

THE FEIA LAGOON THE DETECTION OF SERIOUS INJURIES TO THE ENVIRONMENTAL CONDITIONS FROM TM IMAGERY

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Abstract

The Feia Lagoon belongs to the Paraíba do Sul River in its deltaic mouth, in the southeastern of the Rio de Janeiro State. This study begun when the author made the visual analysis from Landsat MSS data (1973/82), it was a part of the master thesis.

This survey show the detection of serious injuries to the environmental conditions, and gained importance in the Brazilian press. This lagoon is a natural geomorphological consequence from the Paraíba do Sul river and the Atlantic Ocean work.

The lagoa Feia is disappearing of the man-made fills aiming to enlarge the area to cultivate sugar-cane, this fact is so clear in comparing the TM images (1985/89) and old maps.

Résumé

Le lac Féia se trouve dans le delta du fleuve Paraíba do Sul, au Sud-Est de l'Etat de Rio de Janeiro. L'auteur a commencé sa recherche en faisant l'analyse visuelle et au moyen de l'ordinateur, des images de Landsat MSS (1973/82) (thèse de maîtrise)

L'étude a posé les problèmes d'environnement et a été signalée dans la grande presse brésilienne. Le lac Feia est une conséquence naturelle geomorphologique de l'influence du fleuve Paraíba et de l'Océan Atlantique.

Le lac Féia est en train de disparaître par l'action de l'homme qui augmente les surfaces de culture de la canne à sucre au détriment de la surface hydrographique. Le phénomène est visible en comparant les images de Landsat T.M. (1985/89) et les cartes anciennes.

In 1985, in her master thesis the author emphasized the detection of serious injuries to the environmental conditions at the Feia Lagoon, located in the Southeastern section of the State of Rio de Janeiro, which belongs to the Campos and Macaé Counties, exactly in the middle of the Sugar-Cane Microregion.

This work showed that the Landsat MSS images (bands 4, 5, 6 and 7) in digital and visual analysis produce the accurate and quick localization and evaluation on detection of serious injuries to the environmental conditions at the Feia Lagoon.

On verifying the damage of the Feia Lagoon surface with zones destroyed, we may list some facts below:

The Feia lagoon surface has natural silting-up process, produced by the Paraíba do Sul River deltaic mouth. In Brazil we have traditional studies in geomorphology explaining this formation in the past, see Lamego (1940, 1956), Bernardes (1957).

The rivers, channels and lagoons waters in the Feia Lagoon vicinity has been destroyed by the pollution attacks of vinhoto, a sub-producto of the industrial process, producing alcohol in the distilleries;

The Feia Lagoon surface has the artificial silting up caused by a consequence of man-made fills, aiming to enlarge the area to be planted with the Pró-Alcohol Program, in Brasil; when the oil fees follow-up in the Middle Orient, in the beginning of the 70's decade, when the Brazilian auto industries has just produced cars with alcohol motors;

Looking at the maps designed from the study of satellite imagery from 1973 and 1982. It was possible to verify 20% of reducing the Feia Lagoon surface, the TM images from 1989, 15%.

The very serious problem of rivers and lagoons which fill up at the Feia Lagoon and vicinity in the conclusions of this work, earned important notes in the well-known newspaper in Rio de Janeiro, named «O GLOBO» in the environmental column (1986), because specialists of the Feia Lagoon have considered it the largest lagoon of natural water in Brazil. Its waters escape to the Atlantic Ocean by the channel named «das Flechas».



Brazilian public opinion knows that the sugar-cane plantation is very important, because we have the sugar, a lot of typical deserts, energy, food for the animals in the pastureland, and fertilizer to the others cultures as pineapple.

Well, alcohol is cheaper than fuel, and it is better in the cities, as it more useful in cars. However, we have the increase of the air pollution, and the ecologists defend their anti-air pollution program. On the other side, the Feia Lagoon lost its original features. It is a controversy theme.

