Variability of the precipitation and temperature, hydrology and yield of principal crop associate with ENSO in Paraguay. (in CRN – 055)

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The ENSO, warm or cold phases were agreement with very strong anomalies in the rainfall amounts in the Paraguay's country, especially in the rainy seasons (October-November-December, February-March-April). Especially , is remember that the warm evens of 1982-83 and 1997-98 because occasions a very strong flood in zones neighbor to Paraguay, and Paraná River. Many populations were evacuated, especially en 82-83.

The heavy rain during October to December (1997) and February to April (1998) occasioned many difficult in all areas of the economical activity of the country.

The cold events are agreements with a long period of dry days, that produced a water stress that delay the planting of traditional agriculture products, like cotton and another crops.

The strongest dry periods generated forestall fires, and loss of cultivation and cattle., especially in the north of the country.

The Paraguay River' level experiment values very low and its navigability is impossible, occasioning difficult in the commerce in the northern of the country during the cold events.

In October 1998 the government declared emergency zone to the Conception and San Pedro Department, because the agriculture products were damaged in about 80 or 90 percent because the moisture and water unavailable for agriculture utilization and the fire damage the cultivation and the house of the farmers.

This situation conduced, using the statistics techniques, studies the relationship between the strong anomalies of rain in Paraguay and the SST in El NIÑO 1+2, 3 areas, with the proposal to build a simple statistical model that can to reflects the rain in Paraguay using SST index how predictors. The result show that strong events "El NIÑO change the precipitation in Paraguay, especially in the rainy season. It found high correlation with OND rainfall, weak correlation with AMJ and poor correlation with JFM.
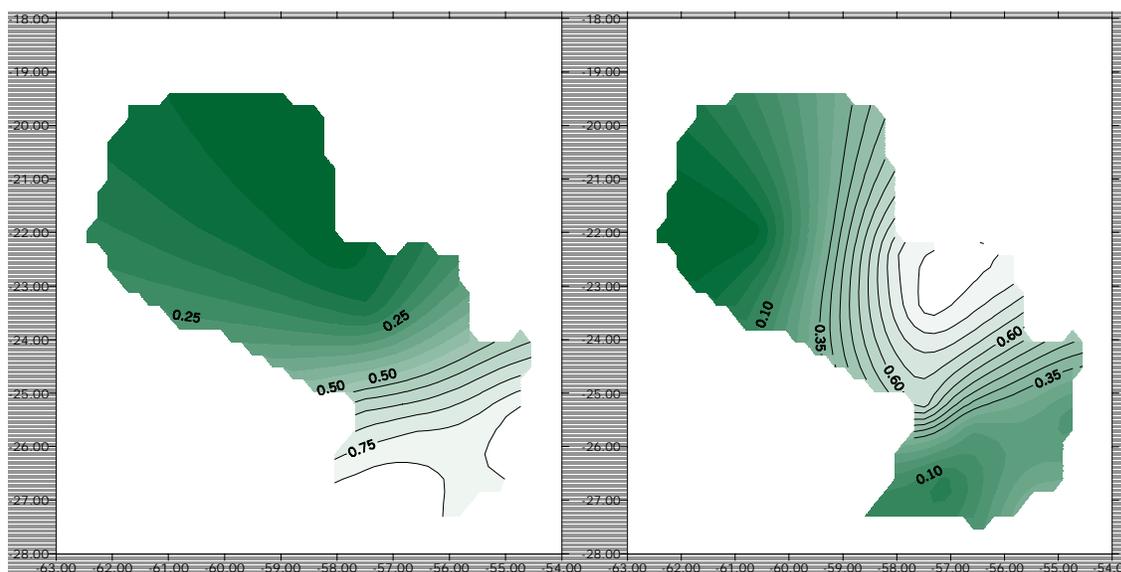
Map of region 1.   Map of regions 2.

The maps show correlation of rainfall indices with SST, for two regions during Oct-Nov-Dec (OND).

The problem of Climate Variability creates difficulties for different sectors of the population, be it in agriculture, and cattle raising, transportation, people living under precarious conditions, with the negative economic consequences. It is obvious the complexity of the problem in all social aspects of the population, revealed to existing social need.

Our main objective is to improve our understanding of the elements that control regional climate variability en Paraguay, in order to provide more accurate and adequate climate predictions to fulfill some of the need of particular socioeconomic sector, remember that agriculture is among the most important economic activities in Paraguay.

1. Particular attention will be given to study on the association between ENSO (SST) and precipitation and temperature anomalies at different area of Paraguay in order to characterize the ENSO signal on precipitation anomalies.
2. Also we will be study relation of SST anomalies and hidrometric high of the Paraguay and Paraná River, study the principal characteristic of flooding, and characterization of the basin.
3. Particular attention will be give to study for explore the existence and naturalize of the associations between agricultural yield and ENSO phase of the major crops grown in the Paraguay (maize, soybean, cotton, wheat).

An important element of the present study is that the results of the study will be delivered to various users

The task before us is immense, but we are enthused and optimistic that, with the assistance of our partner institutions, we will succeed in accomplishing our goals of improving forecasts of seasonal-to-interanual climate variability and developing new knowledge and methods for the application of those forecasts for social benefit.

Younger scientists will participate in the project to form the professionals that will maintain this activity in the future, the education and training for that skilled in the use and interpretation of new forecast capabilities and analysis techniques.

Necessities: To establish relation with specialists of the region for obtain fluid interchanges of data, methodology of analysis for standardize the works, technical cooperation, formation, provision of software and references. Skill of communication system. Insertion in the regional technical - scientific atmosphere.

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