



MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E INOVAÇÃO
INSTITUTO NACIONAL DE PESQUISAS ESPACIAIS

Laboratório 5

Análise Espacial de Dados Geográficos

Disciplina SER – 300: Introdução ao Geoprocessamento

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São José dos Campos
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Objetivo

Este laboratório tem como objetivo explorar através de procedimentos geoestatísticos a variabilidade espacial de propriedades naturais amostrados e distribuídos espacialmente em 3 etapas: (1) análise exploratória dos dados, (2) análise estrutural (cálculo e modelagem do semivariograma) e (3) realização de inferências (Krigagem ou Simulação).

Desenvolvimento

As etapas de desenvolvimento do trabalho estão apresentadas nas figuras.

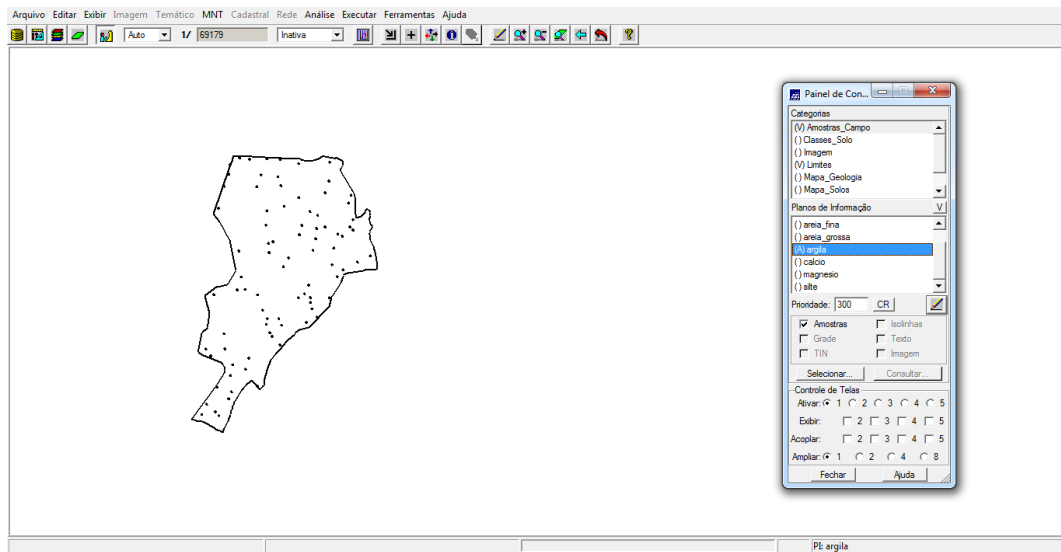


Figura 1 – Etapa de carregamento dos dados no sistema Spring

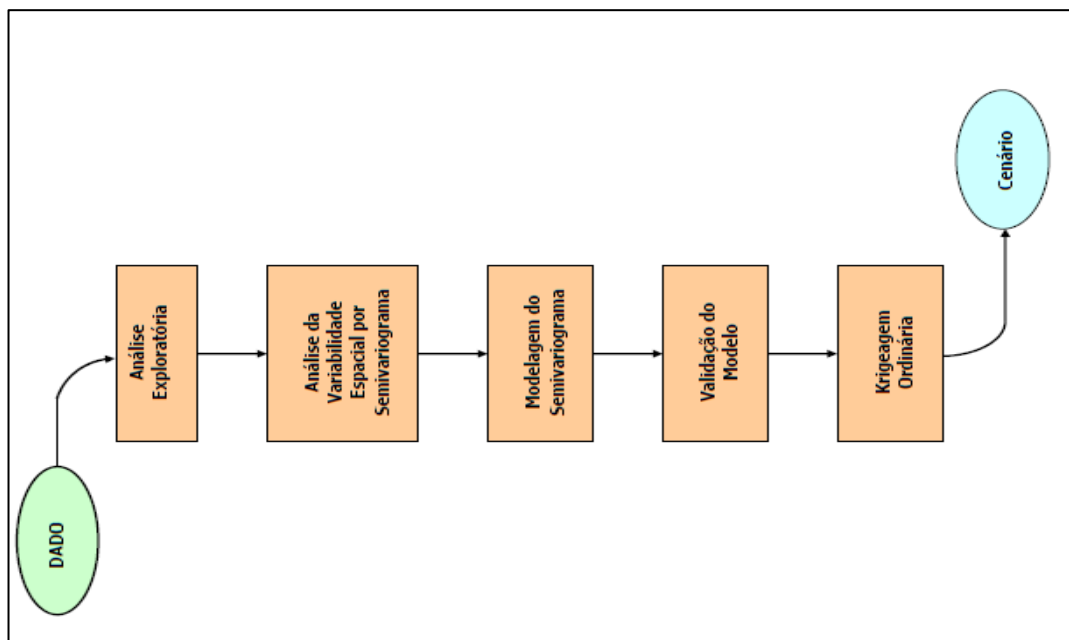


Figura 2 - Etapas da análise geoestatística

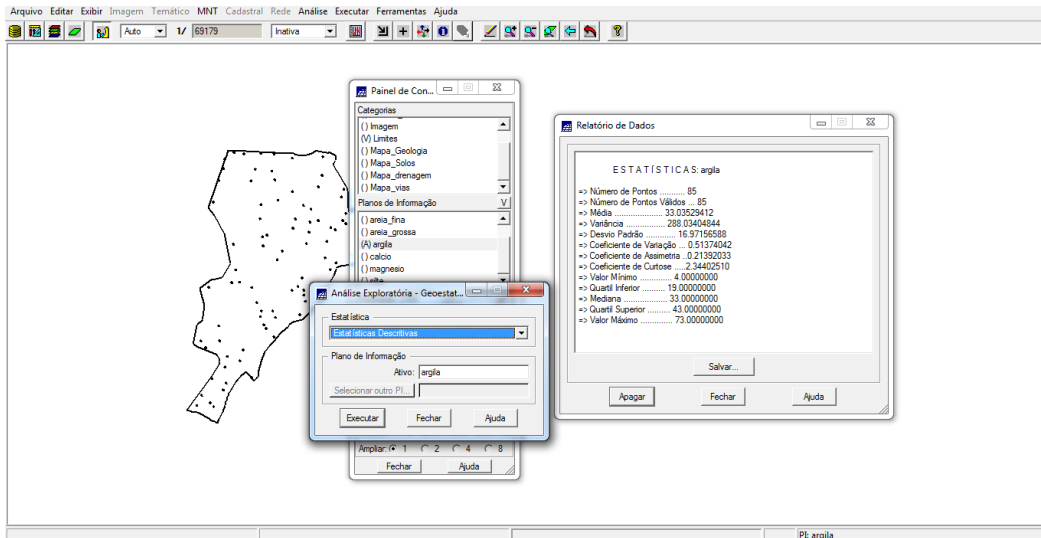


