

Climate Service for Climate Change Impact Indexes on Food Security in Nicaragua

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Central American region is continuously affected by extreme meteorological events. These events have great impact on agricultural production, specially in more vulnerable regions, which creates food insecurity and lack of nutritional status. As a part of an international initiative, some Impact Indexes, locally related to the planting seasons, are tailored and studied looking for minimizing food insecurity. This local indexes, mixed with future climate scenarios, are useful for assessing impacts of future climate on food security. All this information is distributed to users through a climate service centered at INETER.

The future climate has been simulated using a “two step analog” statistical downscaling method developed by the Climate Research Foundation (FIC) for Europe, that has been adapted for this project to Central America, with the collaboration of INETER. This method produces daily series of minimum and maximum temperatures, and of daily rainfall, for each station, and for the whole XXI Century. These local scenarios downscaled from General Circulation Models show for the future a clear increase of temperature and climate variability, and a slight decrease of precipitation. For that reason the main objective of the present study was to define different impact indexes related to food security, in order to calculate them both for past observed climate and for future scenarios, so the impact of future climate on food security could be assessed.

Using temperature and precipitation daily series, some food security impact indexes were estimated, as duration and characteristics of the Canicula (a dryer period inside the raining season), the begin and end of the different planting seasons, and the extreme temperatures of those planting seasons (which are called Primera, Postrera and Apante); all of these are key indexes for crops related to food security.

The verification results show that most of the indexes are acceptably simulated using downscaled series, although some further analysis is required in order to improve some of the indexes utility for food security.

The results show that duration of planting seasons may be reduced for the future (raining period begins later and canicula begins earlier), and that canicula period may increase. The variability of most of the indexes seem to increase quite a lot for the future, so uncertainties on planting dates and on whether the planting season will be long enough, will increase very much, what will cause food insecurity.

The results of these indexes, both for future and present climate, are distributed to end users through a climate service centered at INETER.

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