

**GEOLOGICAL ENVIRONMENTAL ASPECTS AND MORPHOLOGICAL TRANSFORMATIONS IN  
THE LANDSCAPE COAST  
OF THE NORTH-EAST OF SANTA CATARINA  
ISLAND - SANTA CATARINA STATE.**

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**ABSTRACT**

The paper present the results of geological environmental detail mapping realized at the north-east sector on Santa Catarina Island, in the scale 1: 10.000, and more precisely on the coast band from the Ponta das Canas locality until the Ponta das Aranhas locality, united the Ingleses and Santinho beaches. In this adress intenses environmental transformations, are caused by the intervention of human nature process interconnected with the proper coast dynamics, which are actions of tide streams, waves, winds and other ones.

**Keywords** - Ingleses, Santinho, Beaches, Dunes, Waves.

**1 - INTRODUCTION**

Santa Catarina Island where is localized the study area, between the geographics coordinates of latitude 27° 23' 30" and 27° 26' 50" South and longitudes 48° 21' 30" and 48° 24' 30" West of Gr. (Fig-1). has in the crescent tourism one supplemental factor of acceleration of the urbanization what so thus as at the larger part of state coast, has caused a disordered process of occupation (ORTH and SILVEIRA, 1993). Due to of this fact serious environmental problems, with the consequent degradation of the natural beauties, main reason of the touristic incursion.

The coast band of the Ingleses District, which include the homonymous beach, and Santinho, areas object of this studies are adress, for excellent of intenses environmental transformations, which

causes are mainly are the intervention of human nature process interconnected with the proper coast dynamics, which are the actions of tide streams, waves, winds and other ones.

**2 - PHYSIOGRAPHIC ASPECTS**

The physiographics importants aspects associated to the geological environmental and

morphological studies in the north-east sector of Santa Catarina Island are the climate, whose characteristics are inherent to the south coast of Brazil, a not be by the fact, of be an island, in any case very near of the continent, where predominate one climate tropical humid, without dry season defined with hot summer, and rains well distributed to the long of year.

The conditions of time depend basically of the movement of Atlantic Tropical Mass, at the summer and of the Antartic Polar Mass in the winter, and of this form we can considerate as one climate with tropical summer and marked winter or of number 3 (three), in according with the classification presented by TARDY (1985), for the climate great lines of DURAND-DASTES (1968).

The annual temperature of 20°, present one average rainy of 1,314 mm.

This fact affect in the composition of the vegetation, what although very antropomorphized, still preserve somes stains of the primitive vegetation.

The soils are sandy, with occurrence of some latosol yellow-brownish and hidromorphics, while the network of drainage locally, belong the hidrographic basin of the Capivari river and your branches.

**3 - MORPHOLOGICAL ASPECTS**

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The relief present a morphological discontinuous with crest mountainous of altitudes which vary of 150 to 300 metter and isolated hill with lowers altitudes. This area is included in the band of occurence of the geomorphological unity named Coastal Plains.

This is important consider the presence of dunes, sands worked by the winds of north-east to south, what constitute a species of tongue and barcanas bearing generally in the north/south sense, occuring at the flank SE of the Ingleses beach and to the long of the Santinho beach also.

#### 4 - GEOLOGICAL ENVIRONMENTAL ASPECTS

The geological environmental unities, which were described on the Ingleses and Santinho areas, included the geological unities Pedras Grandes Group and the Palmeira do Meio Granite locally (HERMANN "et al",1984), named in this work of Old Crystalline Ground Domais, and the Recent Quaternary Sediments, which is here called Littoral Quaternary Deposit Domains, in according with the hierarchical class presented by BERTRAND (1968), for natural landscape.

The Old Crystalline Ground Domains characterize the main elevations of the island, with estimated age of 445 million years.

At this unity are constructured several building such as hotels, houses for tourism and wages (Photo.1), stands of sale meal, drinks. The spread block and the flag-stones are utilized locally as building materials, to originering of this manner a process unbridled of litoral unbalanced.

The geological environmental unity Littoral Quaternary Deposits Domains which comprise the maritime border and the internal portion of the coast plain, come being aim of a intense aggression a more of two decades.(GARCIA NETTO, 1996). The actions of human nature are characterized originally by the misuse of this shrubby vegetation coast, which fonctionned as the natural protector of the beach and as a barrier to the sand accumulation in the formation of dunes.

The irregular jungle clearing and the destruction of dunes are the factors this cause serious

transformations in the dynamics of the coast, and consequently at the landscape.

The process which opperate in this geological environmental unity and notably on the tide plain are responsible for the appearance of a paleosoil of mangrove(marshy ground by the seaside) on the boundary between Ingleses and Santinho. The soil contains a clayey horizons of grayish an niger colour, with organic matter content and roots of vegetation that predominate in these ecosystems.