Figura 3 – Estatística descritiva

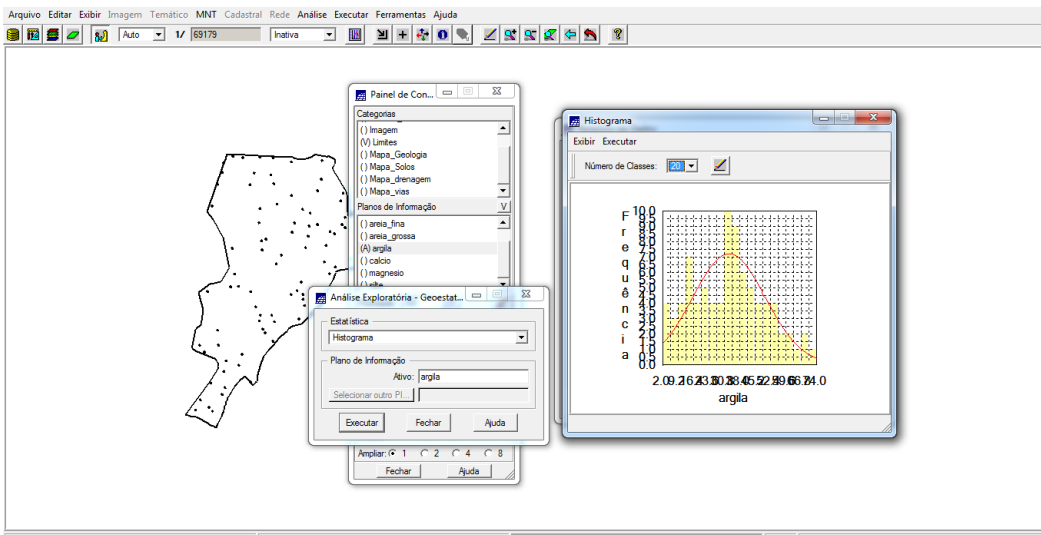


Figura 4 – Histograma com 20 classes

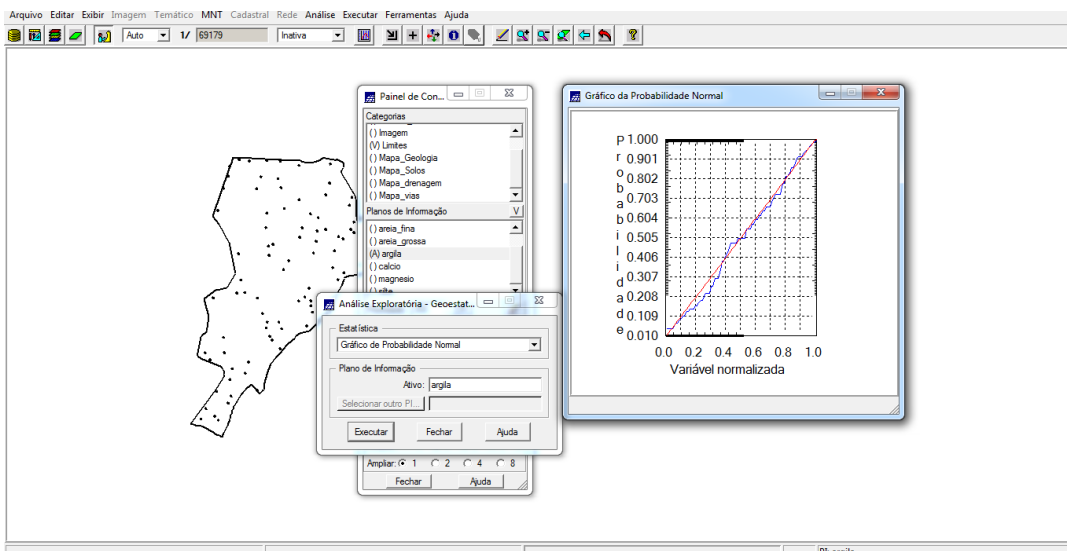


Figura 5 - Gráfico da probabilidade normal

Caso isotrópico

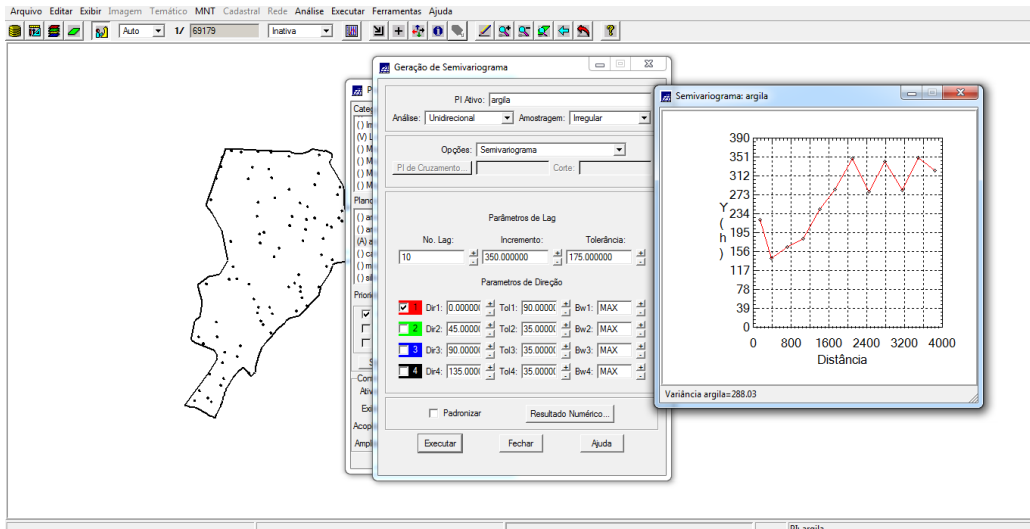


Figura 6 - Semivariograma com especificações padrão do Spring

