CLIMATE CHANGE AT THE MICRO-REGION SCALE: THE CASE OF TAMAZULA, STATE OF JALISCO, MEXICO

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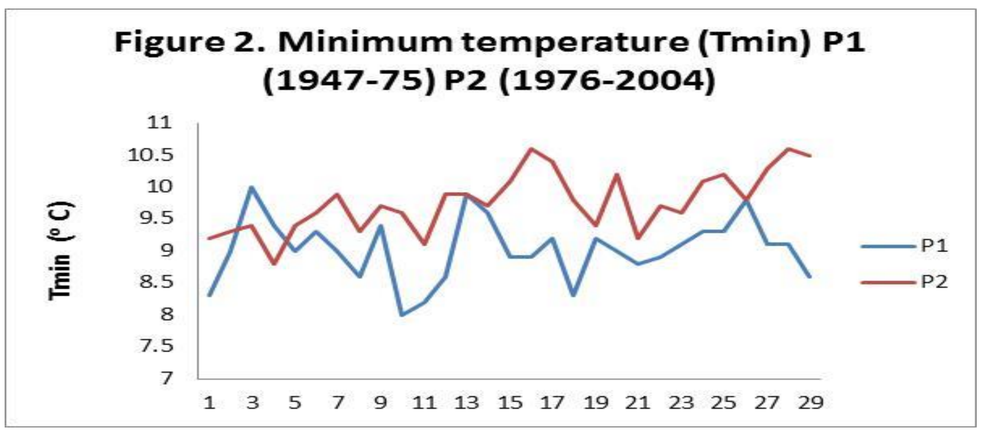
INTRODUCTION

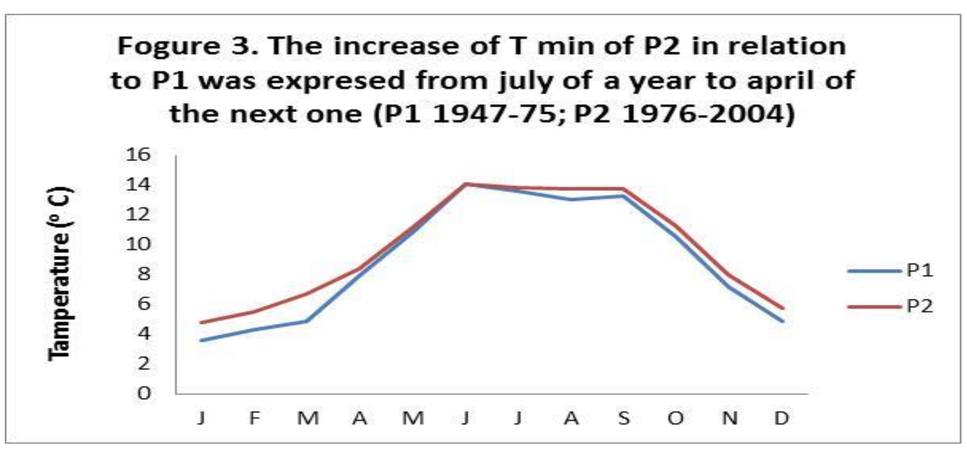
In Mexico rainfed agriculture is carried out in a mosaic of micro-regions that undergoes several adverse events such as the great winter drought (GWD) and the midsummer drought (MSD) (Figure 1) among others. From Figure 1 of the book Climate Change 2001 (IPCC, 2001), it follows that 1975 is a reference line of appreciable climate change. Therefore, we have compared historical climate data from 1975 and previous years (P1) against later years (P2) from Tamazula, Jalisco State, Mexico (103.23ºW, 19.66ºN, 1127 m), located in a micro-region planted to sugarcane (Saccharum spp.). The studied variables were: minimum and maximum temperature (Tmin, Tmax) in each of three tens (T) by month (M), the sum of mm of rainfall of each ten (Ll). The main objective was to have an idea of specific variations to look for adaptation by breeding or agronomic management.

