Assessment of climate forecasts impacts on cropping activities and yields in Senegal: lessons from participatory workshops

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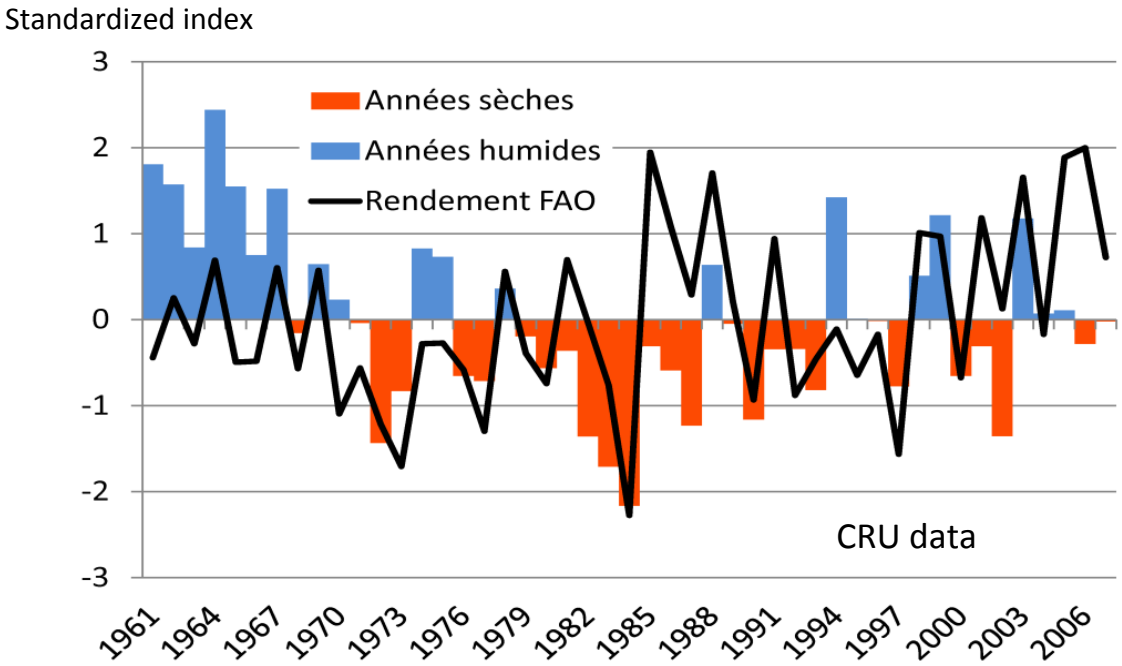
CIRED

escape

Links climate/agriculture in West Africa

- Rainfed agriculture
- High year-to-year rainfall variability
- Strong link between rainfall and crop yields:
  - Observations
  - Perceptions



How to limit the risk of bad years: climate forecasts

- In WA, farmers have to make crucial choices :
  - Sowing date (sowing may fail if a drought happens)
  - Buying inputs (less powerful if not enough rain)

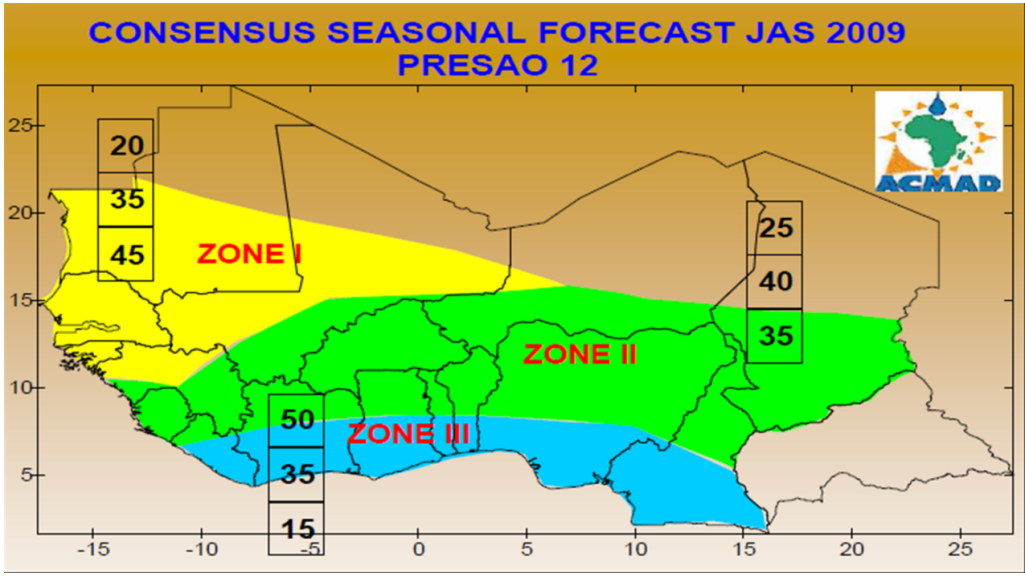
Can be positive for farmers to have information about these parameters

