



MINISTÉRIO DA CIÊNCIA E TECNOLOGIA  
**INSTITUTO NACIONAL DE PESQUISAS ESPACIAIS**

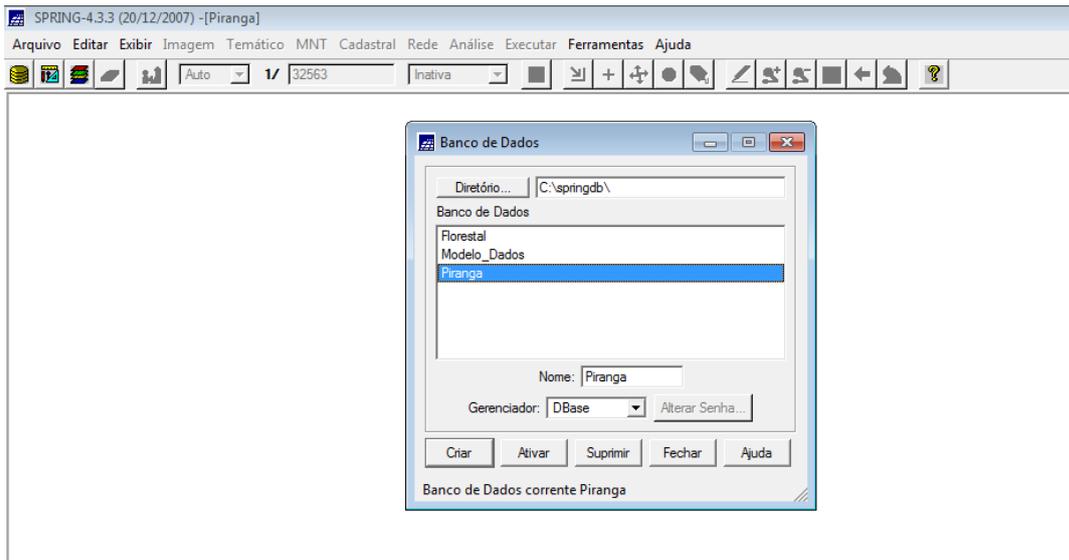
**Disciplina: SER-300 - Introdução ao Geoprocessamento**

