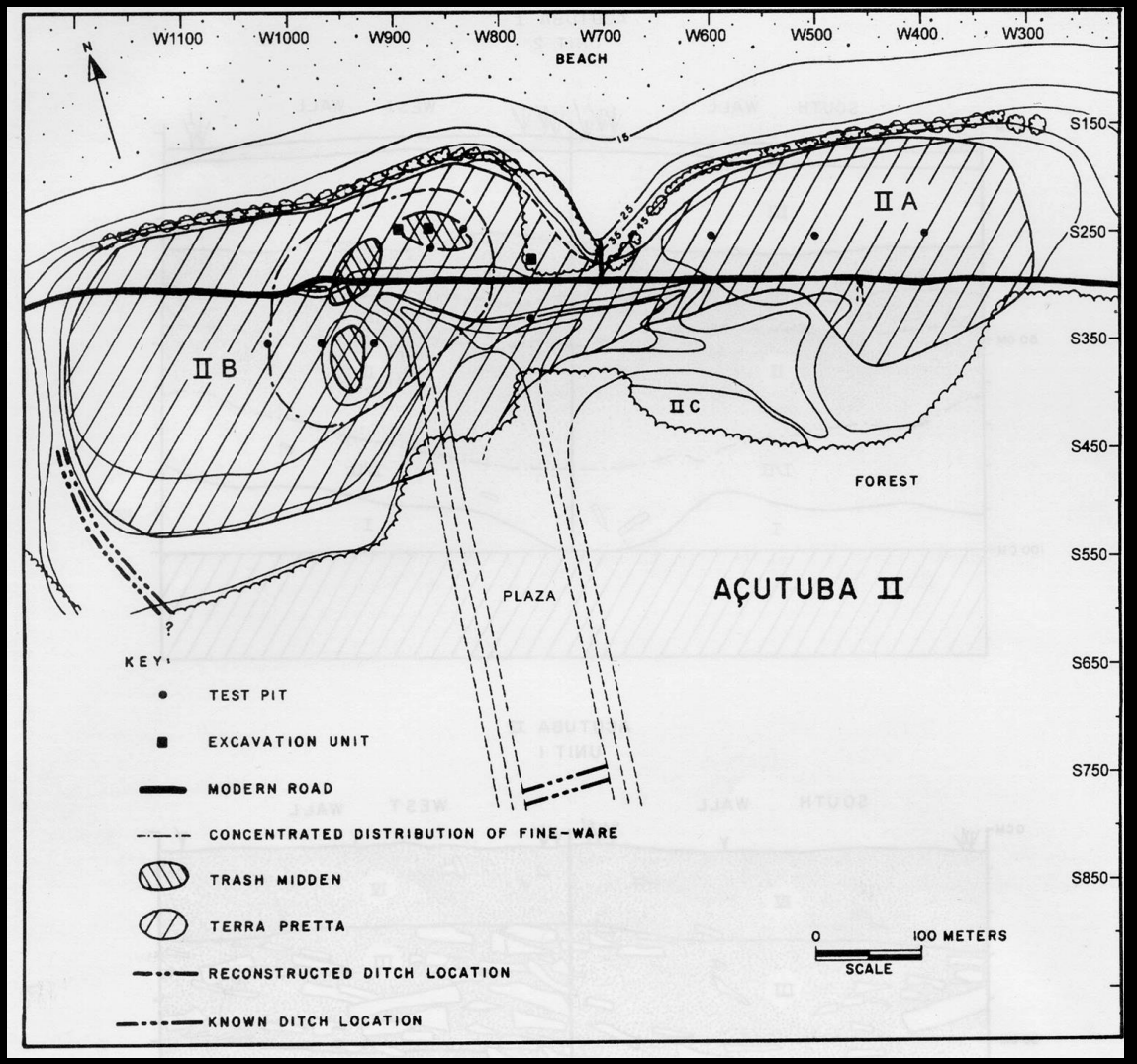
CENTRAL AMAZON DOMESTICATED LANDSCAPES



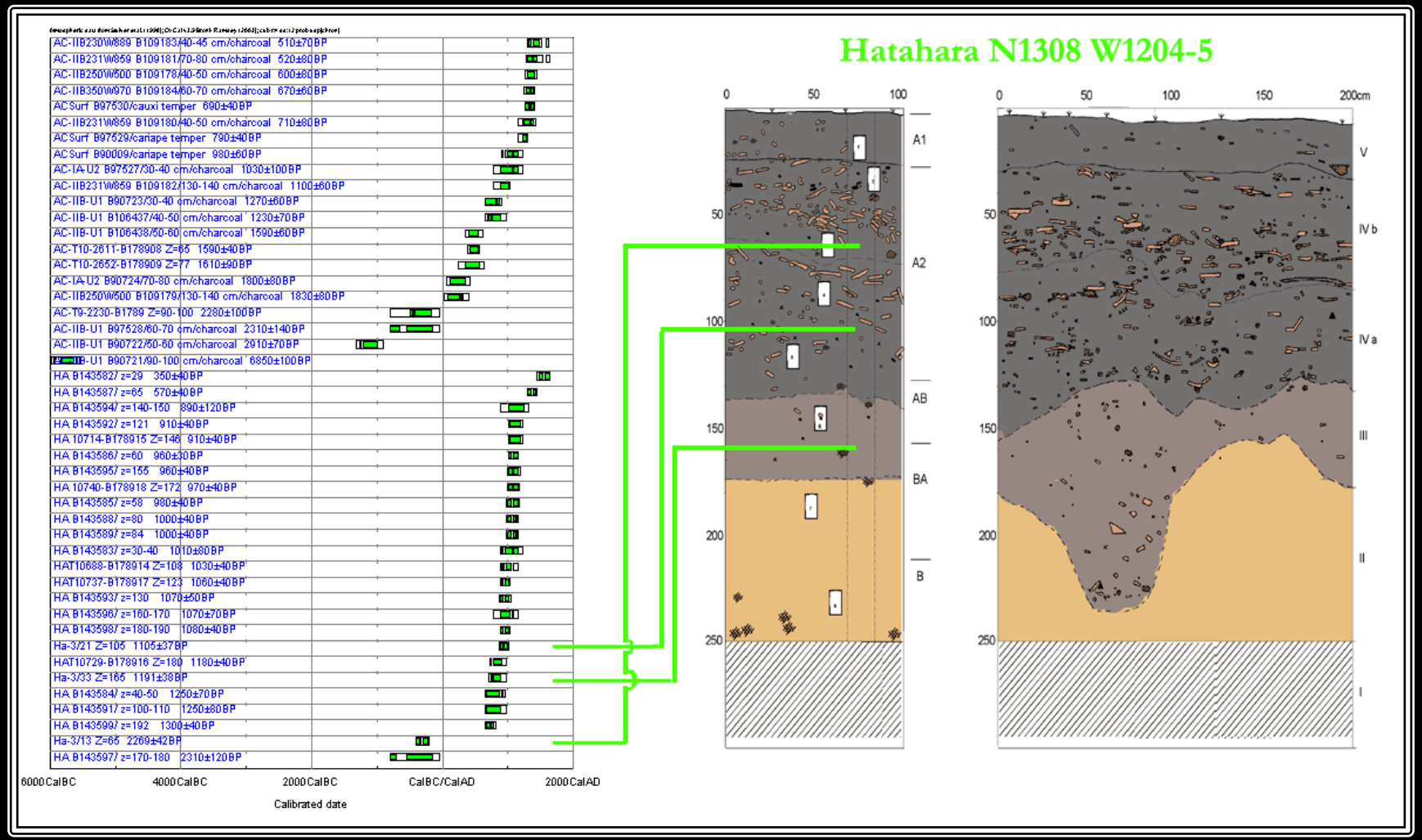


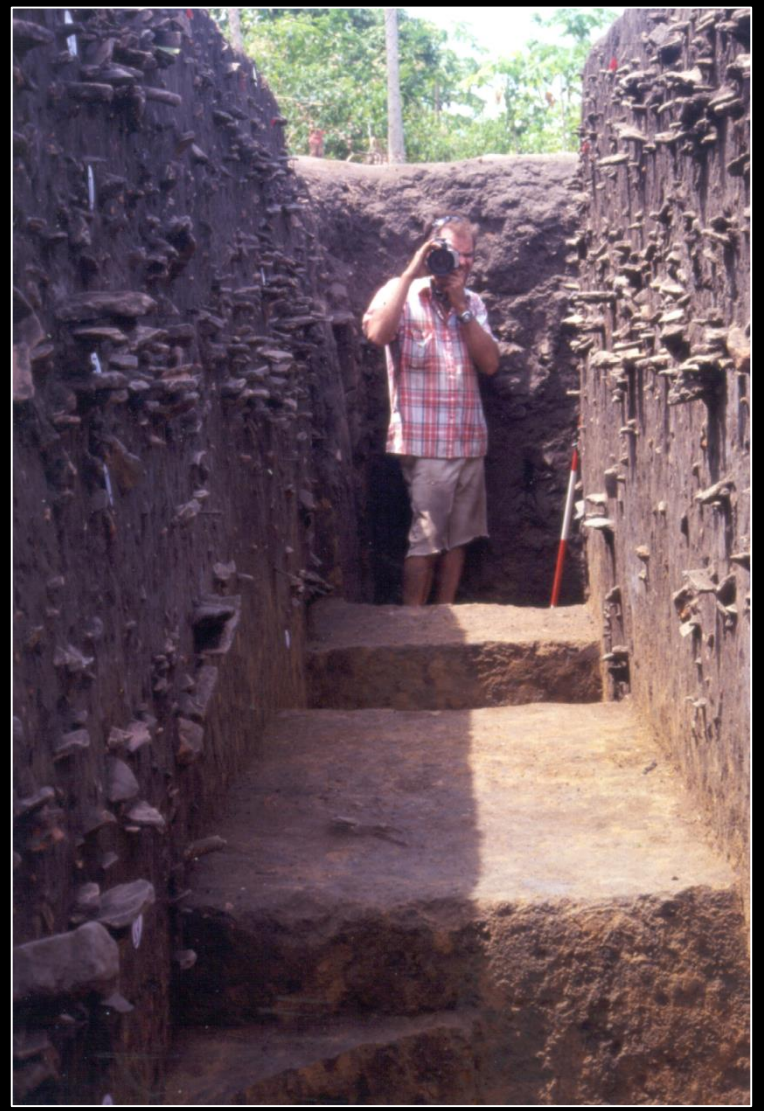
PAC: EGN, JBP & MJH
(1994-2005)



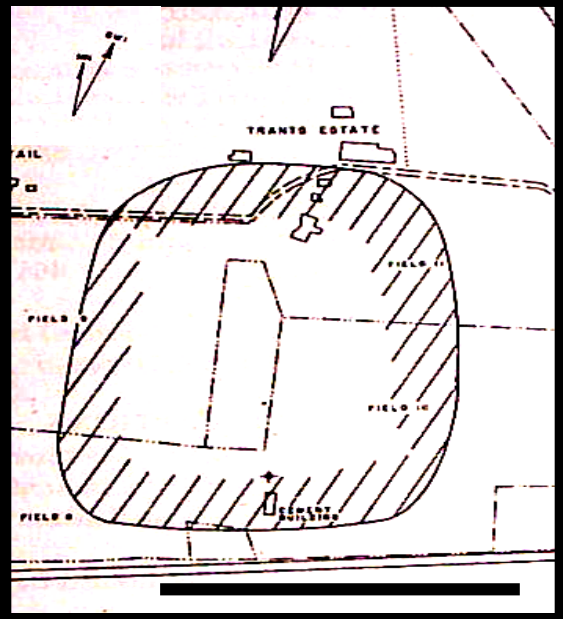

W1100
W1000
W900
W800
W700
W600
W500
W400
W300
N
BEACH
S150
S250
S350
S450
S550
S650
S750
S850
II A
II B
II C
FOREST
PLAZA
AÇUTUBA II
KEY:
TEST PIT
EXCAVATION UNIT
MODERN ROAD
CONCENTRATED DISTRIBUTION OF FINE-WARE
TRASH MIDDEN
TERRA PRETTA
RECONSTRUCTED DITCH LOCATION
KNOWN DITCH LOCATION
0
100 METERS
SCALE