➔ Use of climate information

- Ex: forum PRESAO since 1998
- Information about the cumulative rainfall of the coming season

➔ Other information are possible to forecast (onset…)

Seasonal forecats for 2009:



About the quantification of forecasts value

- ✓ First *in situ* trials gave promising results (Hellmuth, 2007; Konte, 2007)
- ✓ Very few studies have quantified the value of climate information in WA (Meza et al, 2008)

Rain gauges use during pilot programs (Hellmuth, 2007)

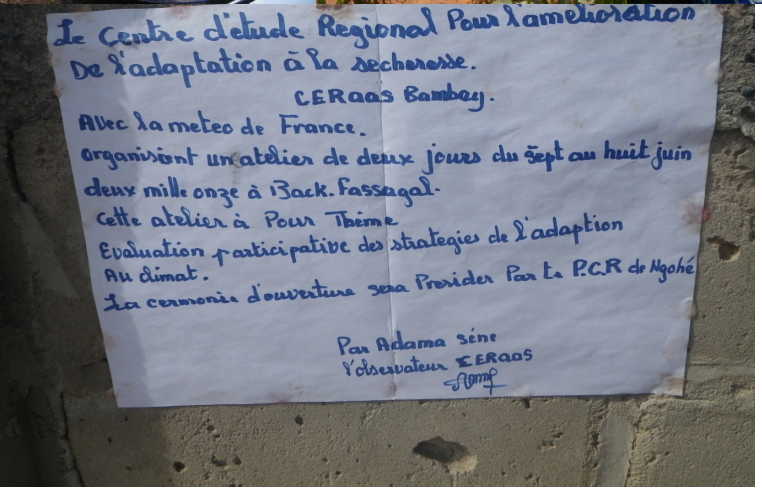
➢ The quantification of climate information is useful:
- For donors, institutions
- To know which kind of information is the most relevant

