Analyses of Highs and Lows tracks in South and North Atlantic from 1960-2000

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Abstract: In this study, we analyse firstly the features of Lows and Highs over the Atlantic Ocean and surounding lands in the two hemispheres from automatic tracks scheme (Benestad R.and Chen D., 2006) using EMCWF ERA 40 Mean Sea Level Pressure. Secondly, we study the differences between them and finally explore the climatic impact of Highs characteristics in the intertropical region.

1- DATA and METHOD.

The data are extracted from EMCWF ERA-40 (http://data.ecmwf.int/data/d/era40/daily). The computations were done using the free statistical package R, (http://cran.r-project.org).

Working with the "Calculus-based Cyclone Identification method for generating storm statistics" created by Benestad R.and Chen D. in 2005, we establish the tracks of Lows and Highs in the North and South Atlantic Areas.

From these four Data Base (two concerning the Highs and two about Lows for each hemisphere), we extract a significant number of time series representing every aspects interested the variability of Highs and Lows tracks along the period at different tresholds.

2- RESULTS AND INTERPRETATIONS.

a- *In the North Atlantic*. The number of Highs at every tresholds increase from 1960 to 1970 and decrease from 1970 to 2000. oppositly, Lows decrease from 1960 to 1970 and increase from 1970 to 2000.

b- *In the South Atlantic*. The number of Highs and Lows decrease but deeper Lows and stronger Highs increase along the period.

c- *In the intertropical region.* The Highs of North Atlantic are able to go further southward for 1970 to 2000 and the Highs of South Atlantic are able to go further northward. So the "space" between those two elements get thinner and that can an

explanation why the amount of rain decrease strongly in Sahel region during the same period.

3-CONCLUSIONS.

This analyse allows to better understand the climate variability over the Atlantic region at surface level. The most interesting part of this study concern the fact that it's take in account the two hemispheres.

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