

SAHELIAN LIVESTOCK

Boury-Esnault A.¹, Salgado P.¹, Marié F.¹, Taugourdeau S.¹, Touré I.¹, Assouma M.H.¹, Diop M.², Corniaux C.¹, Traoré E.H.²



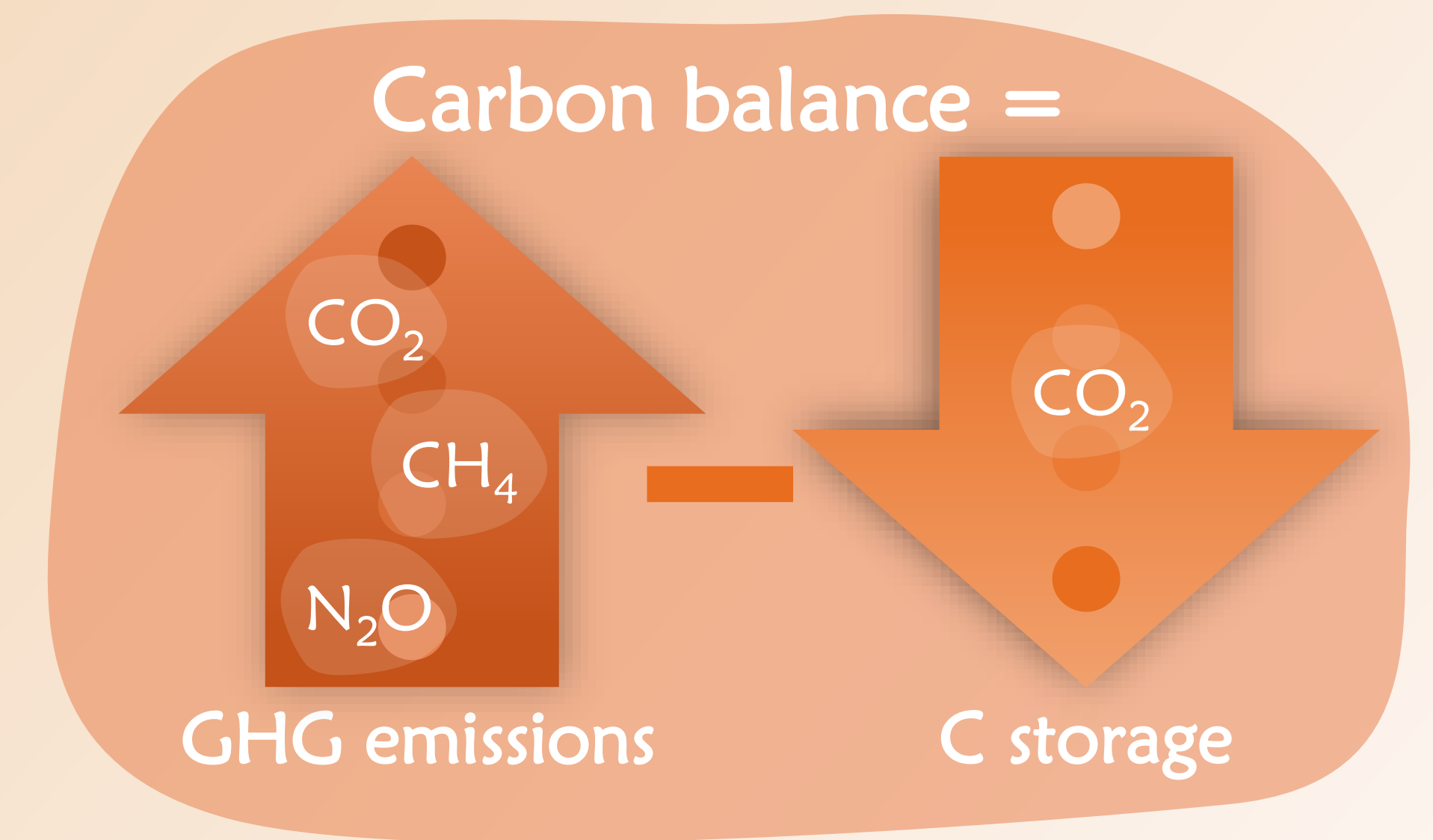
In sub-Saharan Africa, maintaining **pastoral mobility** is a key action to preserve both the stability of **populations and ecosystems**

Pastoralism is a source of income and protein that ensures **food security** of many families

¹ CIRAD
² ISRA



CARBON BALANCE



All exchanges of a defined **territory** are measured: **greenhouse gas (GHG) emissions** into the atmosphere and **carbon (C) storage** in the ecosystem

