

# **The spatio-temporal rainfall variability in the north of Senegal 1951-2004**

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Abstract:

The study proposed concern the north region of Senegal, a latitude 16 degree 15 and 14 degree 30 north and a longitude 12 degree 50 and 16 degree west, with the aim to monitor and evaluate the variability of pluviometer in order to find the reasons and to ensure the necessary forecast for the agricultural needs and mostly to take in charge the moving of live-stock related to the availability of the biomass. Breeding is the main activity of this sector. Like this, on the bases of monthly database of 12 pluviometer stations spread out on both sides of the region, we are going to be able to release the trends and the inter-annual changes on the period going from 1951 to 2004.

## **1. Data and method**

The database used concern the monthly cumulus of the stations of Barkedji, Coki, Diourbel, Linguere, Louga, Matam, Podor, Ranerou, Saint Louis, Widou Thiengoly and Yang Yang. Those same data come from in majority of the National Department of Meteorology of Senegal but also from some research organizations as the IRD (Institute for Research and Development), the GTZ (German Project of Cooperation) and the Center of Ecology Follow-up thanks to the ROSELT Project (Network for Ecological Observation and Supervision on the long run) Tools are handled to put in evidence the trends and the variations. It concerns:

- Rainfall rating of Nicholson (Nicholson & al. 1988) - The method of the quintiles (Dione, 1996) - The method of the variations on average - The stationary according to the segmentation of Hubert (Hubert and al, 1988) - The analysis of principal components (ACP)

## **2. Results and discussion**

### **Spatio-temporal variability**

Even if the general average of the years in deficit for the region is around 50%, some disparities are to be emphasized:

58% of years in deficit in Barkedji 51% of years in deficit in Coki 48% of years in deficit in Dagana 54% of years in deficit in Louga and Linguere 65% of years in

deficit in Matam and Podor

A better distribution of the rain according to the north-south and the east-west gradient. In other word, the south and the west present more rainfall.

The trend

A general trend on the decline since the years 70s, the beginning of the enormous Sahel dryness even if those last few years record rains largely above average.

Conclusion

The variability is still a perceptible character at all levels in the rhythm and in the spatio-temporal evolution of precipitations, contrary to the general trend that seems to take a new turn but for the moment nothing enables us to say a return of rainy episodes in this part of Senegal.

4 - References

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