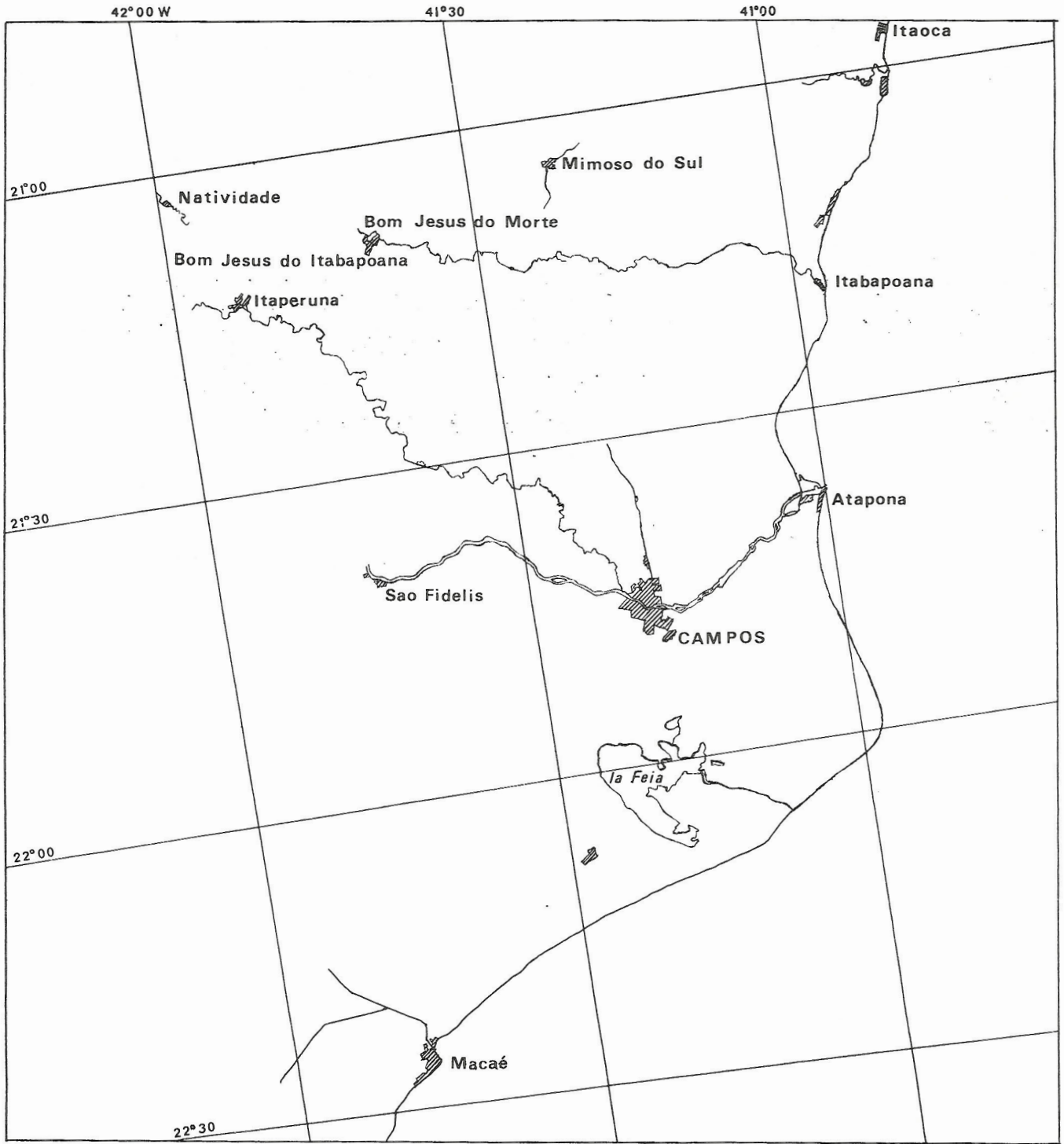
The Pró-alcohol Program brought approval of the Brazilian auto industry, which has been a success since it began in the 70's. This fact made possible the increase in research in remote sensing. The reflectancy of the sugar-cane crops is very good in MSS and TM, Landsat data, which became a modern fact, now, with another crise in the Persian Gulf in 1990.

In 1985 SILVA wrote that «the sugar-cane crops, in the Lowland of Campos, appeared very well in the images Landsat MSS we may see the sugar-cane density, its evolution and spatial distribution». The spectral responses are very good at the TM images, bands 3 and 4.

The Landsat TM imagery taken from 1982, 1985 and 1987 made possible continuing this research, and the fill up enlarged in the North and in the East of the Feia Lagoon, first caused by the sugar-cane crops and second because of the pasture land. The surface reduced 15%.

Comparing the periods of formation in the geological time (see the figures 1, 2, 3 and 4) in the study of the deltaic mouth of the Paraíba do Sul river, we will see that the Feia Lagoon will disappear quickly.

Talking with retired fisherman who live in a place named Ponta dos Fidalgos, the old limit of the Feia Lagoon in the North, they told that 30 years ago, they had clean waters, a lot of fish, but today they see the pollution, no fish, a lot of sugar-cane plantations and the enlarged channel of the Uruaí River.



Happily the mapping of this region are up-dating from satellite TM imagery. The author registered this ideas because she has the ecological feelings and thinks that the satellite imagery and the thematic cartography may help man around the world, in his developing activities. Believing in a better future, she gave let two ideas:

«Avoir été, c'est une condition pour être.»

«Forests that burned came back to wear green and flowers, and fountains that were dry became rivers.» in Portuguese means:

«Florestas que queimaram voltam a se vestir de verde e flor e as fontes que secaram se transformam em ribeirões»
Marcus Vianna.

We have proud of our industry and the Pró-alcohol Program brings the ecological mentality, and the remote imagery is so important.

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