

Security Implications of Climate Change in the Sahel Region (SICCS)

Spatial description Sahel geo-referenced data

SNAPSHOT



METADATA CATALOG / DATA COLLECTION

Visit of websites / downloading of data

Contact / visit of Institutions / partnership:

FAO, AGRHYMET, BRGM GIS AFRICA NETWORK , FEWSNET

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[Socio Economics Data and Application Centre \(SEDAC\)](#)

[Population statistics for countries](#)

[Web Atlas on Regional Integration in West Africa](#)

[Institute for Applied Systems Analysis \(IIASA\)](#)

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[GIS Africa project and network](#)

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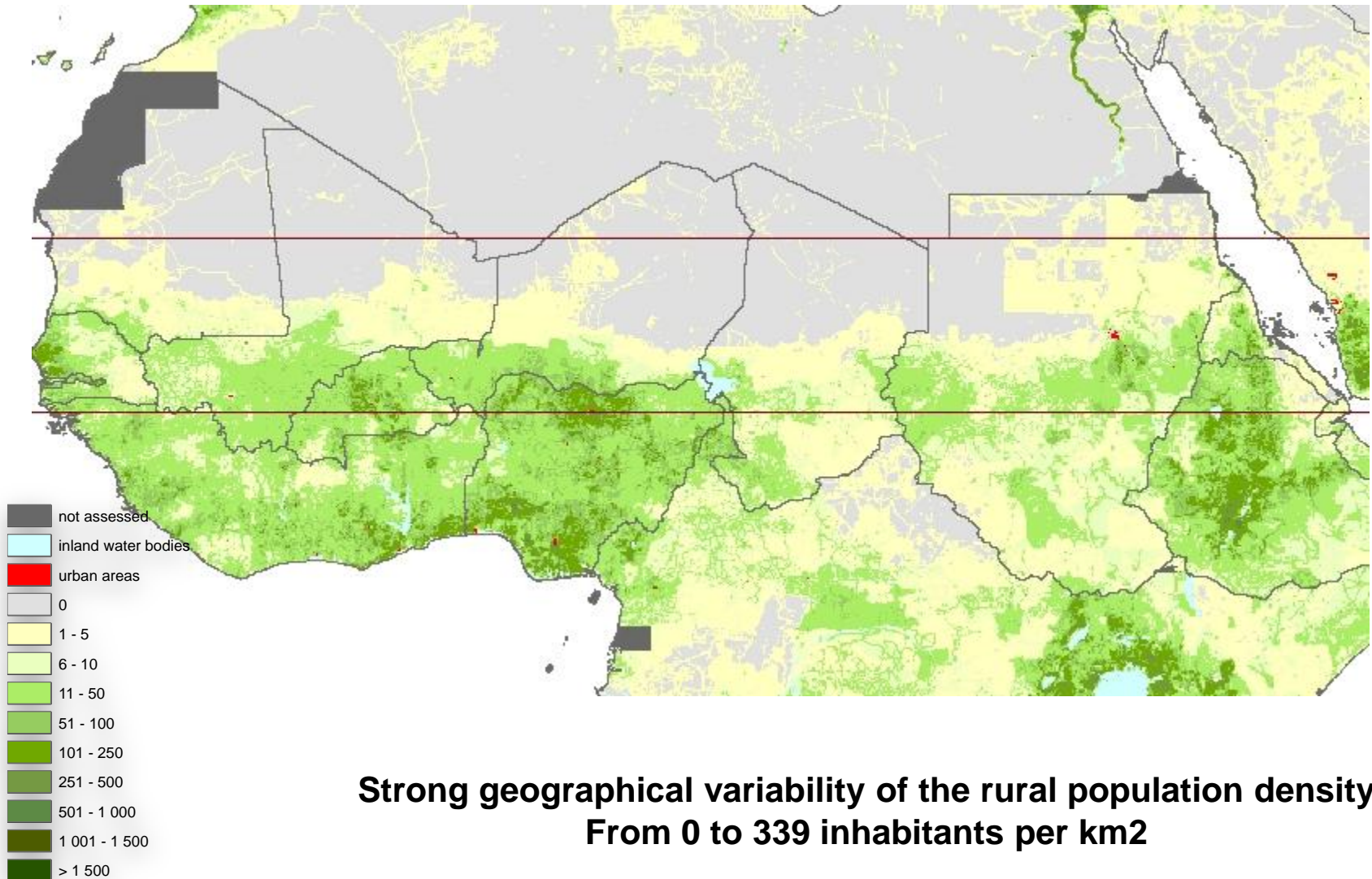
[ECOWAS](#)

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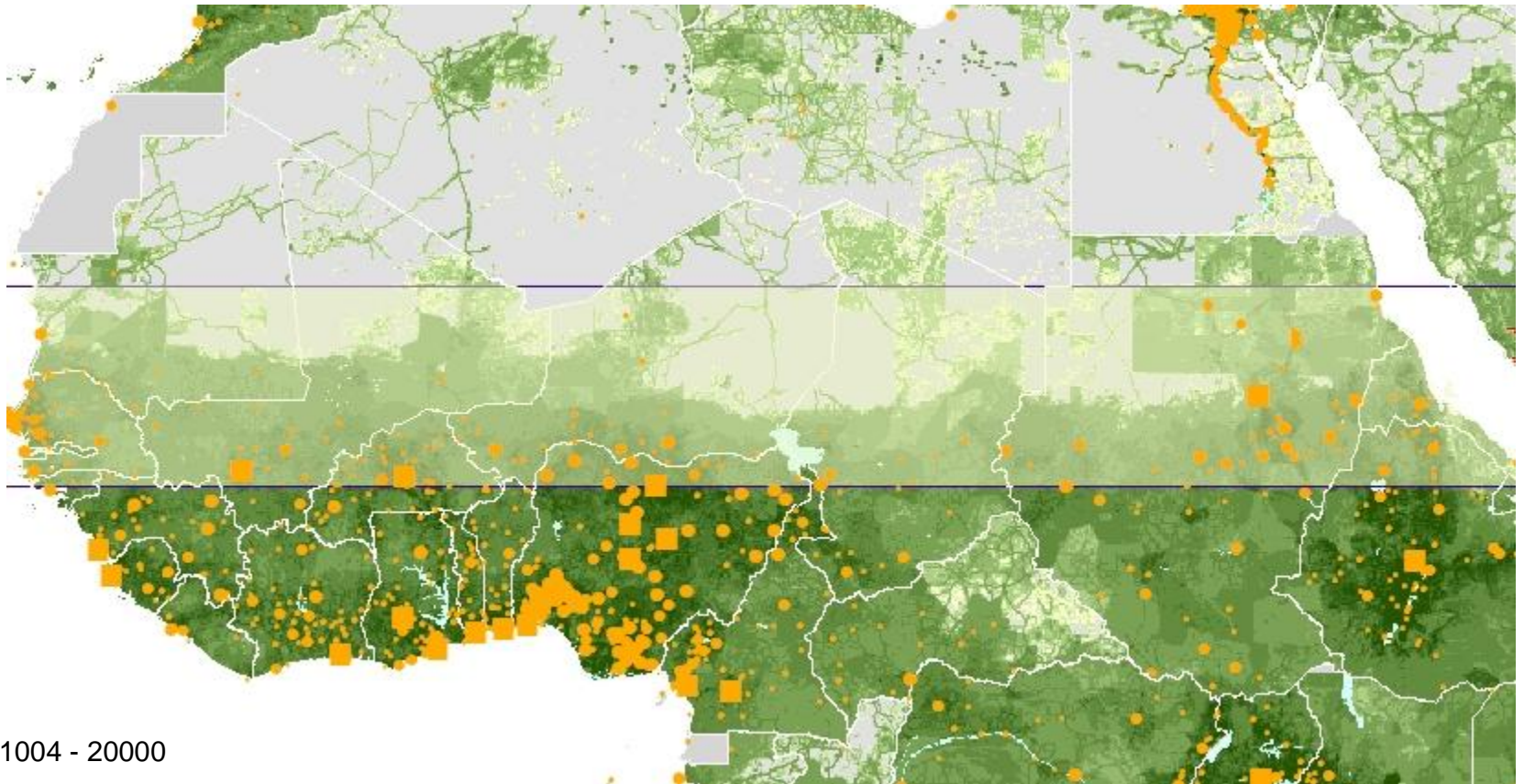
[Common Market for Eastern and Southern Africa \(COMESA\)](#)

[Web site of the FCFA area IZF - Investir en Zone Franc](#)