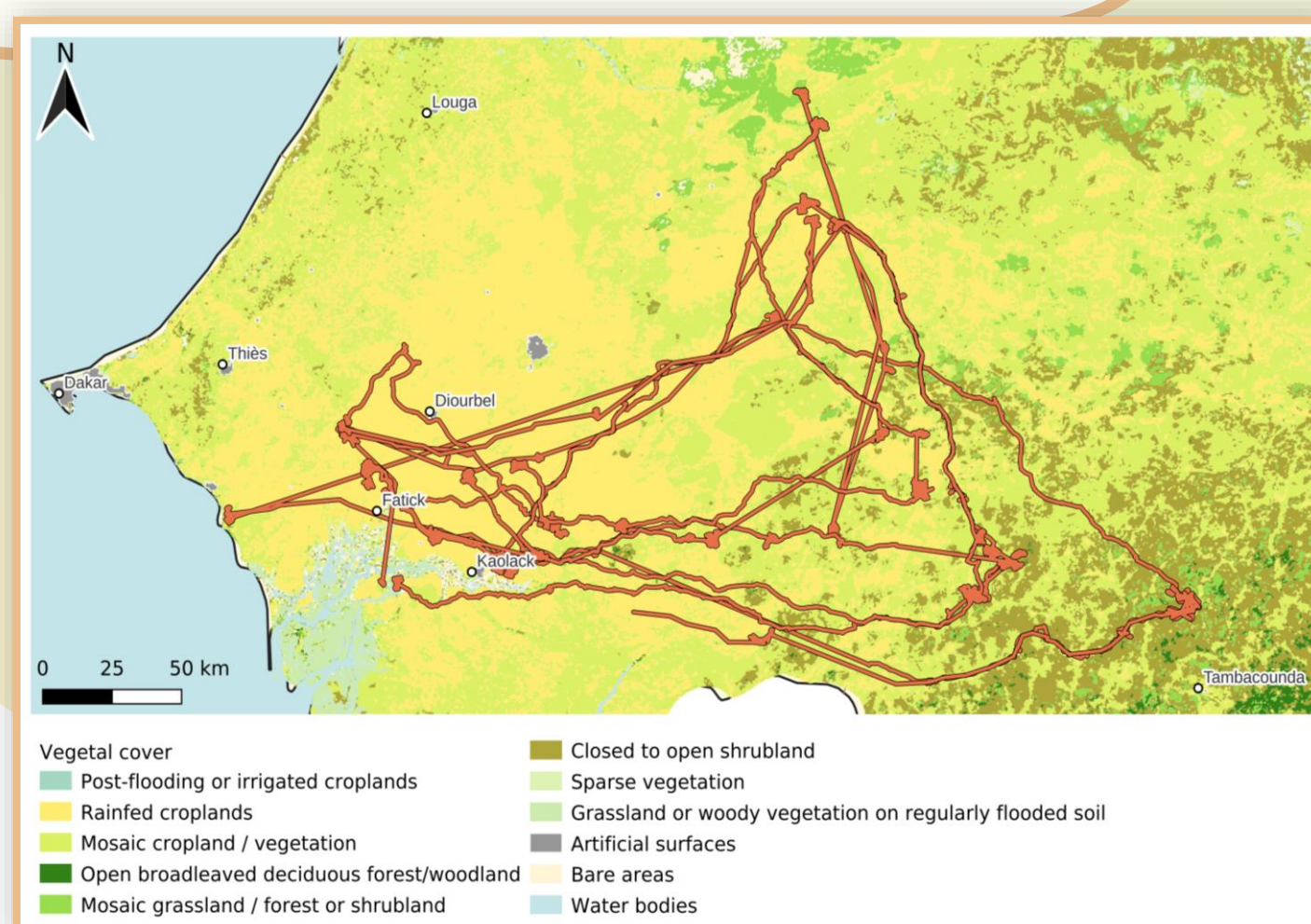
CONDUCTING A CARBON BALANCE ON A NATIONAL SCALE

Describe the main elements of the territory (animals, plants, soils) as well as the interactions between them and with the atmosphere

Animal



Direct measurements of enteric methane emissions using *GreenFeed*
→ Enteric methane emission data more contextualized to Sahelian systems than IPCC Tier 1 and Tier 2 data (2019)
Monitoring of transhumance herds with *GPS collars*