HATAHARA



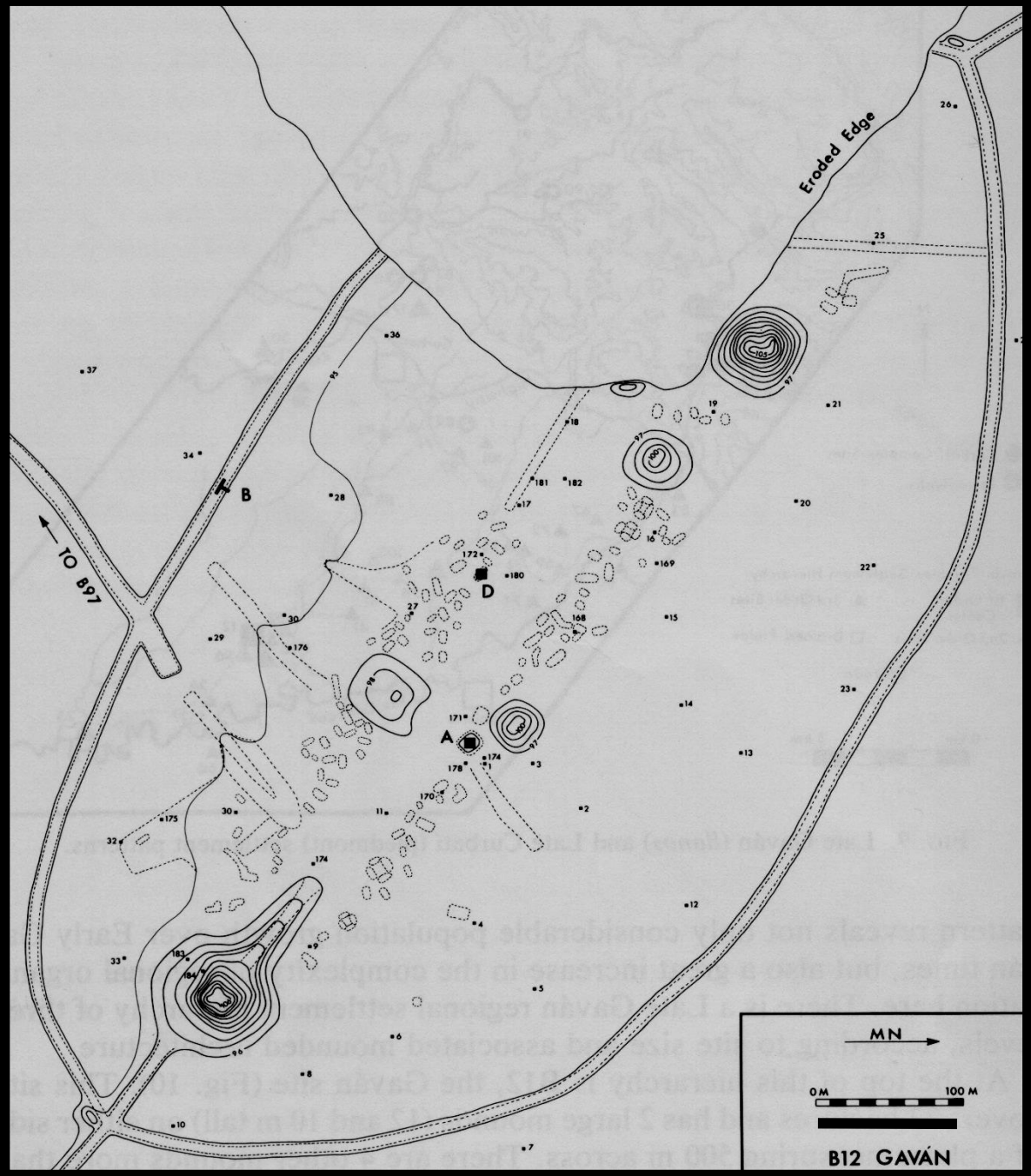


after Neves et al. 2003

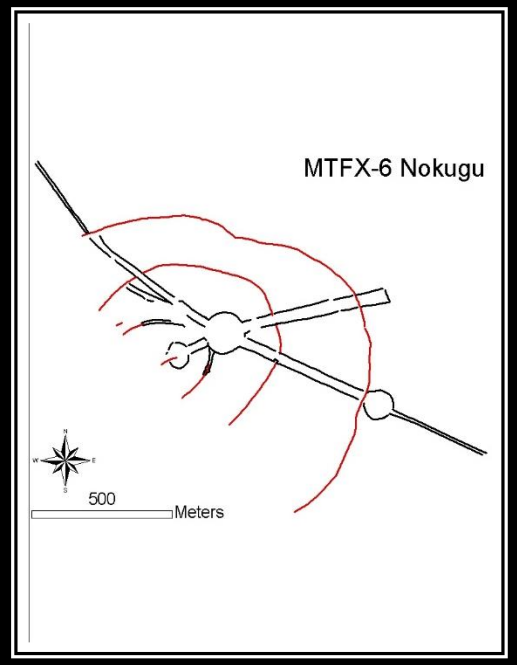


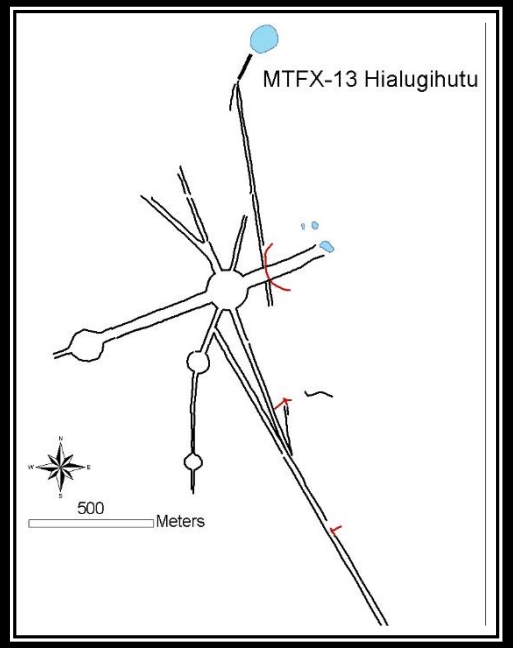
Trants, Montserrat
c. 500 BC – AD 600

Northern Amazonia



Gaván, Western Orinoquia,
c. AD 600-1300

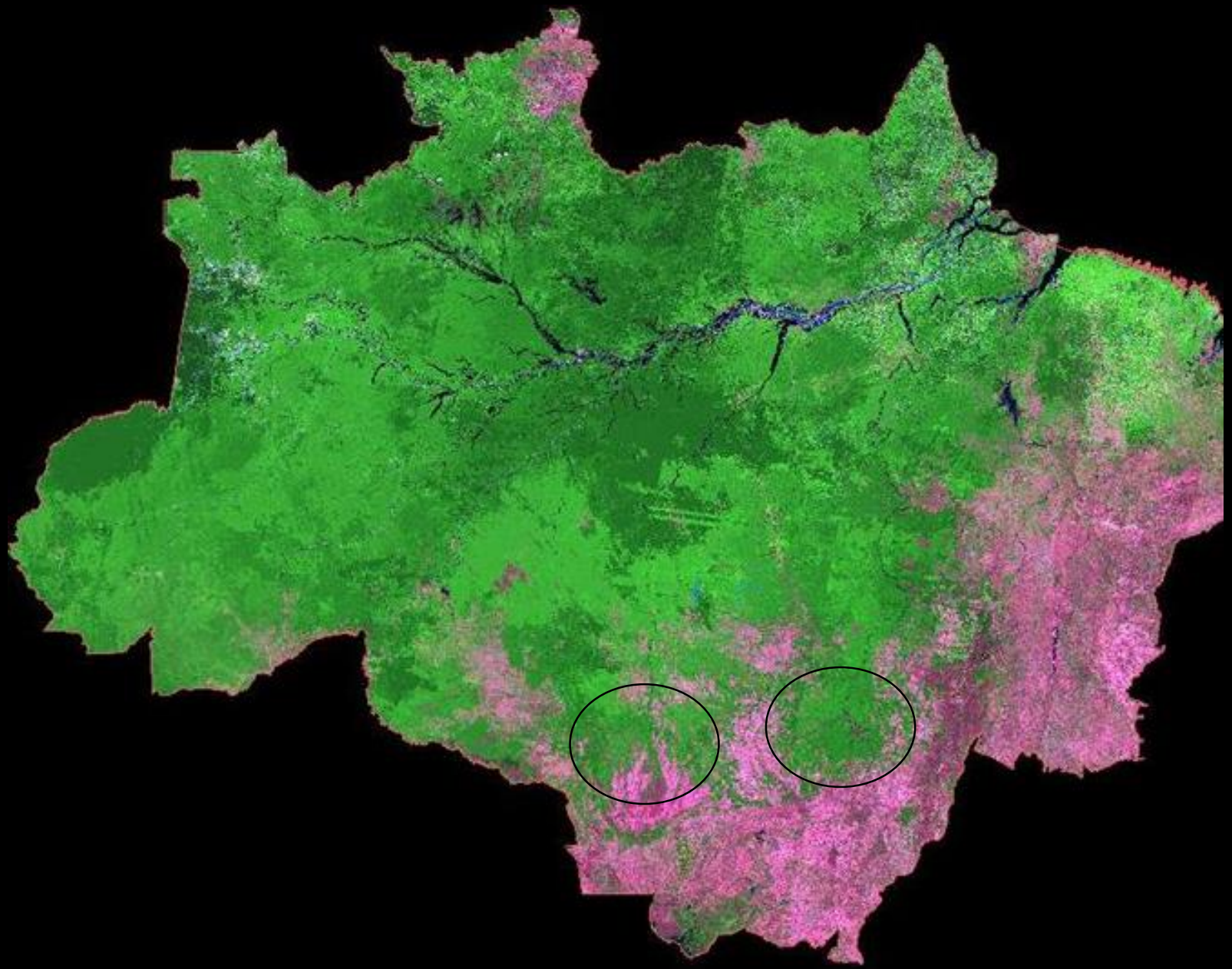




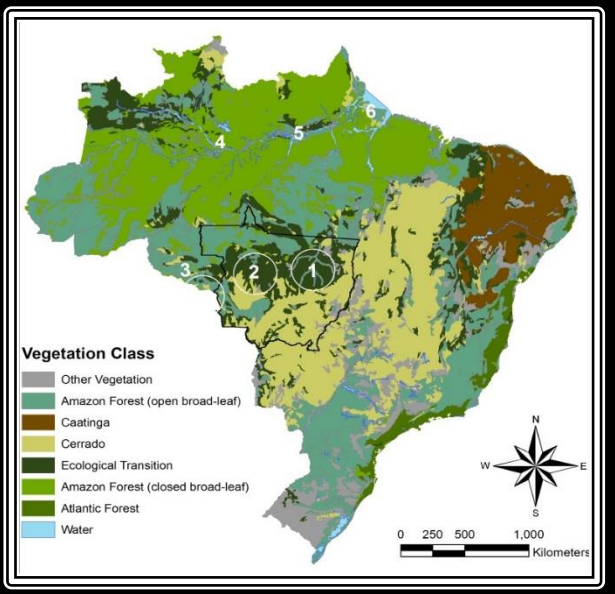
Earthworks provide key:

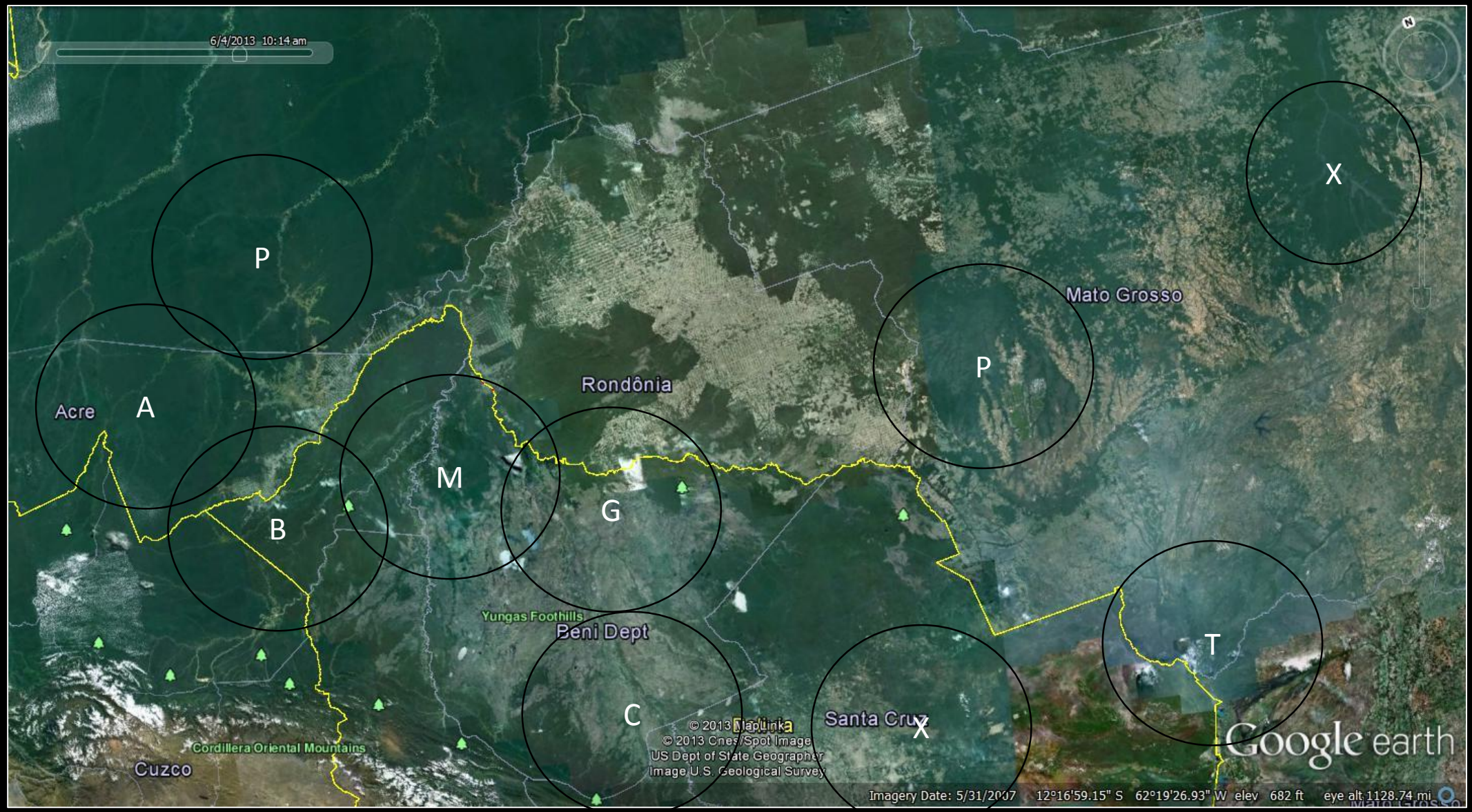
Highly visible and datable, contiguous, and precisely laid out.

Remarkable patterns within villages, like today, but much larger and linked by curbed roads across whole region

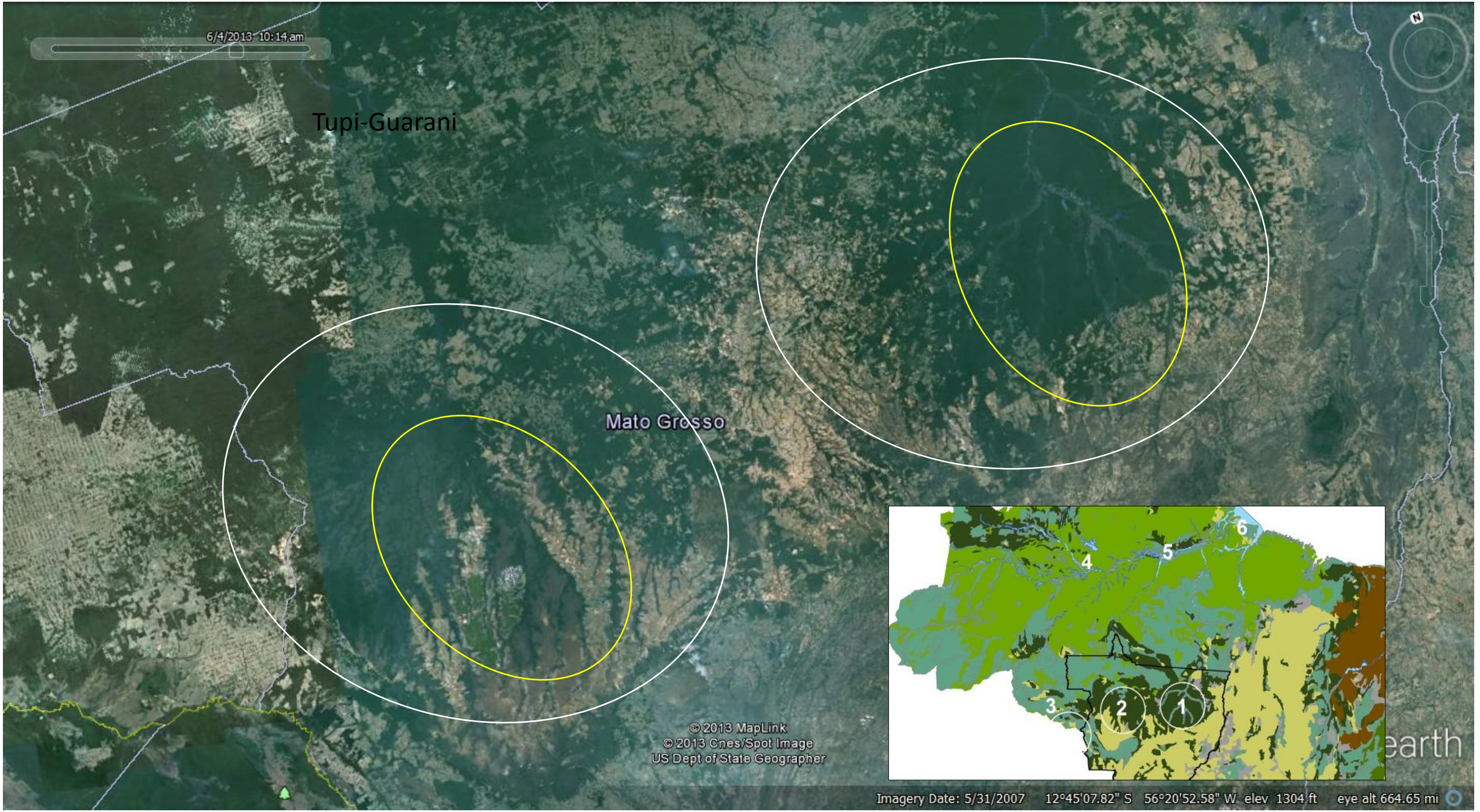


MODIS (8/2003; RGB)





Southern Transitional Forests


6/4/2013 10:14 am
Tupi-Guarani
Mato Grosso
© 2013 MapLink
© 2013 Cnes/Spot Image
US Dept of State Geographer
1
2
3
4
5
6
earth
Imagery Date: 5/31/2007 12°45'07.82" S 56°20'52.58" W elev 1304 ft eye alt 664.65 mi

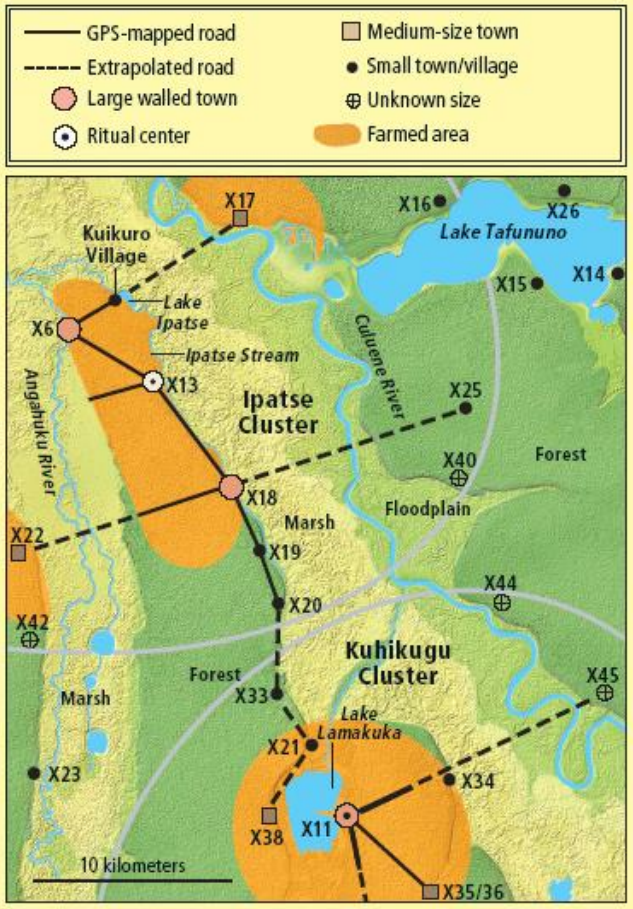
A Nação Pareci em 1720,
O bandeirante Antonio Pires de Campos
(1862 [1720]