RURAL POPULATION DENSITY 2000



MAIN CITIES



1004 - 20000

20001 - 50000

50001 - 100000

100001 - 250000

250001 - 1000000

1000001 - 14000000

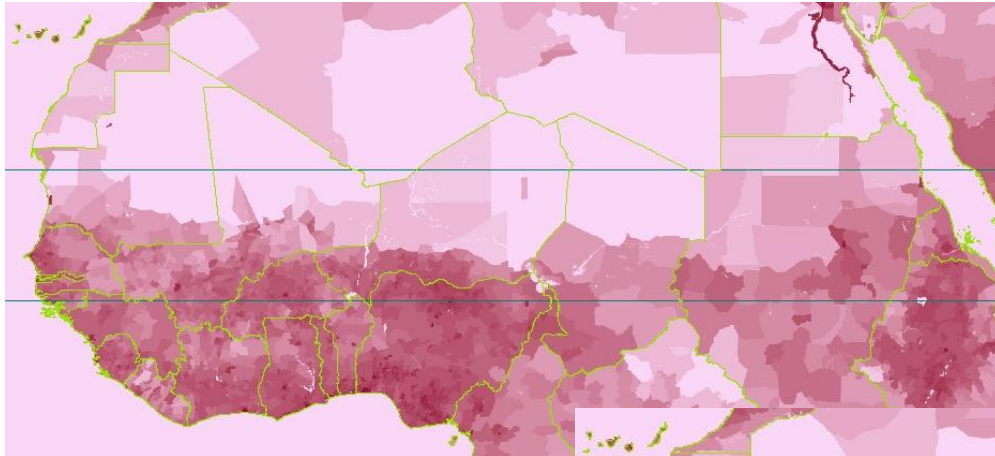
> 1 million inhabitants : 5 cities

[500 000 ; 1 million] : 5 cities

[100 000 ; 500 000] : 37 cities

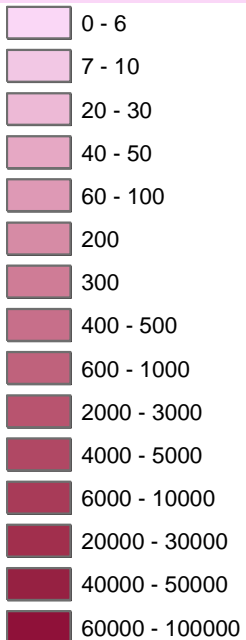
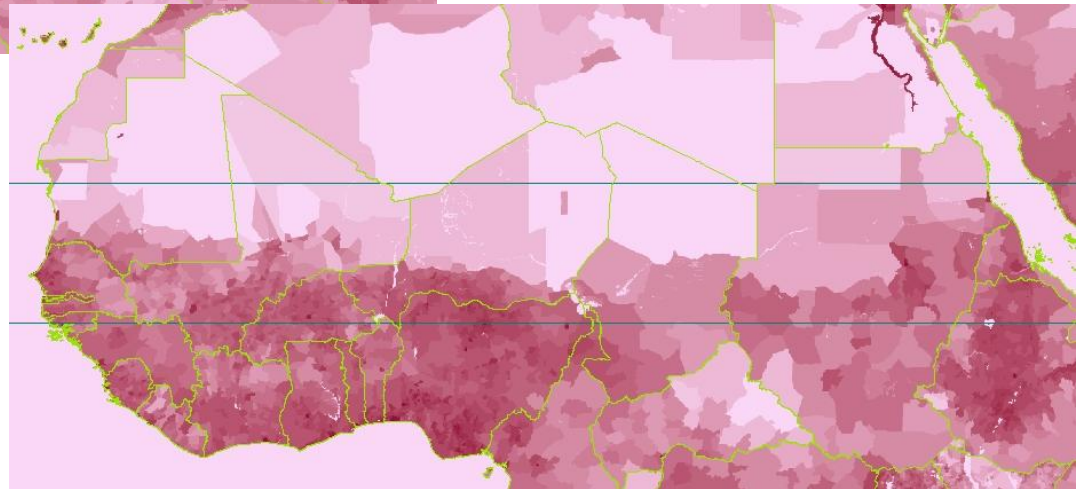
[20 000 ; 100 000] : 157 cities

