



## Analysis of rainfall in the Brazilian semiarid

Nivaldo Teixeira (1), Javier Vide (2), and Jonas Nery (3)

(1) Barcelona University, Barcelona, Spain (nivaldofteixeira@gmail.com), (2) Barcelona University, Barcelona, Spain (j.martin.vide@hotmail.com), (3) Barcelona University, Barcelona, Spain (jonas@ourinhos.unesp.br)

The Brazilian semiarid sub region is located in the Northeast and a small part of the territory of the Southeast region of Brazil. The study area lies between latitudes 3° to 18° S and between longitudes 35° to 46° W. According to the Köppen classification, semi-arid climate BSh and BSk is dominated, and the mean annual temperatures is between 26 and 28 °C.

In total nine units are incorporated in the federation, eight Northeast and a small portion of the southeast region. The land area is 982,563.3 km<sup>2</sup> with 22,598,318 inhabitants residents, nearly 12% of the national population, divided into 1,133 municipalities. The sub region has population density of 23.06 inhabitants per km<sup>2</sup>.

Northeast Brazil is characterized by precipitation variability and irregularity in its spatiotemporal distribution, which make it to be under a severe water shortage.

This study is aimed to analyze the rainfall variability through anomalies for El Niño and La Niña years (severe, moderate and weak), calculation the values of the Concentration Index, and numbers of irregular rainy days.

The first part is concerning in analyzing the consistency and standardization of rainfall, using R-Package CLIMATOL.

The work was achieved using daily rainfall data, during the period 1970-2012, based on the 104 series long enough rainfall observatories in the Brazilian semiarid region.

Study of daily rainfall events, may contribute in improving land use and regional economic development, based on the water, the source of life of living beings.

Results show rainfall anomalies, especially in the strong El Niño years, such as 1983 and 1992, a large variability appears in precipitation semiarid region, especially in the northern part. This study also shows a sever precipitation variability between years. The semiarid area has years of drought and years with rainfall above the climatological average normal. The stronger are the events, the more erratic rainfall, ie intense El Niño events cause intense droughts and intense La Niña rains caused more marked.