

## PRELIMINARY STUDY OF THE pH, SALINITY AND BALNEABILITY OF MARAGOGI – ALAGOAS, AT THE 2004 RAINY SEASON

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Situated the 128 km of Maceió, Maragogi is a small city that lives basically of fishes and tourism that guarantees the city the heading of according to tourist polar region of the State of Alagoas.

This work has the objective to study of preliminary form pH, salinity and the balneability in the points you show of the city of Maragogi, the coast north of Alagoas. The behavior of the variation of pH and the salinity will be correlating to the tide and to the rainy season (April, May, June and July) in Alagoas, resulting in the quality

of waters destined to the recreation of primary contact.

The region in study comprises the coast of Maragogi, situated in the coast north of the State of Alagoas, and the studied period was between the months of April and July of 2004. The climatology data show that these months represent the rainy period of the region, as show Figure 1, through data yielded for the Nucleus of Meteorology of the Secretariat of Environment, Resources Hídricas and Nature (SEMARHN - AL).

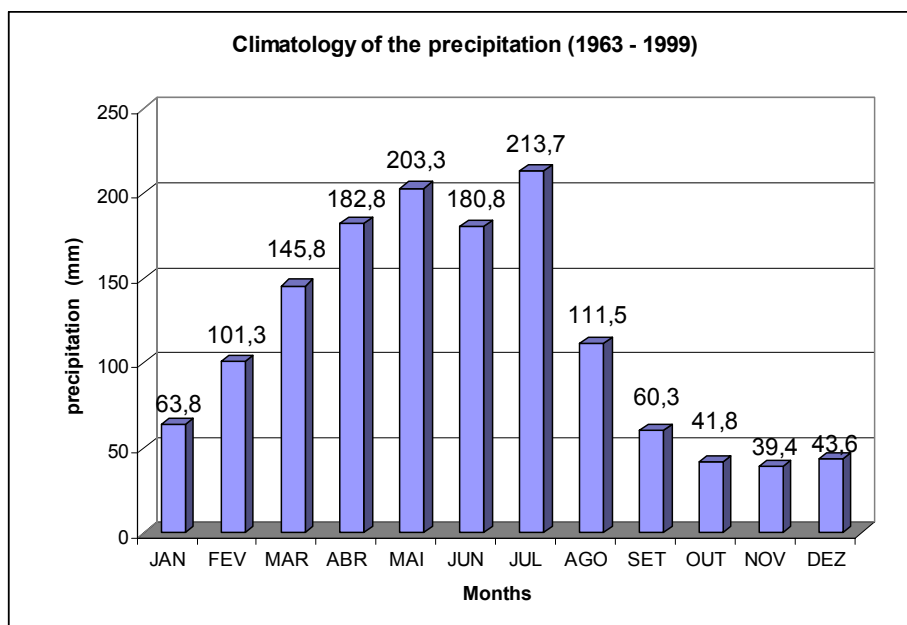


Figure 1 - Climatology of precipitation in Maragogi - AL.

Source: Nucleus of Meteorology of the Secretariat of Environment, Resources Hidrics and Nature (SEMARHN - AL).

Such samples were carried out by the Environment Institute (IMA), according to established method "Standard Methods will be Examination of Water and Wasterwater" to characterize pH and the salinity also the time they were collected, following in a concrete form resolution CONAMA N<sup>o</sup>. 20.

The data used to classify beaches in terms of balneability were obtained in the IMA, this data of balneability e were collected, analyzed and laterly it delivers to the responsible group for this work, for the case of the study of ambient monitoring. The data of colimetria are set up following the resolution of the CONAMA N<sup>o</sup> 274 of 29/11/2000, wich established the following

criteria of balneability that were used for the IMA: the beaches are considered PROPER, when in 80% or over in a set of samples obtained in one out of five previous weeks, collected in the same place, do not exceed a limit of 1000 NMP (More likely Number) of coliformes termtolerants (Fecal Bacteria) by 100 ml the water sample. The beaches are considered IMPROPER, when they don't obbey the previous criterion or when it presents at the last week a value over 2500 Coliformes Termtolerants s by 100 ml. The collections were carried out once per week during the four months of study, the sample points had the following localization: next to the estuary to the Salty River (175), River Maragogi

(185) and River Persinunga (215), in front of the School Manoel M. Costa - São Bento (180), in front of Best Age Square - Maragogi (190), in front of Multieventos Square - Maragogi (195), in front of the street Ours Lady of the Guide - Great

Bar (200) and in front to the Village Hotel Welshman (205). It was made use of 8 points in the sample period as referred in Fig 2.