POPULATION DENSITY GROWING

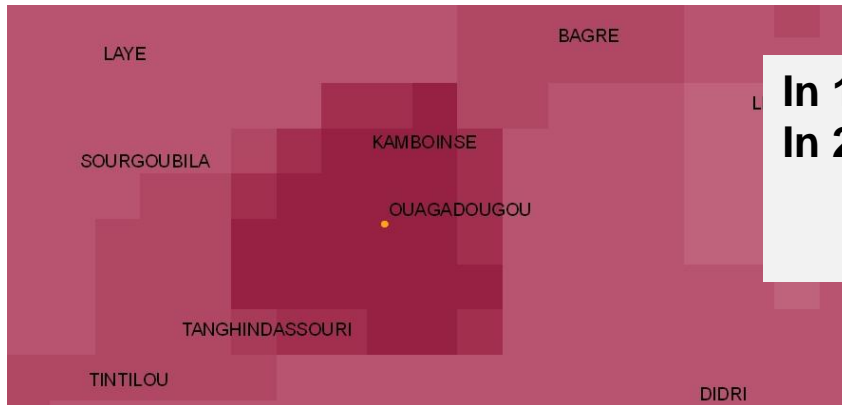


1995

2005

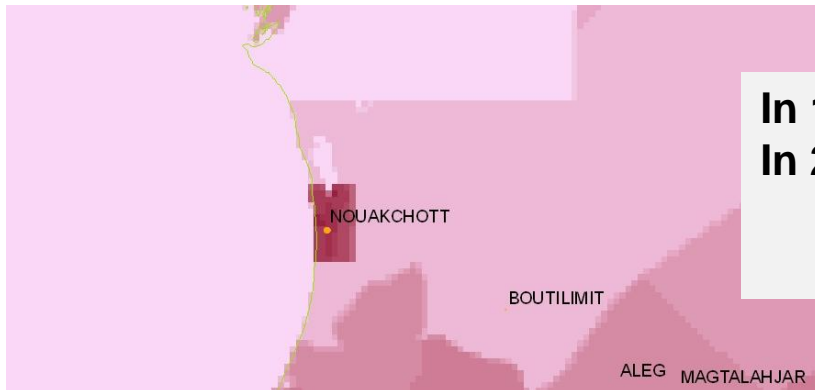


STRONG URBANISATION : Ouagadougou, Nouakchott



**In 1995 density of 30000 inhabitants for a pixel
In 2005 density of 36000 inhabitants for a pixel**

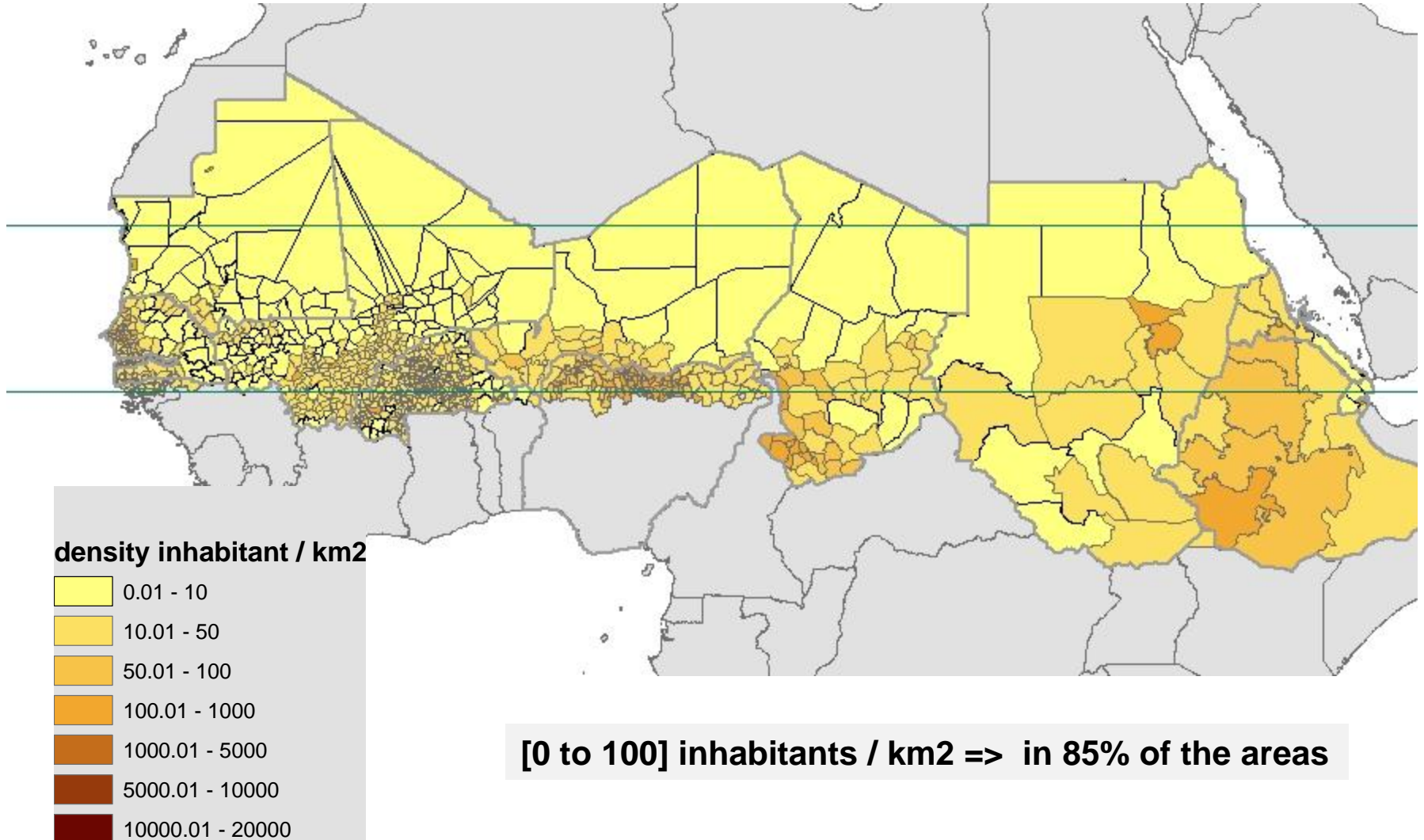
=> + 20 % between 1995 and 2005



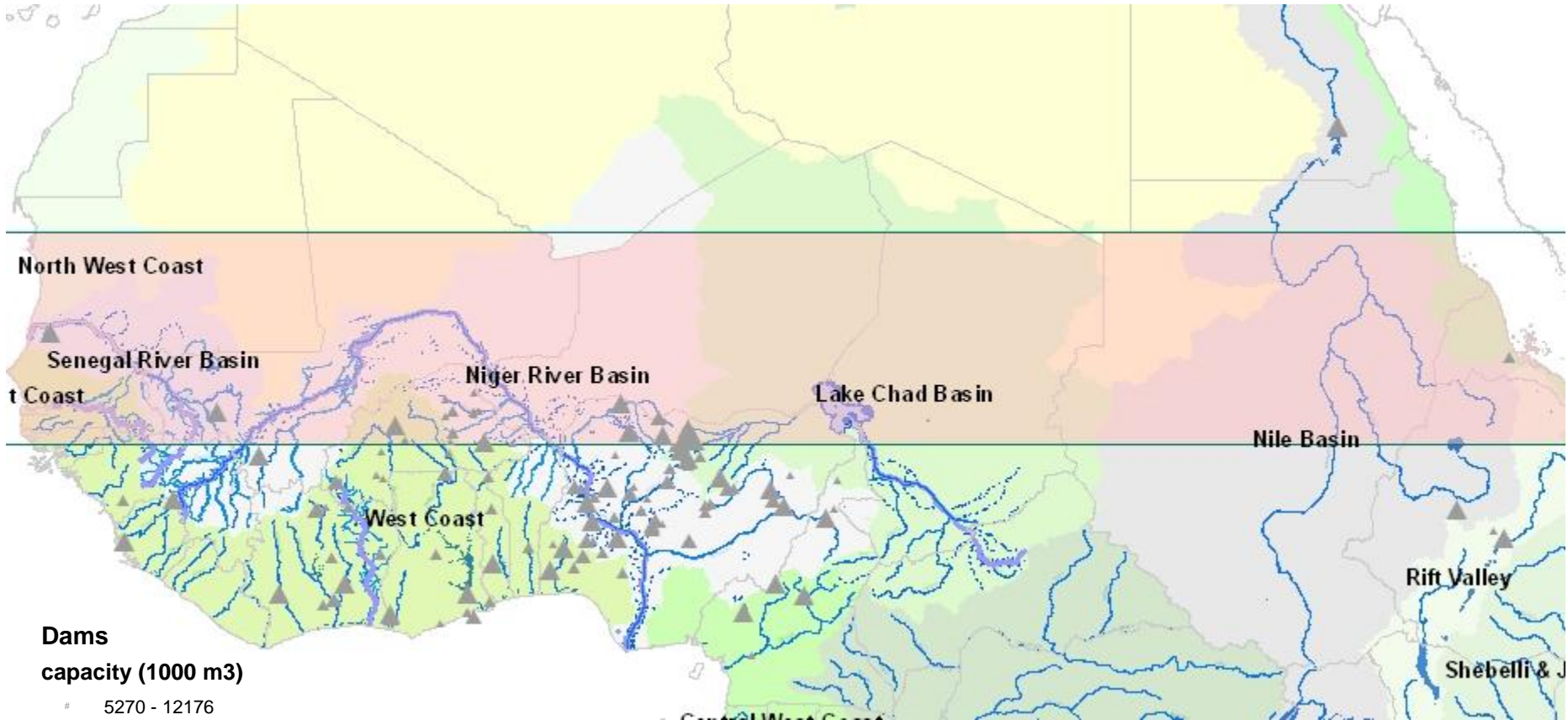
**In 1995 density of 23000 inhabitants for a pixel
In 2005 density of 31357 inhabitants for a pixel**

=> + 34 % between 1995 and 2005

POPULATION BY ADMINITRATIVE AREAS



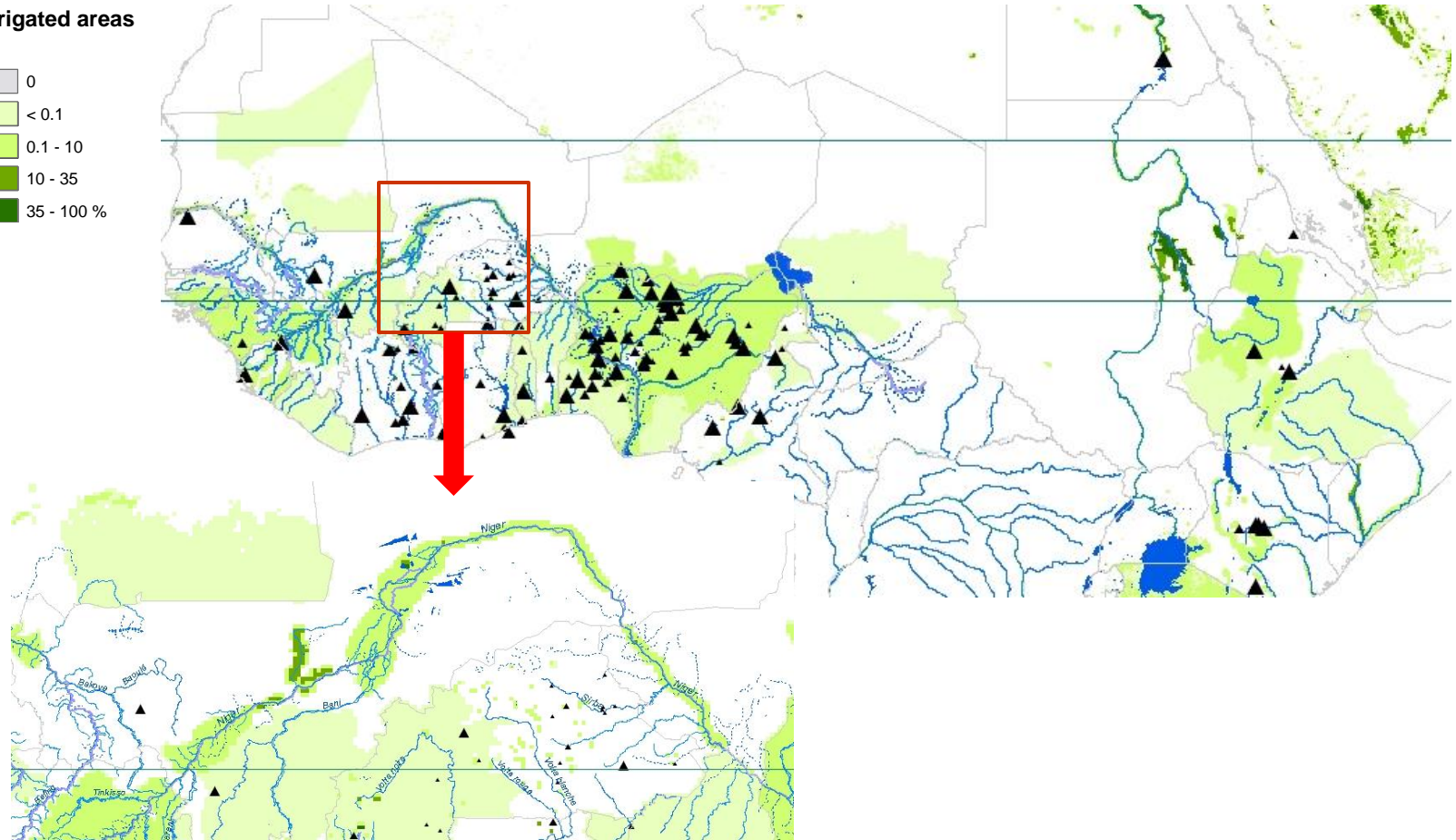
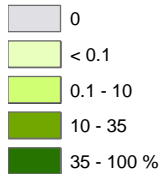
HYDROGRAPHIC BASINS AND MAIN DAMS