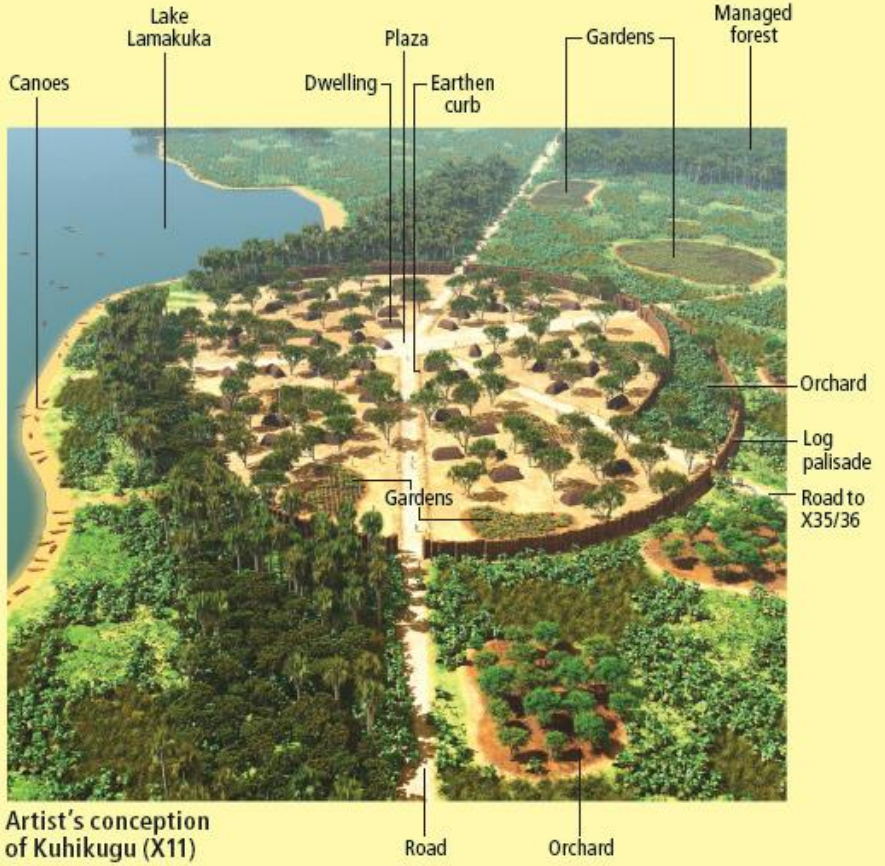
"These people exist in such vast quantity, that it is not possible to count their settlements or villages, [and] many times in one day's march one passes ten or twelve villages, and in each one there are from ten to thirty houses ... even their roads they make very straight and wide, and they keep them so clean that one will find not even a fallen leaf" (Campos 1862 [1720])

Este povo existe numa quantidade vasta, e não é possível somar os assentamentos deles, em um dia pass dez a doze, em cada um dez a trinta casas, e mesmo as estradas eles fazem tão reto e limpo que nem uma folha encontra

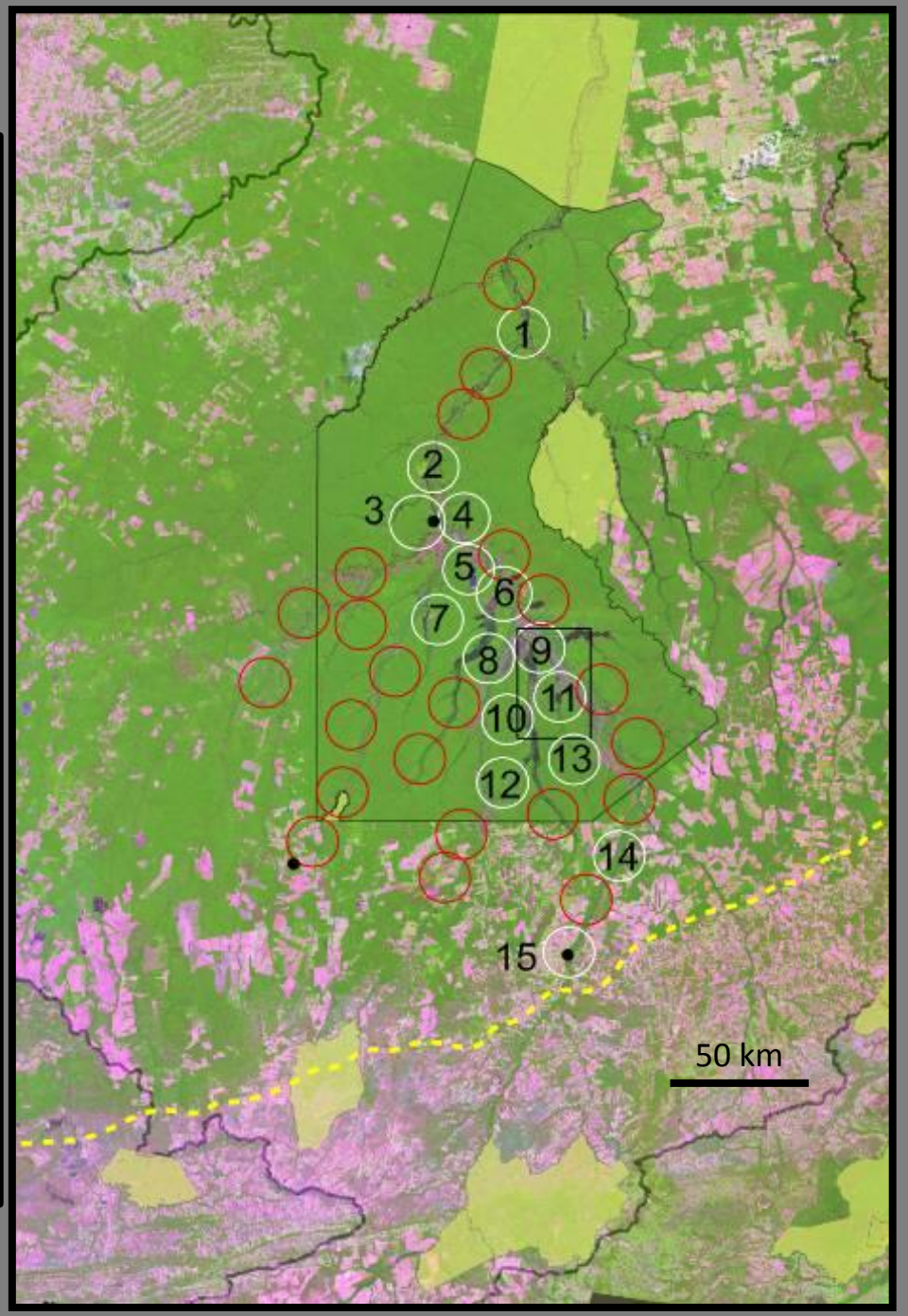
Pre-Columbian Towns

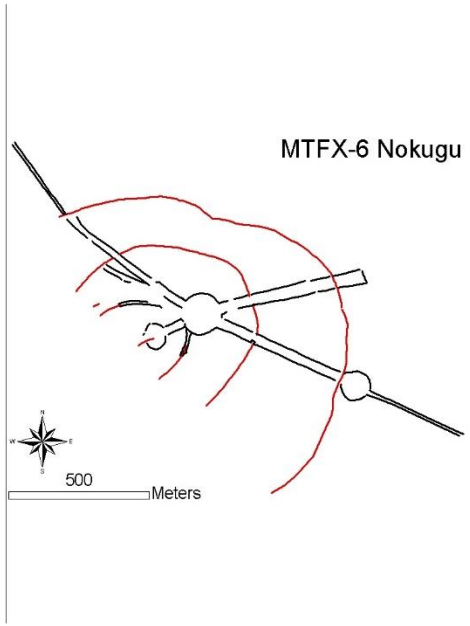
Surveys show that the Kuikuro's ancestors reworked hundreds of square kilometers of forest into productive agricultural land. Although individual settlements were small by modern standards, they were packed close together in clusters, each of which functioned as a political unit. The settlements had a fractal organization; for example, clusters, towns and houses were all organized along the same roughly east-west axis.

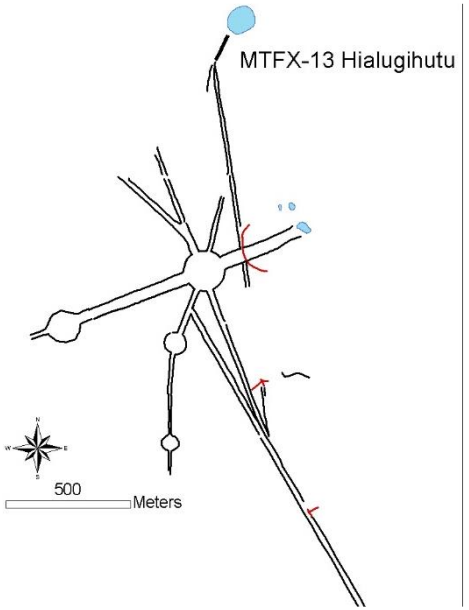




Artist's conception of Kuhikugu (X11)



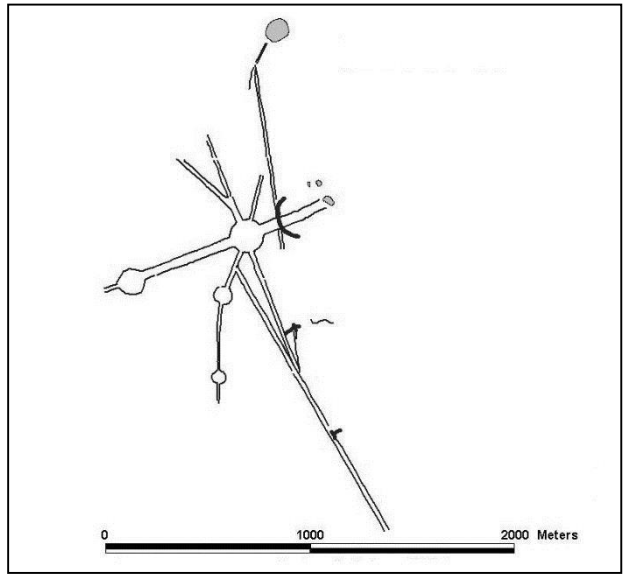




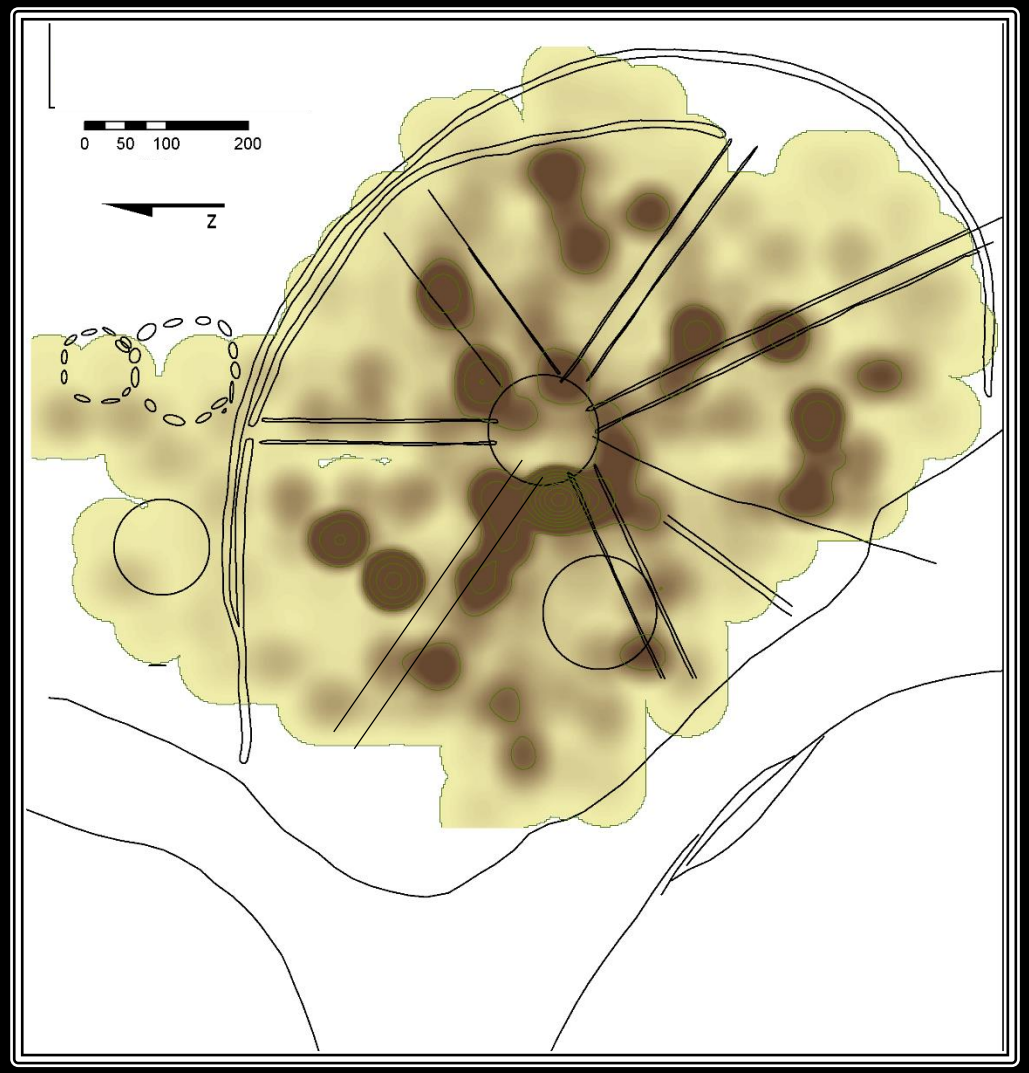
Earthworks provide key:

Highly visible and datable, contiguous, and precisely laid out.

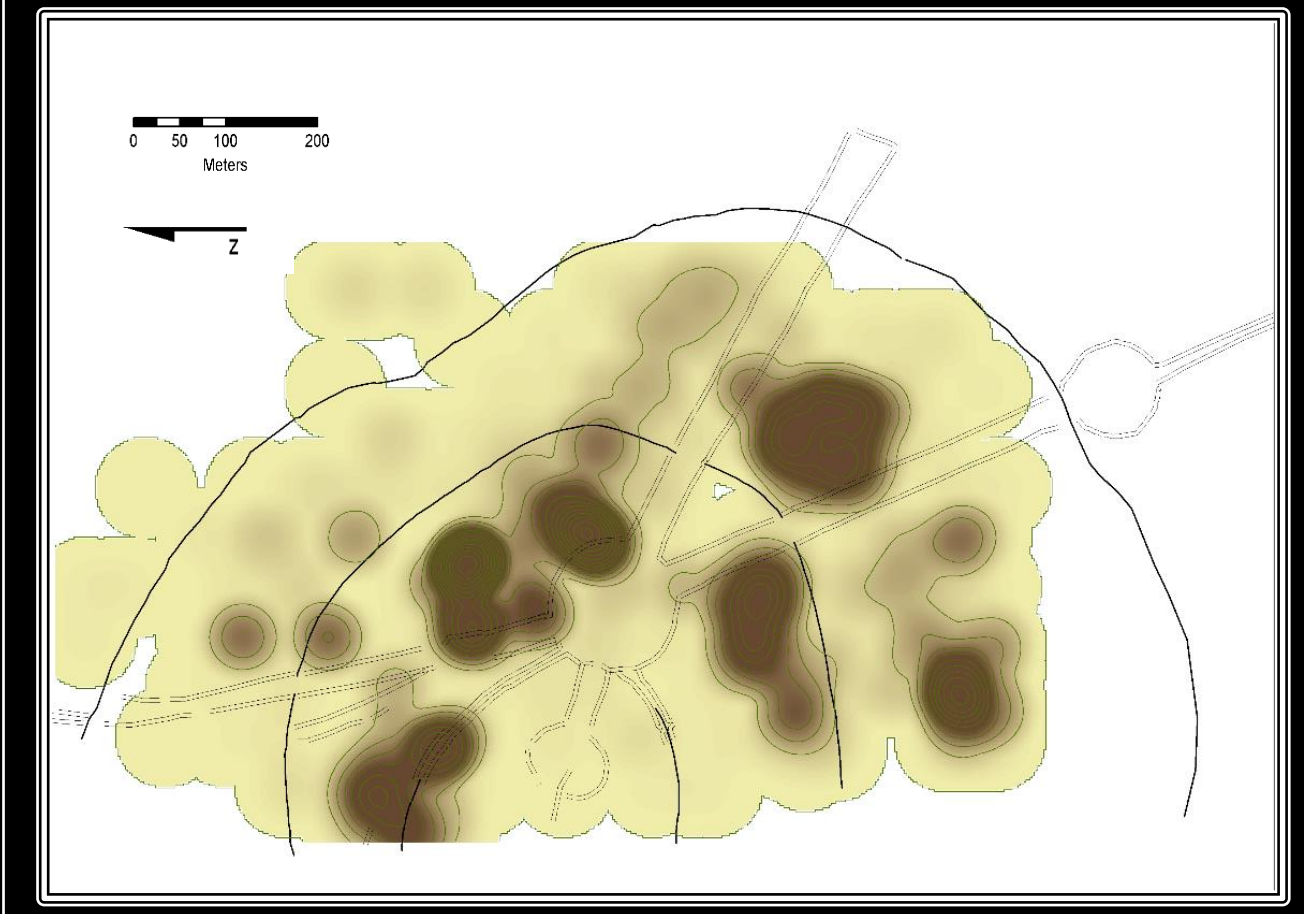
Remarkable patterns within villages, like today, but much larger and linked by curbed roads across whole region