**LABORATÓRIO 4A – LABORATÓRIO  
MÓDULO: ANÁLISE MULTI CRITÉRIO**

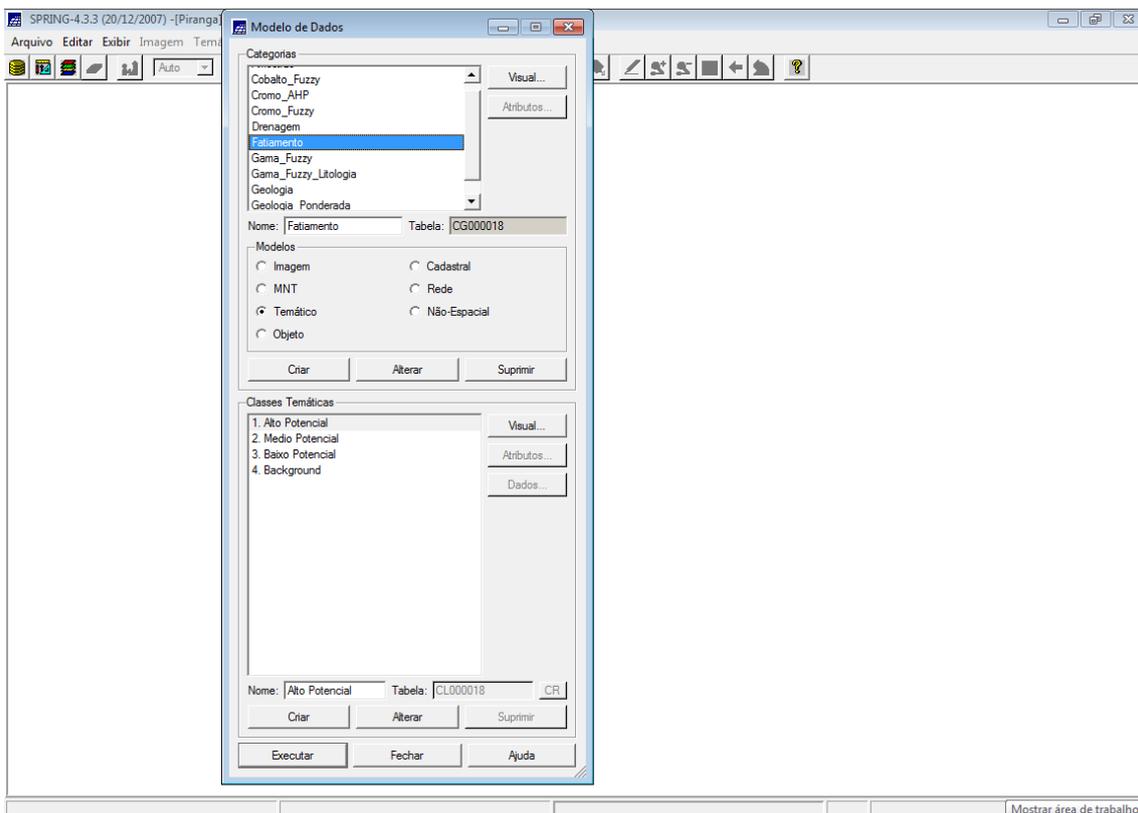
Nelson de Almeida Gouveia

INPE  
São José dos Campos  
2017

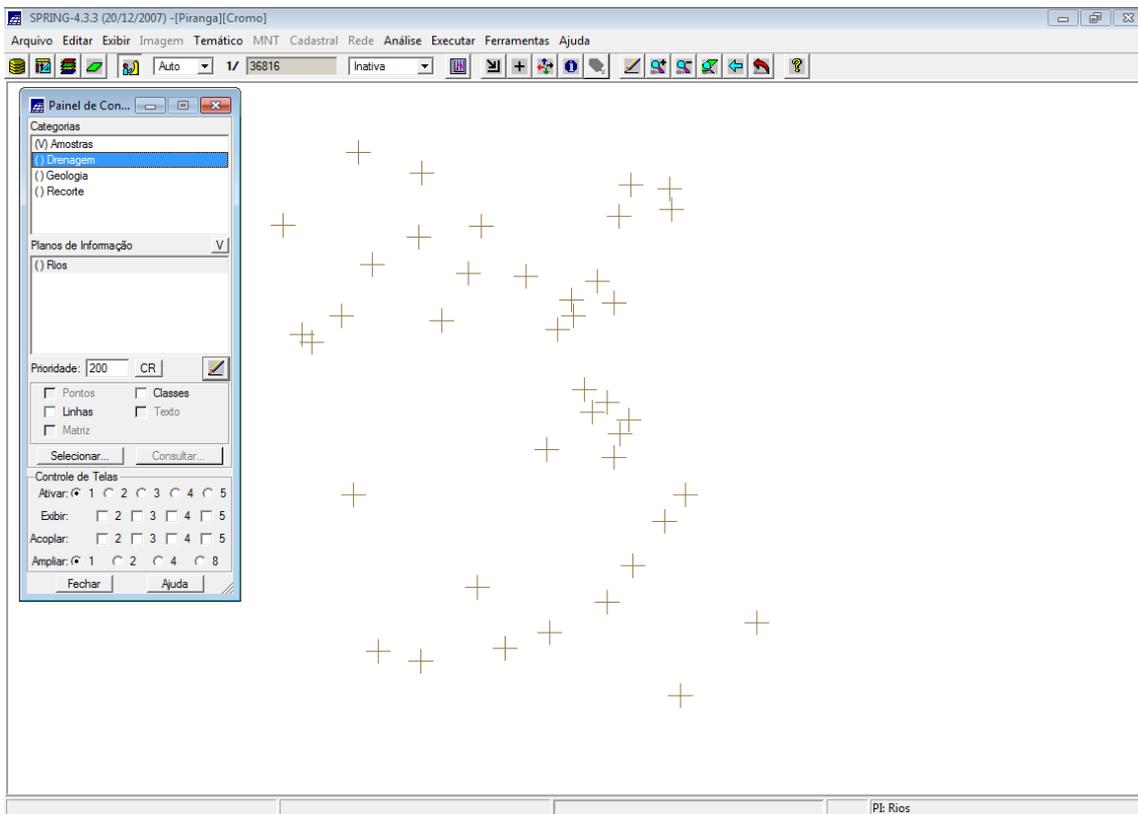
## ATIVAR BANCO DE DADOS PIRANGA



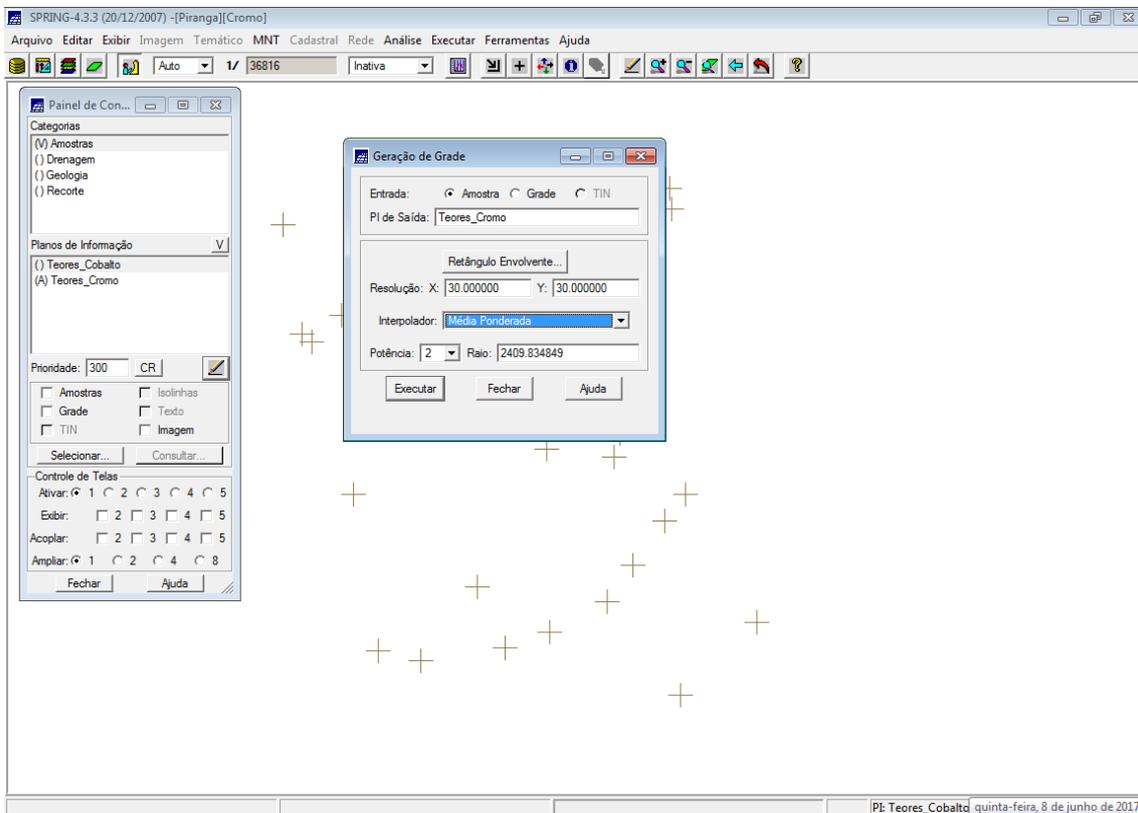
## MODELAGEM DO BANCO DE DADOS PIRANGA

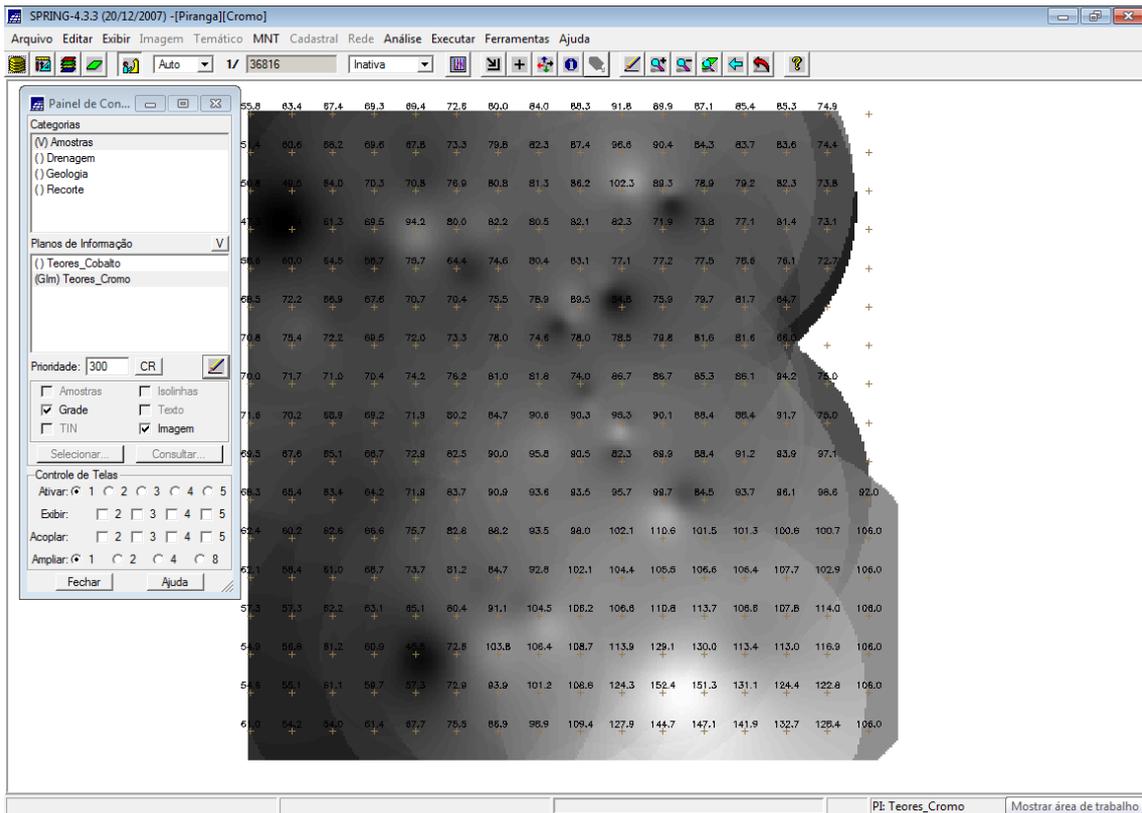


## IMPORTAR DADOS

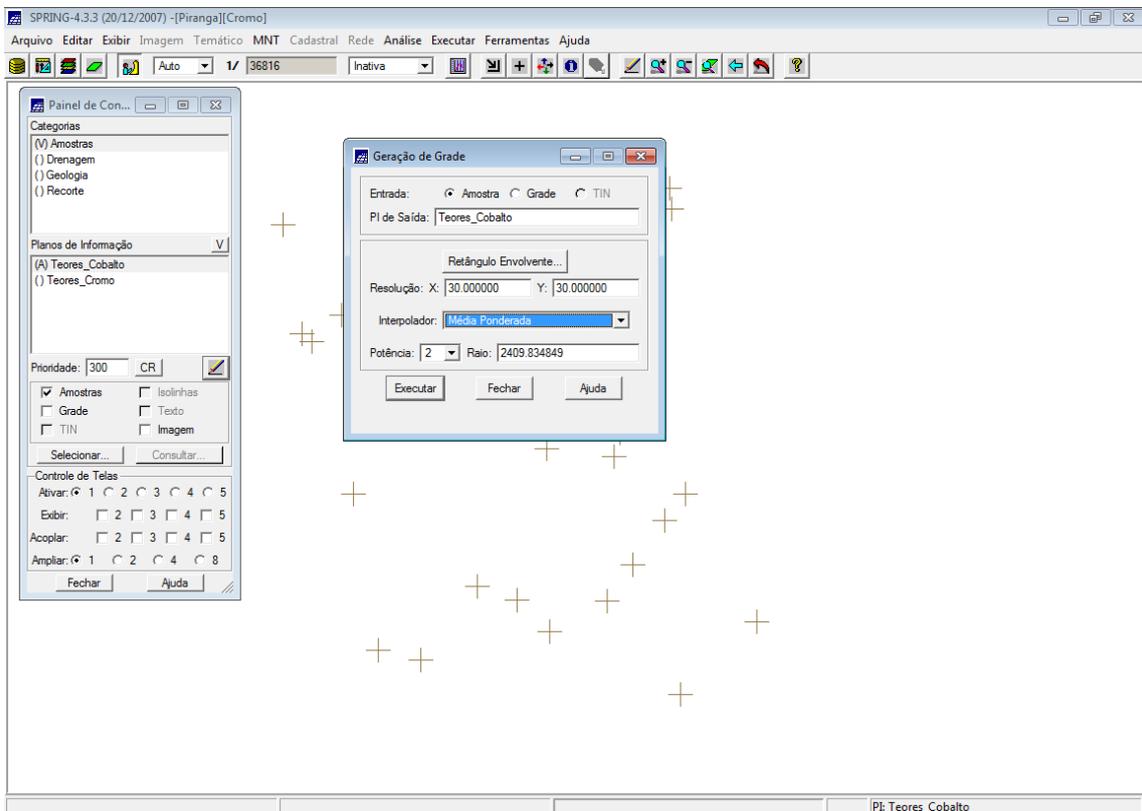


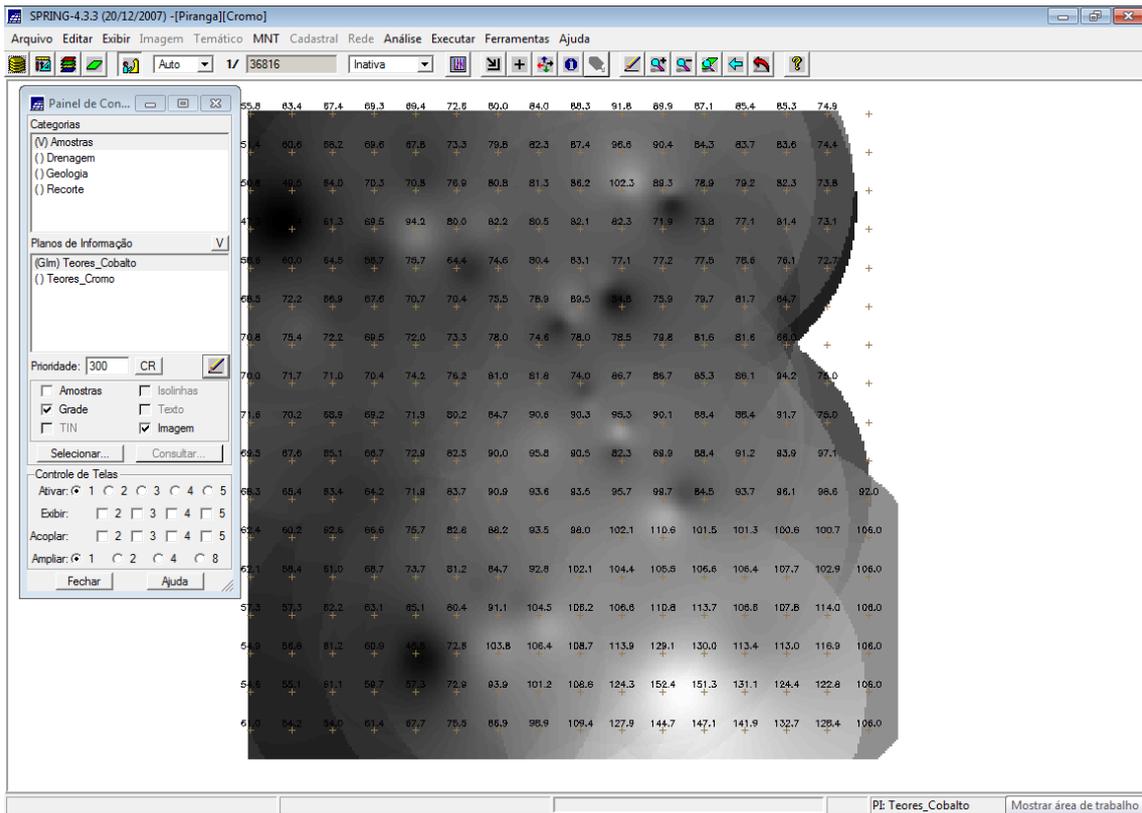
## GERAÇÃO DE GRADE REGULAR PARA O PI TEORES\_CROMO





## GERAÇÃO DE GRADE REGULAR PARA O PI: TEORES\_COBALTO





## GERAR MAPA PONDERADO DA GEOLOGIA

SPRING-4.3.3 (20/12/2007) - [Piranga][Cromo]