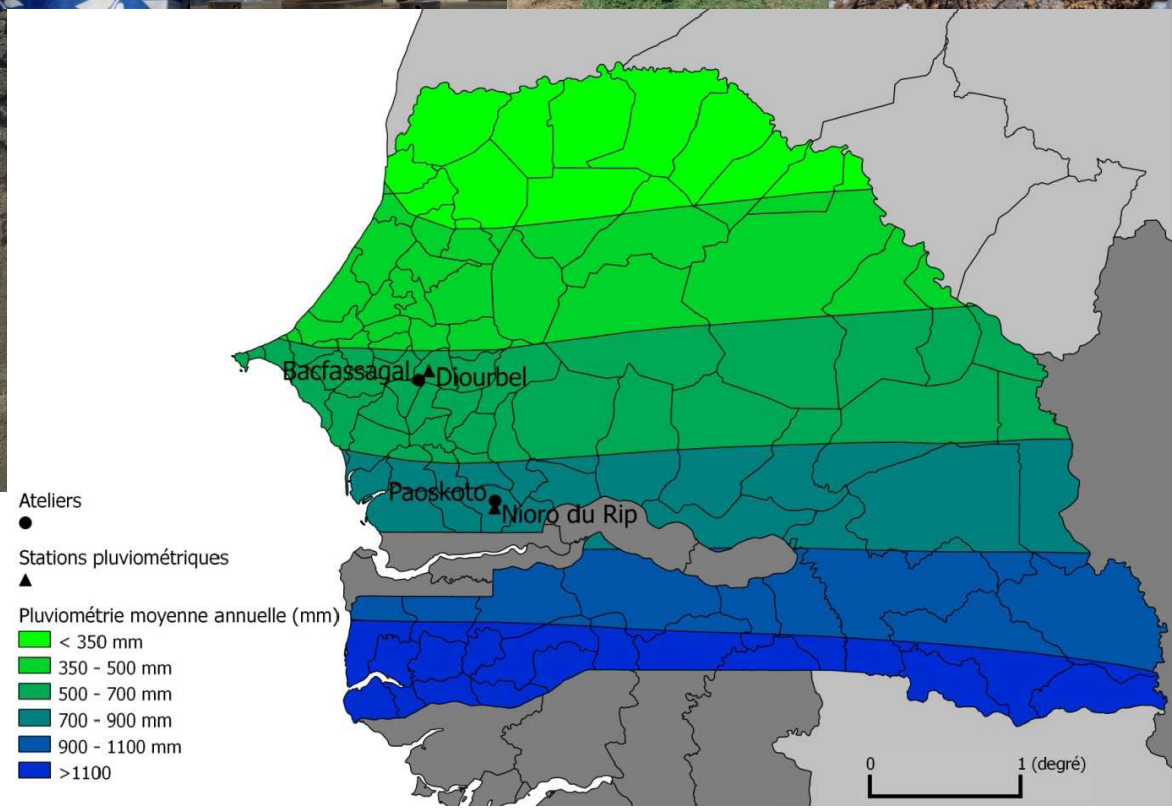
Ex ante studies (Roudier et al 2011)

Ex post studies (Patt et al 2009)

Participatory approaches (Ziervogel et al, 2009)

About these participatory workshops





✓ 2 contrasted villages

➔ We aim at assessing the impacts of forecasts use on:

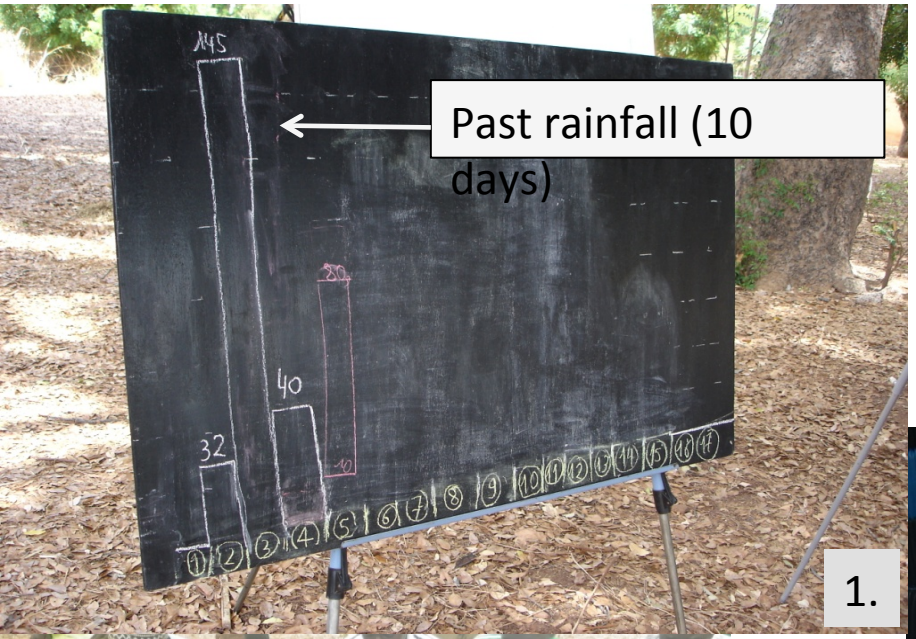
- Cropping activies changes (10 days timestep)
- Crop yields

