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# THE PROBLEMATIC OF SANDY LANDS IN PARANAVAÍ MUNICIPALITY –PR

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## ABSTRACT

The sandy lands are a process of scouring with sand forming a sandy area, which corresponds to a reworking of the sands due its constant mobility, involving the transformation of not solids deposits is sandy areas. This work tried to establish the characterization of this phenomenon of scouring with sand in a local level, occurring in arenaceous areas in the Northeast of the state of Paraná, specifically in the urban site of Paranavaí. It was also made an evaluation of the environmental degradation as well as different causes for what provoked these sandy areas. Being an area with a high level of soil decomposition with the highways routes crossing it, it was necessary, besides bibliographic data that allowed a theoretical basis, a research applied in order to supply subsidies for future planning related to the space organization. The evolution of the use and soil occupation in this area has been processed within an urban planning which considered by no account neither soil characteristic, the vegetation nor the predominant climate in that region. The mechanisms of region atmosphere circulation were analyzed, the alterations or attributes of the climate as well, aiming to identify the genesis of the erosion sandy and possible time and space distribution. Initially, the main characteristics of the region were collected, components e processes working on the land model. It was observed how it worked and the use and occupation of the soil in past times and currently. During 2004, using the Environmental Fragility Letter, the areas of erosion were identified, ravines and strong erosion that compounds the first stages of the focused problem. The sandy land is a process that involves erosion, transport, e accumulation, meaning most of times the loosing of Biosphere productivity. For monitoring these risk areas some measuring canes were made to measure the soil loss, which were used in several spots of erosion in the urban area in Paranavaí. The measurement happened in every two months for a year in six different pre-established spots through satellite image that turned it valid in the study field. All together, the pluviometrical levels were analyzed to be related to the soil losses. It was

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observed initially that the causes of these facts were reflection of inappropriate handling of the urban soil, and in second time it was noticed that it had a broaden reach, involving from ecological unbalance, to politics, social and economical interests. Among them; the stabilization of this sand scouring some suggestions were made: the plantation of some trees in specific seasons of the year which hold the best conditions for their developing, for instance, during the Winter the temperature is lower and the insolation lower as well, consequently it provokes a higher level of soil humidity.

**Key-words:** Sandy scouring – strong erosion – erosion – ravines – urbanization – urban planning.

## INTRODUCTION

The evolution of the use and occupation of the soil in the municipality of Paranavaí occurred within a urban planning, neither taking in account the kind of soil nor the vegetation the predominant climate over there.

The most studied areas of a number of researchers are the urbanized areas for the use of the land that became the main subject for environmental problems and its topography, the compass for further occupation.

The works about desertification accomplished by several scholars in this scientific area came to contribute expressively in these studies. The evolution of these studies concluded that the great majority of what has been called ‘desertification’ was nothing but the phenomena of sand covering.

The term desertification appeared for the first time in 1949 in a French study about the growth of savannah areas in Tropical and Subtropical Africa. In 1978, in a conference of UNO (United Nations Organization) about this theme, it was defined this phenomenon as the “diminishing or destruction of biological potential of the earth, and it might take it to similar conditions of a desert”. From 1990 it is restricted to the definition of desertification to the areas of arid climate, semi-arid and sub-humid.

In 2002, according to the Brazilian Dictionary of Environmental Science desertification can be defined as “phenomenon of transformation of areas previously full of

vegetables in barren soil due the human action, as the misuse and land exploration”. It can happen also for natural processes as for example: “due a climatic drying up, which is the humidity diminishing for long periods of time”.

The sand cover, according to the same dictionary consists of a “process of sand dunes formation in the Southeast of Rio Grande do Sul. It is related to reworking of the sand, due its constant mobility, which corresponds the transformation of deposits not consolidated in sand grounds.”

Suertegaray (1987), studied harder the sand covering defining as the “deficiency of vegetal cover due the intense mobility of the sediments by the action of winds and water, constituting a process which involves erosion, transport and accumulation”. This process cannot be mixed up as the desertification phenomenon.

The questions of modification of the nature by the human action and the methodological analysis most suitable for realizing it, is the heart concern of great number of scholars of the so called Environmental Sciences, chiefly the geographers and geomorphological.

For all of this, it can be observed the necessity of studying these areas, these phenomena that can be from a natural cause due the conditions of the ecosystem itself, or human action due the improper management of the land.

This study focused the investigation of the sand covering in the Municipality of Paranavaí, in the Northeast of the State of Paraná- Brazil.

## **OBJECTIVES**

This work had the general purpose the characterization of the phenomenon of sand covering in a local scale in an urban site in Paranavaí, state of Paraná.

It also established an evaluation of the environment degradation and an identification of the different causes of sand covering in this Municipality, in order to subside

the future planning referring to the space organization without compromising the environmental quality.

The analyses of the mechanisms of the regional atmosphere circulation aimed to identify the genesis of the sand covering phenomenon and possible irregularities in the space and temporal distribution.

## **METHODOLOGICAL PROCEDURES**

It was chosen the applied research, due the scientific surround that this way shows and a vast data collect for analysis, for studying the urban means it is also necessary to raise ecosystem in this area. (Guerra e Cunha, 2003).

