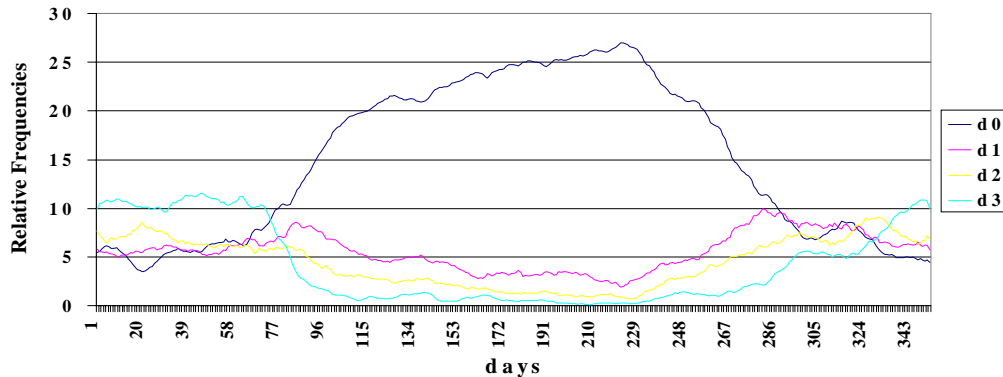


EXTREMES ON TEMPERATURES, PRECIPITATION AND RUNOFFS. CLIMATIC ASPECTS.

Walter Vargas

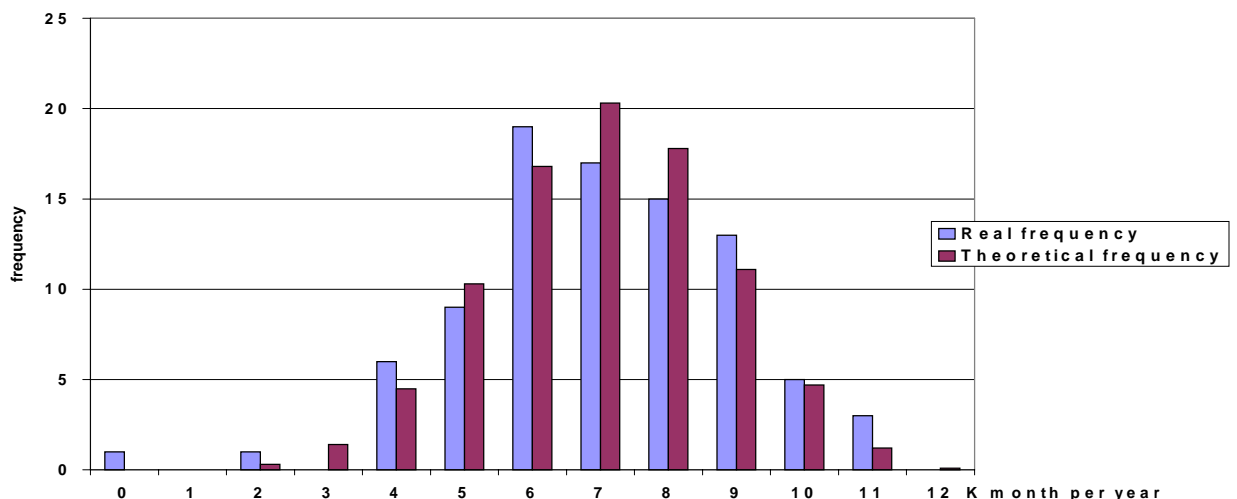
A precipitation climatology is being developed for the relative frequencies of zero (d0), one (d1), two (d2) or three (d3) days with measurable precipitation within 3-day periods. The study of the annual wave of daily precipitation occurrence with different thresholds was introduced. For each day of the year, for each station counts were made of the number of times that 0, 1, 2, 3 days with precipitation occurred in the three days centered on the day in question. Example can be shown at Figure 1. The analysis has been done for reference stations over Rio de la Plata basin, related to the previous exposition on Climatology of precipitation extremes. The annual waves were calculated in a 'transect' and the structure function for subregions were studied, with the purpose of analyze the spatial variability of the extremes.

Fig. 1 d0, d1, d2, d3 (b214500903 1941-1998)



The distribution of extreme monthly precipitation and streamflows, the number of months with positive anomalies in a year and the spell of them were analyzed. A statistical model was adjusted to precipitation data and its spatial coherence and evolution in the basin was analyzed. The Figure 2, shows an example of distribution of k positive monthly anomalies per year at Concordia (1902 – 1990, fitted binomial distribution).

Fig. 2 Distribution of the K monthly positive anomalies of rainfall per year at Concordia (1902-1990) (good agreement χ^2)



Finally, daily extreme temperature events were analyzed. The correlation between the occurrence of these events and the Atlantic Sea Surface Temperature was studied with the aim of finding a favorable pattern for their occurrences. The study has been done with Argentina stations, but the next inclusion of neighbor regions will allow a better comprehension of results. As an example, the correlation between the occurrence of cold events and the sea surface temperature in each season is shown in the Figure 3. Only 95% significant values are shown, blue points are negative correlation, red positive. Cold events occurrence are hardly accompanied by negative temperature anomalies over the South America coast, the location depending on the season.

Fig. 3: Significant correlations between seasonal Cold events in Northern Argentina (LOM) and SST