0
1000
2000 Meters

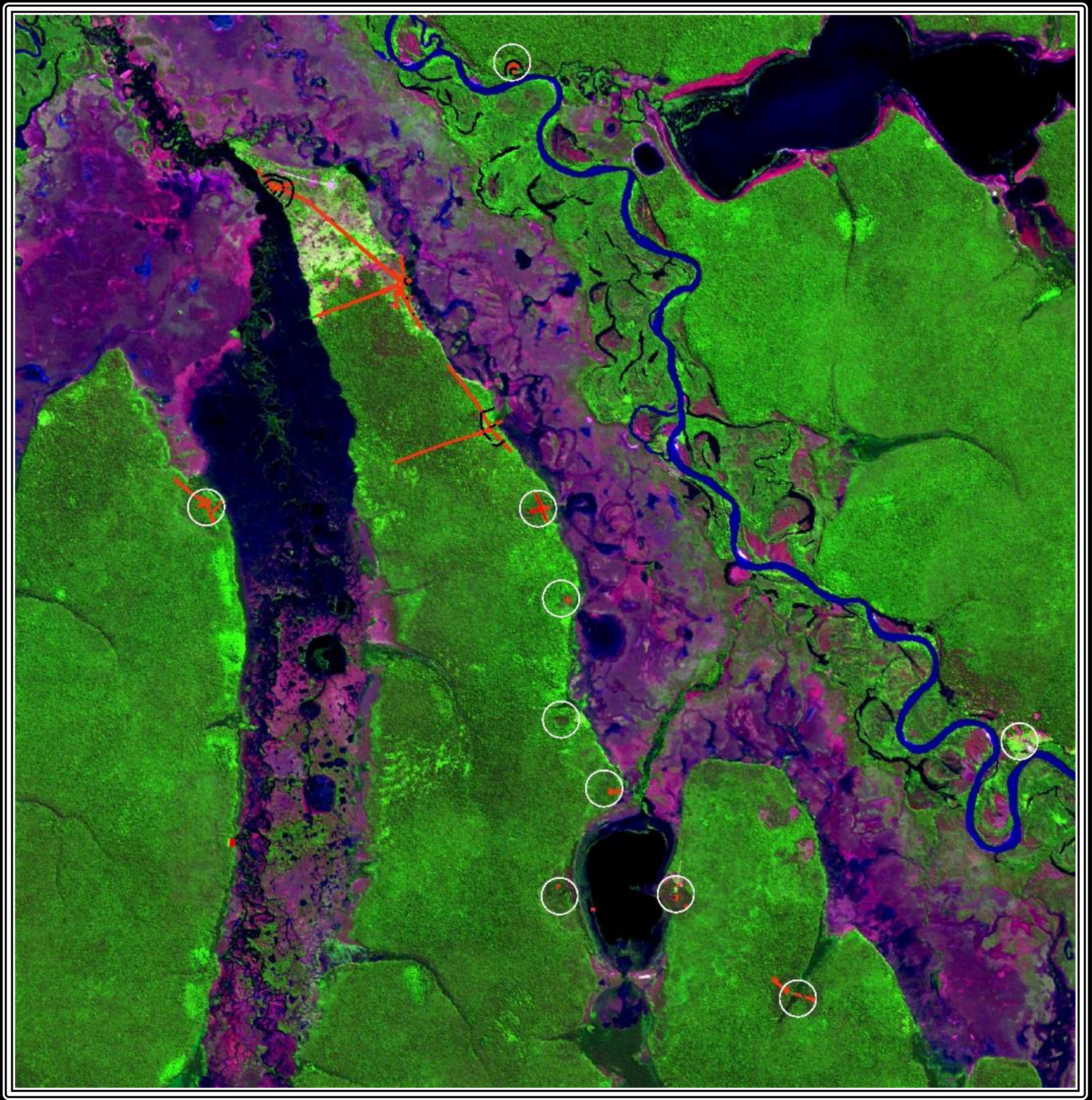
Kuhikugu (X11)

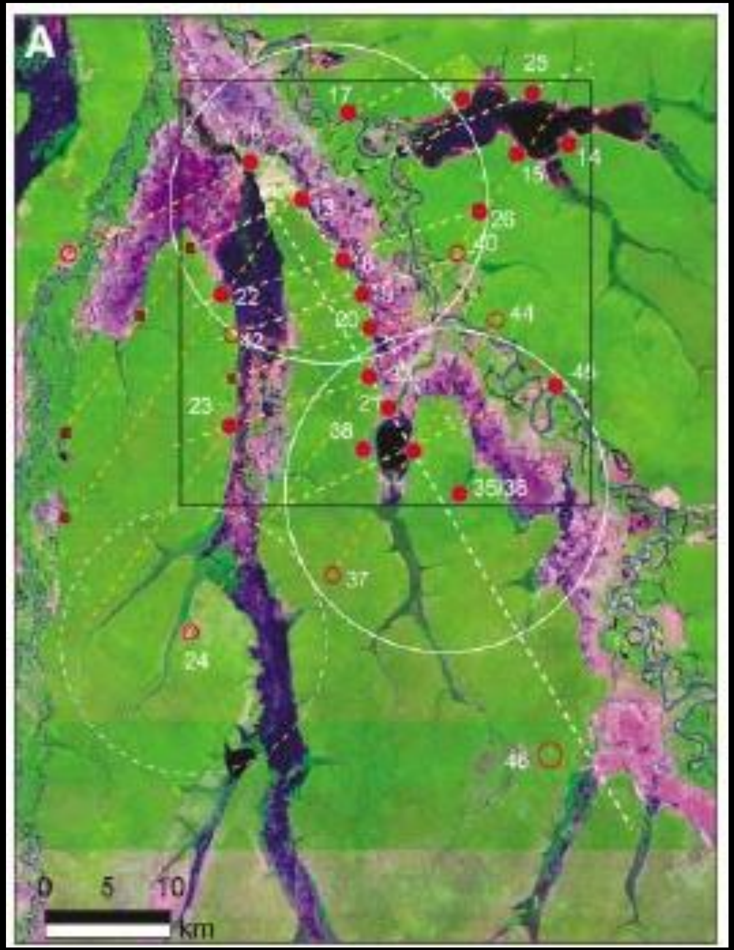


Nokugu (X6)