For a better base, Ross an author, used Echo-dynamics Units were (1995), divided in:

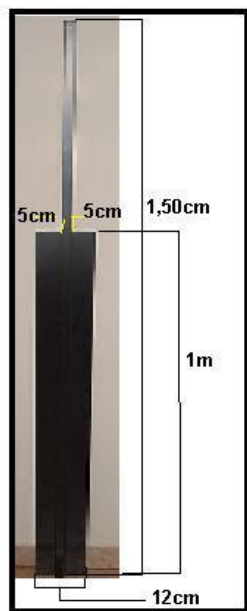
- Echo-dynamics Units stable: natural area where there wasn't any human action.
- Echo-dynamics Units Instable: natural environment that was changed by the man.

Satellites images were used for the elaboration of the theme letters of the Declivity, Vegetation and Kinds of soil necessary to the research. The confection and analysis were processed through the software and IILWIS for Windows, for it instills greater veracity to the mapping.

Based on the Fragility Environmental letter we can identify the areas where the erosion happens and processes of huge land sliding holes, which may be considered as initial stages of the sand-covering phenomenon.

For monitoring the endangered areas, some measure sticks were made, to measure the loss of soil that is one of the modalities of erosion present in that area. The sand covering is a double process, which involves erosion, transport and accumulation that means quite often loss of productivity.

The sticks were made of metalon with ionized bath to resist the action of water (oxidation), 60 inches high, two blades of 2 inches each (Figure 1).

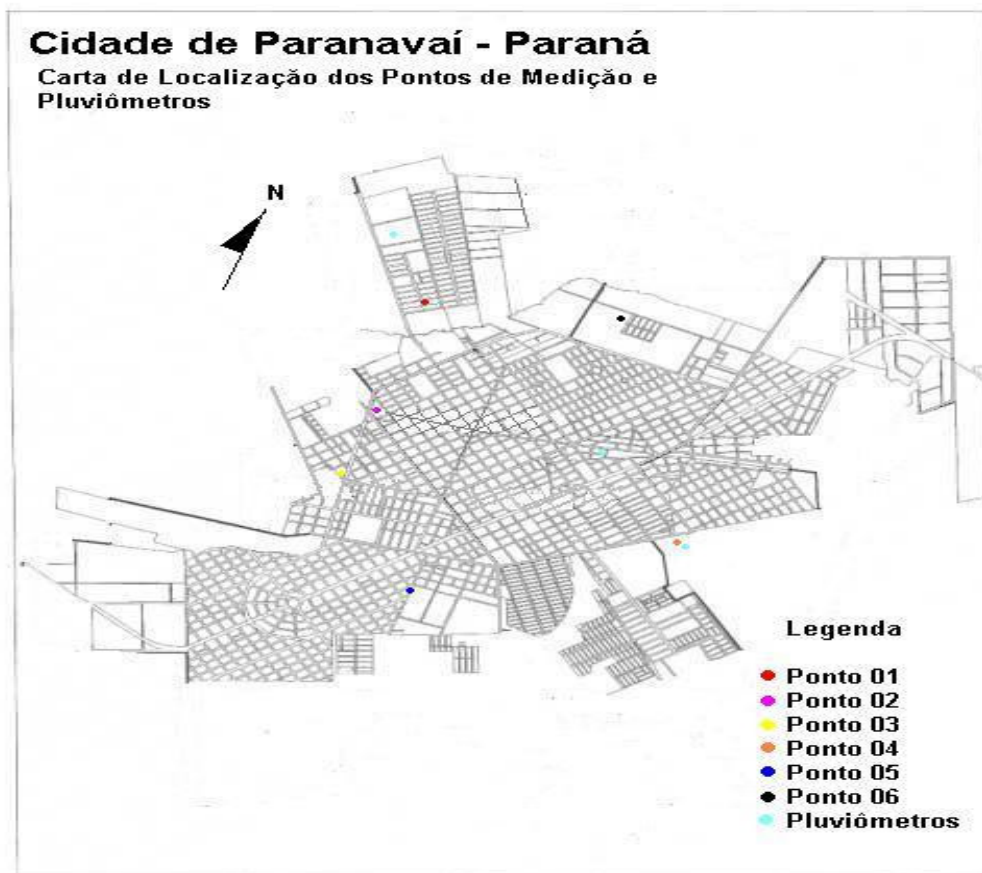


**FIGURE 1 – Measurement stick.**

In order to fix it, it was necessary to sink part of the stick with the blade, for it works as testimony of the level in the soil in the beginning of the research.

The measurement was made every two months for a year (12 months). Simultaneously, it was analyzed the pluviometer rate of the area, in order to relate with the loss of soil, according to the data from IAPAR (Agronomic Institute of Paraná) and INMET (Meteorology National Institute).

Through the letter of environmental Fragility it was elected six spots for measurement. Areas where the greatest problems are related to the lack of ciliary woods, pluvial water galleries causing silting up the rivers and areas with huge holes as result of land slide (Figure 2).



**FIGURE 2 – Letter of location of the bridges of measurements and pluviometer– Org. STIPP, M. E. S., 2003.**

## **PARTIAL RESULTS**

It was observed initially that the causes of these local facts were the reflections of the inappropriate management of the urban soil and in second instance, it was observed that they had a larger reach, involving from ecological unbalances up to politics, economical and social interests.

For the stabilization of these phenomena of sand covering, it was suggested several alternatives, among them, the stabilization of this sand covering some suggestions were made: the plantation of some trees in specific seasons of the year which hold the best conditions for their developing, for instance, during the Winter the temperature is lower and the insolation is lower as well, consequently it provokes a higher level of soil humidity.

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