Arquivo Editar Exibir Imagem Temático MNT Cadastral Rede Análise Executar Ferramentas Ajuda

Auto 1/ 36816 Inativa

Painel de Con...

Categorias

- ( ) Amostras
- ( ) Drenagem
- ( ) Geologia
- ( ) Recorte

Planos de Informação

- ( ) Teores\_Cobalto
- ( ) Teores\_Cromo

Prioridade: 300 CR

Amostras  Isolinhhas

Grade  Texto

TIN  Imagem

Selecionar... Consultar...

Controle de Telas

Ativar: 1 2 3 4 5

Exibir: 2 3 4 5

Acoplar: 2 3 4 5

Ampliar: 1 2 4 8

Fechar Ajuda

Editor de Modelos

```

Programa
{
//Declaração
Temático geo ("Geologia");
Numerico geoP ("Geologia_Ponderada");
Tabela geoT (Ponderacao);

//Instanciação
geo = Recupere (Nome="Mapa_Geologico");

geoP = Novo (Nome="Geologia_Ponderada" , ResX=30, ResY=30, Escala=50000, Min = 0, Max = 1);

geoT = Novo (Categorialni = "Geologia",
             "Granito-Granodiorito" : 0,
             "Arvs - Unidade Superior" : 0,
             "Arvm - Unidade Media" : 0.7,
             "mv1 - Sto Antonio Pirapetinga" : 1,
             "mb - Sto Antonio Pirapetinga" : 0.5,
             "Asap - Sto Antonio Pirapetinga" : 0.7);

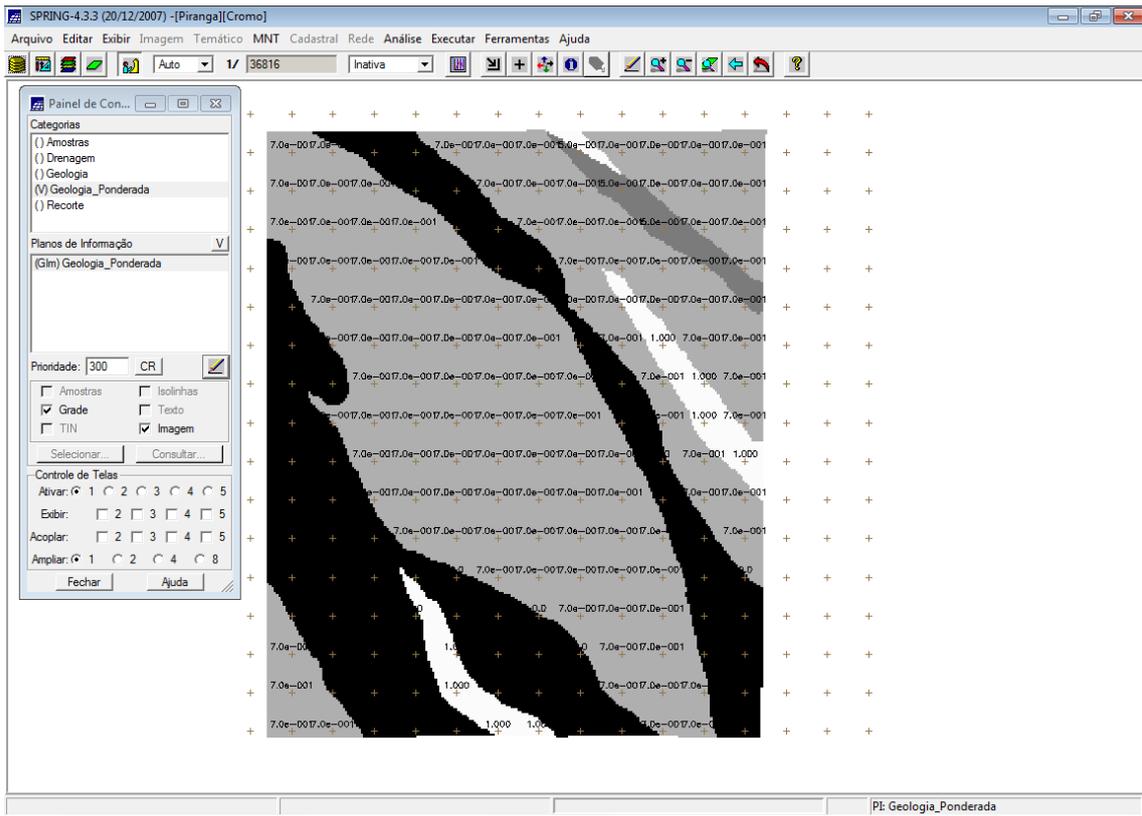
//Operacao
geoP = Pondere (geo, geoT);
}