The natural coast landscape is relatively destroyed due to the misuse of vegetation and dunes.

Ingleses and Santinho in this geological environmental unity comprise generally four geosystems: beaches, strings of dunes, mangroves and steady land and the intervention of human nature reach directly these ecosystems.

The beaches correspond to a band of sand narrow and long which accompany whole the coast border, being constituted by fine sand and mean, weakly sorted.

The strings of dunes are the result of the gradual transport of the sands of the tide plain at the direction of fixed windscreen constructured as protection for the homes and buildings at the local, more which are being vanquished by the growth of this dunes. (Photo 2)

In the Ingleses beach, well in the corner SE, residences constructed to 50 meter of the beach, already are being buried by the dunes (Photo 3), because an owned of a house built one wall of protection, with almost 5m of height, by 0,5m of thickness (Photo 4), in order to contain the advancement of the dune, nevertheless the what does was to activate very more the growth of the dune, which already surpass the wall and reach the residence and will go bury shortly.

The extraction of sand and stones for the utilization in the building is another problem in this geological environmental unity, because arrive reduzing naturally the physical defense of Ingleses and Santinho areas, face the action destroyed of the waves and of the tide streams, this because the same actuate as natural wall support.

#### 5 - FINAL CONSIDERATIONS

All the classic problems related to the Ingleses and Santinho areas of the north-east Santa Catarina Island, are clear evidences of absence of an environmental planning for littoral areas, which is normal in the same, and which come contributing for the increase of the unbalance at the natural dynamics of this locals.

In this paper we can note the common factor, to the two areas, or the undribled intervention of human nature, which are harmful in all the senses at the preservation of these areas, and as a form of contribution for the reasonable utilization and the consequent protection of these geological environmental unities an yours fragiles ecosystems, is necessary the execution of a program of environmental planning, for the corrections in this localities and others or accomplished, by the well of the local.

## 6 - BIBLIOGRAPHY

BERTRAND, G., 1968 - *Paysage et géographie physique globale. Esquisse méthodologique. Revue Géographique des Pyrénées et du Sud-Ouest*, 39 (3): 249-272, Toulouse, France.

DURAND-DASTES., 1968 - *Climatologie, Enciclopedia Universalis*, 4, p. 618 - 624.

GARCIA NETTO, L. da. R., 1996 - *Diagnóstico do Ambiente Urbano: Norte da Ilha de Santa Catarina*. Dissertação de Mestrado em Engenharia Civil. Centro Tecnológico, Departamento de Engenharia Civil, Universidade Federal de Santa Catarina, 128 p.

IBAM-Instituto Brasileiro de Administração Municipal., 1994 - *Consulta Nacional Sobre a Gestão do Saneamento e do Meio Ambiente Urbano*. Consulta Local - Florianópolis, SC., Versão Preliminar. Ministério do Bem Estar Social/Secretaria Nacional de Saneamento. Projeto de Modernização do Setor Saneamento-PMSS, Coordenação da Prefeitura Municipal de Florianópolis, 113p.

HERMANN, M. L. de. P.; ROSA, F. O. de. ; REGO NETO, C. B.; MENDONÇA, M.; SILVA, J. T. N.; SILVA, A. D. & VEADO, R. W., 1984 -

Aspectos ambientais dos entornos da porção sul da Lagoa da Conceição. *GEOSUL*, Florianópolis, Santa Catarina. Ed. UFSC., p.7 - 41.

ORTH, D. M. & SILVEIRA, R. G., 1993 - Avaliação da evolução da ocupação do Balneário de Ingleses/Florianópolis-SC. In: SIMPÓSIO BRASILEIRO DE SENSORIAMENTO REMOTO, VII, Curitiba, PA, *Anais do...*, INPE, p. 119 - 128.

TARDY, Y., 1985 - *Le Cycle de L'Eau - Climats, Paléoclimats et Géochimie Globale*, Masson Editeurs, Paris, 388 p.