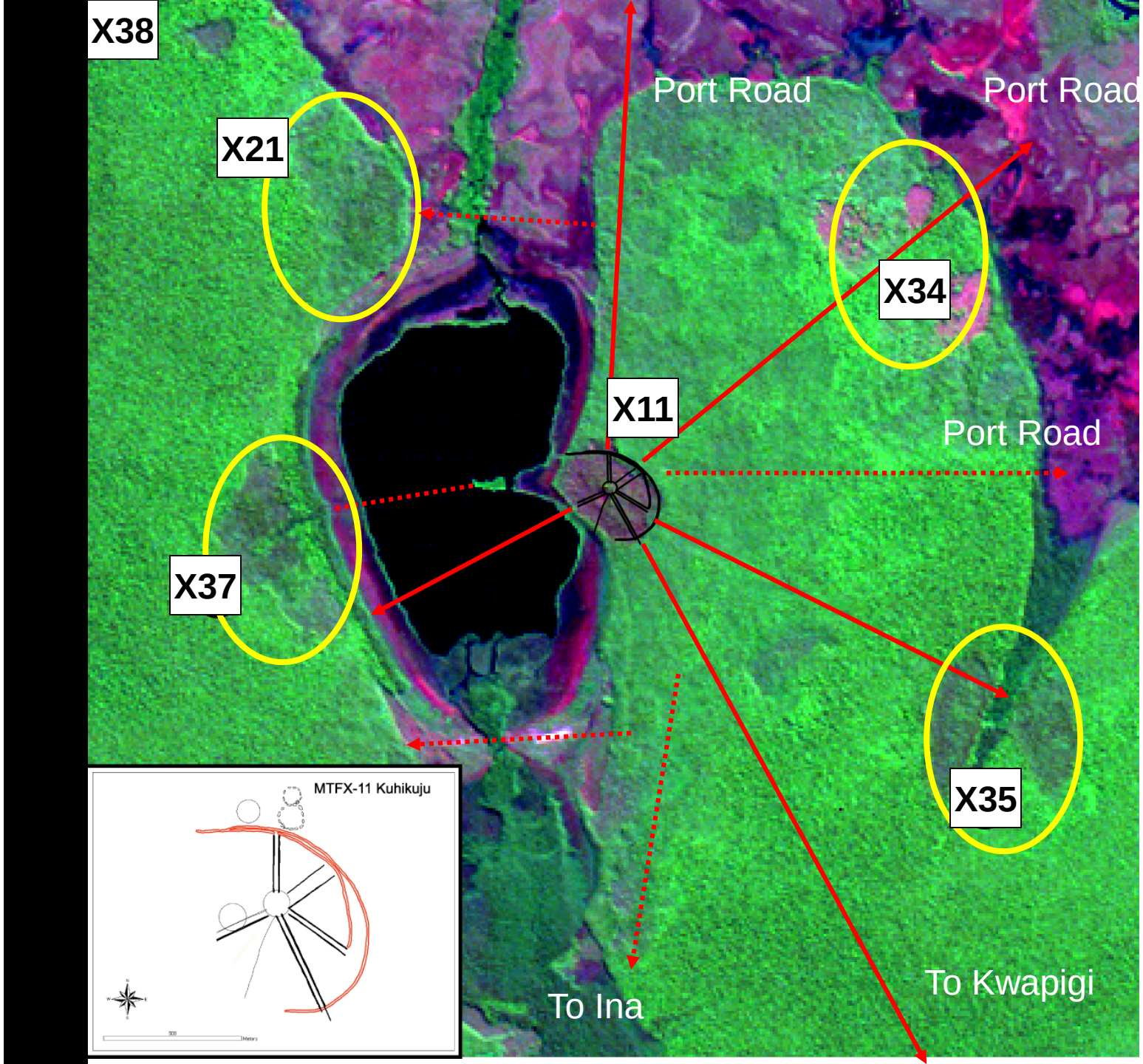


Science 2003



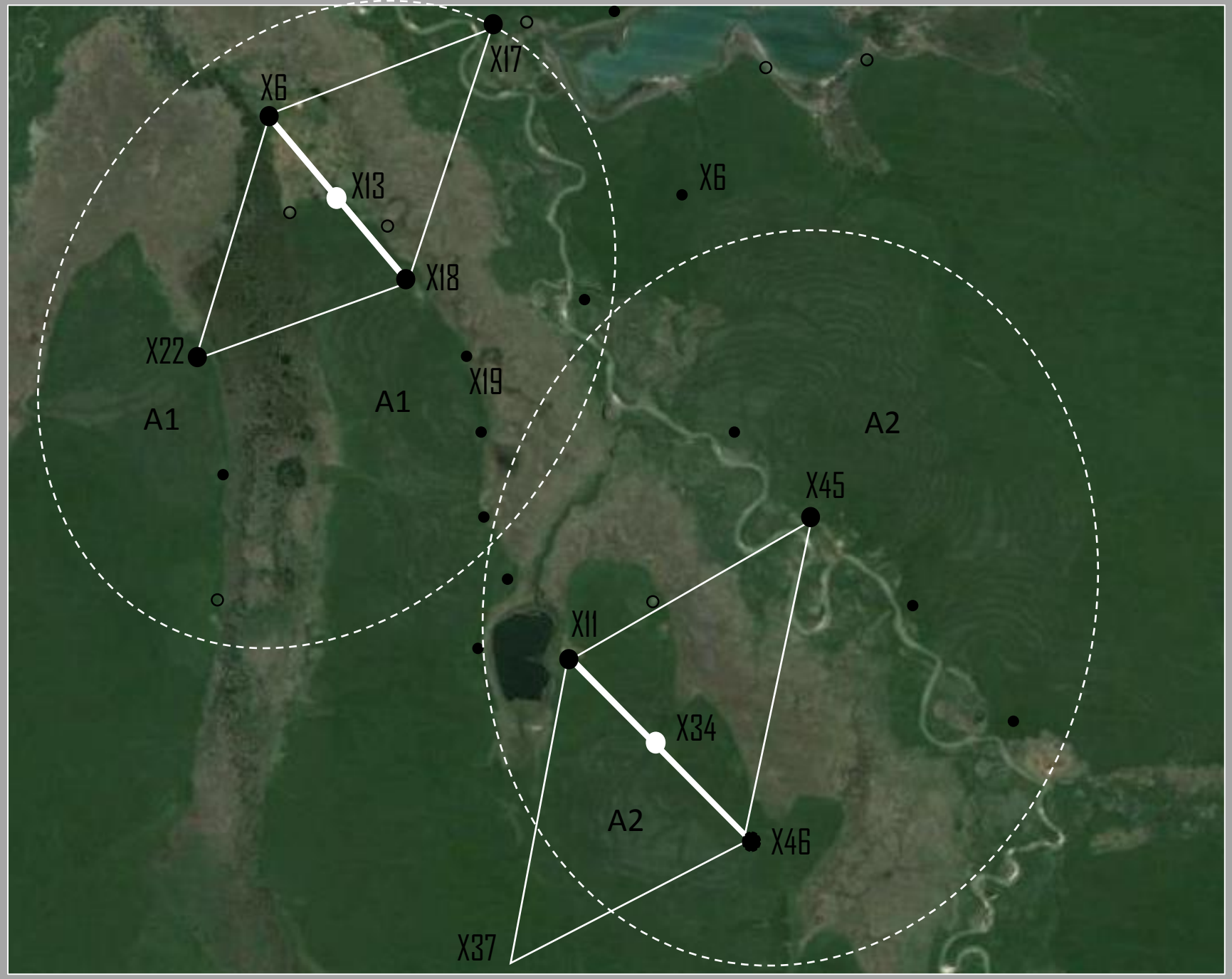


A
25
17
14
15
26
40
22
20
41
23
38
45
35/36
37
24
46
0 5 10
km



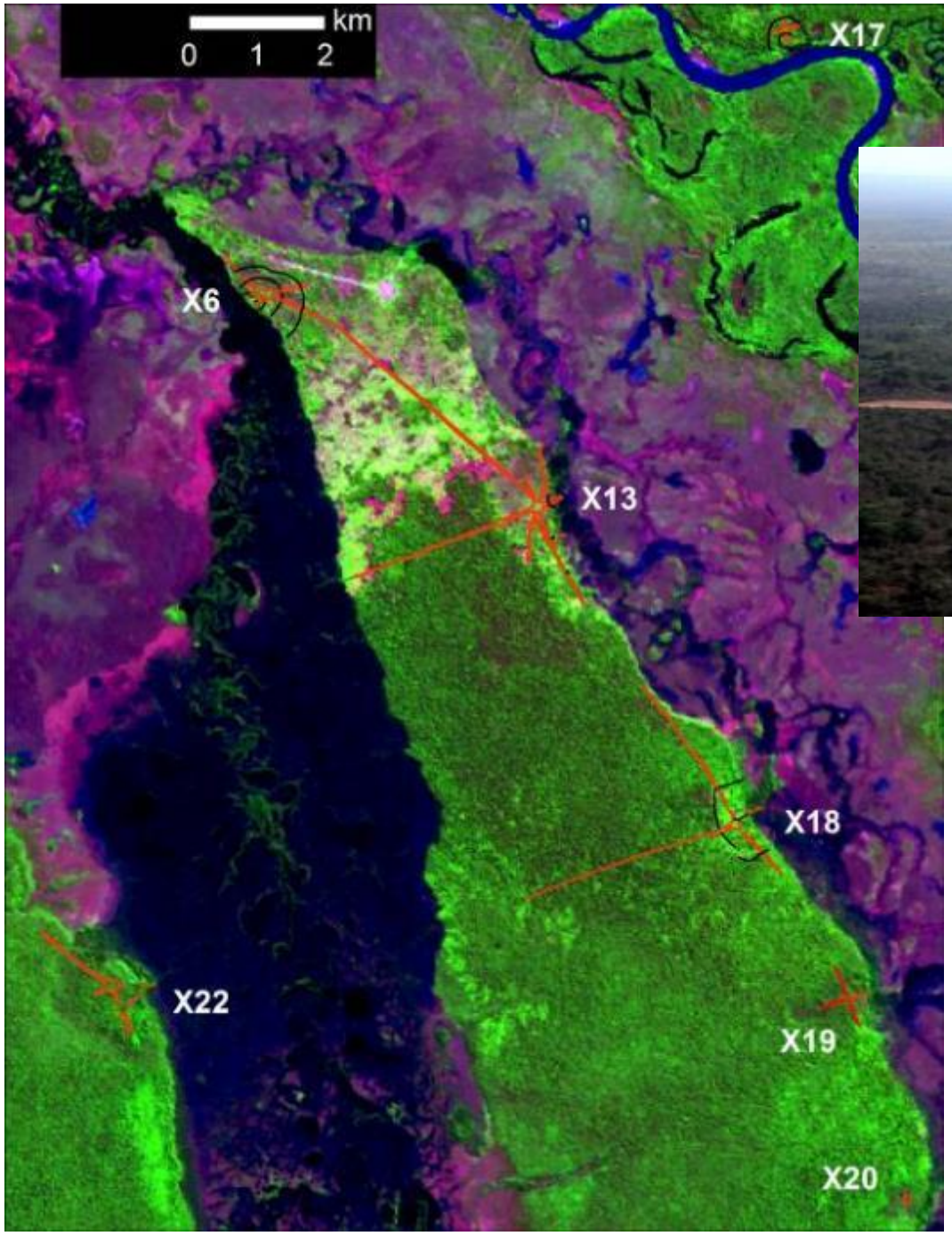
Kuhikugu Cluster

Xingu Garden Cities



Terracing (A) and Agricultural Intensification in Production Landscapes

- Major walled residential center
- Un-walled non-residential hub site
- Minor un-walled plaza residential center
- Non-plaza hamlet

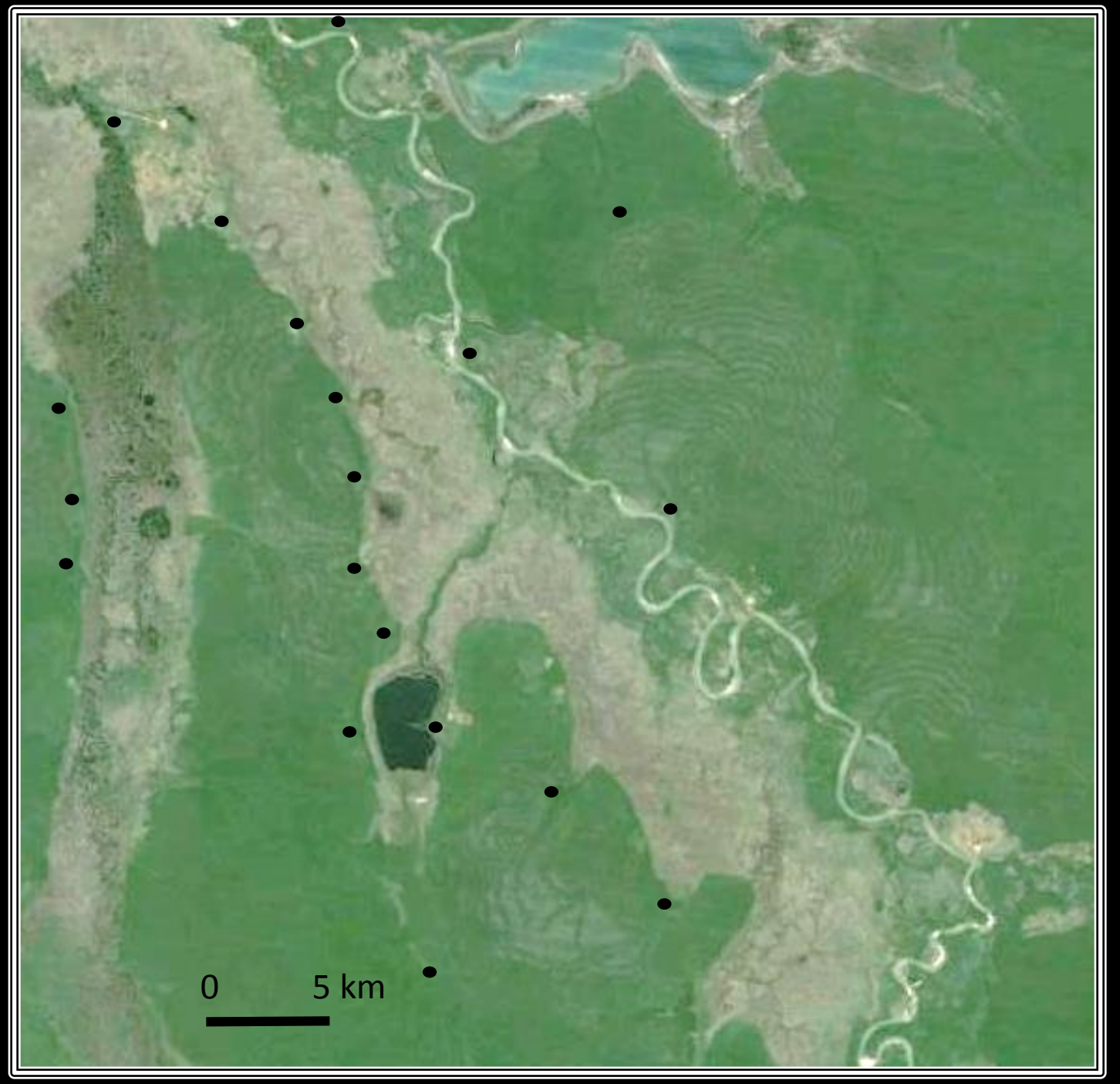


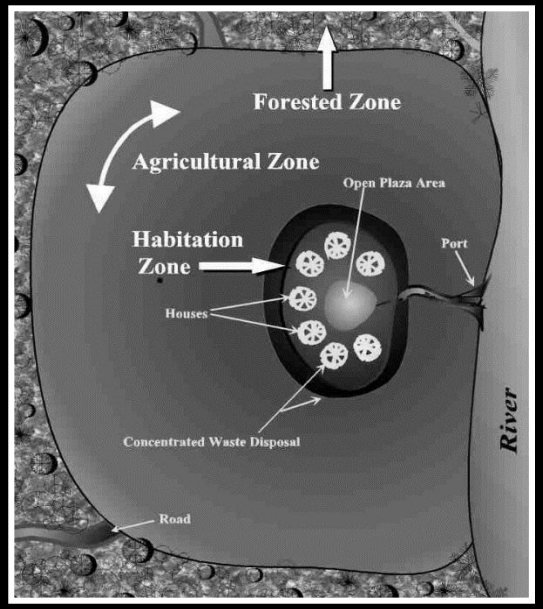
The fractal person: body and landscape.

Then, they get complex
(and the “Button Effect”)

Hybrids and the Post-human: Is this arts or sciences?

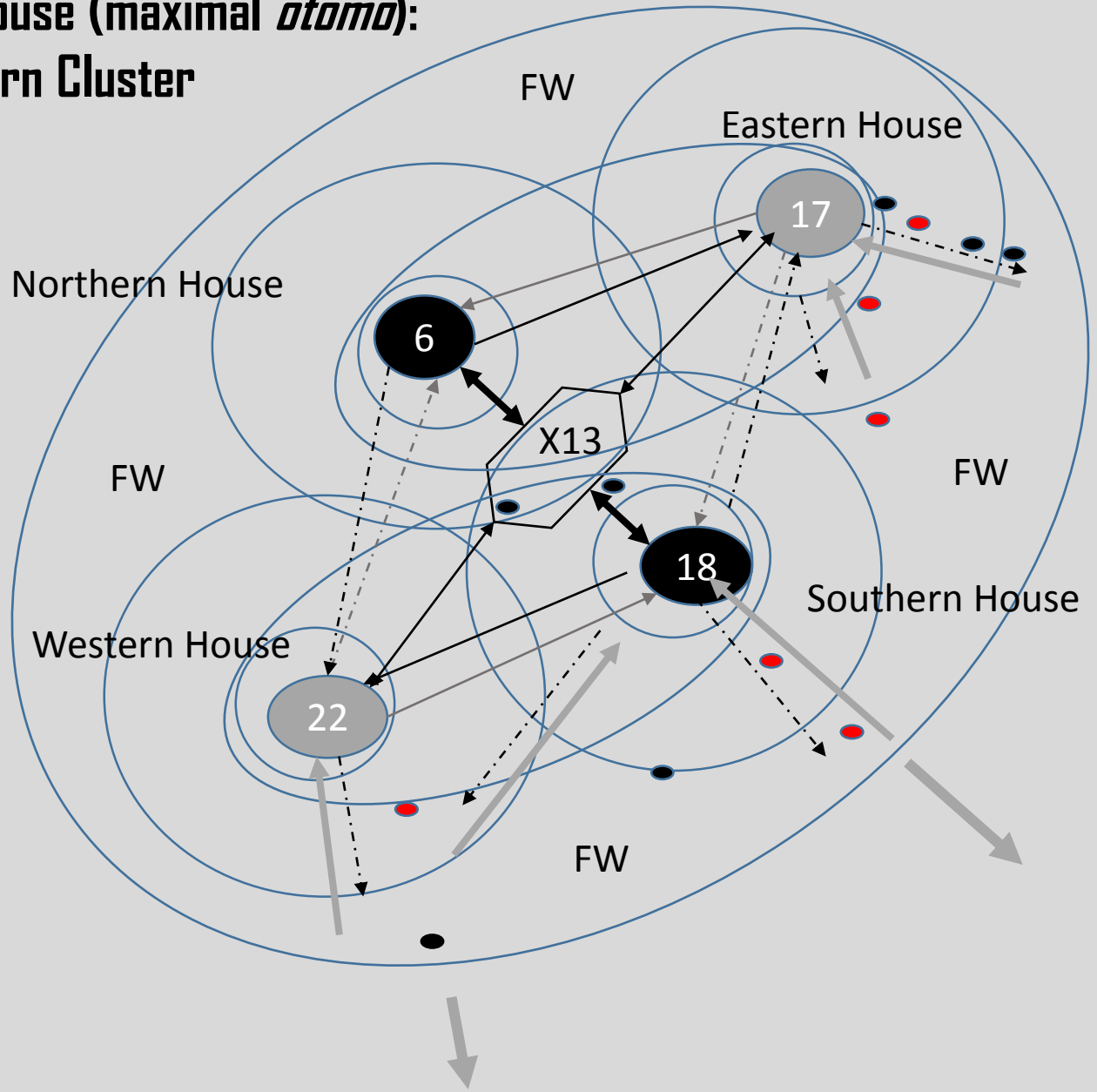

0 5 10
km


0
5 km



It used to be so simple!