```

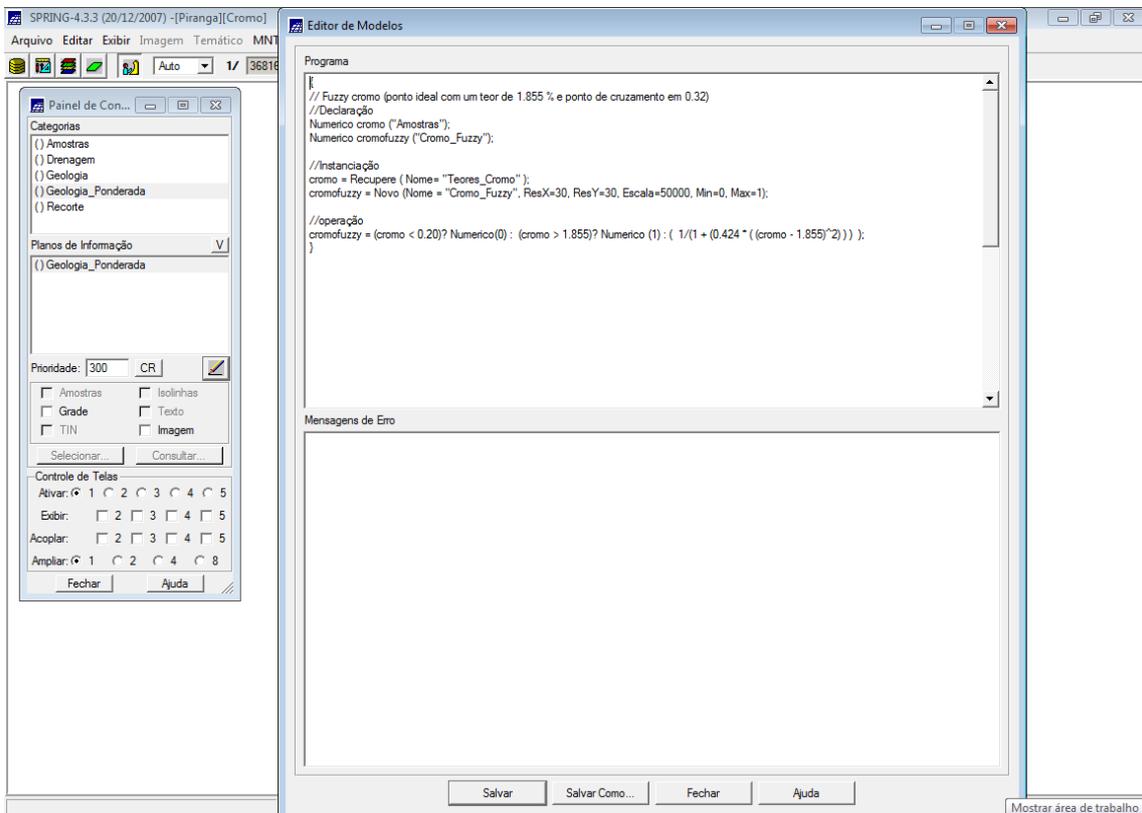
Mensagens de Ero

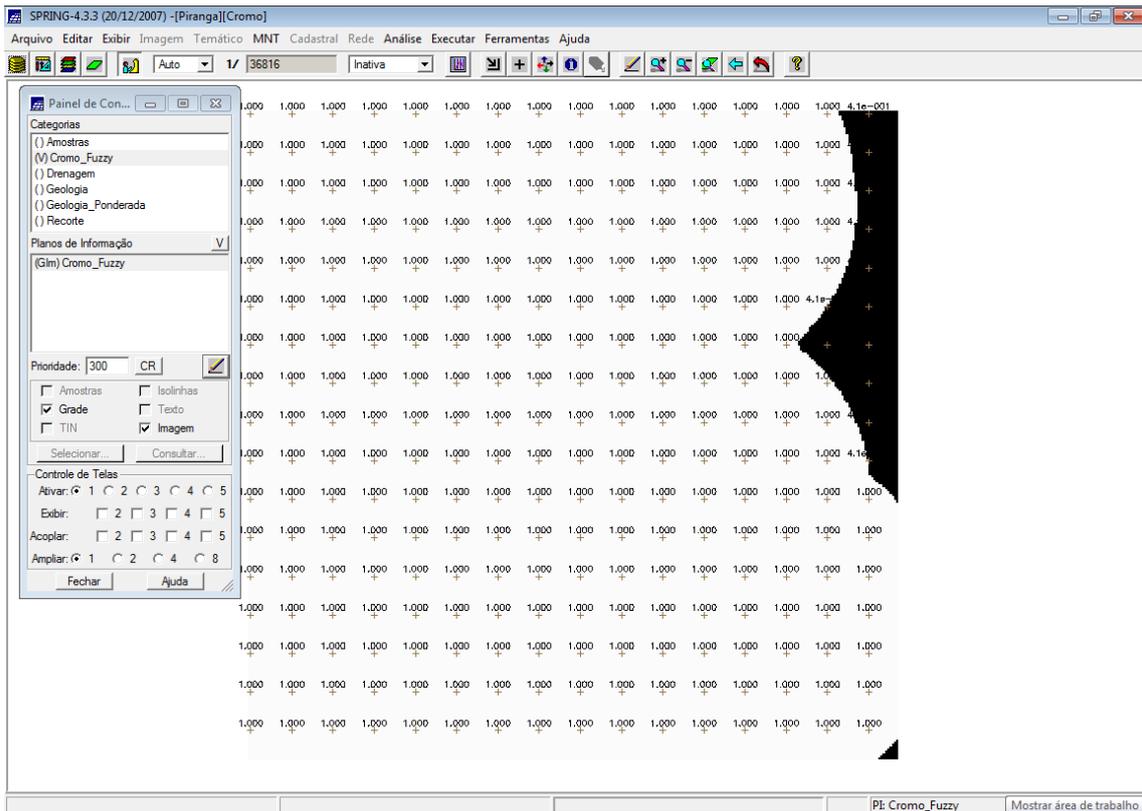
Salvar Salvar Como... Fechar Ajuda

Alto-falantes: 100%

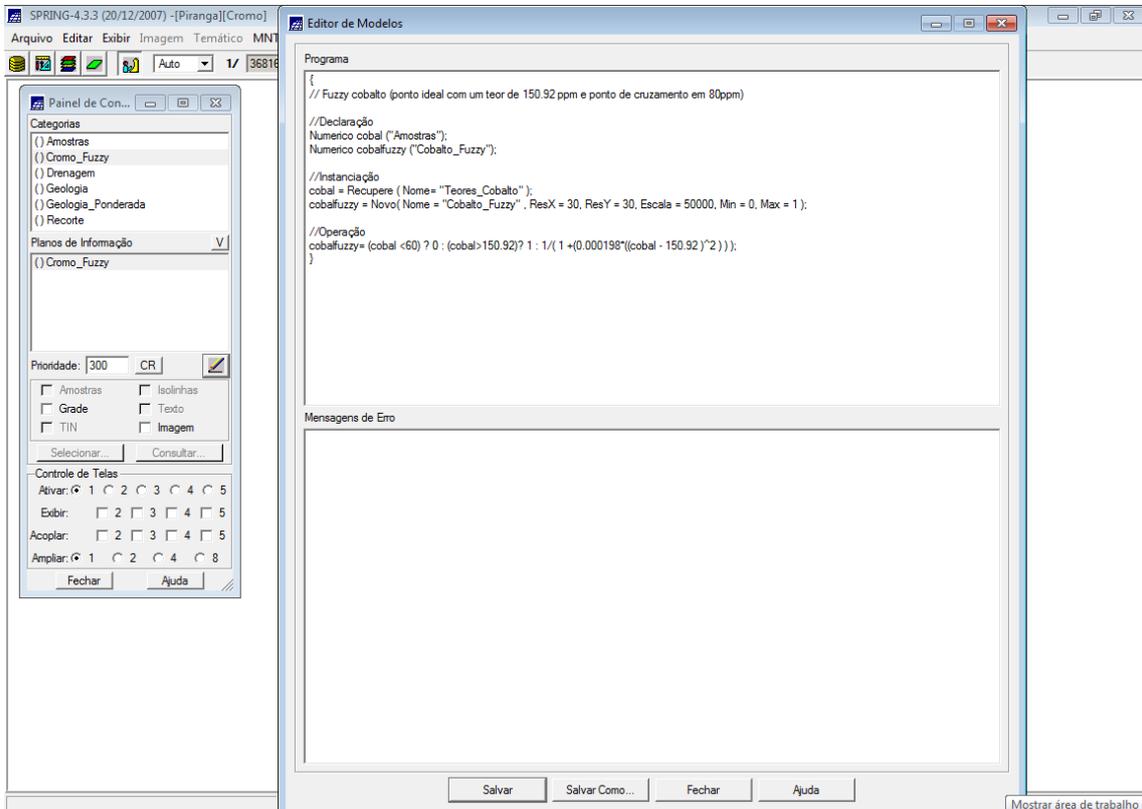


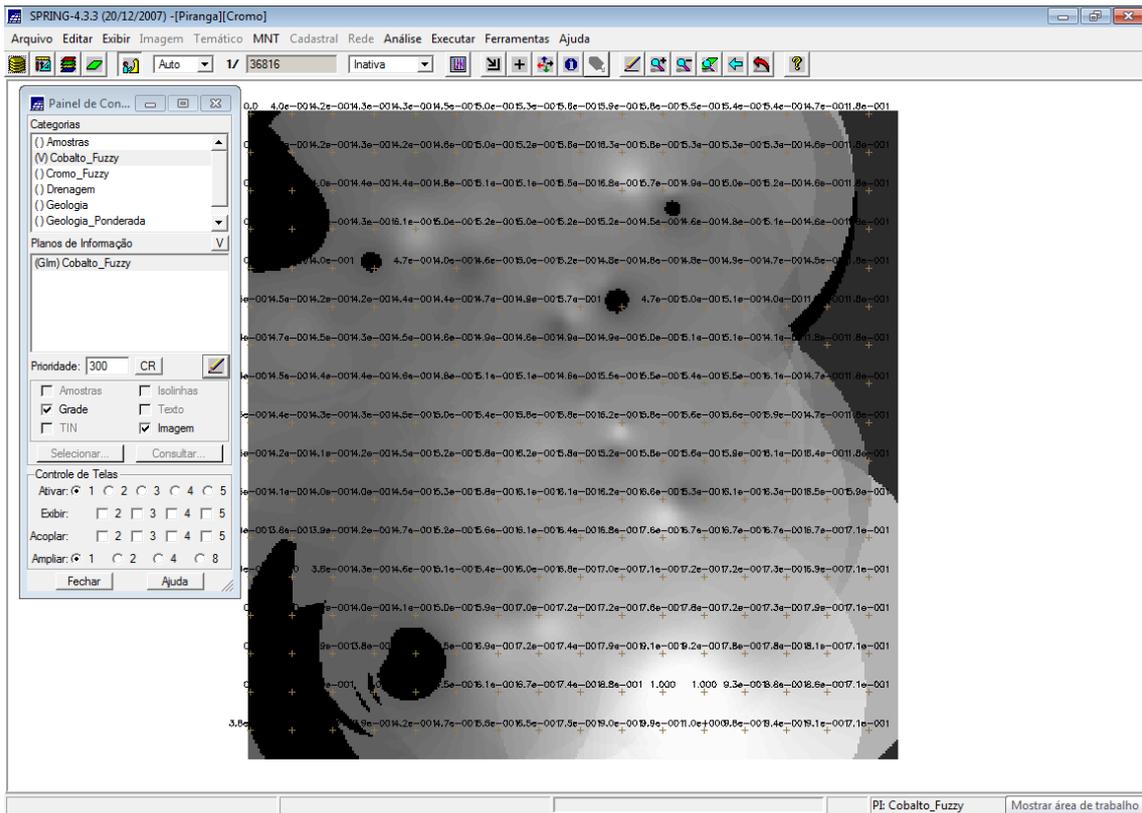
## MAPEAR A GRADE DO PI TEORES\_CROMO UTILIZANDO FUZZY LOGIC.





