

Flux and Transport of Nutrients in the Cantão State Park

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Workshop Dynamic Data Driven Application Simulation - DDDAS

GEOMA Net

Thematic Group of Research in Environmental Modeling of Amazon



Computational Simulation of Flux Process and Nutrients Transport in Araguaia's Basin

- Work in collaboration with Laura Borma (UFT)
- Cantão State Park (TO)

The Area

- **Delta rivers Javaés, Coco and Araguaia;**
- **Next to potentially sources of contamination;**
- **Lack of agriculture control, use of chemical products to correct soil pH, herbicides, pesticides (soy, corn and rice production);**
- **Wetland;**
- **800 lakes in dry season.**

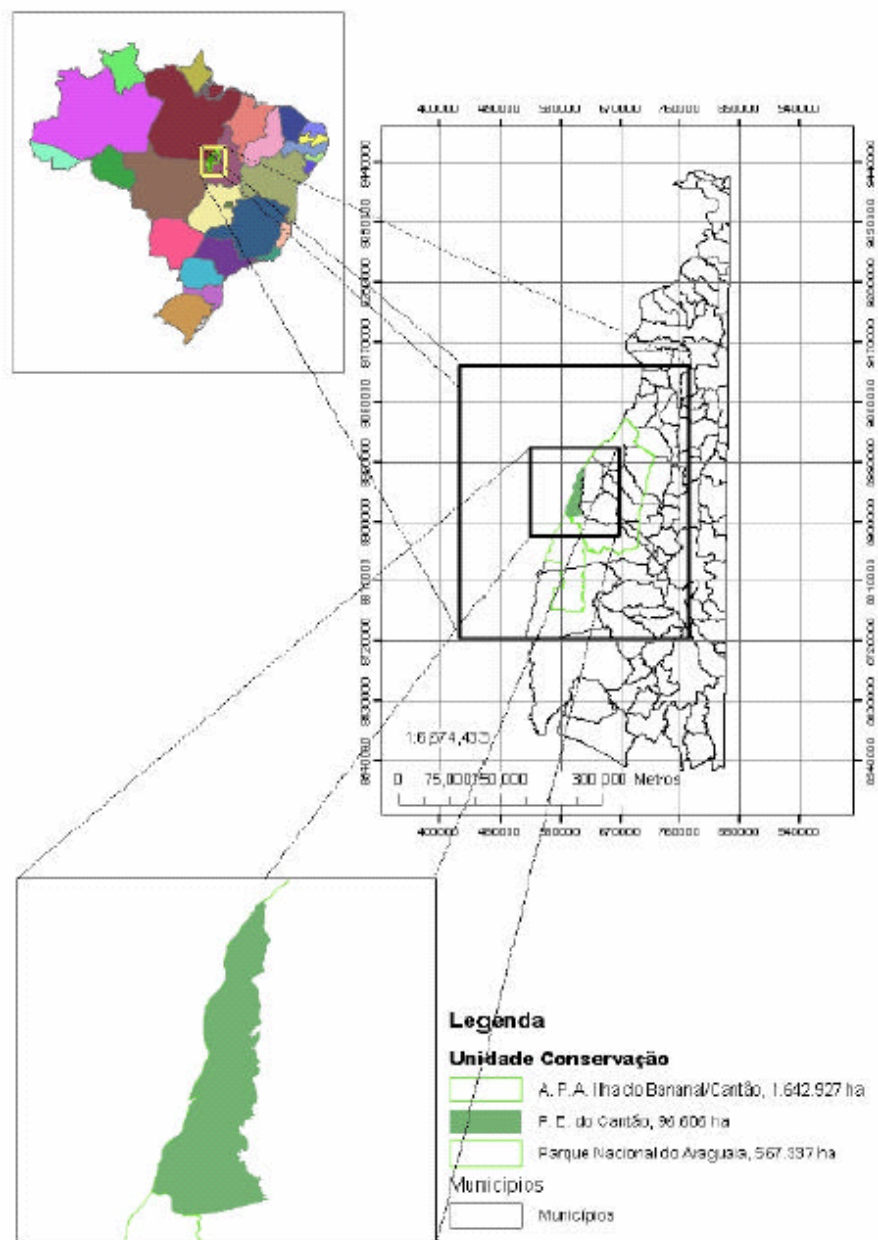
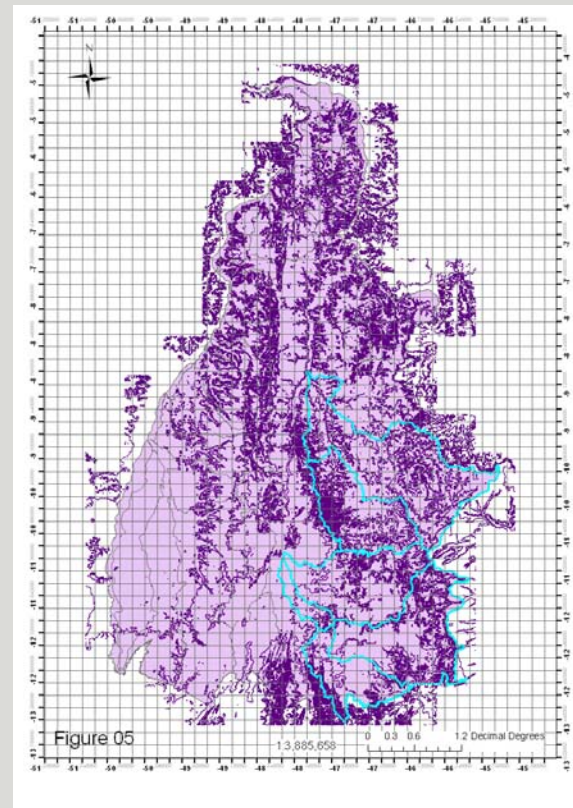
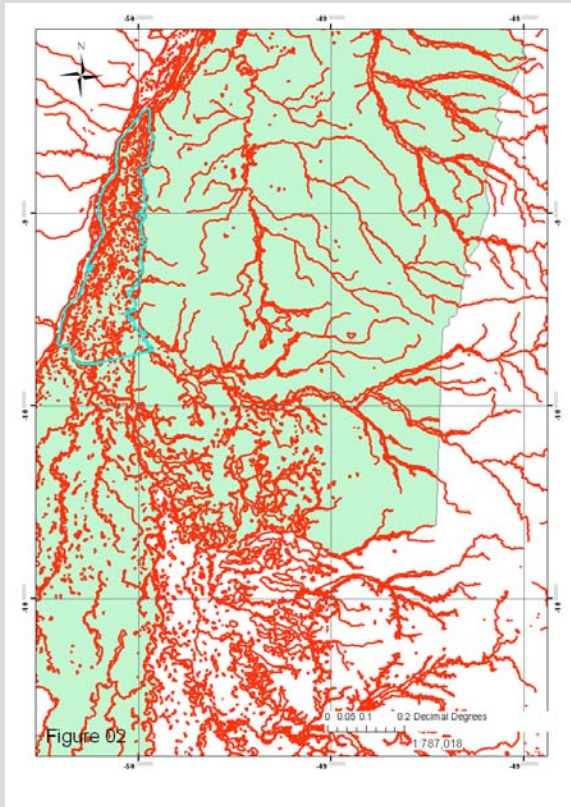