Workshops conduct

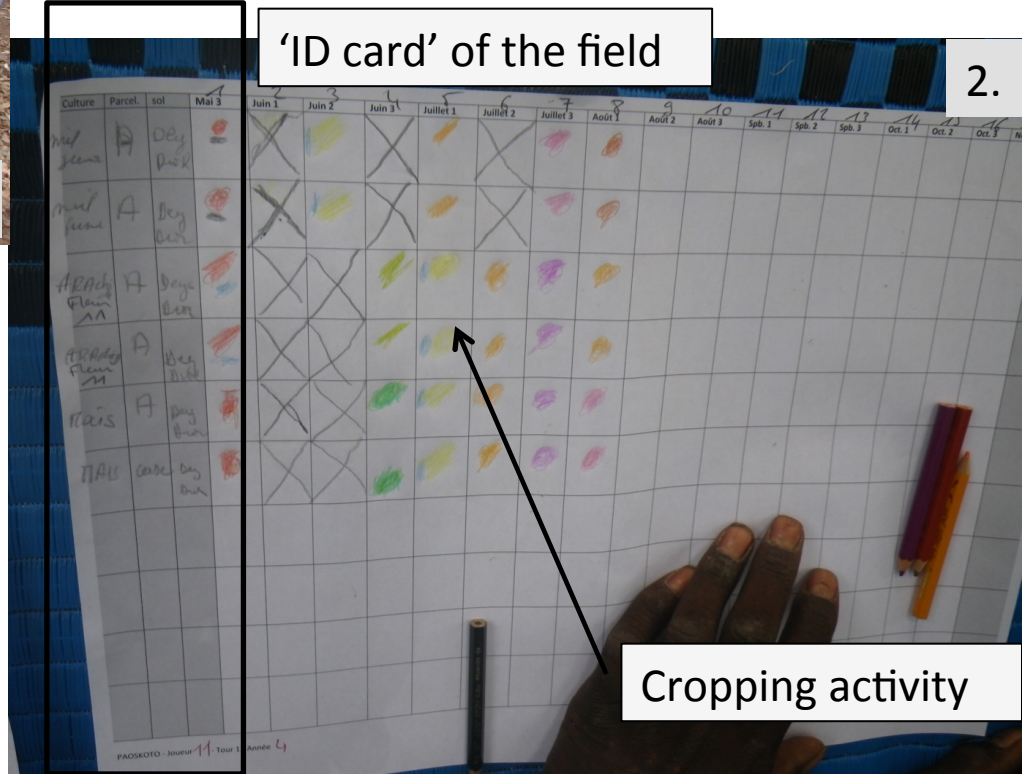
- Only real years (ex: 1977, 1979, 1992, 1996 in Paoskoto)
- For each year, cropping activities description for:
  - Round 1: without forecasts
  - Round 2: with seasonal and 10 days forecasts