## MAPEAR A GRADE DO PI TEORES\_COBALTO UTILIZANDO FUZZY LOGIC.





## CRUZAR OS PI'S CROMO\_FUZZY, COBALTO\_FUZZY E GEOLOGIA\_PONDERADA UTILIZANDO A FUNÇÃO FUZZY GAMA.

```

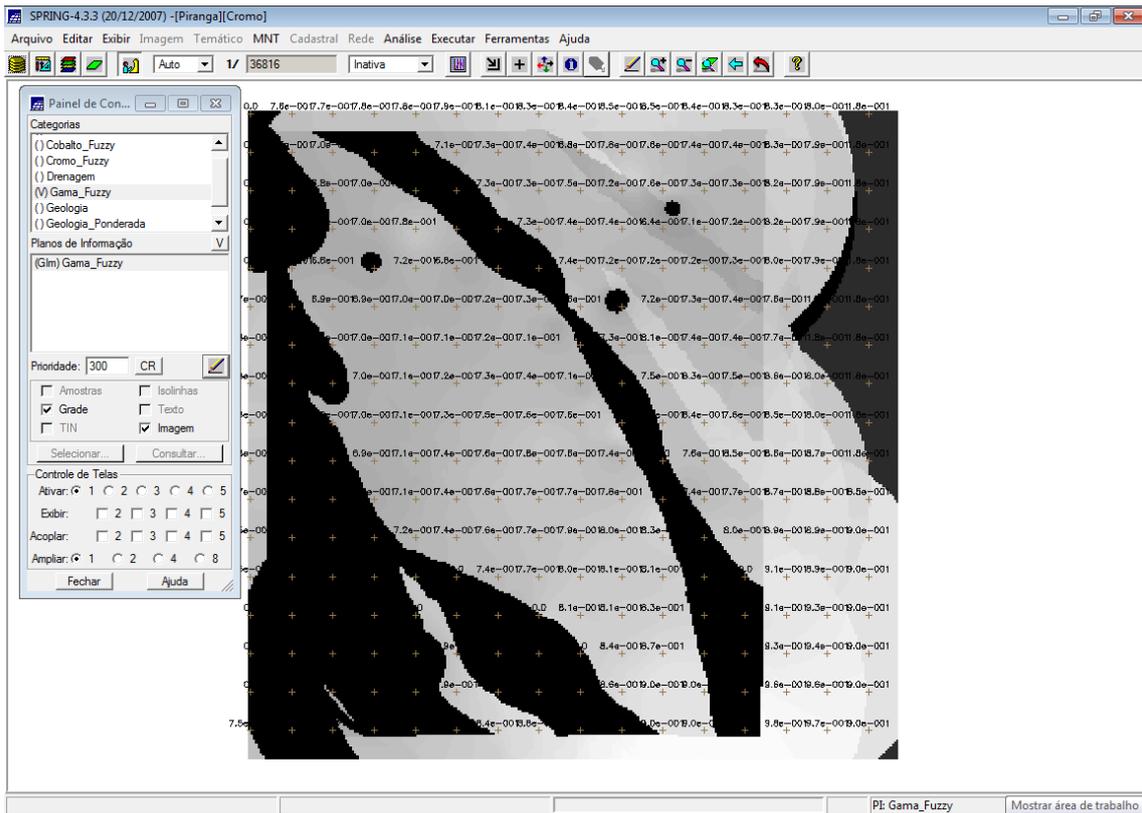
Programa
{
//Declaração
Numerico cobal("Cobalto_Fuzzy"), cromo("Cromo_Fuzzy"), geol ("Geologia_Ponderada");
Numerico gama ("Gama_Fuzzy");

//Instanciação
cobal = Recuperar (Nome= "Cobalto_Fuzzy");
cromo = Recuperar (Nome= "Cromo_Fuzzy");
geol = Recuperar (Nome= "Geologia_Ponderada");

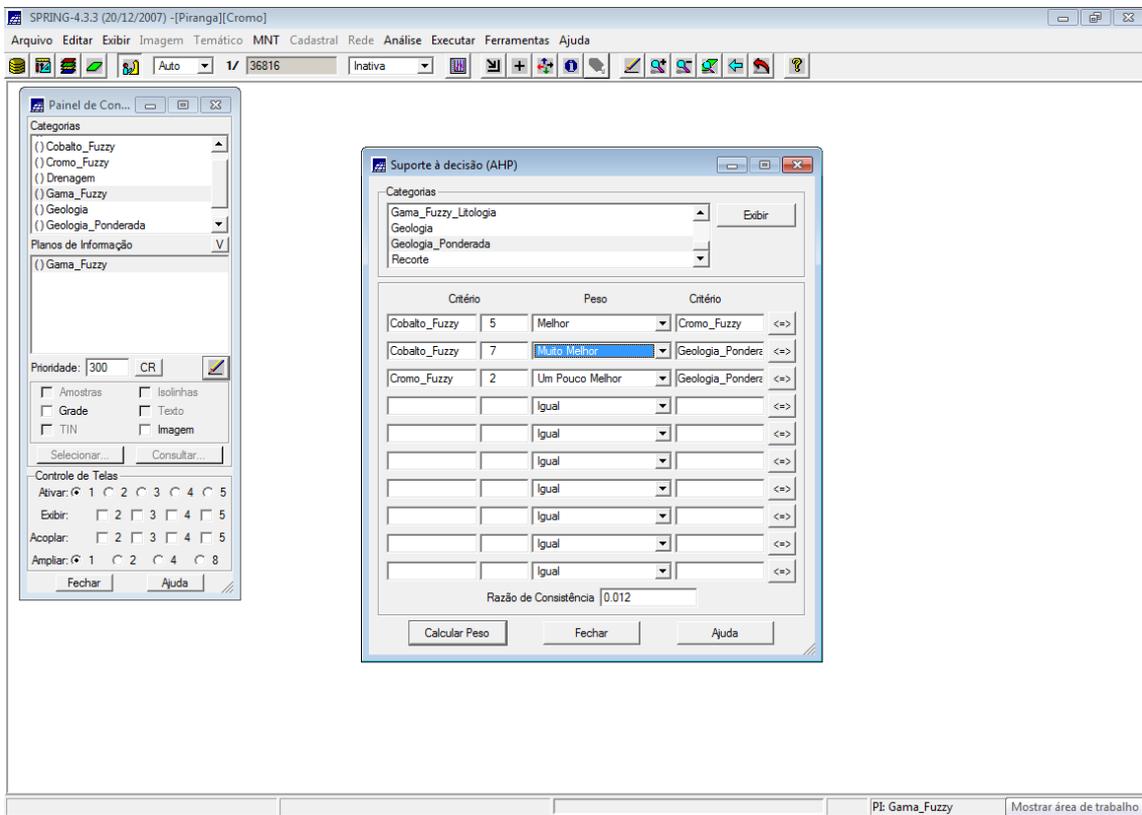
gama=Novo (Nome="Gama_Fuzzy", ResX=30, ResY= 30, Escala=50000, Min=0, Max=1);

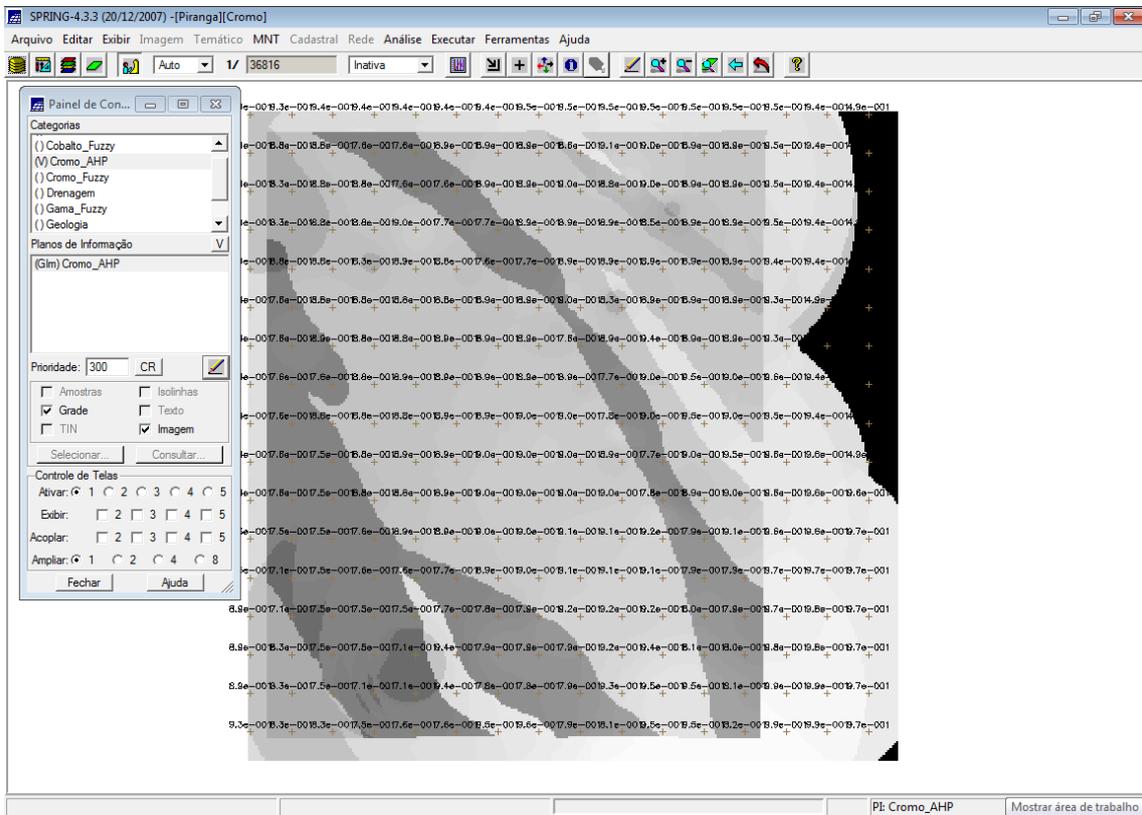
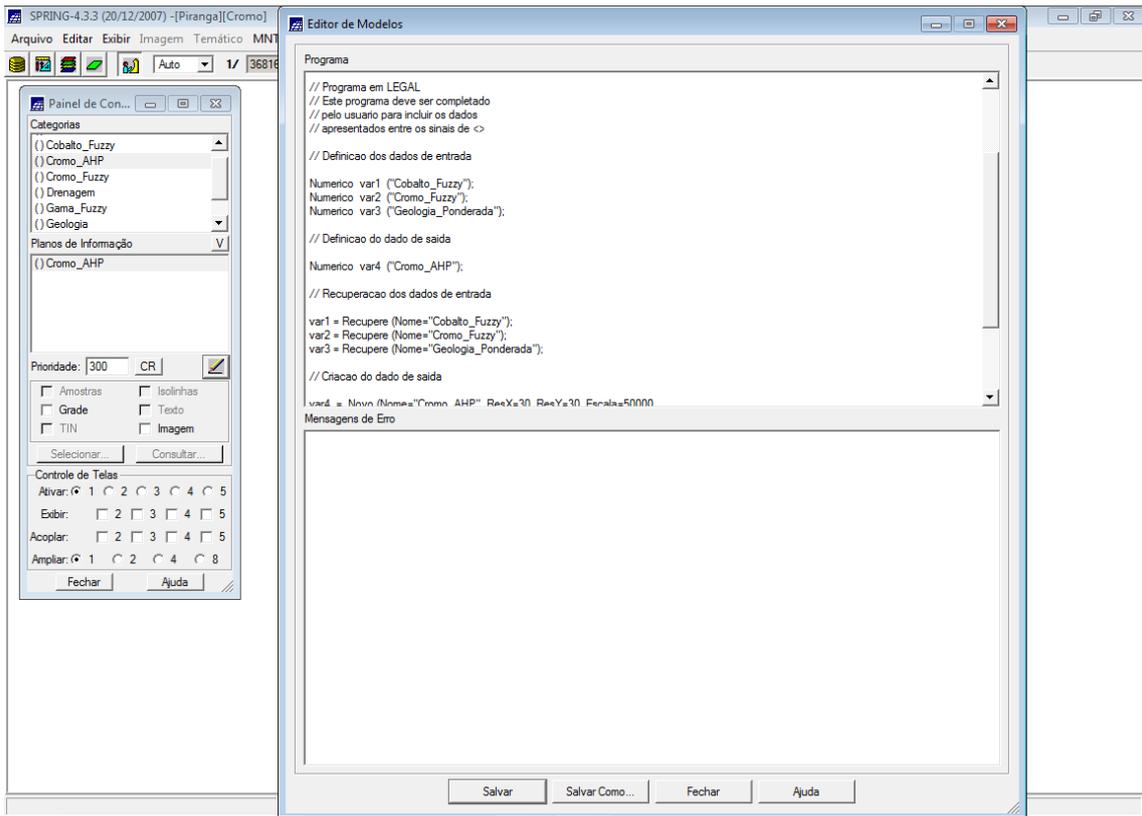
//Operação
g=0.70;
gama = (cobal*cromo*geol)*(1-g) * (1-((1-cobal) * (1-cromo) * (1-geol))^g);
}