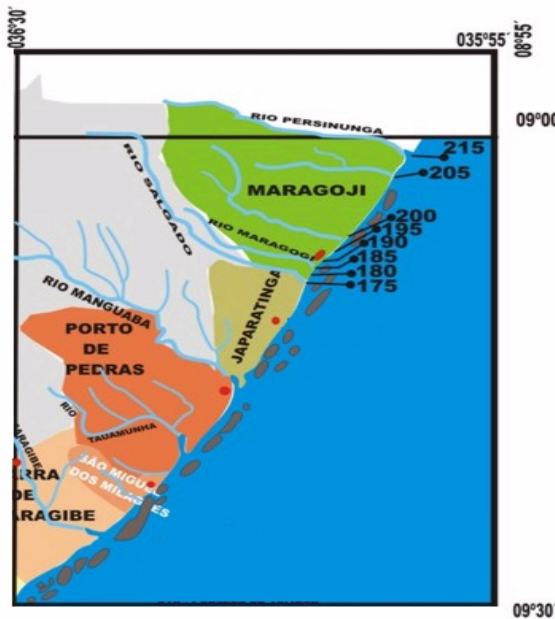


Fig. 2 - Points of collections of evaluations of pH, salinity and conditions of balneability of beaches of the city of Maragogi - Alagoas. Source: (IMA) - Alagoas.

It was observed that in two weeks of the June month it was not registered the analyses of pH and salinity, where also did not obtain the information of balneability.

The analyses of quality of the water were collected to evaluate the level of not balneability at these points, according to the events of precipitation. The data of precipitation collected by the IMA - AL inform the occurrence of rain antecedent to days of collection and the data from the SEMARHN - AL referring to the accumulated of the month wich the samples were carried out.

The data of tide for the days and time at study were acquired at the web page of the NAVY (CENTER OF HYDROGRAPHY). The data of high tide and low during the sample period were compared to the data of precipitation data given in by the SEMARHN - AL, in rainy season of 2004.

The coast of Alagoas is damp with an annual average precipitation surpassing 1500 mm (et.al MOURA, 2002), the rainy season is cleaner during the winter in the April months the July.

During the collection wich was comprehended in the rainy season, it was observed antecedent precipitation in 75% of the days studied.

Fig. 3 relates the average values of the salinity and pH of the samples in virtue of the collection points, and are located close to the beaches and mouth of the three rivers, wich are characteristic of the region of Maragogi. The points 175, 185 and 205 located in the mouth of the rivers, showed low salinity of 5,9‰, 12,9‰ and 7,4‰ and pH of 7,6, 7,7 and 7,5 respectively, this happens because of the increase of the outflow provoked by the precipitation. Point 180 with salinity of 27,6‰ and pH of 7,9, had a slight alteration in the salinity since it is situated between two rivers. Point 215 located at the river mouth as well, did not follow the same tendency like the others; this point needs a future study to analyze a possible sand sediments or little outflow of this point of study. What refers to the points 190, 195 and 200 the salinity and pH were inside the patterns of the resolution of CONAMA N°. 20.