The Xingu Great House (maximal *otomo*): Northern Cluster



Key

Settlements

- First-order
- Second-order
- Tertiary Plaza
- Hamlet

Socio-Symbolic Resources

- primary
- secondary

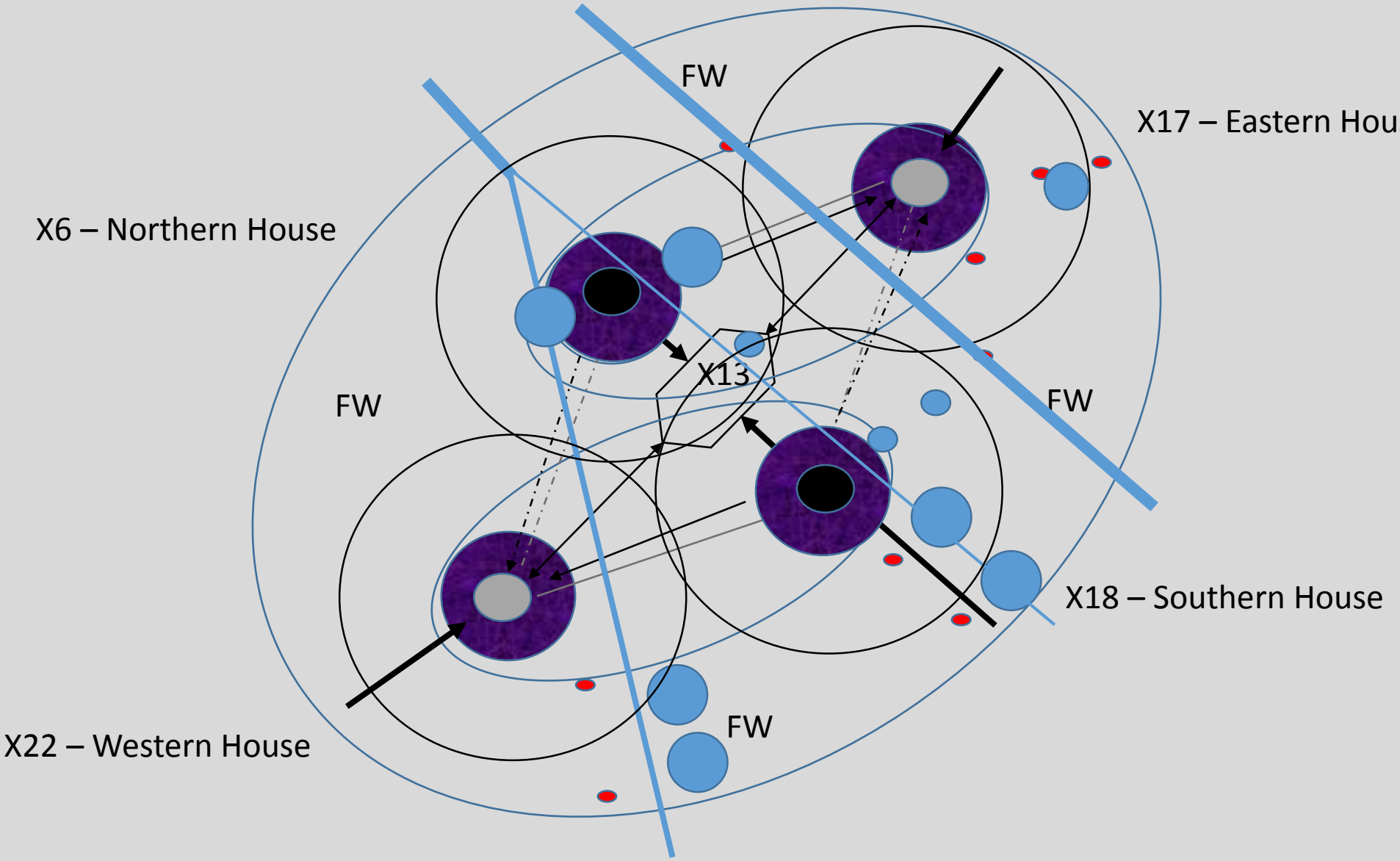
Raw Materials

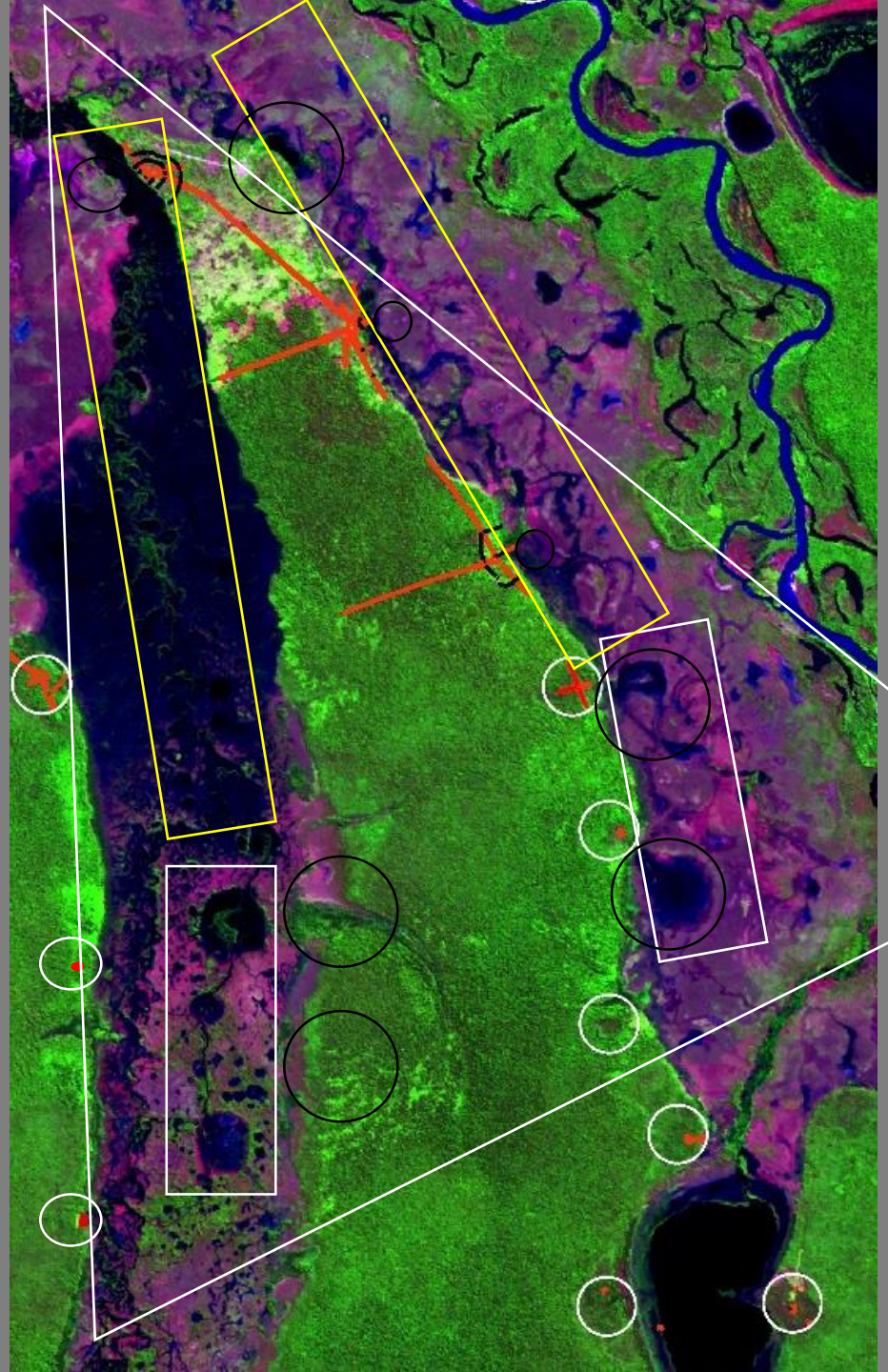
- primary
- secondary

Things were complex!

Joining what we know about materials and social flows in contemporary communities with past settlement networks we can suggest this:

The old French master wrote back on the book, at 99, and was very turned on by the Houses


FW
X17 – Eastern House
X6 – Northern House
X13
FW
FW
X18 – Southern House
FW
X22 – Western House



Hydrology and/or
environmental engineering:

Funnel resources;
Deep water hatcheries;
A supply line;

No deep water fishing;
ideological barriers to really
deep waters, hatchery
preserves, big breeding pools.

Theirs is a science of swimmers,
but also carefully engineered.

Ours a context-sensitive science,
as well?

Terracing and Agricultural Intensification in Production Landscapes

- Major walled residential center
- Un-walled non-residential hub site
- Minor un-walled plaza residential center
- Non-plaza hamlet

A = terraces

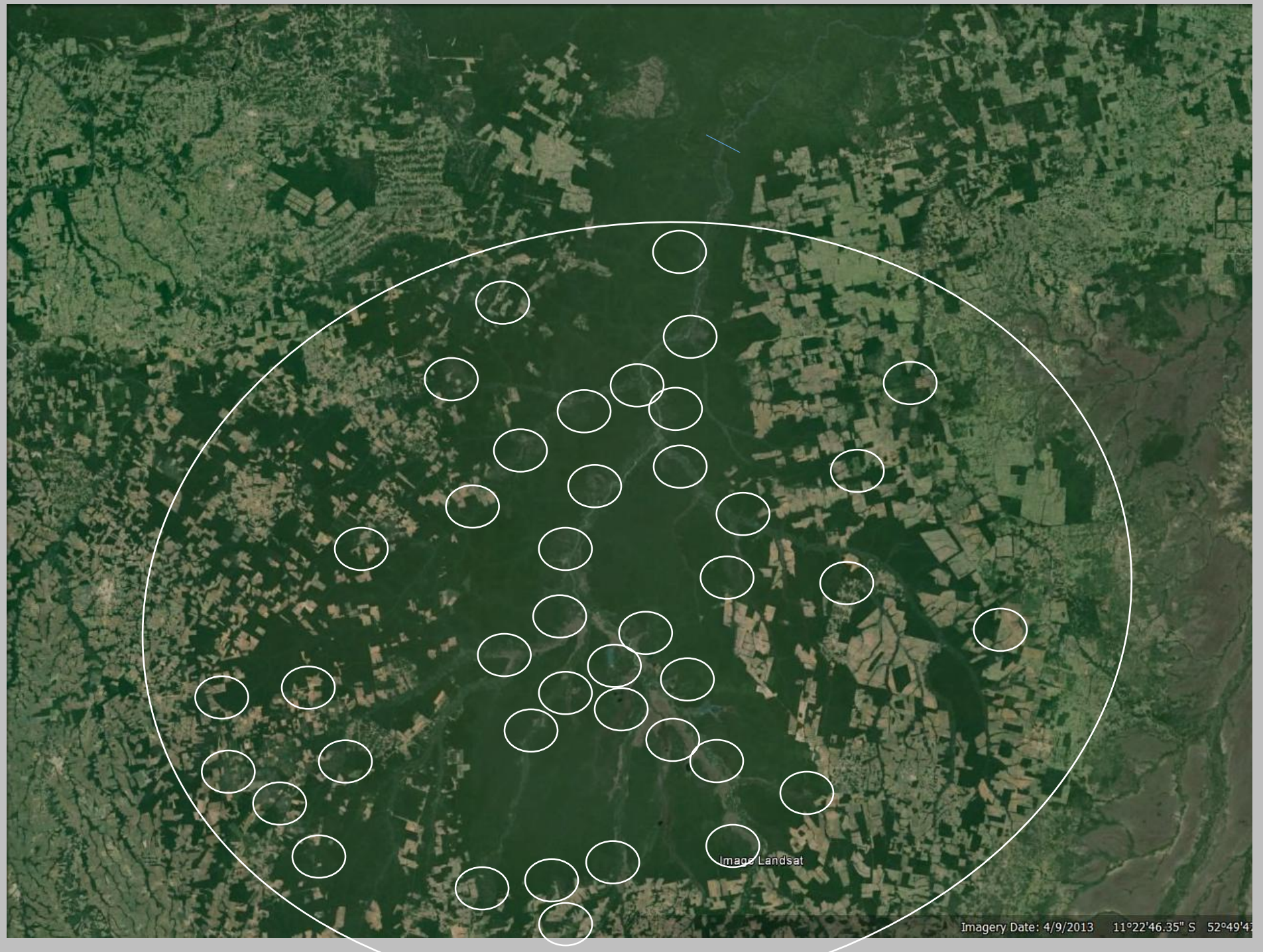


Image Landsat
Imagery Date: 4/9/2013 11°22'46.35" S 52°49'47

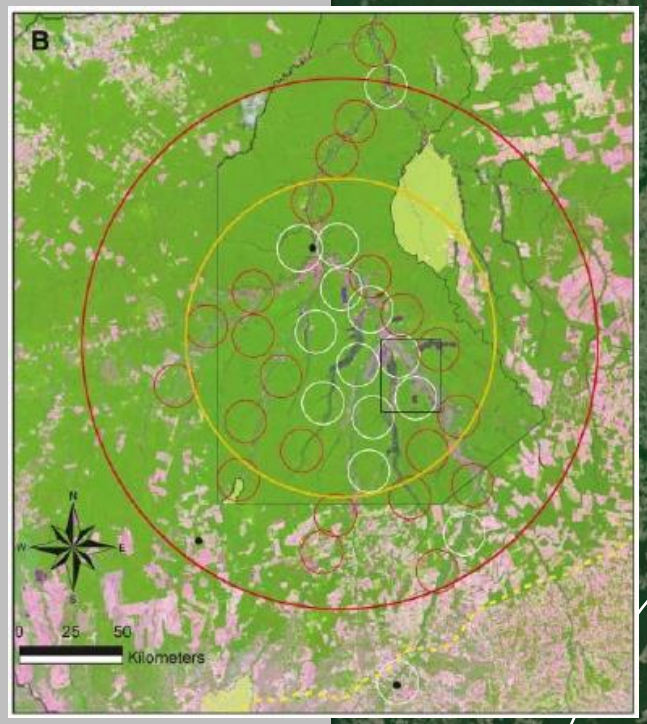
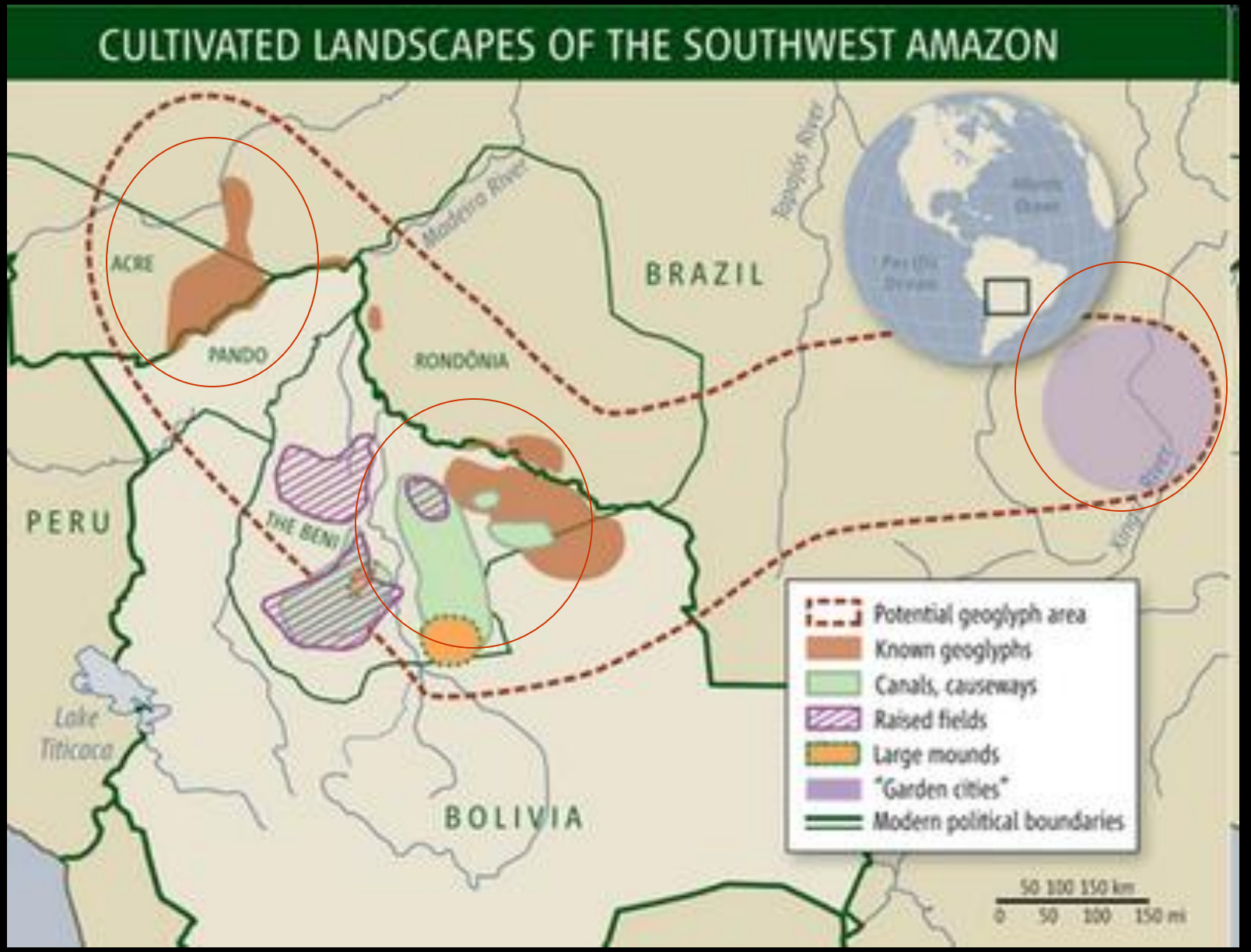


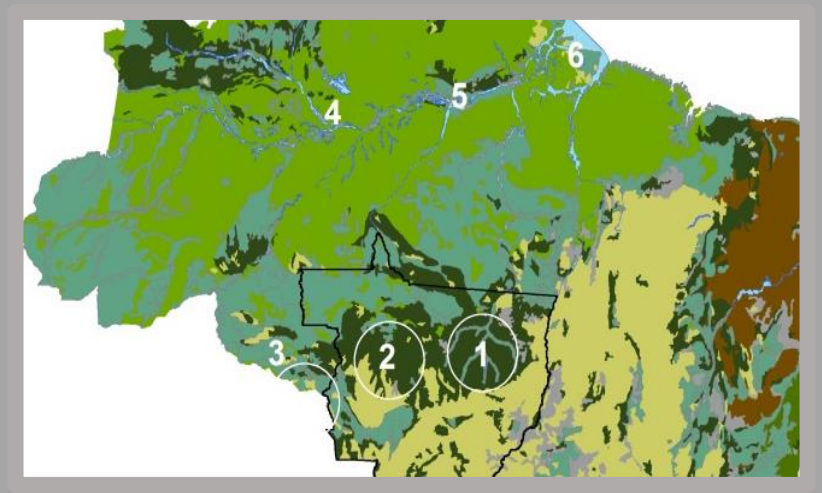
Image Landsat

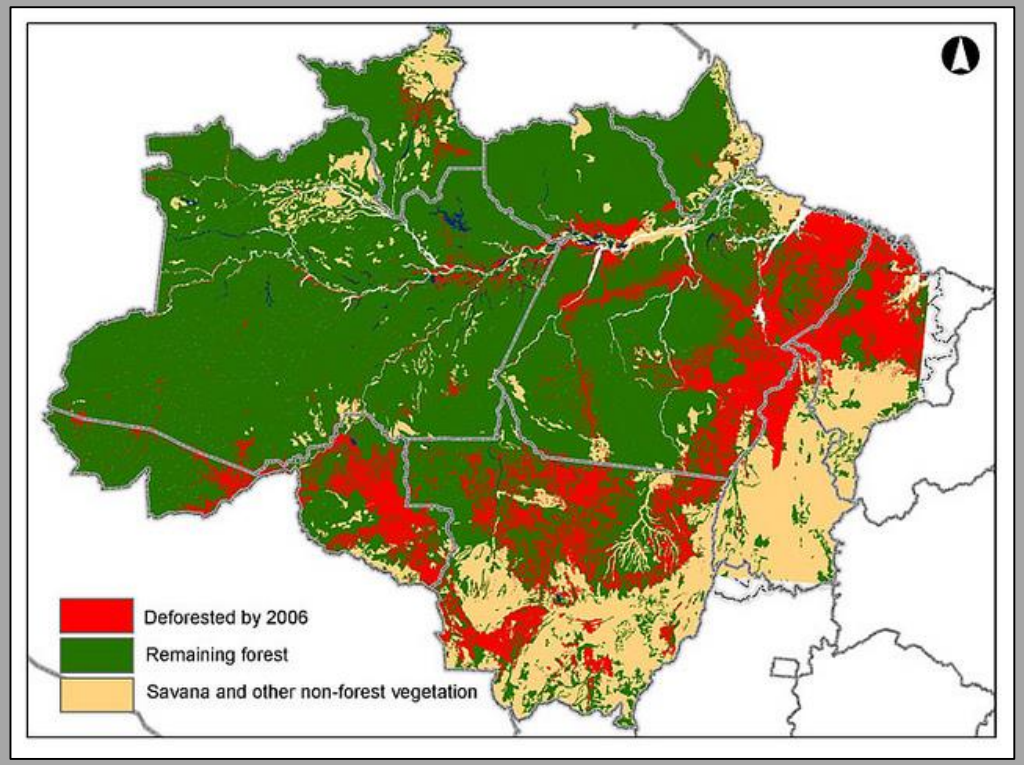
Imagery Date: 4/9/2013 11°22'46.35" S 52°49'47