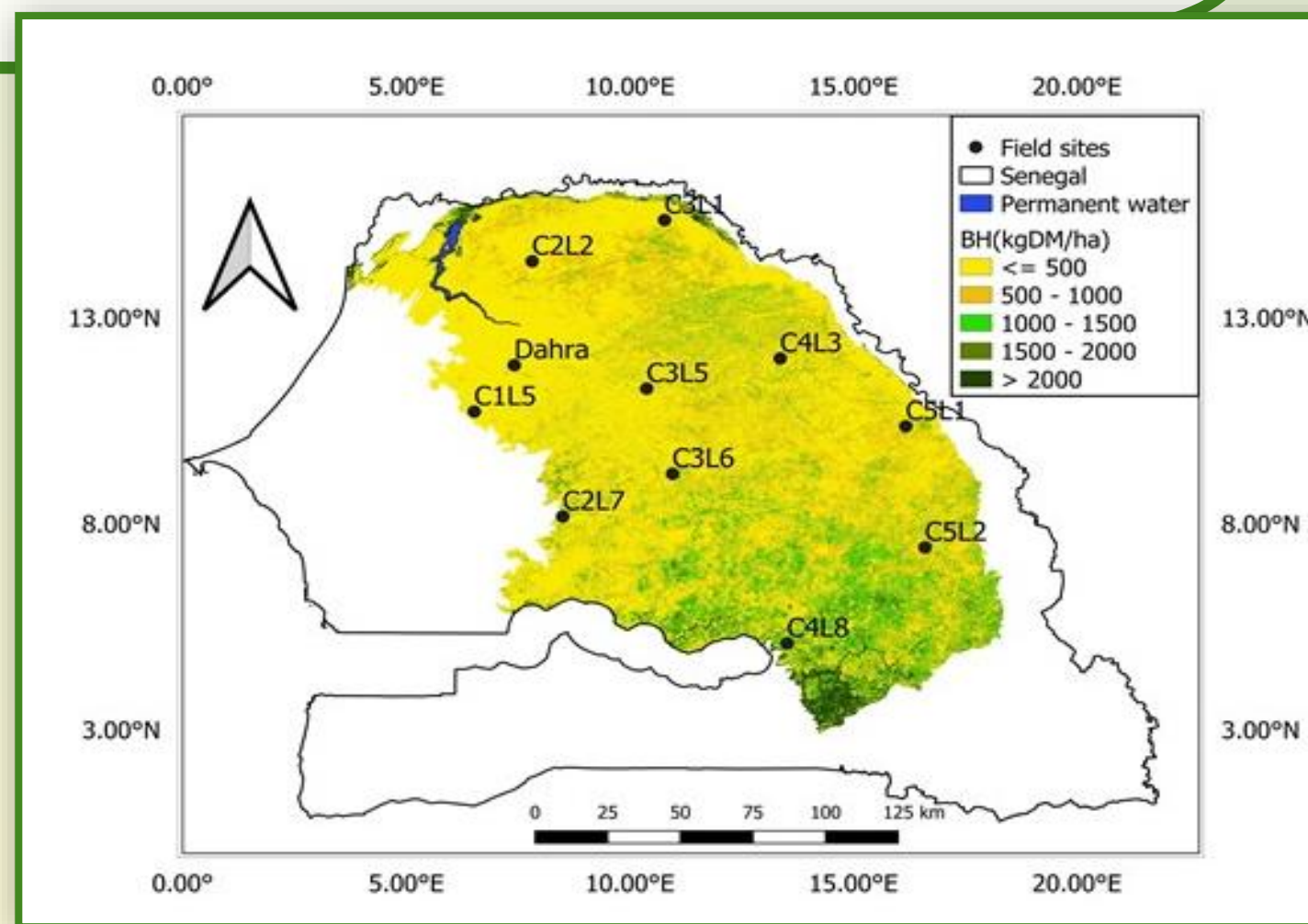


Pastoral mobility
Scriban A., 2023

Plant



Analysis of plant biomass using *satellite images* and *UAV*
→ Data on the quantity of **available straw** and their **C storage**
→ Data on the **structure of woody plants** and their **C storage capacity** using *remote sensing* and *growth collars* on trunks and roots