```

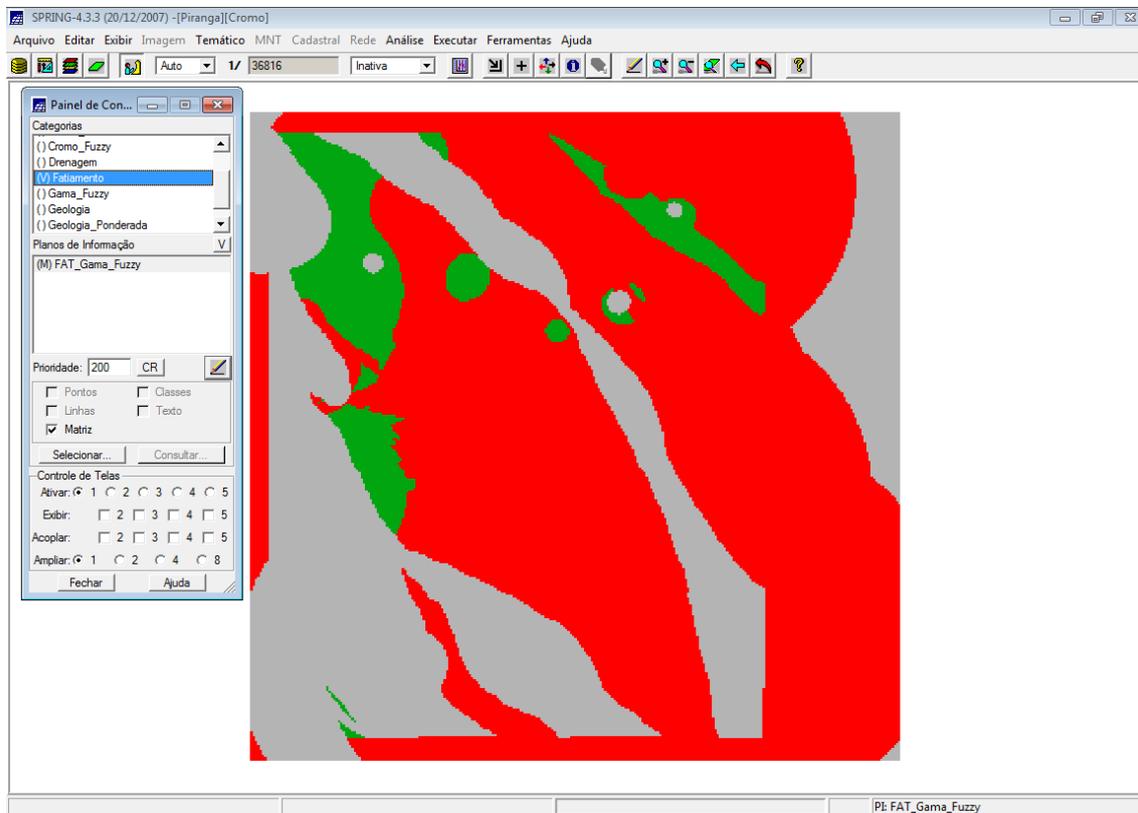
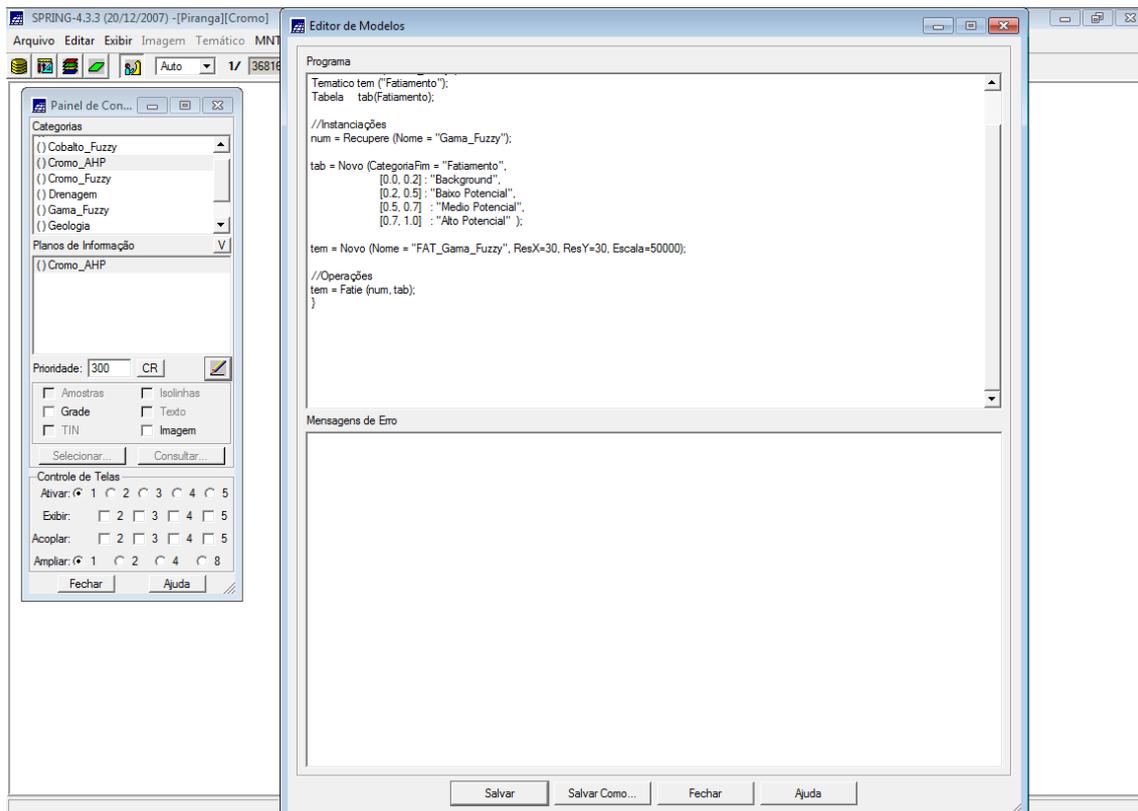