## 7 - ANNEXES.

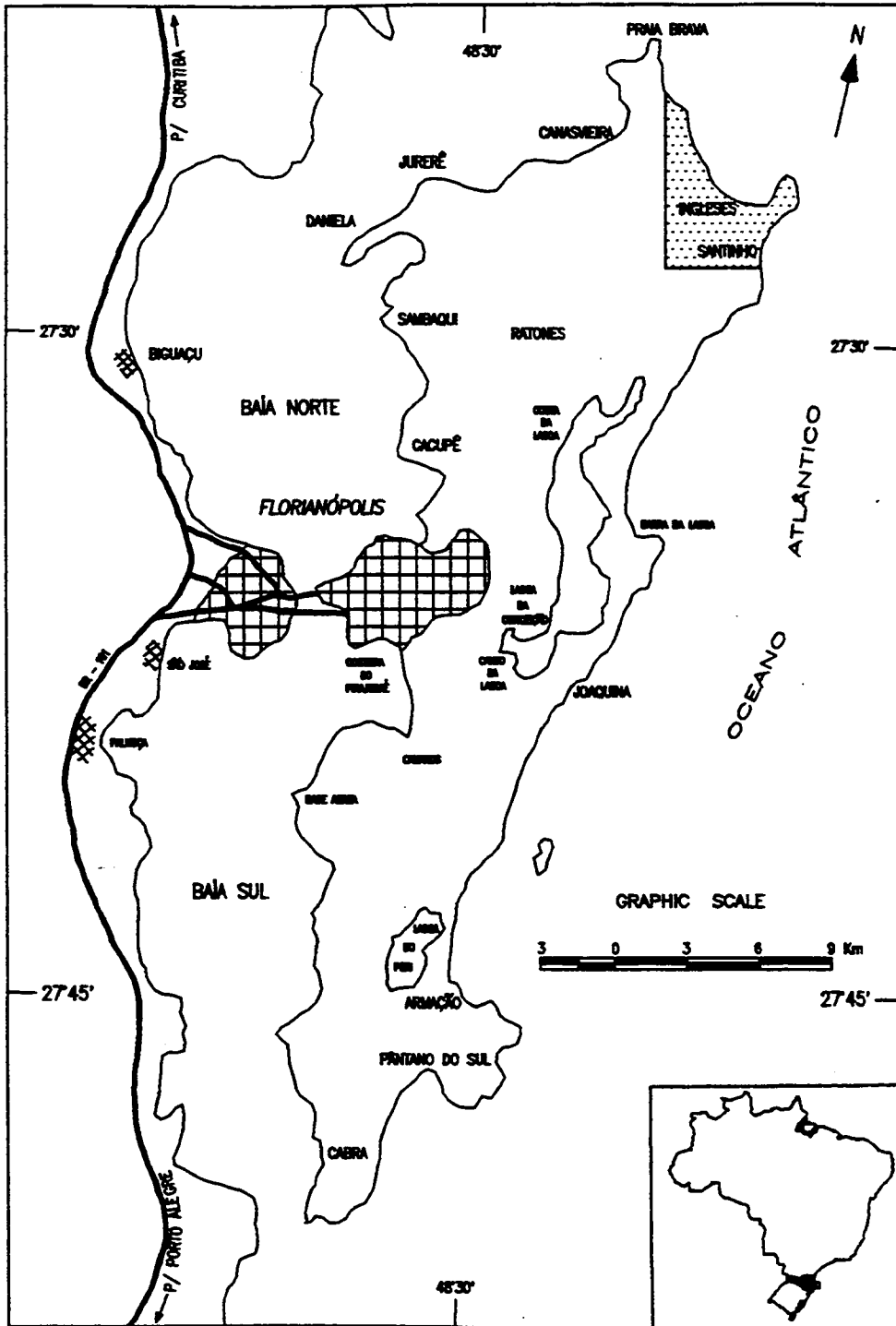
Fig. 1- Localization map of the studies area.

Photo 1 - The Old Crystalline Ground Domains Unity in the Santinho beach where are constructed several buildings such as hotels, houses for tourism and wages,

Photo 2 - The windscreen constructed as protection, for one home at the Ingleses beach, more which are being vanquished by the growth of the dune.

Photo 3 - The residences constructed to 50 meter of the beach, already are being buried by the dune.

Photo 4 - The wall of protection, with almost 5m of height, by 0,5m of thickness, which activate very more the growth of the dune.

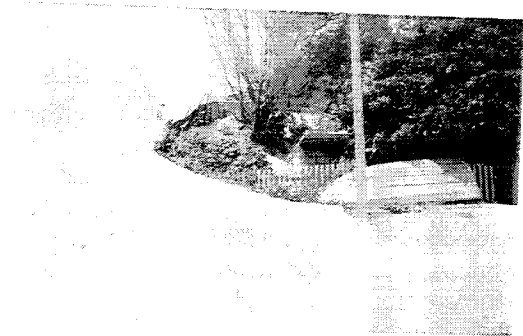


Source: IBAM, 1994.

FIG. 01: Urban area of the Florianópolis city, and localization of the studies area



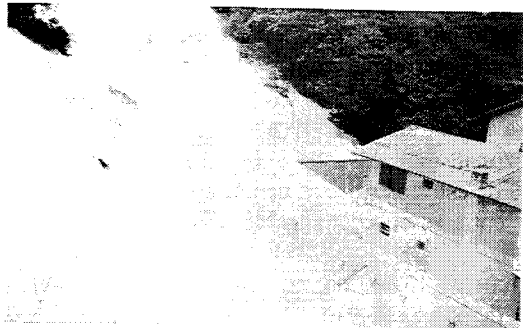
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