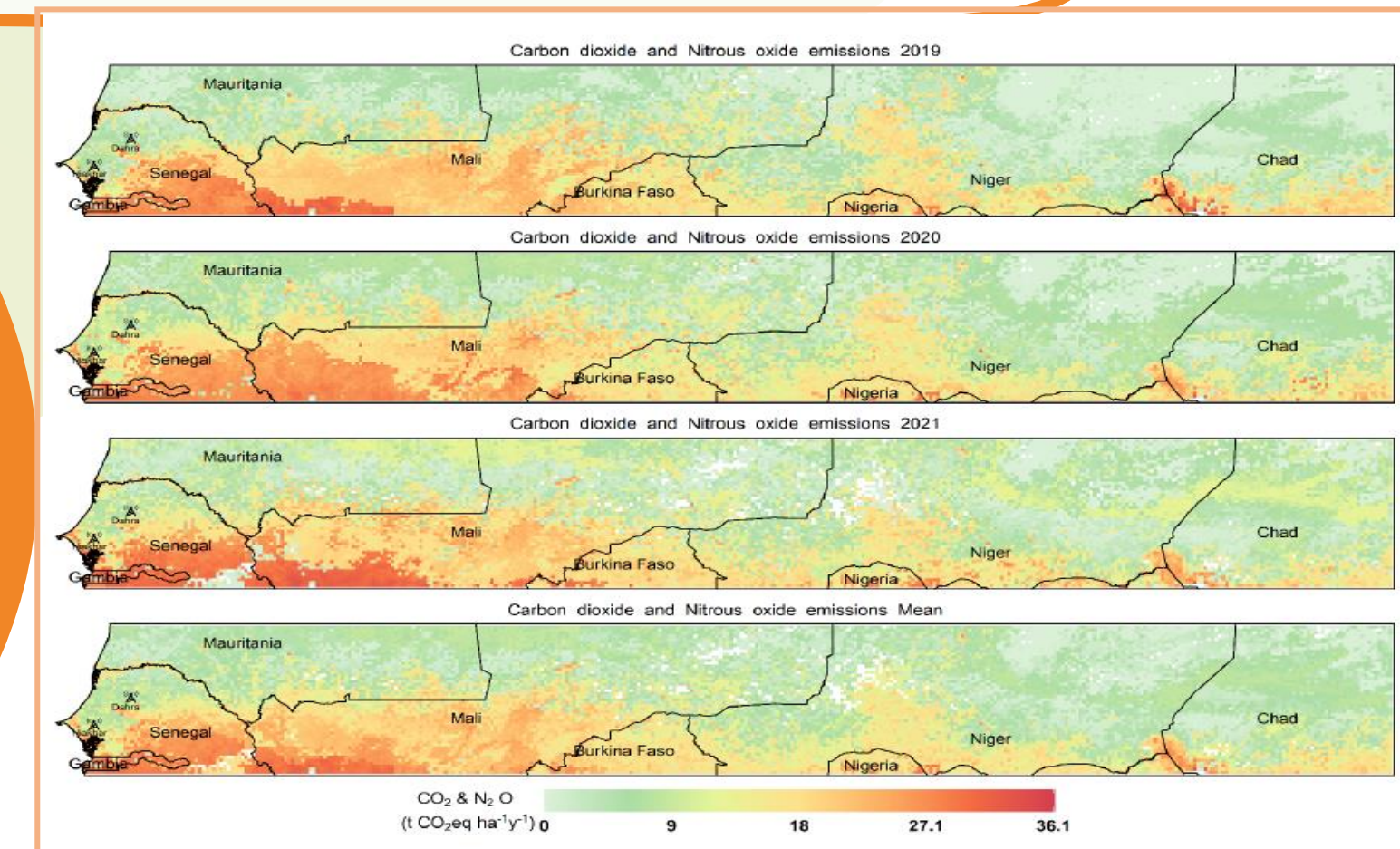


Soil



Continuous assessment of soil and vegetation gases [CO₂, H₂O, N₂O, CH₄, NH₃] by *automatic chambers* coupled to a gas analyzer
→ **Negligible fluxes** of CH₄, N₂O and NH₃ were recorded for all seasons
Analysis of soil C stocks using *near infrared spectrometers*

Temporal variability of GHG emissions data [CO₂, H₂O] from ecosystems by *flow towers*
→ **Sharp increase in C uptake** in the rainy season
Modelling flows of greenhouse gases on a regional scale



Discussions on tree planting

Territory

Co-designing options for optimizing the carbon balance, with local stakeholders, on animal feeding, resource management and tree planting → test and validate these options according to their environmental, social and economic viability

GHG flow tower

Ecosystem

KEY OUTCOMES

Pastoralists and agropastoralists will be equipped with **best practices** to optimize carbon balance:

- **Professional trainings** in practices and innovations to optimize the carbon balance of pastoral activities (less emissive feed rations, tree planting and wood-friendly practices, etc.)

The **methodological framework** for assessing the impact of livestock farming is improved:

- **Reinforcing the equipment of research Institutes** in CILSS countries
- **Developing multi-scale measurement tools and systems** for producing reference data on ecosystem emissions and C storage
- **Strengthening skills of technical agents** from ministries and research Institutes in CILSS countries

Sustaining skills with training for students from CILSS countries:

- **10** PhD theses
- **>35** Master internships

Carbon balance approach to assess environmental impact of pastoral livestock with **more reliable data** fosters:

- better visibility of the **real impact of pastoralism in the Sahel**
- better way to support **mitigation efforts** in livestock sector

Photos credits: Taugourdeau S., Cesaro JD., Diédiou L.

28th session of the Conference of the Parties (COP 28) – Dubai, United Arab Emirates – November 30-December 12, 2023

For further information
E-mail: contact@cassecs.org
Tel. SD.: +221 33 859 17 35
Tel. Coord.: +221 77 644 07 81

www.cassecs.org



With the support of