✓16 participants per village

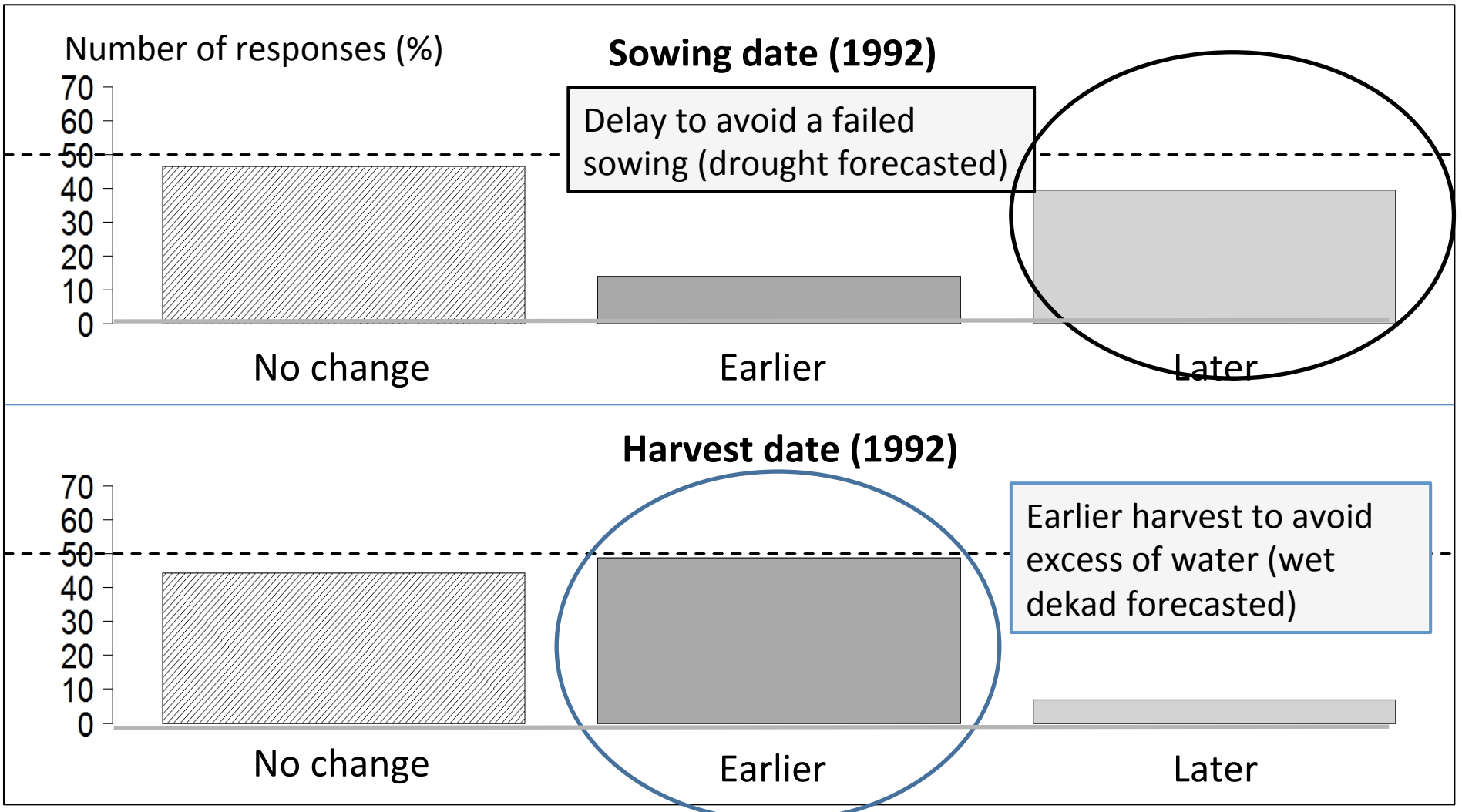
Workshops conduct



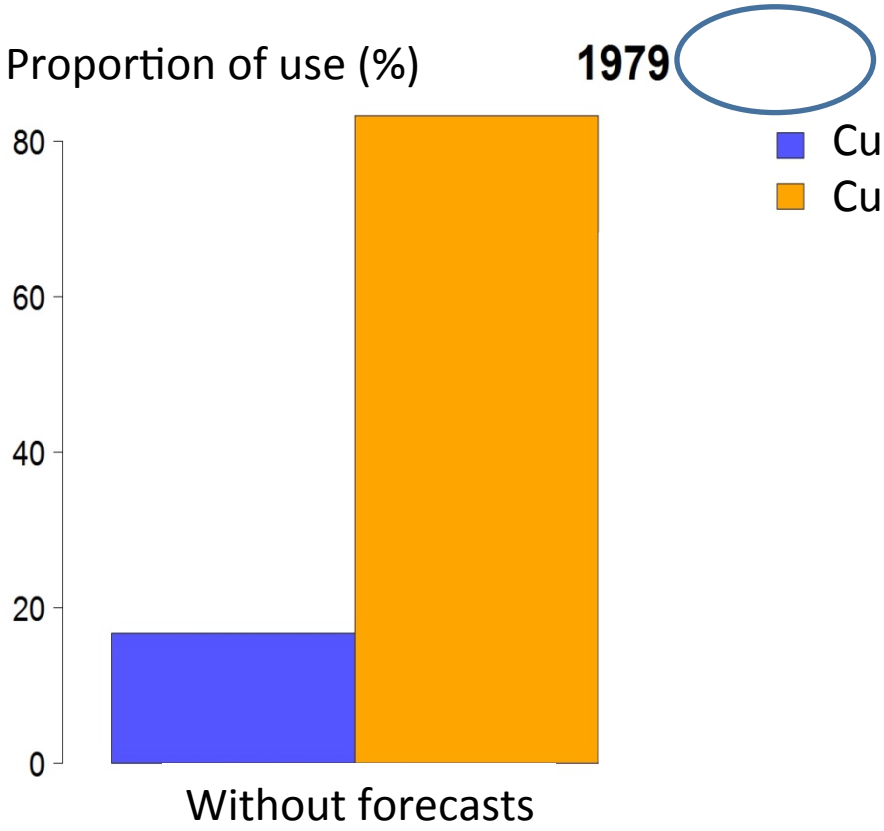
1. Annoucement of rainfall during the past 10 days
2. Annoucement of forecast
3. Cropping activities choice



