Introduction
The Central American Region is continuously affected by climatological events of negative consequences. These events have a great impact on the farm production, especially in the more vulnerable zones, which originates food insecurity and a lack of nutritional status. The different scenarios modelled for the future, according to the Intergovernmental Panel for Climate Change (IPCC), have predicted an increase in temperature and a greater climatological variability in the region. In order to set policies for adaptation and mitigation to ensure food security in these regions, it is of great interest to establish indexes that allow to determine these weather phenomenon with a major impact on the study areas, like the Rain Periods or the temperature extremes.

As a tool for the determination of these indexes, a method of regionalization developed by the FIC has been used to simulate daily series of temperature and precipitation from which we are able to generate the impact indexes selected.

Once the appropriate indexes have been determined, it is possible to apply the results in the future thanks to the information provided by several General Circulation Models under the assumptions of future emissions scenarios.

Verification of the Methodology
The verification process is used to study the ability of the methodology to simulate the local climate. This process involves comparing the results from the regionalization of the NCEP reanalysis against the observations of the stations of Nicaragua. As an example of the verification process, we show the results of two phenomena of great importance in the agriculture of Nicaragua, the midsummer drought, the so-called Canícula, and the average, maximum and minimum temperature.

Future Precipitation Indexes
The precipitation plays a fundamental role in the agriculture, determining the appropriate times to perform different agricultural tasks. The Rain Season goes through three stages: the first rain period called Primera; a second period of relative drought, called Canícula; and a third rain period, called Postera. For the generation of future climate scenarios we used the ECHAM5 model output and the A1B emission scenario.

Future Temperature Indexes
The temperature is a very important meteorological variable for the planting seasons. In each period of the agricultural cycle, the temperature variations will be of great value.

Conclusions
• The study was conducted on Nicaragua [lat (0-10° N) and lon (110-70° W)]. For making this study we have used meteorological data from 17 temperature stations and 197 precipitation gauges within the territory of Nicaragua. These stations go through a prior control to ensure the validity of the data, and the shortest duration (2000 days with daily data) required to perform a satisfactory regionalization.

• The used reanalysis database is the NCEP, from the National Center American Prediction (http://www.erlh.noaa.gov). Spatial resolution: 2.5° × 2.5°, temporal resolution: six-hour; period: 1951-2008.

• The used General Circulation Model (GCM) is the ECHAM5 from the Max Plank Institute (http://www.mpi-mpg.de). Spatial Resolution: 1.8° × 1.8°, temporal resolution: daily. Period control of ECHAM5: Future climate scenario: A1B.

The verification results for temperature (mean, average and mean of the minimum) in the three periods of agricultural interest show very satisfactory results, picking up well the variability and the value of the three variables.

The Canícula (from Latin, the dog-days of Summer) is a period of relative drought that happens during the Rain Season that divides it into two periods of rain, so-called, Primera and Postera, and whose length and harshness are of great interest.

As shown in the results for the Canícula, both for its Length and for its Harshness, the methodology was able to simulate both variables very satisfactorily.

The variability of the Harshness of the Canícula: matched with a defined normal value – is very well simulated by the methodology. The length of the Canícula is simulated with a correlation of 0.94.

The period of time when the heavy precipitation return after a period of relative drought is called Postera. It is expected that during the XXI century this phenomenon begins later and its duration is less and less, which means a decrease in the amount of precipitation accumulated during the days in which this phenomenon happens. It is expected that the variability of this phenomenon will be higher in both, accumulated precipitation and length.

The Canícula is a period of relative drought that happens between the rain periods of Primera and Postera. Throughout the XXI century it is expected that the starting day of the year of the Canícula goes forward and that this phenomenon lasts more days.

In this first period, Primera, it happened the first precipitations of the year, which means the beginning of the wet season. In the future, it is expected that the amount of precipitation accumulated falls gradually throughout the XXI century and that interannual variability increase. Is, the amount of accumulated precipitation vary strongly from one year to another. A similar trend is expected on the number of days. The starting day of the year for this rain period is expected to happen a little later.

The period for the Canícula has been separated from the precipitations period of Primera and Postera therefore the minimum temperature is very similar to those obtained for the maximum temperature in the period of Primera and therefore not shown here.

The results for the period of Postera and for the minimum temperature are very similar to those obtained for the maximum temperature in the period of Primera and therefore not shown here.

The period for the Canícula has been separated from the precipitations period of Primera and Postera therefore the minimum temperature is very similar to those obtained for the maximum temperature in the period of Primera and therefore not shown here.

The period for the Canícula has been separated from the precipitations period of Primera and Postera therefore the minimum temperature is very similar to those obtained for the maximum temperature in the period of Primera and therefore not shown here.