

GT: Estudos e Modelagem do Tempo e Clima

**COMPARISON BETWEEN DROUGHT PERIOD LENGTH AT 3 SITES AS TRIANGLE FORM AT SEMI-ARID REGION NORTH-NEB IN 2016 (RAINY SEASON LOW LEVEL) AND 2019 (RAINY SEASON MIDDLE LEVEL)**

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**ABSTRACT**

The North-NEB region (Ceara state) has a arid climate. The rainy season level depending on teleconnections such as NINO/NINA and Madden-Julian as well Oscillation Inter Tropical Convergence Zone. The predictives variables of these phenomena are pressure, sea temperature surface, radiation and others. The aim of this work is development of time series analysis techniques with spatial semi-logarithmic distribution based on the complex networks formalism with applications for understanding the differences between droughts period length (DPL) at North-Northeast Brazil (Ceara state - NEB) at 3 sites as triangle form at semi-arid region in 2016 (Experiment 1: rainy season low level) and 2019 (Experiment 2: rainy season middle level). Data: The study has two periods: 01/01/2016 until 12/31/2016 and 01/01/2019 until 12/31/2019. The triangle vertex are site1-point (Mombaça city Lat -5.44 , Lon -39.37); site 2-point (Quixeramobim city Lat -5.19, Lon -39.29);site 3-point (Solonopole city Lat -5.72, Lon -39.00). Time series rainfall daily was obtained by GPCP data base 0.5 degree resolution at average área as box 2S-9S, 45W-30W (30 years ago). To SST [0.25 d.r.] and SLP [2.5 d.r.]. were applied at average NINO 3.4 region 5N-5S, 120-170W (30 years ago). Tropical North Atlantic SST averaged over the domain 6-22N and 80-15W (30 years ago), to South Atlantic SST average 25S-2N and 35W-10E. Relativity Humidity [2.5 d.r.] area between 40-20W, 15S-1S (30 years ago). Long Wave Radiation anomaly Hovmoller diagram [1 d.r.] 5N-5S , 20E-120W, in 20-70 days(Exp\_1 2016/ Exp\_2 2019). Methods: First to SPL and after other variables: get the differrentiated series  $\Delta SPL = SPL(t+1) - SPL(t)$ ; SPL will be in phase increase is  $\Delta SPL$  is positive, in contrast SPL will be in phase decrease if  $\Delta SPL$  is negative, i.e., increase (or decrease) trends in sea level pressure averaged over a one-month M window time. To quantify the changes in spatial difference will use  $r(m,d)$ ,  $r(d)$  season metric (ave: Feb., Mar., Apr., May.), were used too  $r(m,s)$  to drought period. As conclusions of this research, the authors wait to get the different triggers to DPL, aplications of complex networks formalisms, based meteorological explications depending on kind of rainy season at the triangle region in semi-arid region at Ceara state (North-Northeast Brazil). The authors intend to document the entry, stay and exit of weather systems in the triangle region.

**Keywords:** Complexnet, Drought period length, Semi-arid region, Caatinga biome, Teleconnections.

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