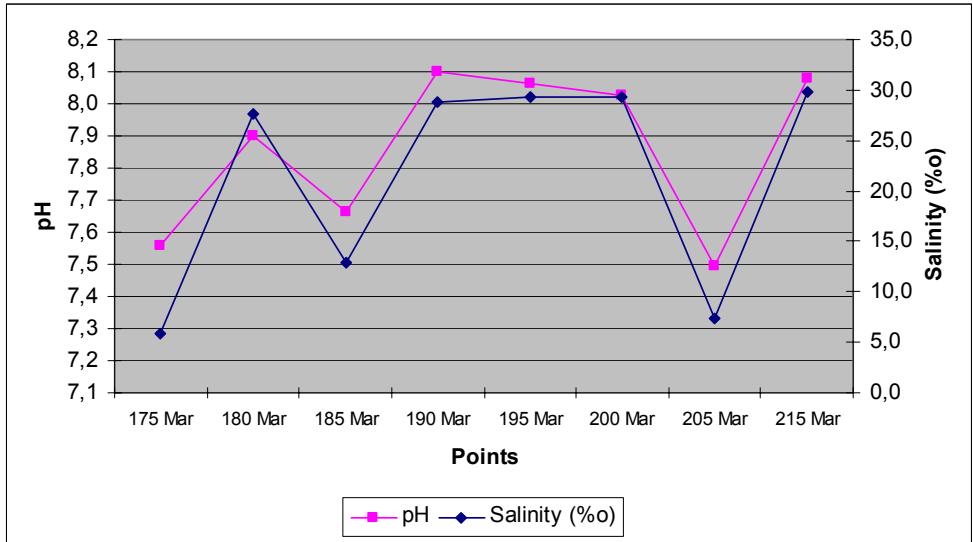


Figure 3 - Relation enters the averages of salinity and pH in the points of collection between April and July of 2004.  
Source: (IMA) - Alagoas.

It was observed in the tide data that occurred tide low in 50% of the cases in the samples collection days.

According to fig. 4, in 100% of the samples collected at points 175, 185 and 205

they were improper during the rainy season of Maragogi. The percentage of collected samples, wich were considered improper at other points, remained between 36 and 86%.

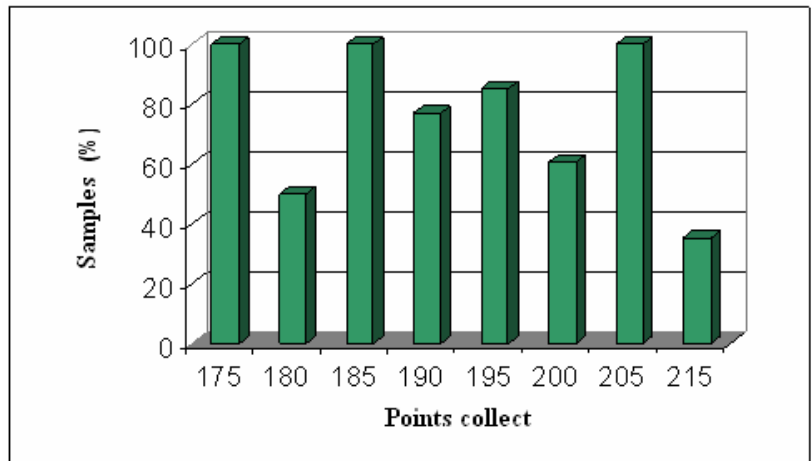


Figure 4 - Percentage of samples with improper balneability in squares rainy in Maragogi.  
Source: (IMA) - Alagoas.

The rains acted like mechanisms for the deterioration of the quality of the beaches waters, wich in these months in study had received a large amount of rivers water, drains, garbage and other debris, carried

through galleries of rain waters, streamlet and canals of draining. Therefore, there is a considerable increase in the density of bacteria in coast water.

In the collection points 180, 190, 195, 200 and 215, salinity and pH found were inside the patterns established by the resolution of CONAMA N°. 20. The points 175, 185 and 205 if had detached in this study, therefore it occurred a large decreasing of salinity and pH, wich is directly linked to the precipitation, to the tide low and the outflow of rivers, taking the occurrence of 100% of samples are indicating that the quality of the water is not proper to bath.

Influence of tide low occurred in 50% of days of collection of samples, what it caused a reduction of the salinity in the points that if find in the estuary of the rivers, also, had the precipitation occurrence that consequent led to an increase of the outflow of these rivers.

Thus, it fits to the competent, municipal and state agencies, to treat the basic sanitation with responsibility, as much of the economic point of view how much of the one of public health, in order to

guarantee the attractiveness of these beaches as tourism polar regions, an alternative of great importance for the development and the improvement of the conditions of life of the littoral population.

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