Cropping calendar modifications



The choice of varieties



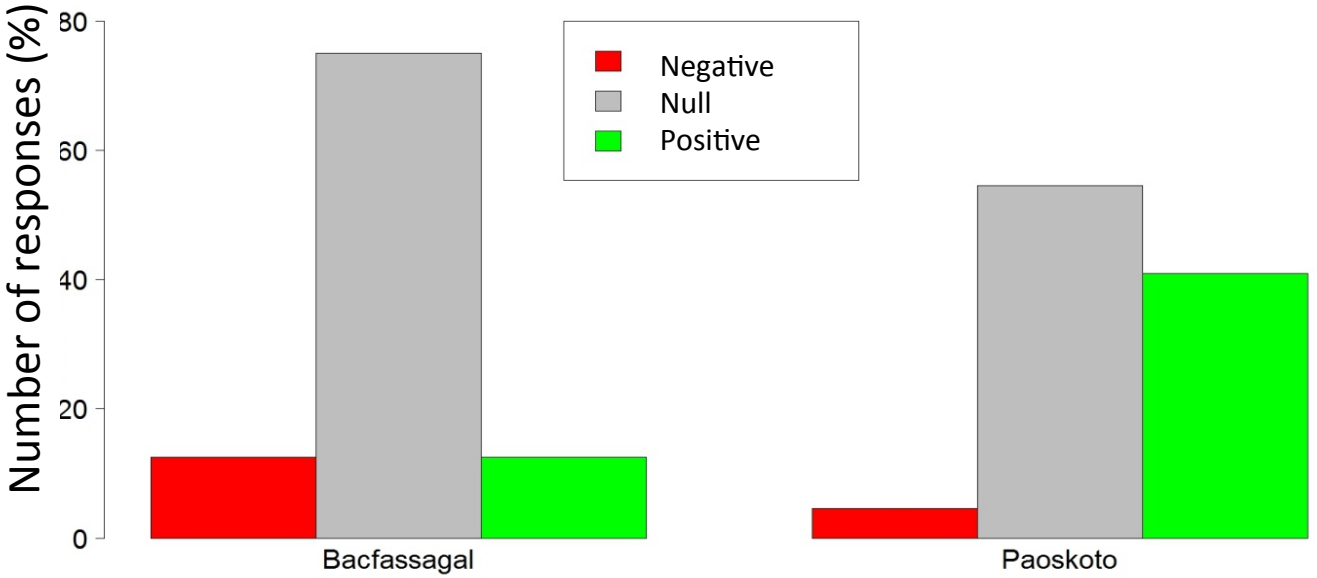
Paoskoto village

Other changes…

- Modifications of weeding time
  - ✓Necessary to weed before heavy rains

- Modifications of inputs use
  - ✓++ inputs (chemical fertilizers+pesticides)

