The GEOSS Joint Asia-Africa Water Cycle Symposium
Tokyo from 25-27 November 2013

Project

Flood forecasting and Climate change impact assessment for decision making in the Niger River Basin

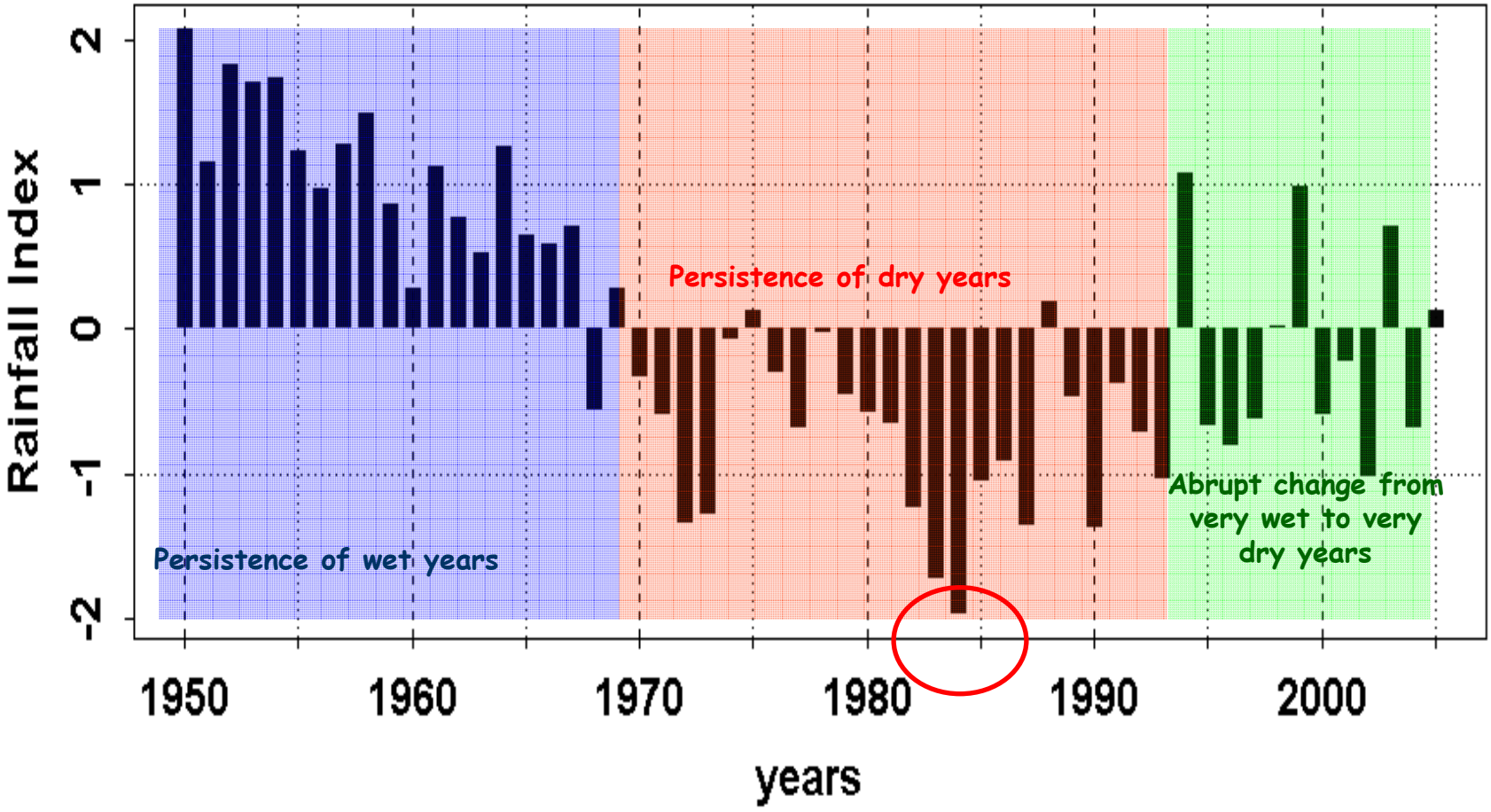
Dr. Abdou Ali & Eng. Bachir Alkaly Tanimoun