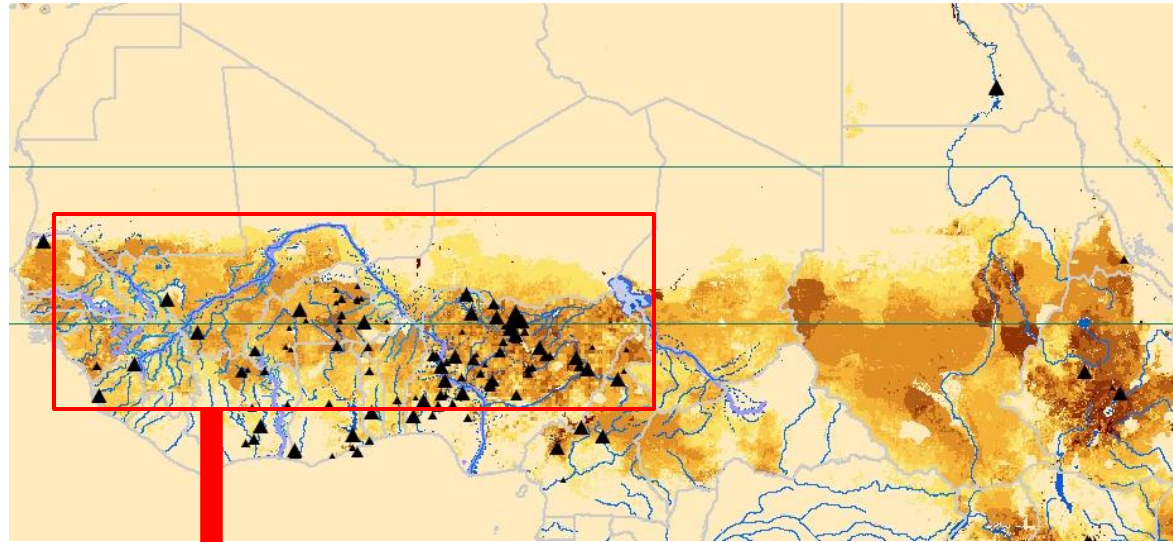
82 dams in our study area, and 73 % dedicated to irrigation

IRRIGATION AREAS

Irrigated areas

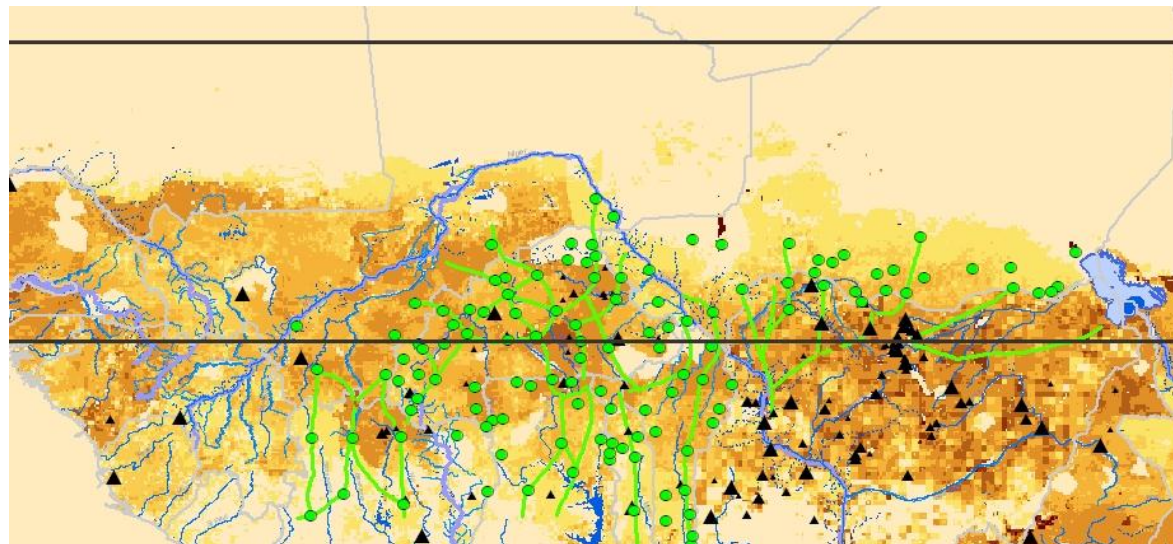
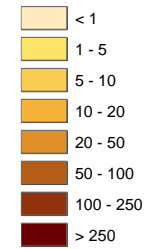


CATTLE DENSITY

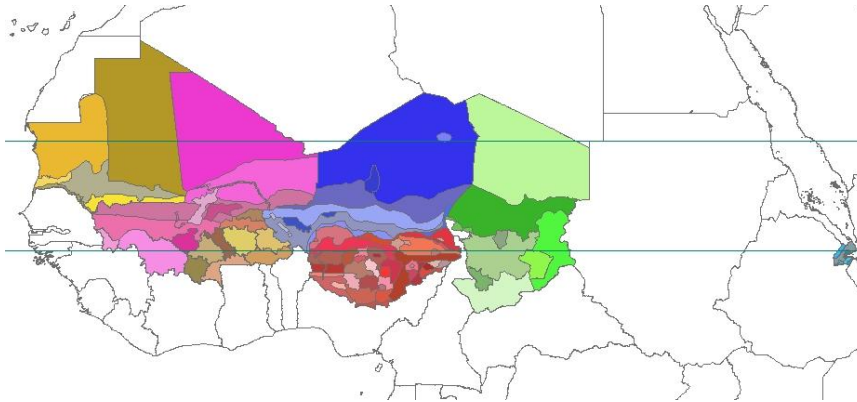


(transhumance localities
— transhumance roads

cattle density



LIVELIHOODS



Mali_Livelihoods

- Delta-lakes: rice flood/retreat sorghum
- Desert
- Dogon Plateau: millet/onions
- Maize/cotton/fruit
- Millet/sorghum/cotton
- Millet/transhumant herding
- Nomadic and transhumant pastoralism
- Office du Niger: irrigated rice
- Rainfed millet/sorghum
- Rainfed millet/sorghum/fruits
- Riverine: rice - transhumant herding

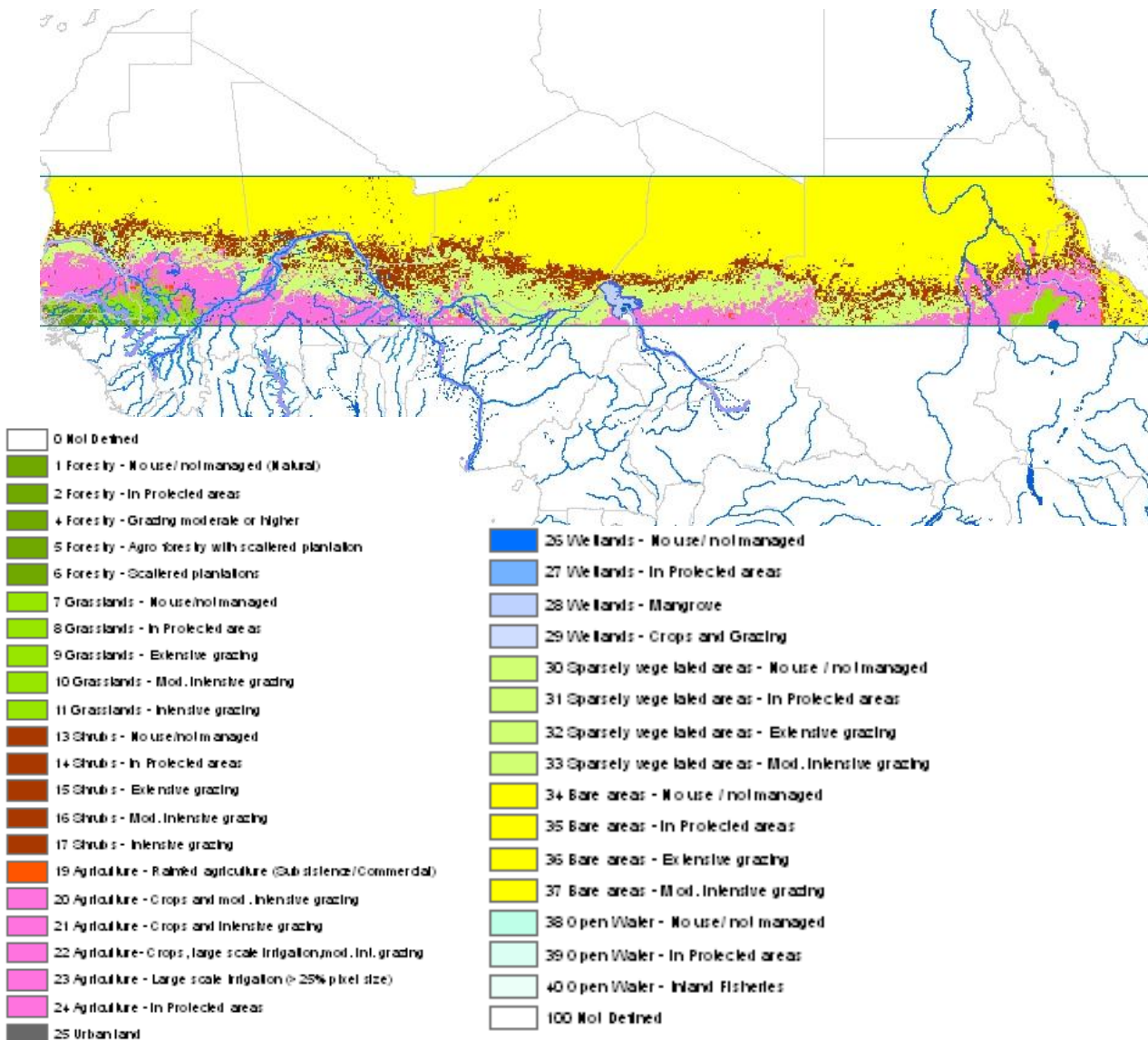
Niger_Livelihoods

- Agro-pastoral zone
- Air mountains cultivation zone
- Bilma oases sub-zone: dates - caravan trade
- Desert
- Komadougou River & Lake Chad cash crop zone
- Niger River irrigated rice zone
- Pastoral zone
- Rainfed agriculture zone
- Southern irrigated cash crop zone
- Sub-zones of high work out-migration