## CRIAR O PI CROMO\_AHP UTILIZANDO AHP (PROCESSO ANALÍTICO HIERÁRQUICO).

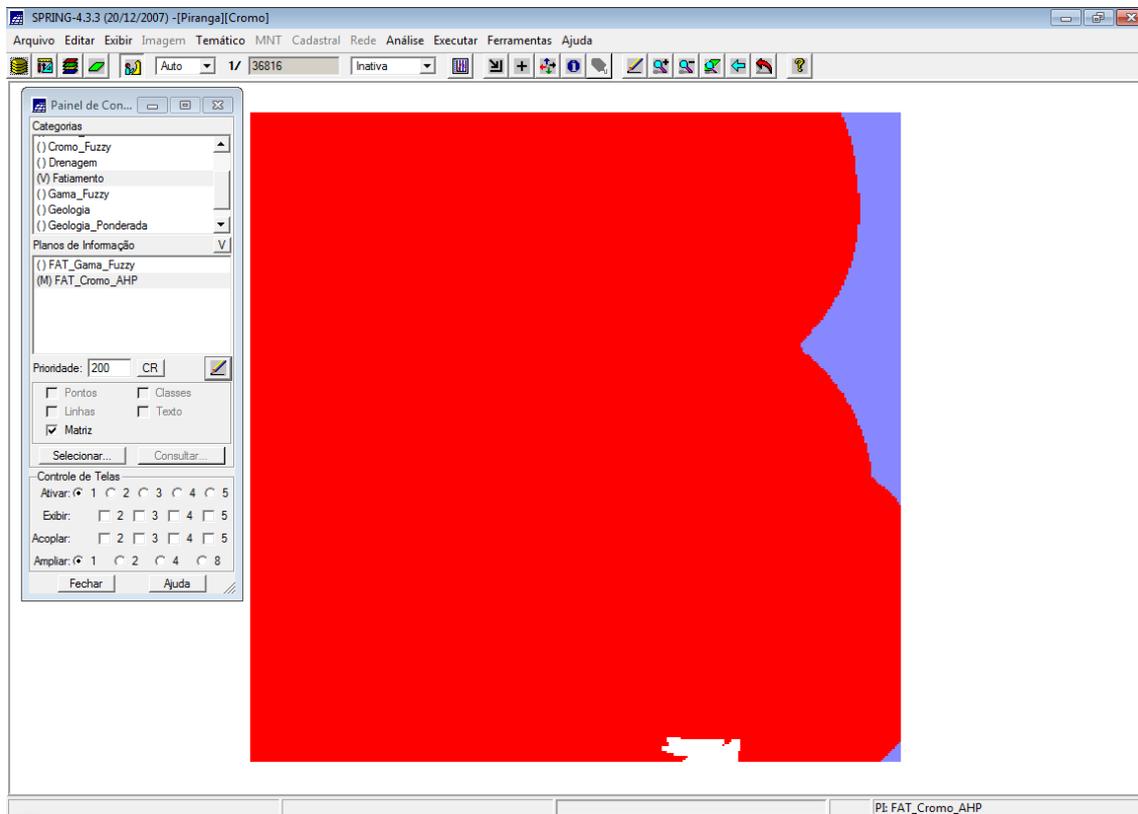
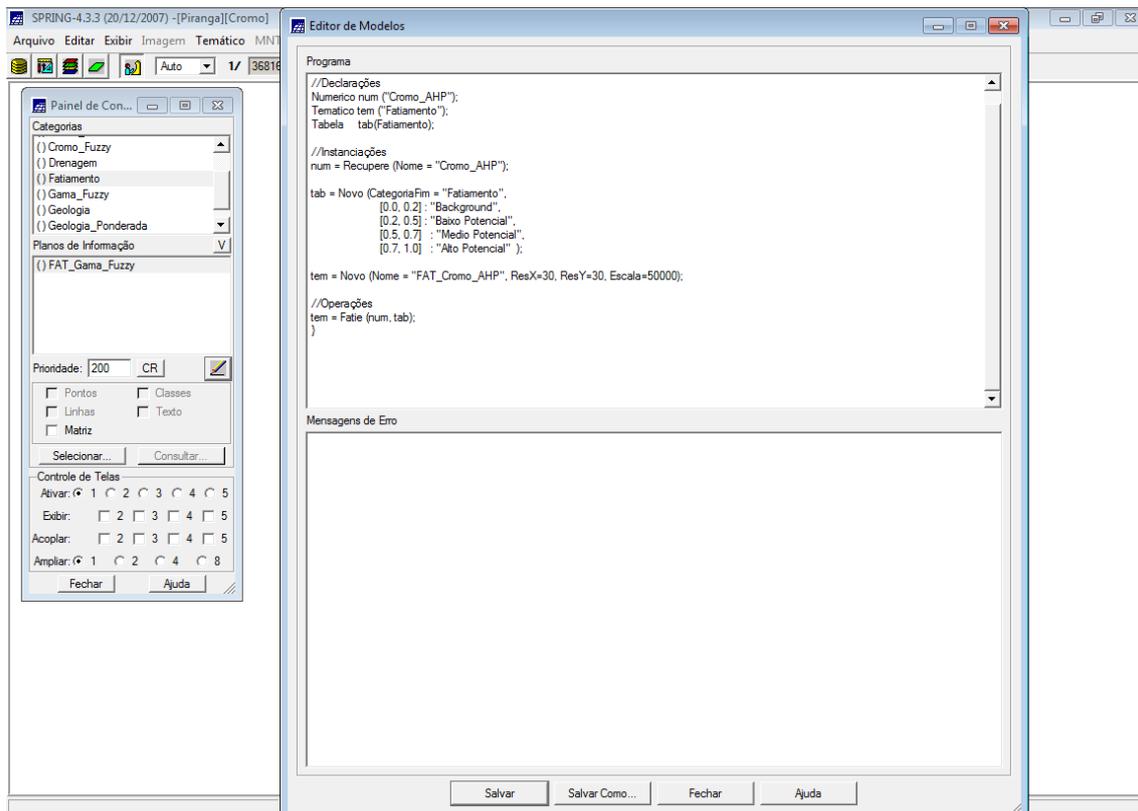




## REALIZAR O FATIAMENTO NO GEO-CAMPO GAMA\_FUZZY.



# REALIZAR O FATIAMENTO NO GEO-CAMPO CROMO\_AHP.



# MAPA GEOLÓGICO DE PIRANGA