a.ali@agrhymet.ne *balkaly@abn.ne*

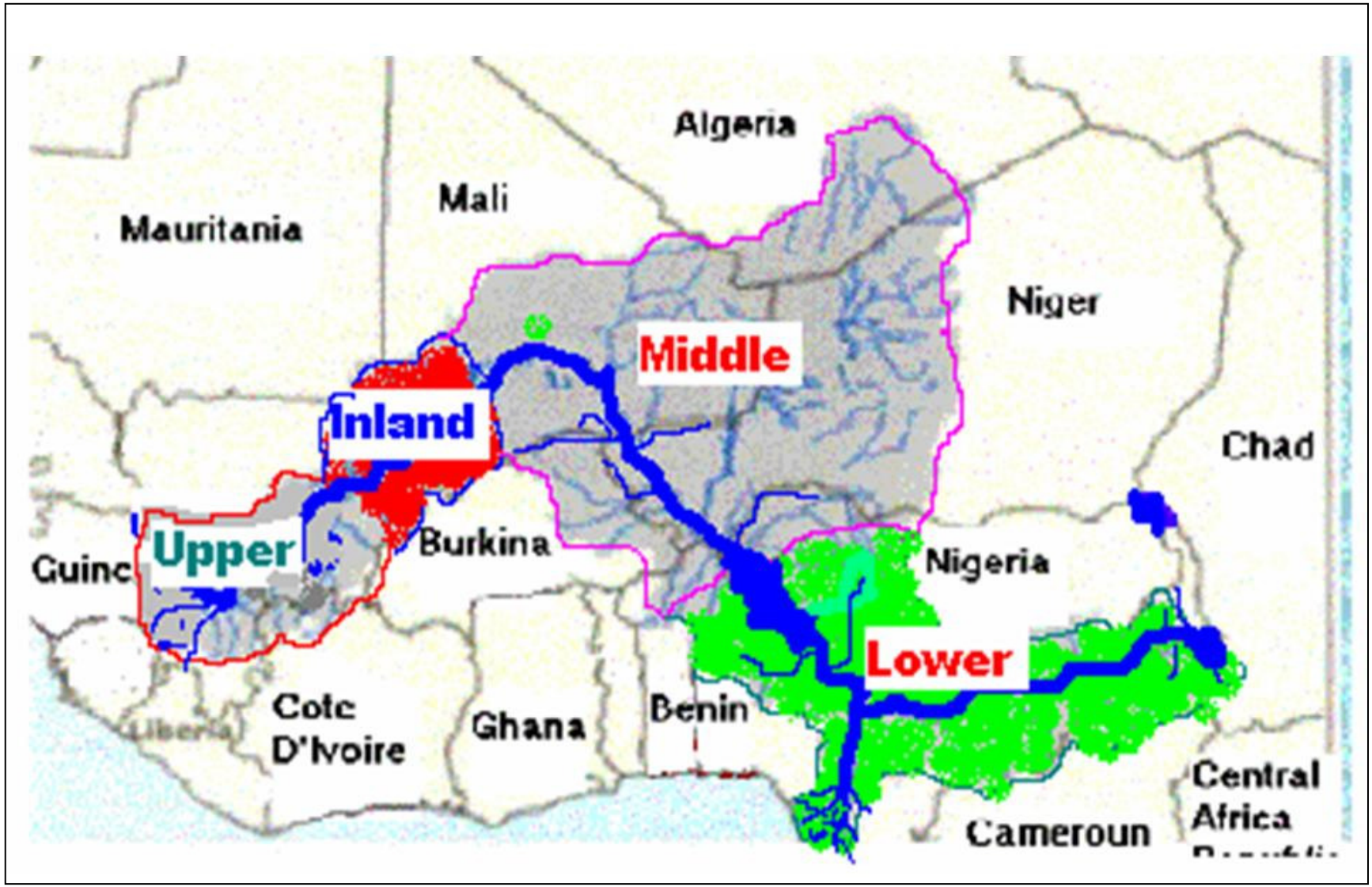
The Niger River Basin

- Located in West-Africa
- 9th largest world river
- 3rd largest river in Africa
- Theoretical catchment area is 2 million km²
- Current active catchment area is 1.5 million km²
- Total length of the river is 4200 km.
- Active catchment is shared by 9 countries:
  - Benin (2 %);
  - Burkina (2%);
  - Cameroun (4 %);
  - Chad (1 %);
  - Cote D'Ivoire (1 %);
  - Guinea (6 %);
  - Mali (25 %),
  - Niger (21 %);
  - Nigeria (32 %).
- Population is estimated over 130 million habitants.
- high rate of growing (3 % per year).
- Around 32 % of the population are living in urban area and 68 % in rural area.