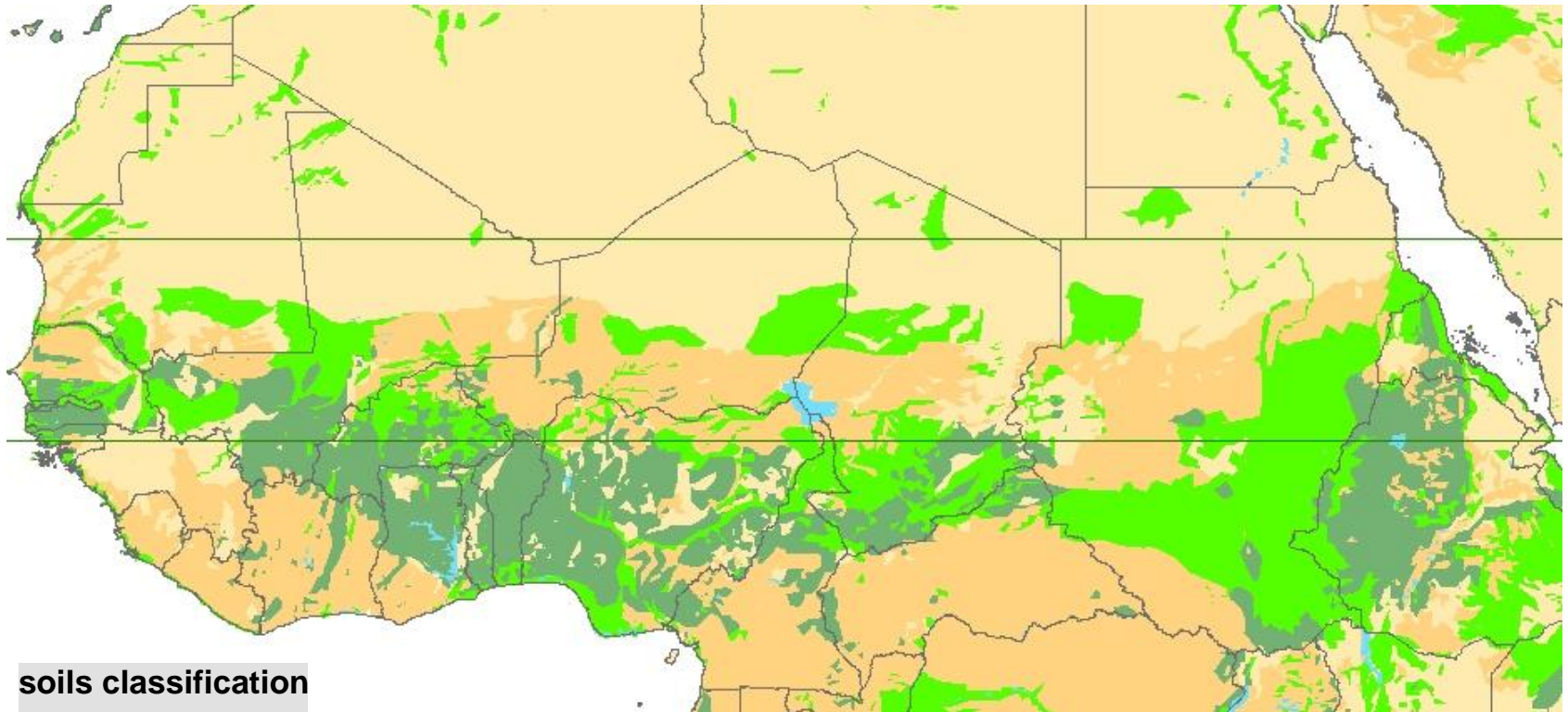
Chad_Livelihoods

- Central agro-pastoral and fishing zone
- Central flood-retreat cultivation and fishing zone
- Eastern rain-fed cereals zone
- Northern camel, date and salt (natron) zone
- Northern transhumant herding zone
- Southeast flood-retreat cultivation zone
- Southern cotton and groundnuts cash crop zone
- Southern rice cash crop zone
- Western agro-pastoral zone

LAND USE / LAND COVER



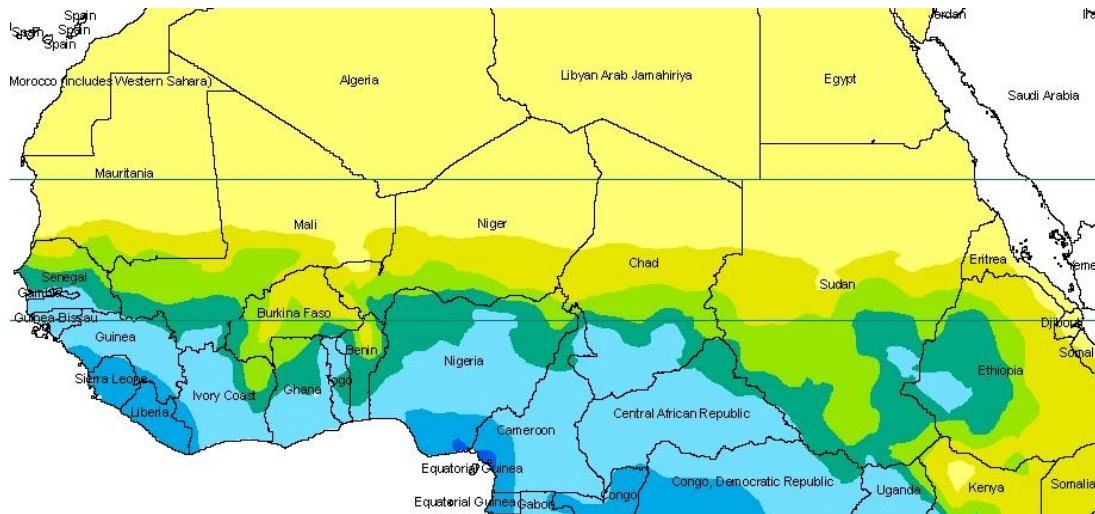
SOILS CLASSIFICATION



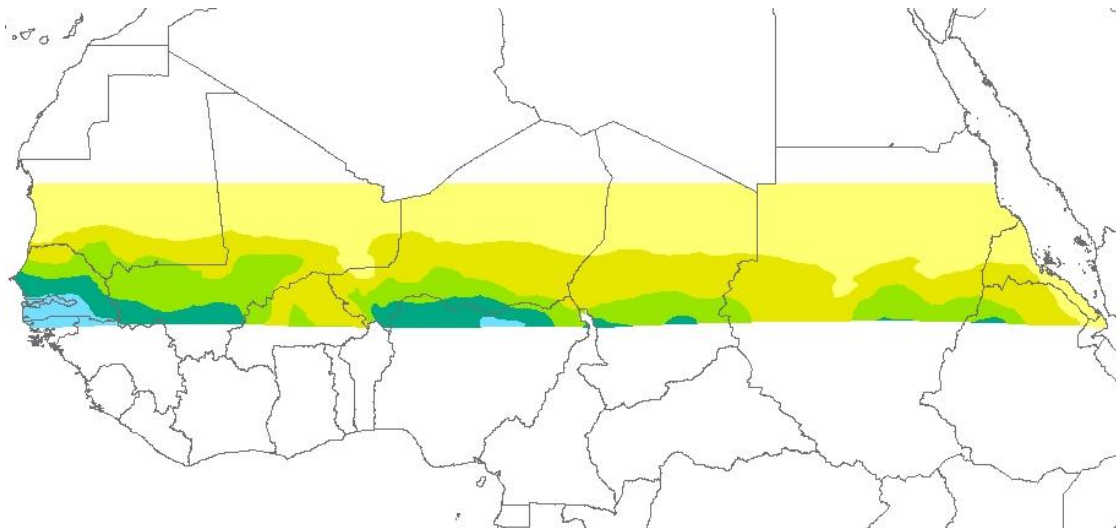
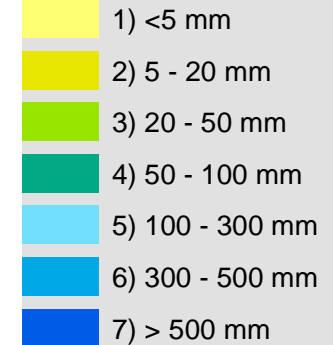
soils classification