Impacts on crop yields



Bacfassagal

Dry area

Paoskoto

More adaptation options

Conclusions about forecasts

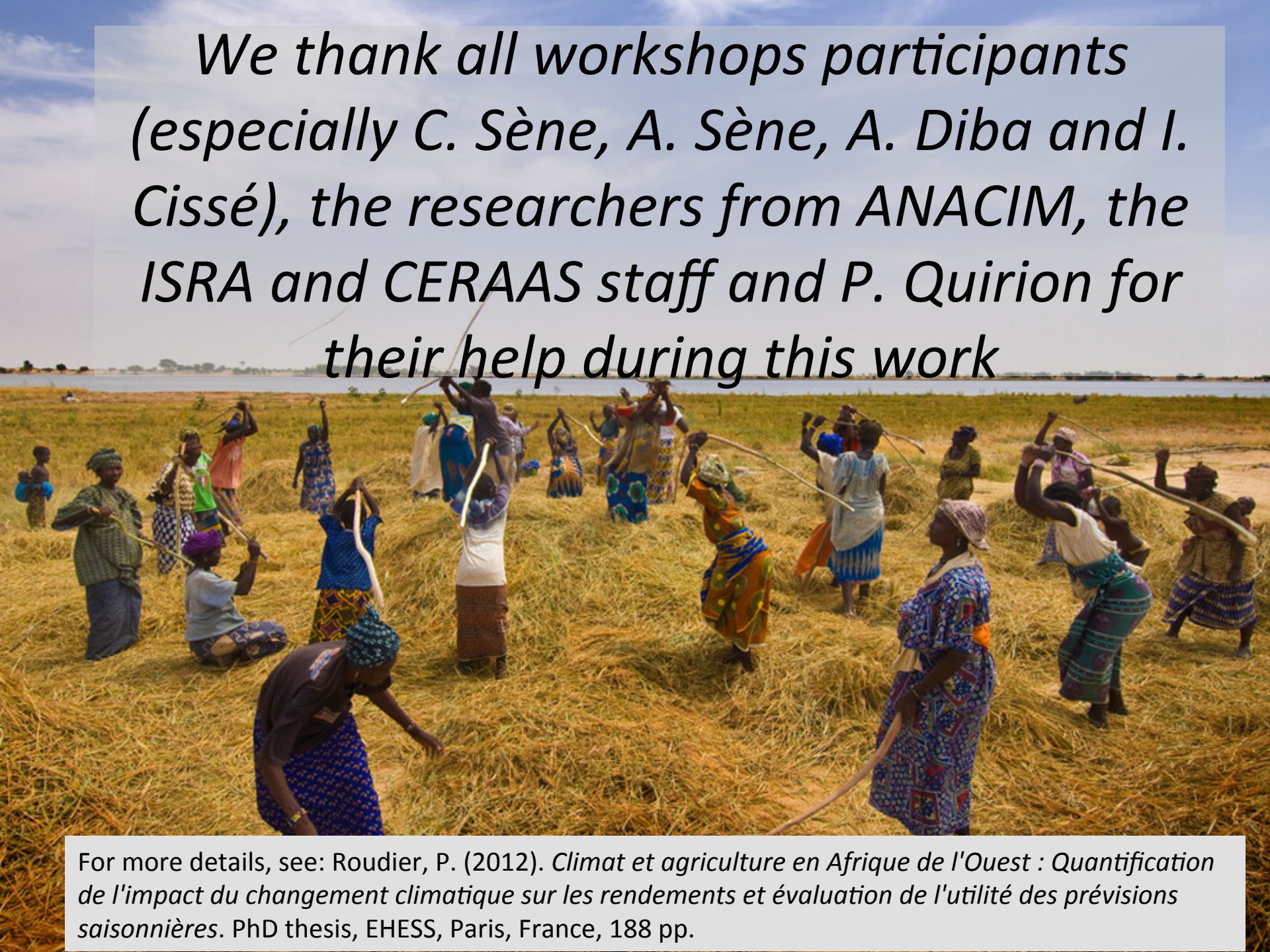
- Modifications of cropping activities: sowing, weeding, harvest…
- Change of crop varieties used by farmers
- Impacts on crop yields are rather positive (31% of cases) than negative (7%), in average, considering both villages
- Interest for dekadal information
- Seasonal forecasts benefits depend on adaptation capacities.

Results are not representative. They are an illustration.

The way forward

- How to represent the limited access to information? (Tall, 2010)
- It is necessary to integrate local forecasts in the workshops (Ziervogel, 2010)
- Less participants in the workshops ➔ more details during the discussion
- It seems important to do these workshops with the national met services (ANACIM)

We thank all workshops participants (especially C. Sène, A. Sène, A. Diba and I. Cissé), the researchers from ANACIM, the ISRA and CERAAS staff and P. Quirion for their help during this work



For more details, see: Roudier, P. (2012). *Climat et agriculture en Afrique de l'Ouest : Quantification de l'impact du changement climatique sur les rendements et évaluation de l'utilité des prévisions saisonnières*. PhD thesis, EHESS, Paris, France, 188 pp.