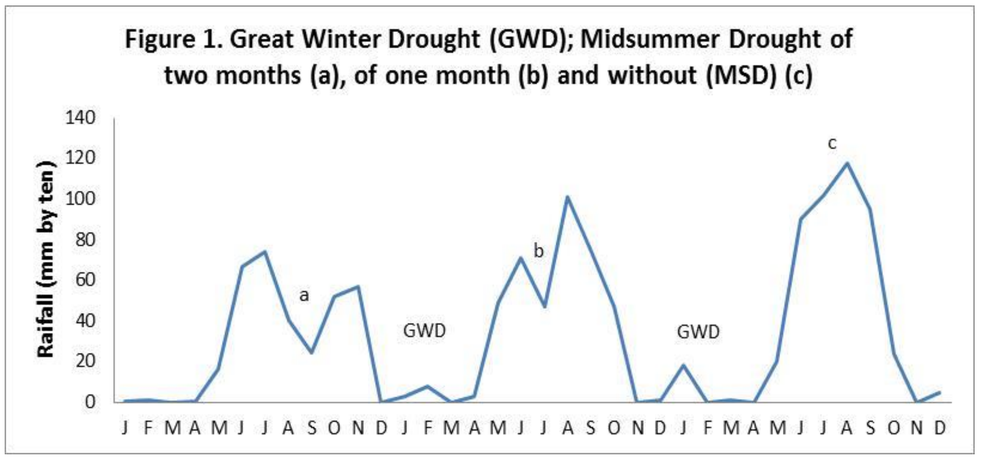
RESULTS

The frequency of years with MSD (Figure 1) was 17 in P1 and 8 in P2. This effect could be related to the increase in frequency and intensity of hurricanes in the Pacific Slope.

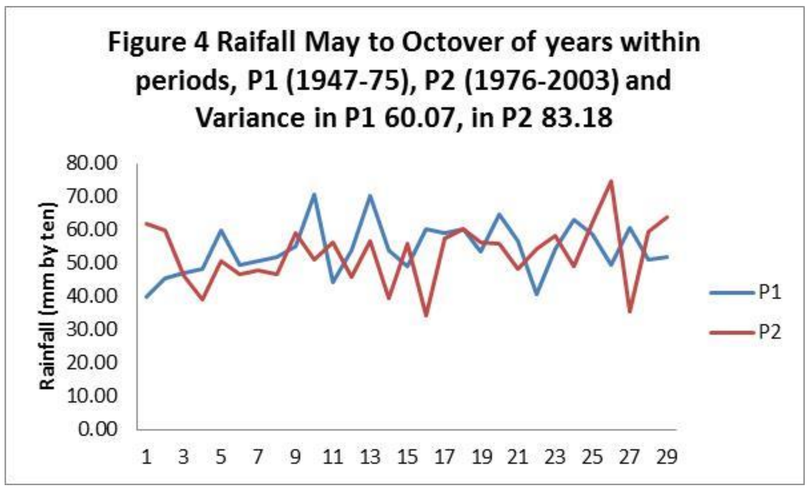
Tmax was no greater in P2 than in P1, although it showed a greater variance in P2, increasing the probability of temperatures above the threshold for sugarcane. Tmin was 0.74ºC higher in P2 than in P1. Tmin was 0.74ºC higher in P2 than in P1. The greatest Tmin in P2 was from July in one year to April in the following year (Figure 2)

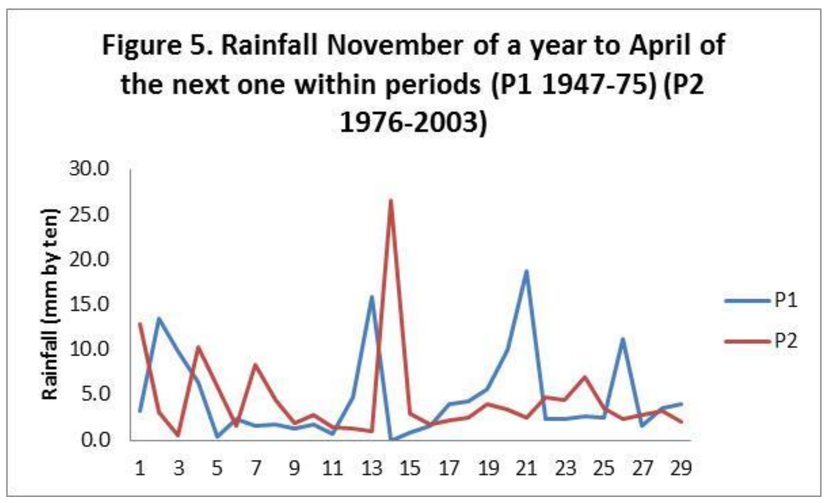






In the rainfall period from May to October MSD happens and also the hurricanes increasing variance in P2 in relation to P1 (Figure 4). In the rainfall period from November to April there is a extreme value in P2 year 14 (Figure 5), its frequency is increasing, it slows sugar cane maturity even it is necessary to stop sugar cane mill.





CONCLUSIONS

There is an effect of climate change on Tamazula, reflected in a rising of Tmin, reduction of frequency of MSD and increase of variation in Tmax and rainfall, as detected through a 29 year sample data in P1 and P2. 1975 was a consistent reference line.