-  very good
-  good
-  poor
-  very poor

GROUNDWATER RESSOURCE – ANNUAL RECHARGE



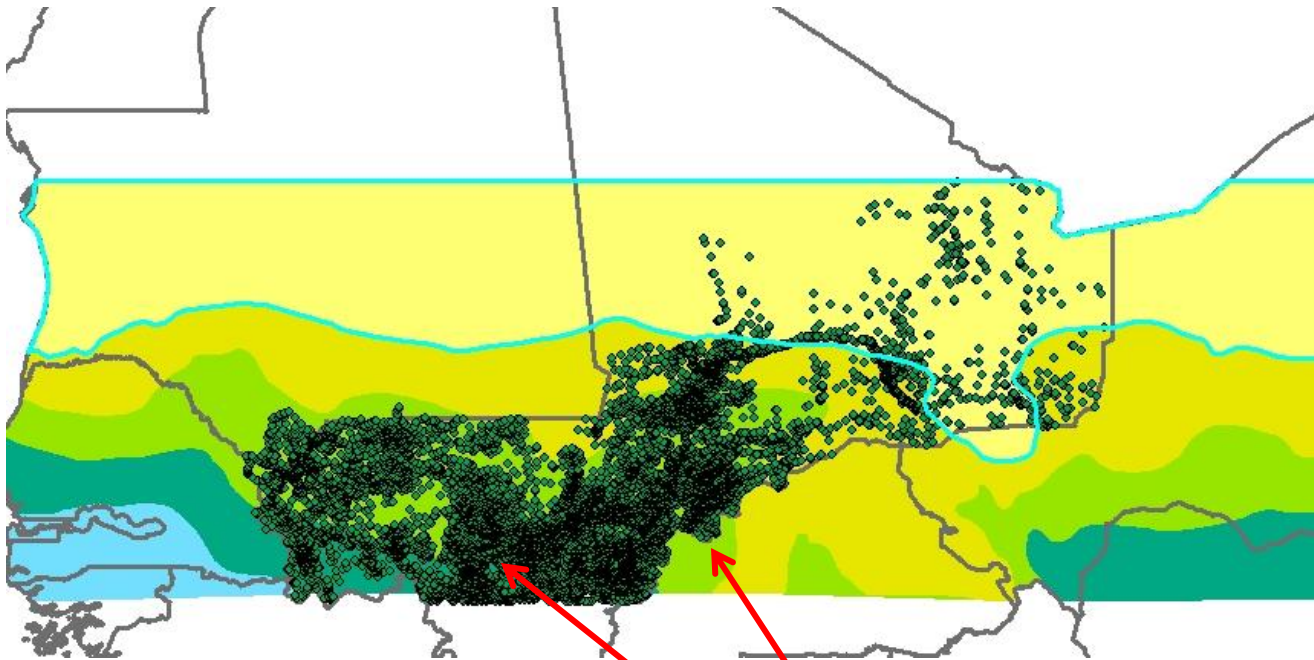
Ground water annual recharge



recharge area of the study



GROUNDWATER RESSOURCE – NATIONAL BOREHOLES DATABASES



% of boreholes regarding recharge classes

- 1) <5 mm => 4.7%
- 2) 5 - 20 mm => 11.1 %
- 3) 20 - 50 mm => 56 %
- 4) 50 - 100 mm => 28 %
- 5) 100 - 300 mm => 0.2 %

GROUNDWATER RESSOURCE – HYDROGEOLOGICAL OUTCROPPING FORMATIONS

hydrogeological formations

non assigned formations : coast, islands...

Quaternary sedimentary deposits, fluvial deposits, recent alluvial deposits (silt, loess), sand, sand dune

Paleogene- Neogene sedimentary formations

formations of "nubian sandstone" type

"Karoo" type - Carboniferous to jurassic Sandstone, limestone, calystone (shale, mudstone), sillstone, conglomerate

cretaceous carbonate formations

Jurassic - Tiras sedimentary formations

Clastic, clastic carbonate to volcanosedimentary formations Precambrien (mainly) to Devonian. Sandstone, quartzite, schist, sandstone schist series, dolomitic limestone...

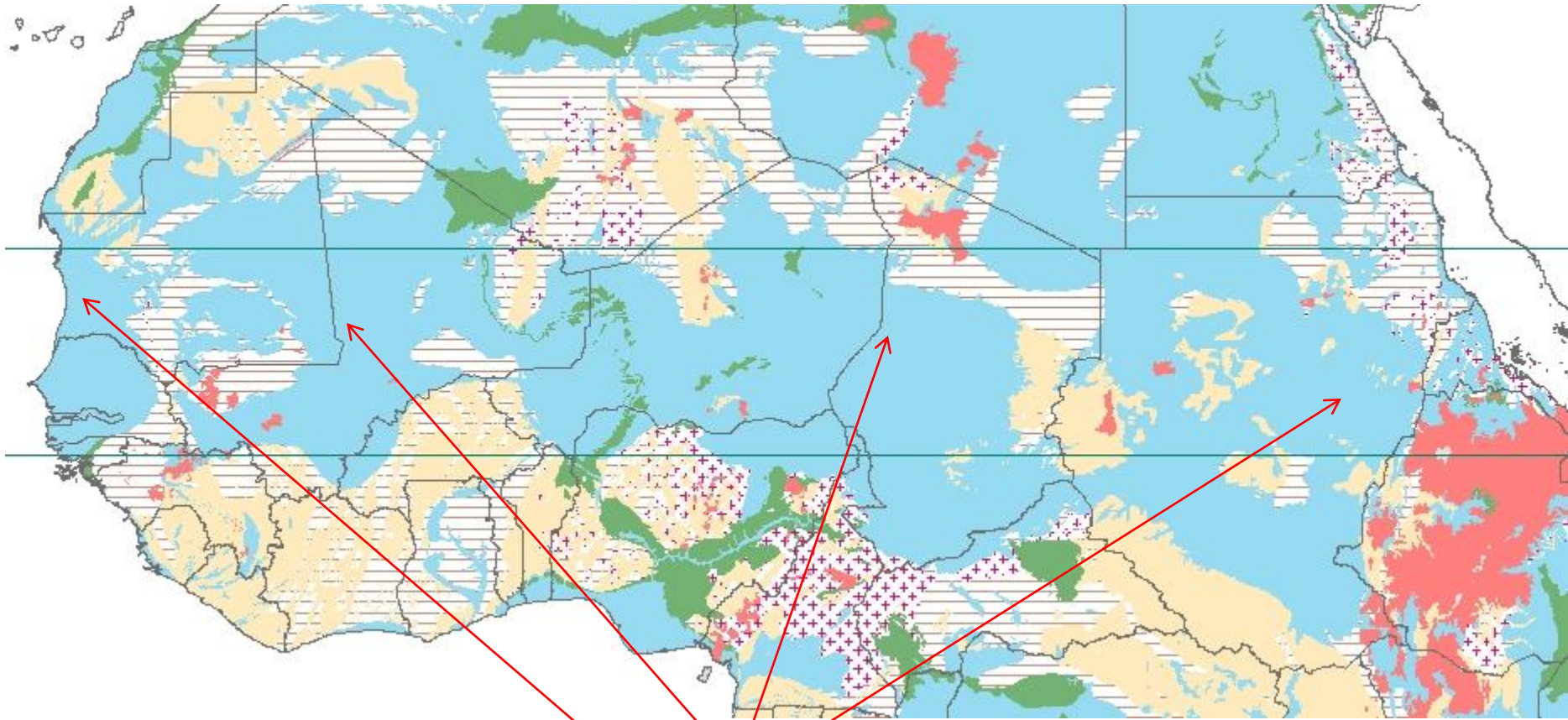
Sedimentary to volcanosedimentary and associated plutonism. Precambrian

Metamorphic-plutonic formations, mainly precambrian. Granite, syenite, chamocktite, tonalite-trondjemite. Granito-gneiss, gneiss, migmatite, amphibolite

Plutonic and volcano-plutonic formations - Precambrian to Cambrian. Granite , granodiorite, gabbro, dolerite,...Greenstone belt

Phanerozoic volcanic and volcano-plutonic massifs. Dolerite, syenite-basalt (trapp), trachyte, phonolite, pyroclastic rocks (Tuff,...)