Figura 1 – Localização da área de estudo e do Parque Estadual do Cantão (no detalhe).

The Area



Parque Estadual do Cantão in blue at right (by Naturatins)

The Project

- It was observed changes in Carbon stock with the changes of the landscape use;
- The rivers are poor in nutrients;
- Modeling of Biogeochemical Cycle;
- Study of the erosion in the region;
- Modeling and Simulation of Hydrodynamics;
- Study of vegetation influence in fluxes mechanisms;
- Modeling and Simulation of nutrients and sediments.

The Project

A - Analysis with 2 different models (dry and wet season)

- Model for the flux :**
 - . Mathematical Model**
 - . Numerical Model (FEM)**
 - . Validation**
 - . Influence of vegetation**

The Project

- **Model for the Transport :**
 - . **Mathematical Model**
 - . **Numerical Model (FEM)**
 - . **Validation**
 - . **Solutes, nutrients, sediments**

The Project

- **Dynamic Process :**
 - . **Mathematical Model**
 - . **Numerical Model (FEM)**
 - . **Validation**
 - . **Integrated Model**

The Project

B - Future

. Biogeochemical Cycle

DDDAS

- **More accurate analysis;**
- **More accurate prediction;**
- **Determine where to get additional data;**
- **Possibility of incorporate dynamic inputs.**



