Rainfall inter-annual variability in the region



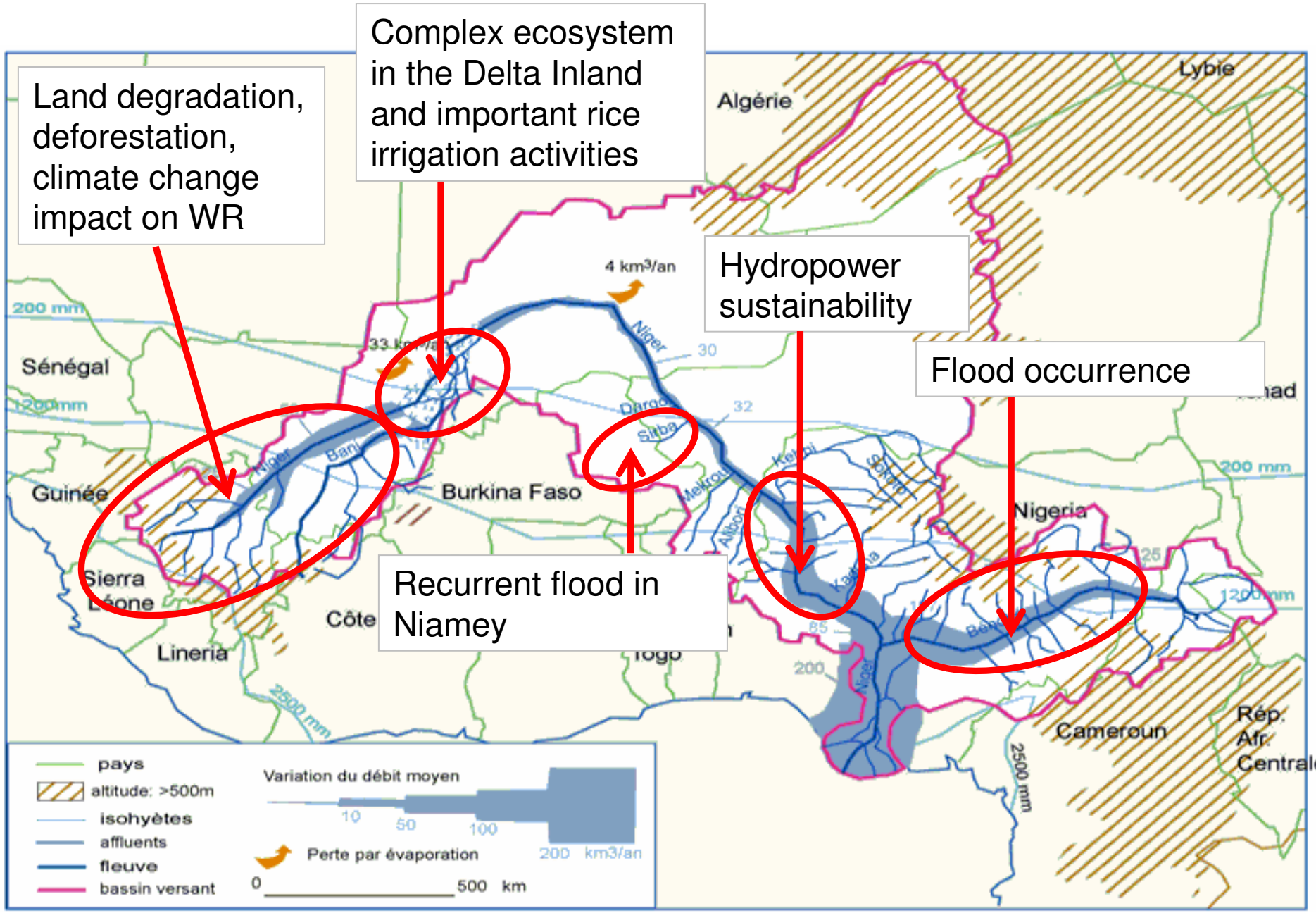
The Niger River Basin is complex and heterogeneous



Some challenges in the Niger River basin

- High rate of population growth
- Land degradation and deforestation, mainly at the Upper Niger
- flood concurrencies
- Drought
- Food security
- High climatic variability
- Hydropower energy sustainability
- Water quality
- Silting problem
- Etc..

Some hotpots



Some hotpots

Project Objectives

- Climate change and land degradation and deforestation impacts assessment on hydropower sustainability in the upper Niger and on rice irrigation in the Inland.

- Flood early warning at Niamey, the capital of Niger

Project activities

- Install automatic integrated meteorological and hydrological (rainfall, evapotranspiration and discharge) observation network
- carry out advanced studies to characterize land surface changes in the Sirba tributary and in the upper Niger.
- carry out advanced studies to quantify current and future deforestation in the upper-Niger.
- Adapt a distributed hydrological rainfall-runoff model both for Sirba tributary and other small kory contributing to flood in Niamey area and the Upper basin of the Niger River.
- Establish an operational flood forecasting system based on the integration hydrological, satellite products and on-line ground based data assimilation for Niamey area.
- Assess the future characteristics of the water resources in the Upper Niger, taking into account deforestation and land-surface changes.
- Assess the sustainability of irrigation in the middle Niger and hydropower generation on Sélingue.
- Organize stakeholders and end-users in the basin workshops.

Beneficiaries and stakeholders

- National hydrological and meteorological services
- National disaster risk reduction services
- Dams and irrigation managers
- River bassin Organisation authorities
- Regional organisations
- NGOs (Red Cross)

Institutions

- **THE NBA**

  The Niger Basin Authority was created in 1964 to coordinate the “Integrated Development Plan in the Niger basin”

  The Statement of the Shared Vision is « a sustainable area of development through an integrated water resource management and associated ecosystems for the improvement of the population living conditions and prosperity

Institutions

- **AGRHYMET**

  The AGRHYMET Regional Center was created in 1973 as a regional scientific and technical interstate body to develop tools and methods in the areas of meteorology, hydrology and agrometeorology. Its mission is to develop and disseminate information to achieve food security and build technical capacities of countries.

  AGRHYMET and NBA have a close working relationship to contribute to water resource management

THANK YOU