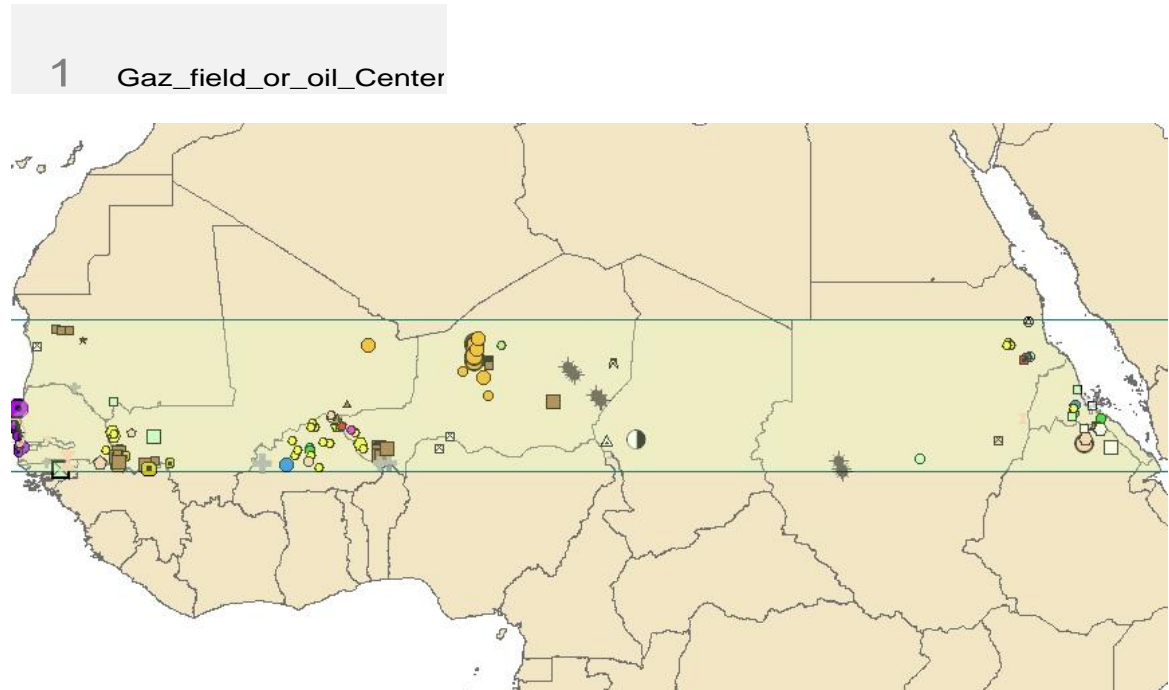
GROUNDWATER RESSOURCE – HYDROGEOLOGICAL OUTCROPPING FORMATIONS



**80 % within continuous media
(intergranular porosity)**

MINERAL DEPOSITS

- | | |
|--------------------|---------------------|
| Al Classe B (15) | Mo Classe C (6) |
| Al Classe C (38) | Mrbl Classe B (9) |
| Attp Classe A | Mrbl Classe C (4) |
| Attp Classe C | Natr Classe B (4) |
| Au Classe B (74) | Ni Classe B (19) |
| Au Classe C (203) | Petr Classe C (93) |
| Brt Classe B (10) | Phos Classe A (6) |
| Brt Classe C (8) | Phos Classe B (22) |
| ClyC Classe A (6) | Phos Classe C (34) |
| ClyC Classe C (2) | Ptsh Classe C (2) |
| Cu Classe C (84) | REE Classe C (3) |
| Dtm Classe A (3) | S Classe B (1) |
| Fe Classe B (129) | S Classe C (5) |
| Fe Classe C (147) | Salt Classe B (6) |
| Fl Classe C | Salt Classe C (13) |
| Gabb Classe A (2) | Sb Classe C (6) |
| Gp Classe C (13) | Silc Classe B (8) |
| HM Classe C (6) | Silc Classe C (6) |
| Kln Classe A (4) | Tillm Classe B (18) |
| Kln Classe C (15) | Tillm Classe C (17) |
| Li Classe C (12) | U Classe A (9) |
| LstC Classe B (11) | U Classe B (46) |
| LstC Classe C (9) | U Classe C (42) |
| LstL Classe A (3) | V Classe C (1) |
| Mg Classe C (4) | W Classe C (32) |
| Mn Classe B (23) | Wol Classe C (3) |
| Mn Classe C (23) | Zn Classe B (27) |
| Zr Classe B (14) | Zn Classe C (30) |
| Zr Classe C (17) | Zr Classe A (5) |