C. Mann, Science (2008)

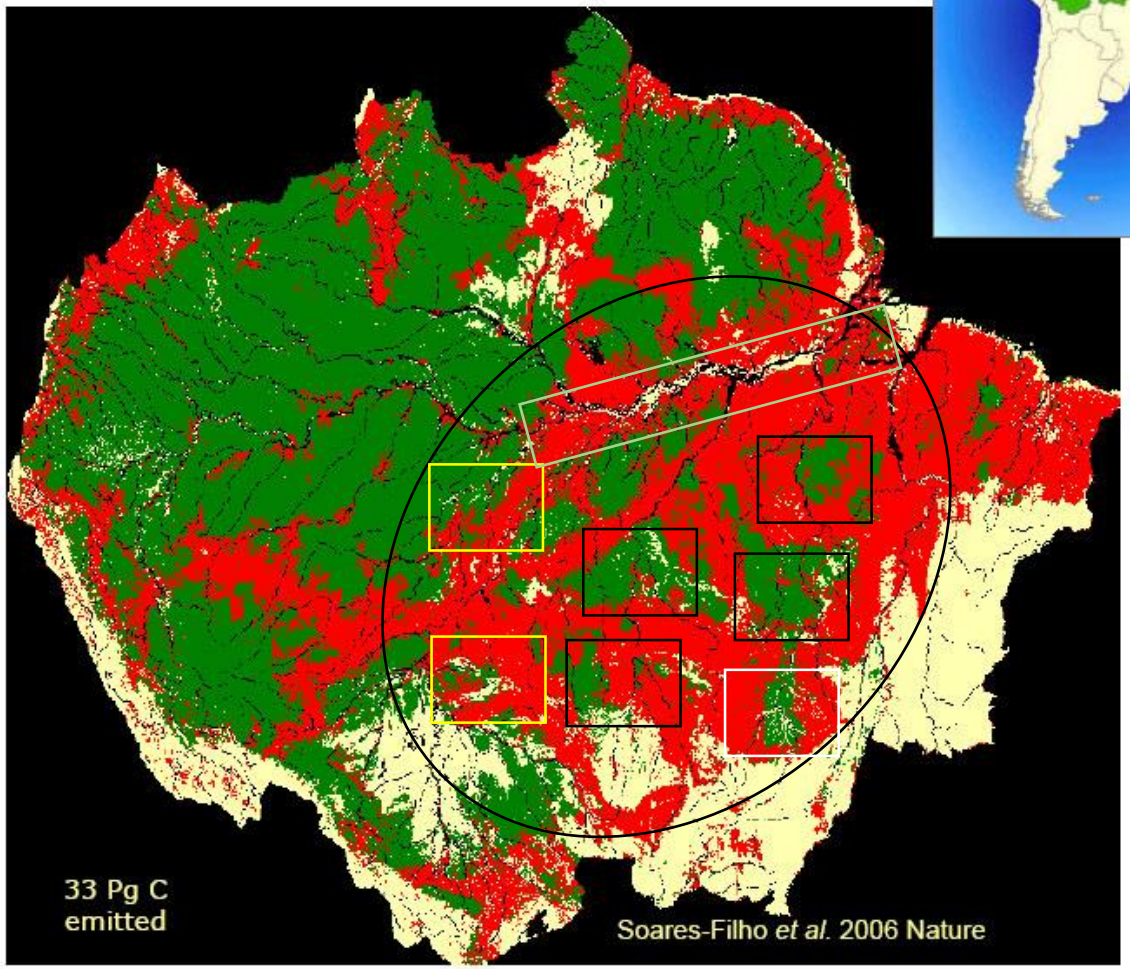
Geoglyphs (Acre, southwestern Brazil)

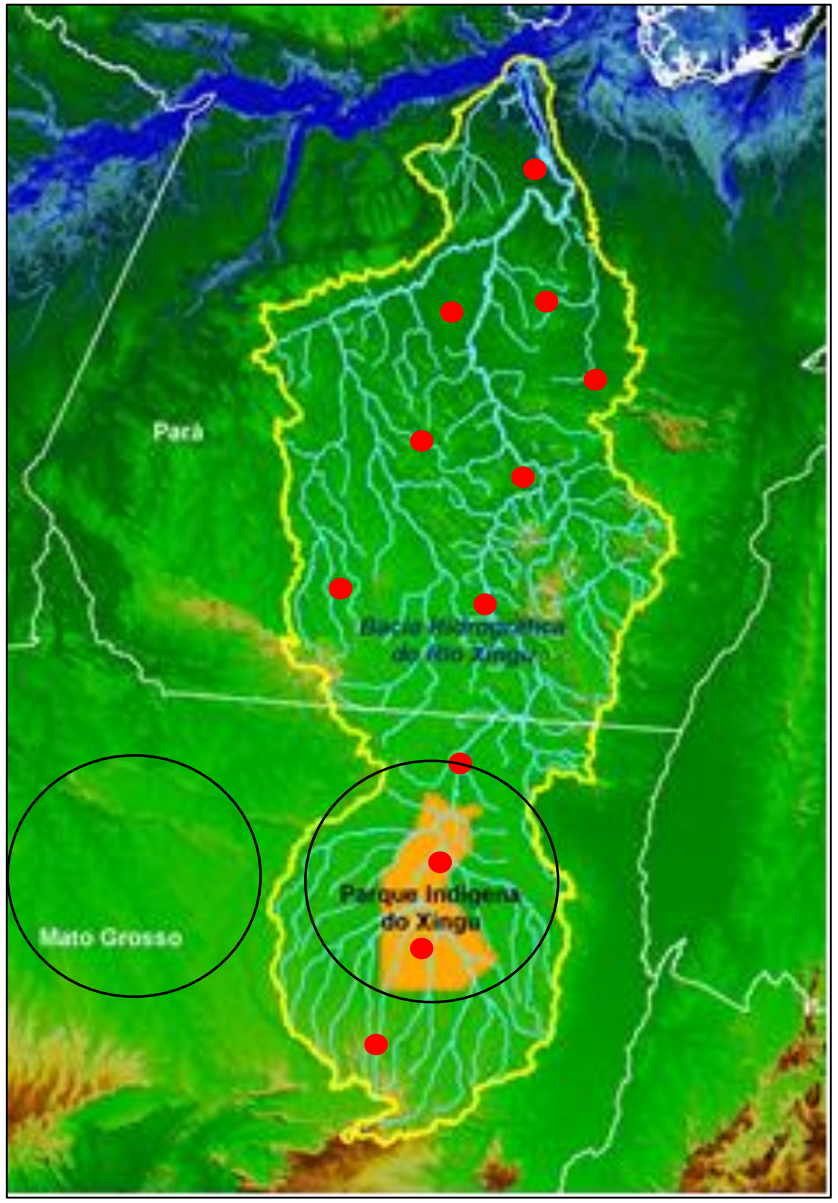




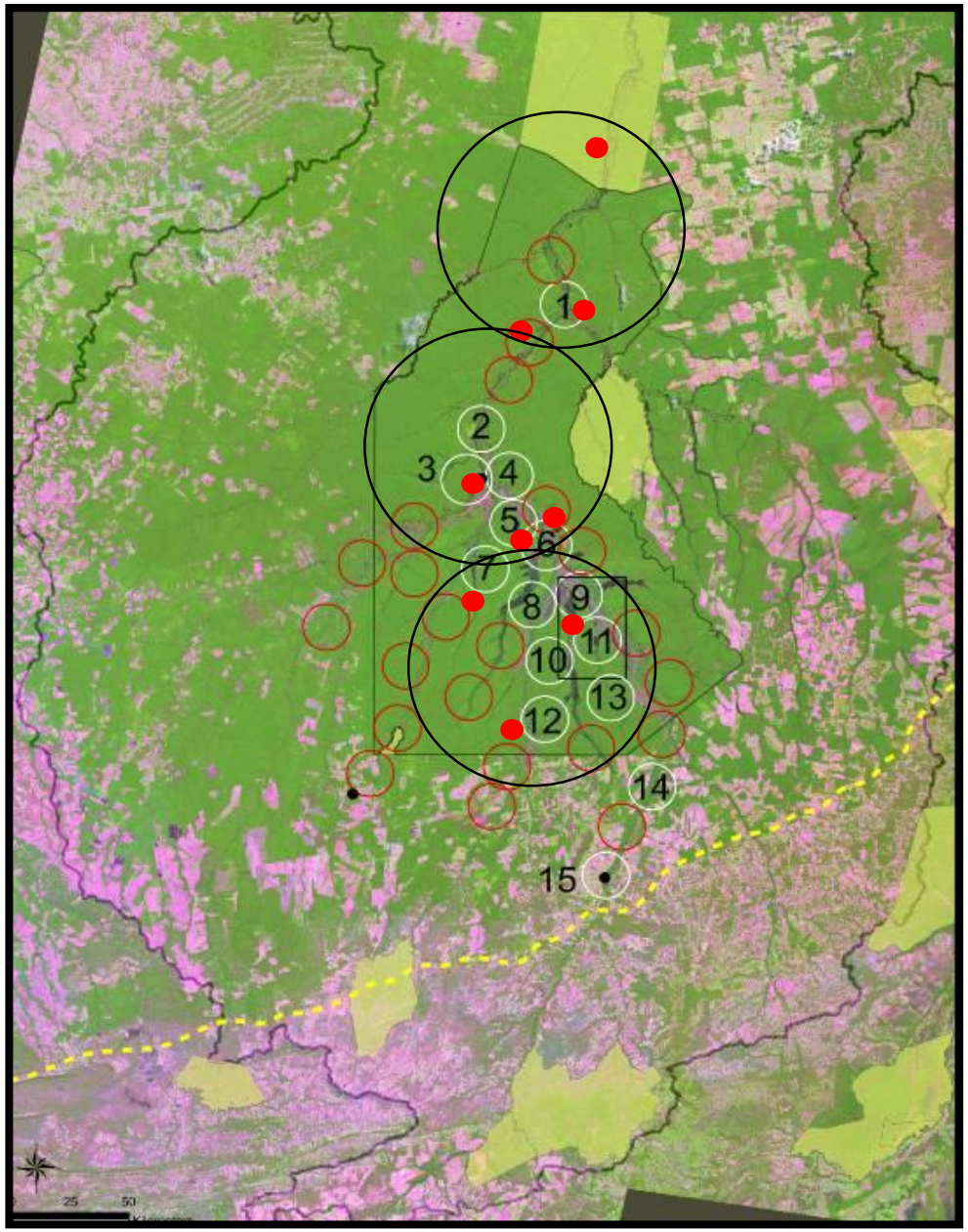
2050 BAU Scenario:

Deforested	2,698,735 km^2
Forest	3,320,409 km^2
Non-forest	1,497,685 km^2

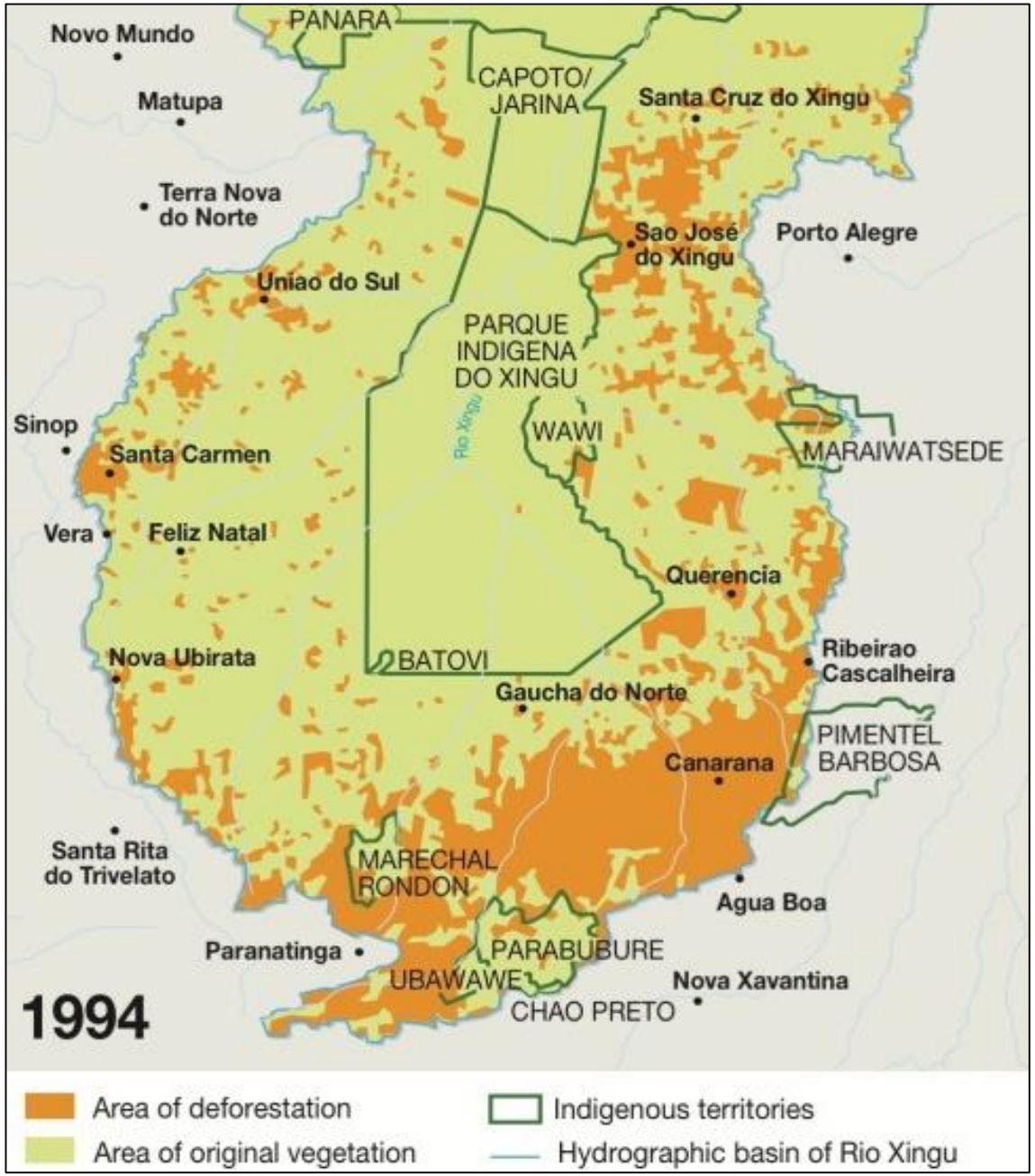


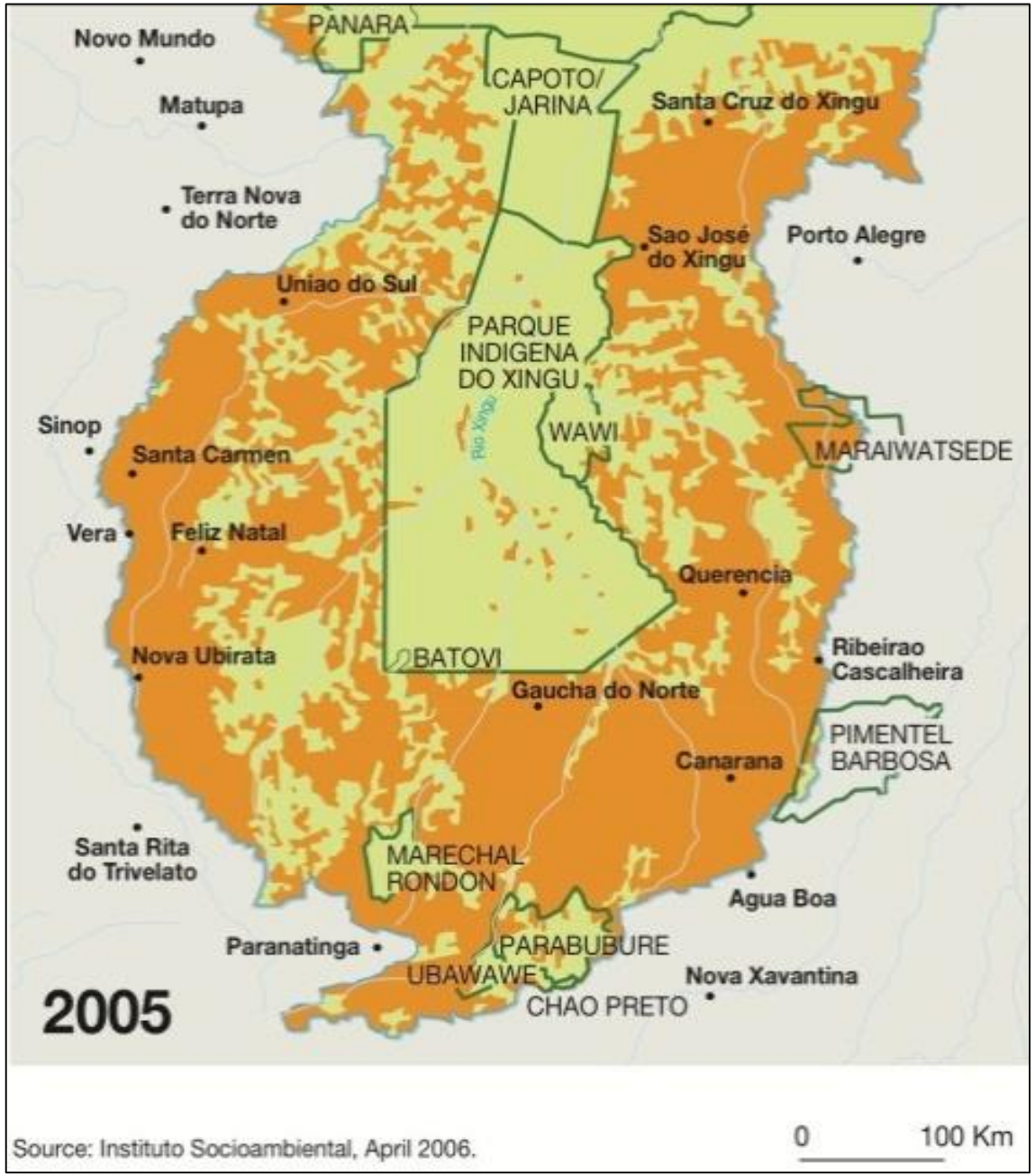


NSF Cyber-SEES



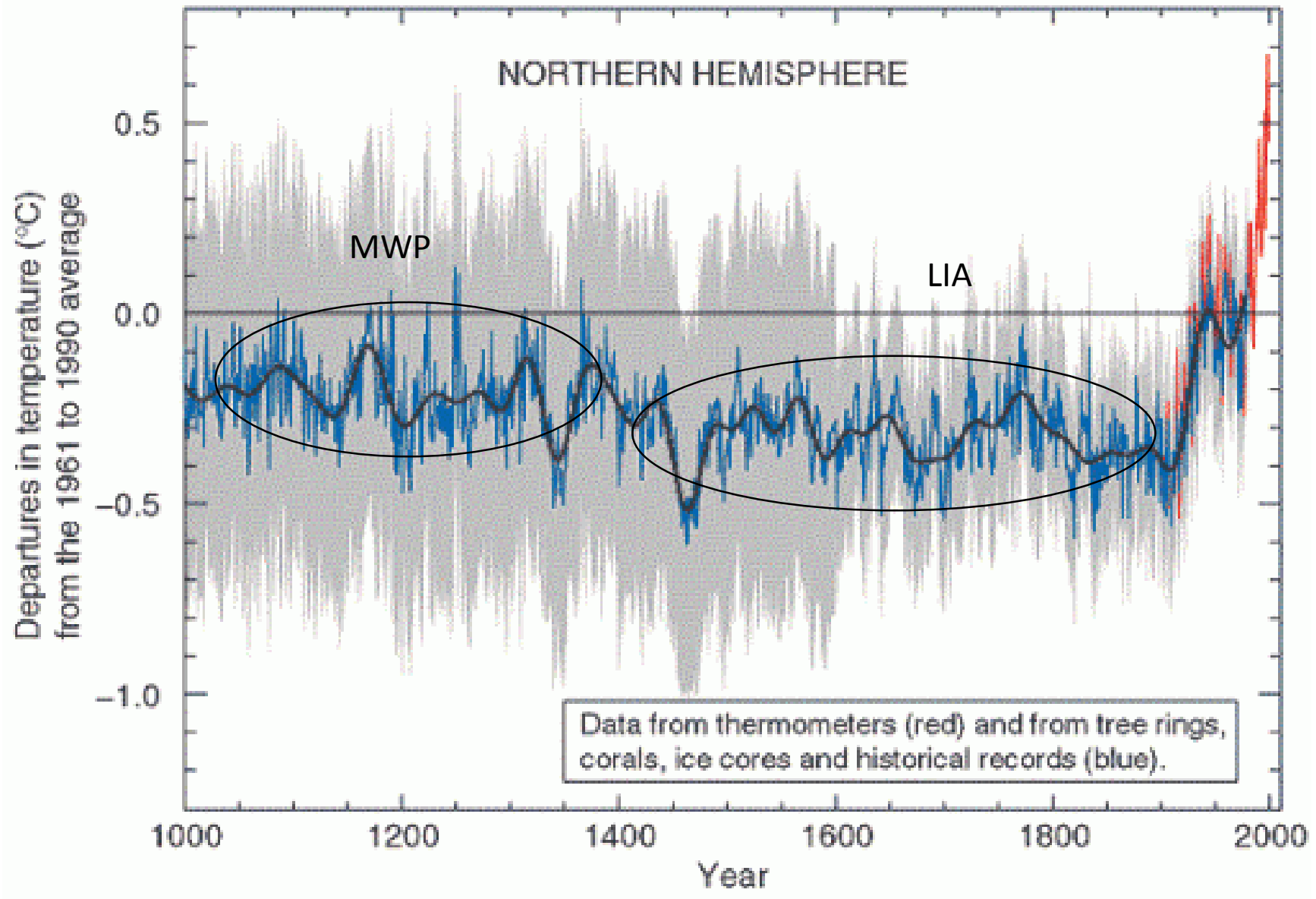
NSF CNH


Novo Mundo
PANARA
Matupa
CAPOTO/
JARINA
Santa Cruz do Xingu
Terra Nova
do Norte
Sao José
do Xingu
Porto Alegre
Uniao do Sul
PARQUE
INDIGENA
DO XINGU
Rio Xingu
Sinop
WAWI
MARAIWATSEDE
Santa Carmen
Vera
Feliz Natal
Querencia
Nova Ubirata
BATOVI
Ribeirao
Cascalheira
Gaucha do Norte
PIMENTEL
BARBOSA
Canarana
Santa Rita
do Trivelato
MARECHAL
RONDON
Agua Boa
Paranatinga
PARABUBURE
UBAWAWE
Nova Xavantina
CHAO PRETO
1994
Area of deforestation
Area of original vegetation
Indigenous territories
Hydrographic basin of Rio Xingu


Novo Mundo
PANARA
Matupa
CAPOTO/
JARINA
Santa Cruz do Xingu
Terra Nova
do Norte
Sao José
do Xingu
Porto Alegre
Uniao do Sul
PARQUE
INDIGENA
DO XINGU
Rio Xingu
Sinop
WAWI
MARAIWATSEDE
Santa Carmen
Vera
Feliz Natal
Querencia
Nova Ubirata
BATOVI
Ribeirao
Cascalheira
Gaucha do Norte
PIMENTEL
BARBOSA
Canarana
Santa Rita
do Trivelato
MARECHAL
RONDON
Agua Boa
Paranatinga
PARABUBURE
UBAWAWE
Nova Xavantina
CHAO PRETO
2005
Source: Instituto Socioambiental, April 2006.
0
100 Km

"An Amazon Culture Withers as Food Dries Up" (NYTimes, 7/24/09)

"Tacuma, the tribe's wizened senior shaman, said that the only threat he could remember rivaling climate change was a measles virus that arrived deep in the Amazon in 1954, killing more than 90 percent of the Kamayurá."

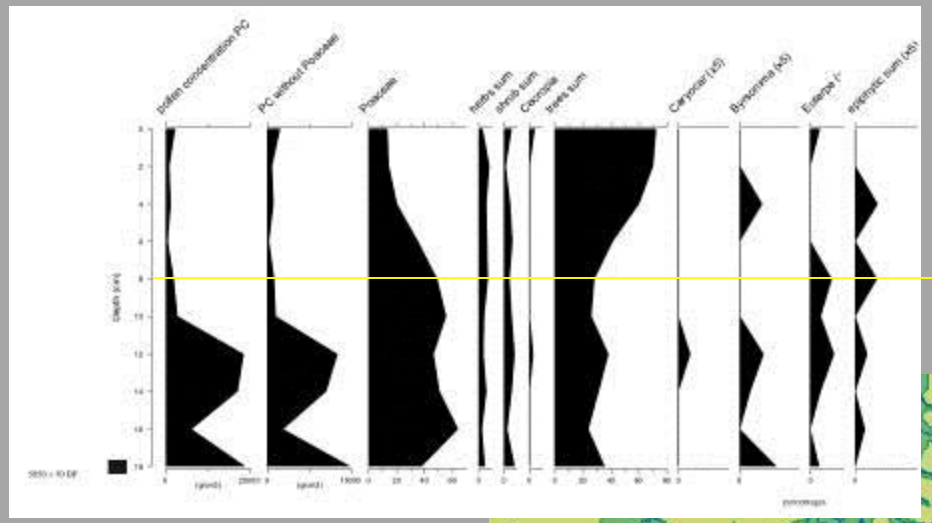


Period (MWP): global warming and pulse in human populations

Little Ice-Age (LIA): decline in Western Hemisphere populations rise of Western Europe (Guns, Germs & Steel)

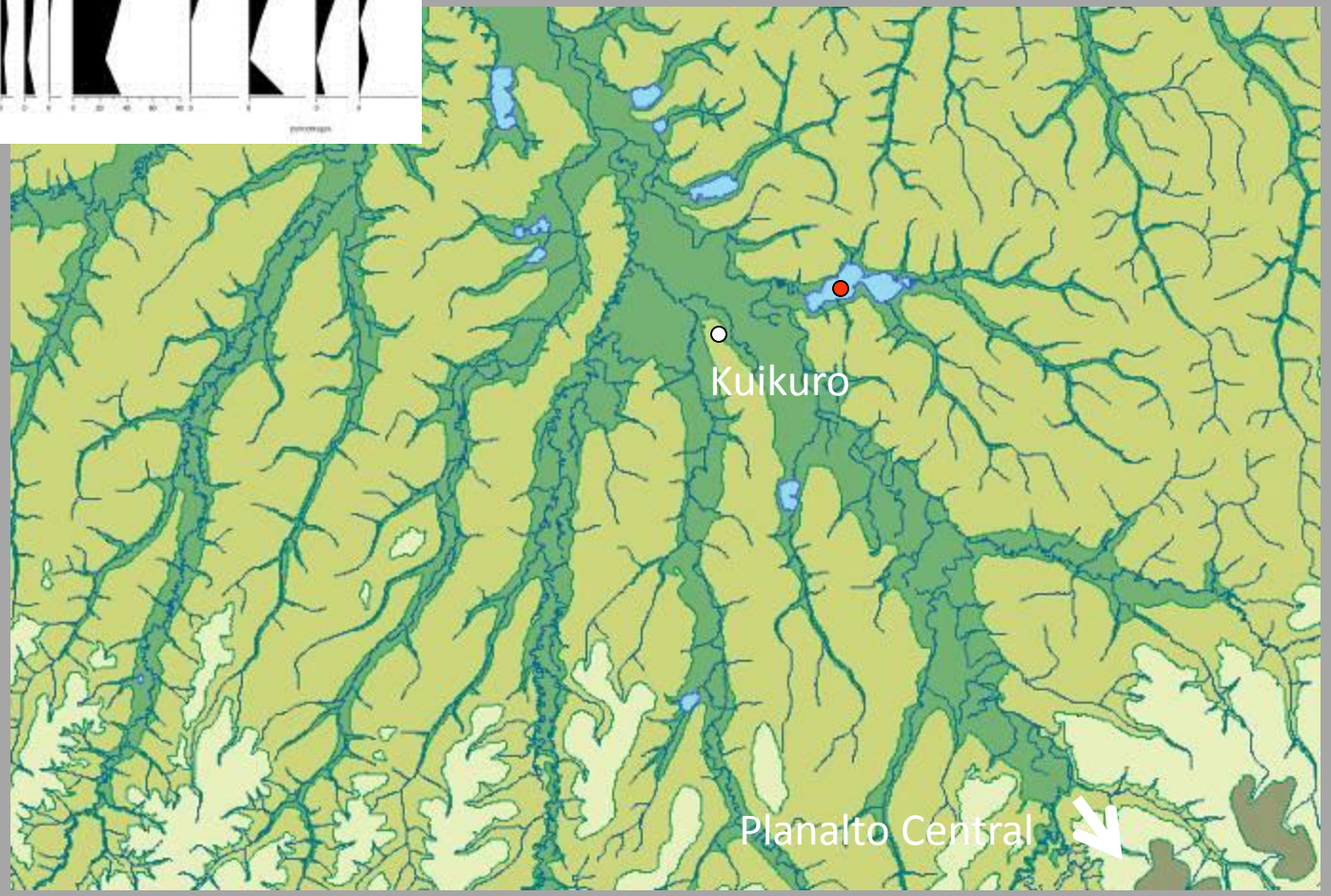
Anthropocene 20th century “Golden Spike”

Grass Trees

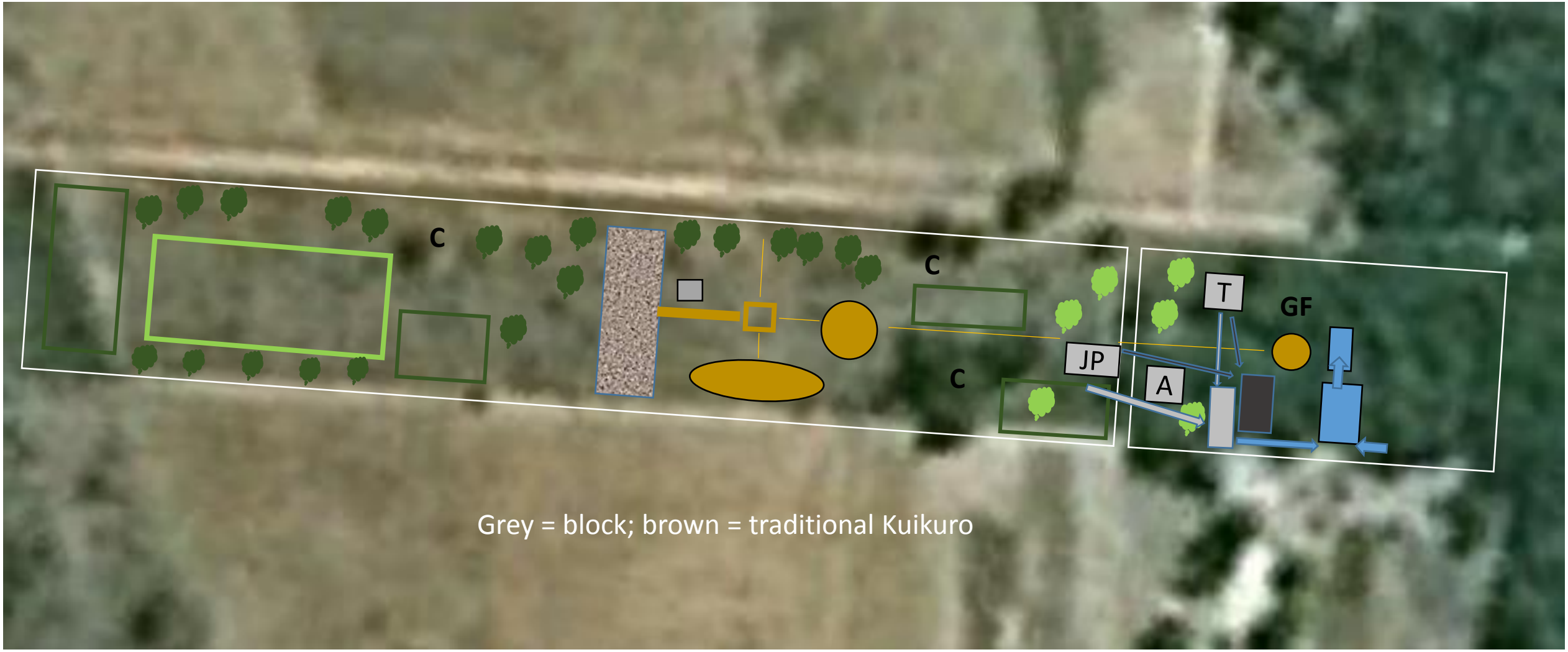


ca. 3,500 BP, expansion of forest

Lagoa Tafununo



Dialogue, Technology & the Politics of Nature



AIKAX CASA DE CULTURA: OVERALL PLAN