149 mineral deposits

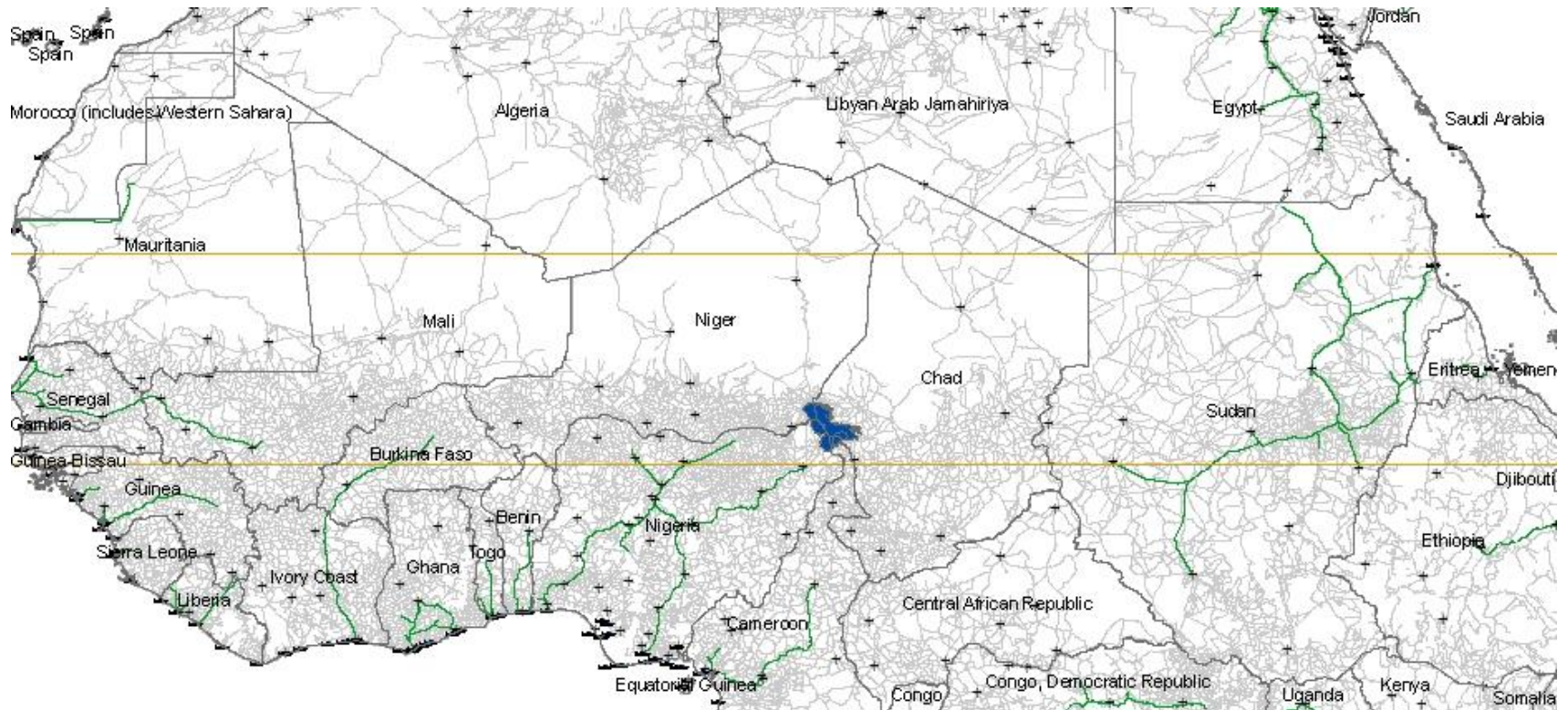
Fe 50 %

Or 17%

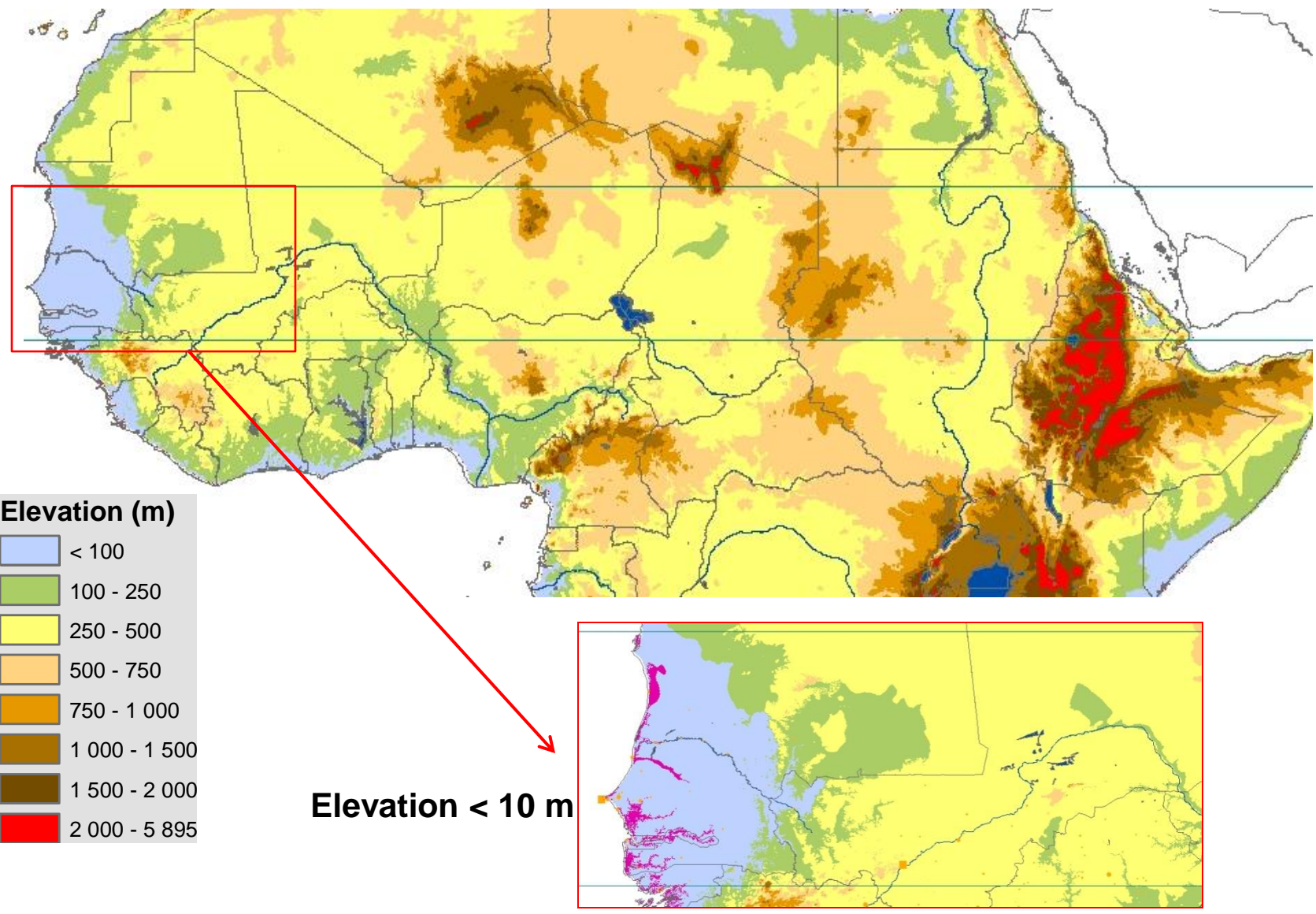
U 14%

Phos 6%

INFRASTRUCTURES

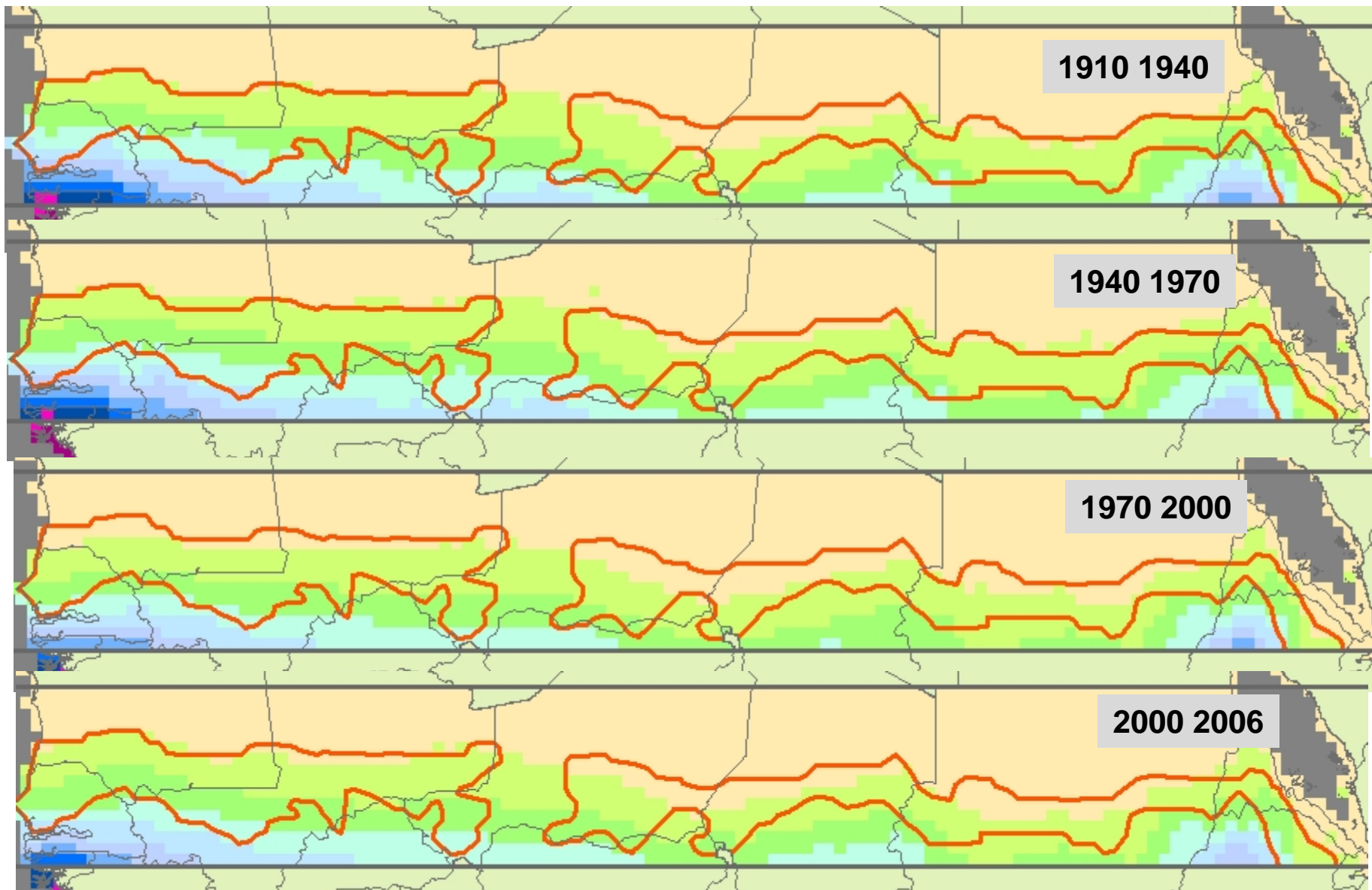
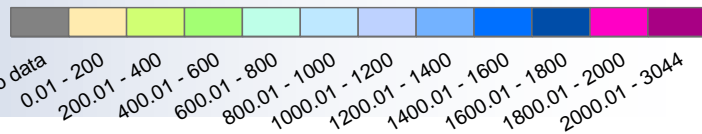


ELEVATION

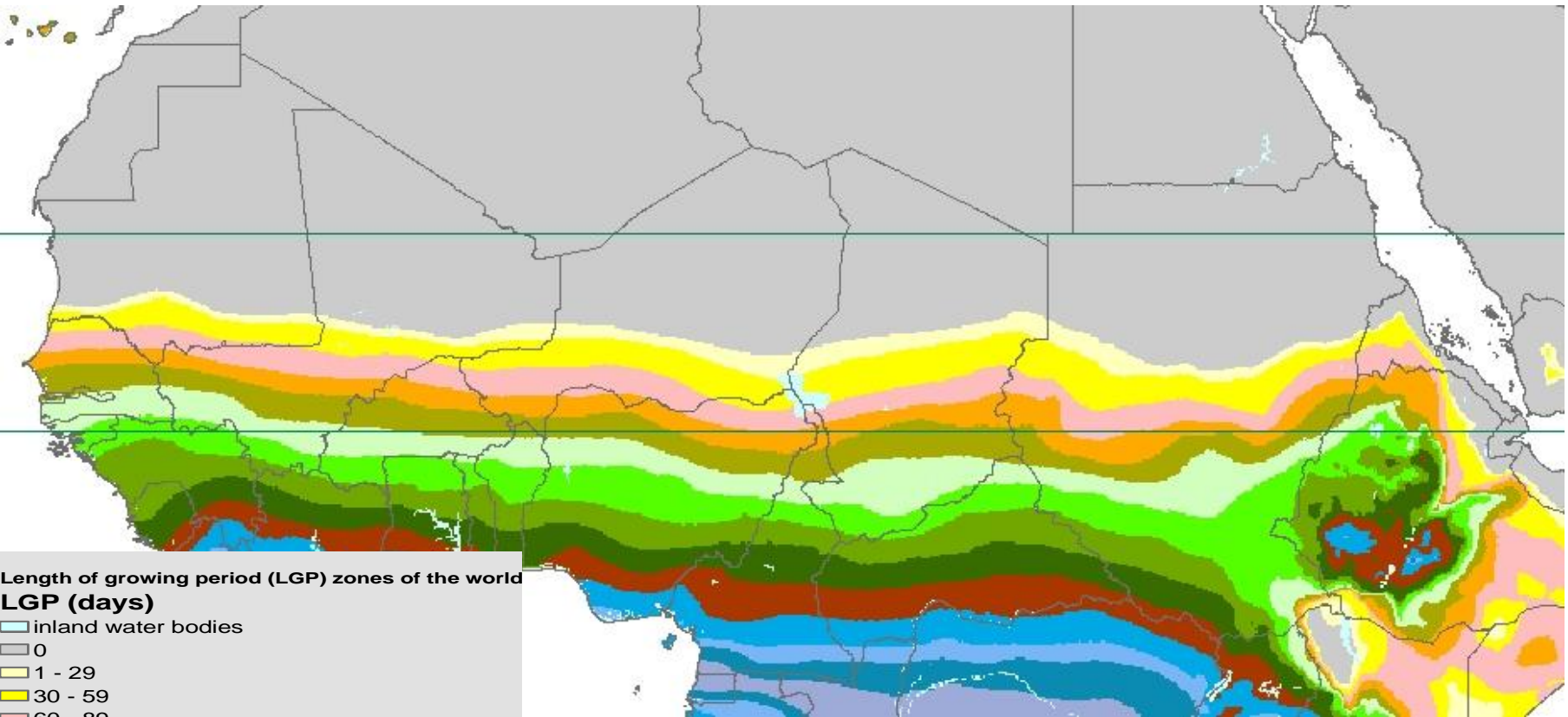


ISOHYETS

annual precipitation (mm)



AGRICULTURAL ISSUES : LENGTH OF THE GROWING PERIOD



Length of growing period (LGP) zones of the world
LGP (days)

inland water bodies

- 0
- 1 - 29
- 30 - 59
- 60 - 89
- 90 - 119
- 120 - 149
- 150 - 179
- 180 - 209
- 210 - 239
- 240 - 269
- 270 - 299
- 300 - 329
- 330 - 364
- 365-
- 365
- 365+

AGRICULTURAL ISSUES : VARIATION OF LENGTH OF THE GROWING PERIOD BETWEEN 1901 AND 1996