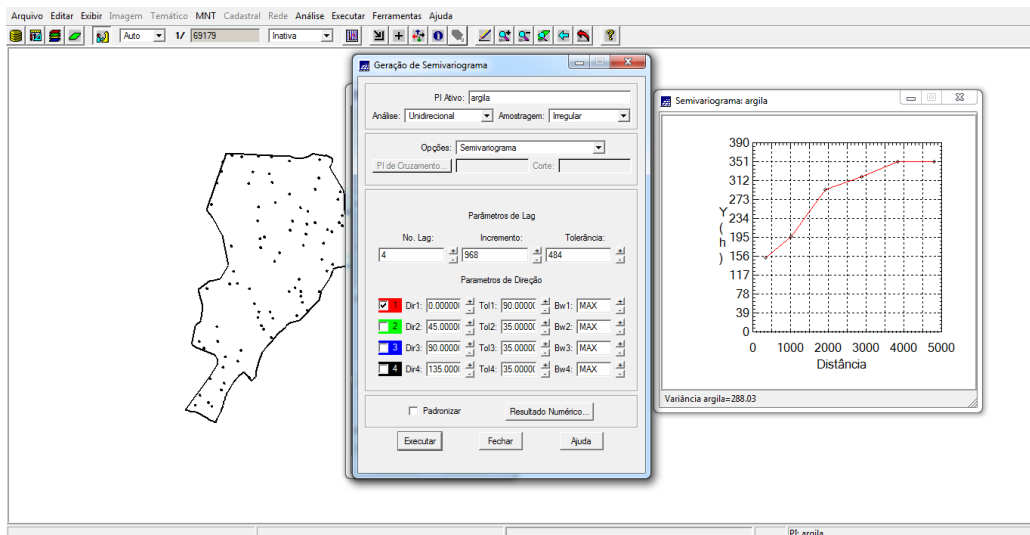


Figura 7 – Semivariograma com No. Lag = 4, incremento = 968 e tolerância = 484

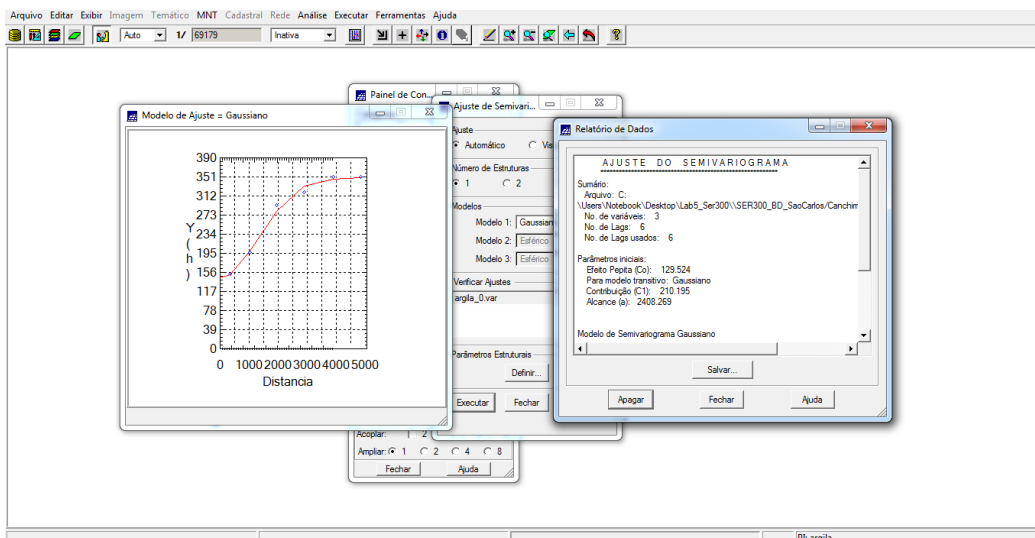


Figura 8 - Ajuste do semivariograma

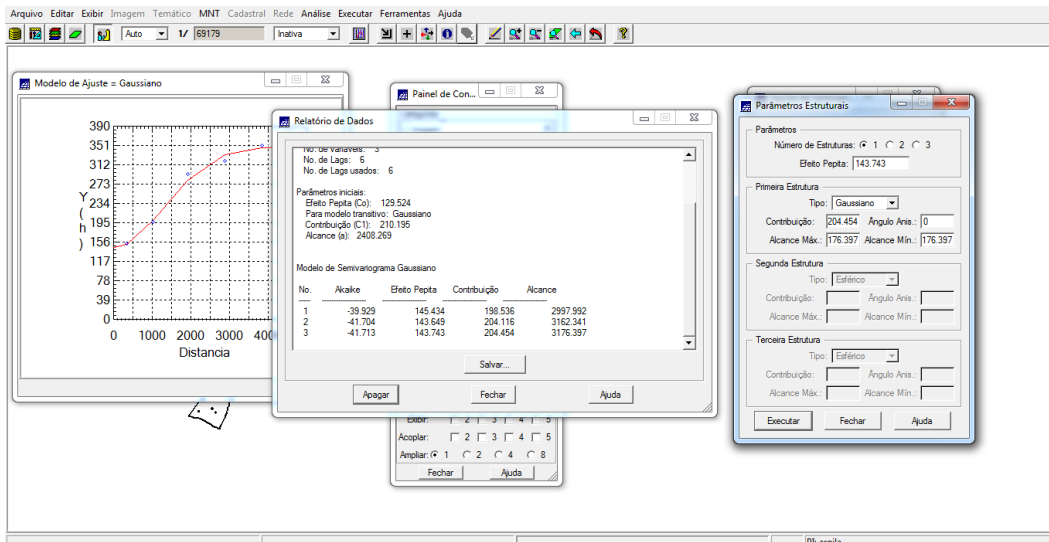


Figura 9 – Ajuste do semivariograma

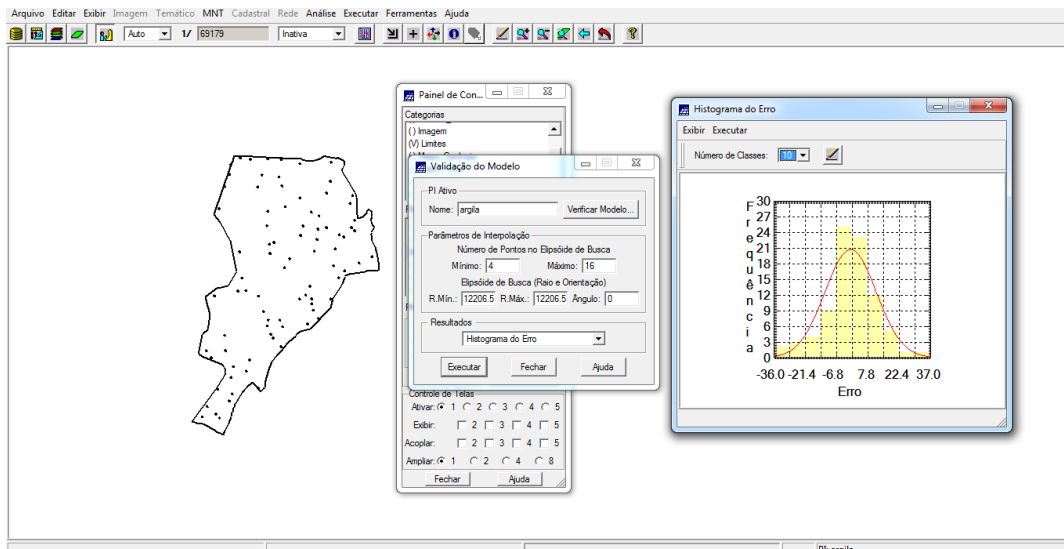


Figura 10 – Histograma do erro

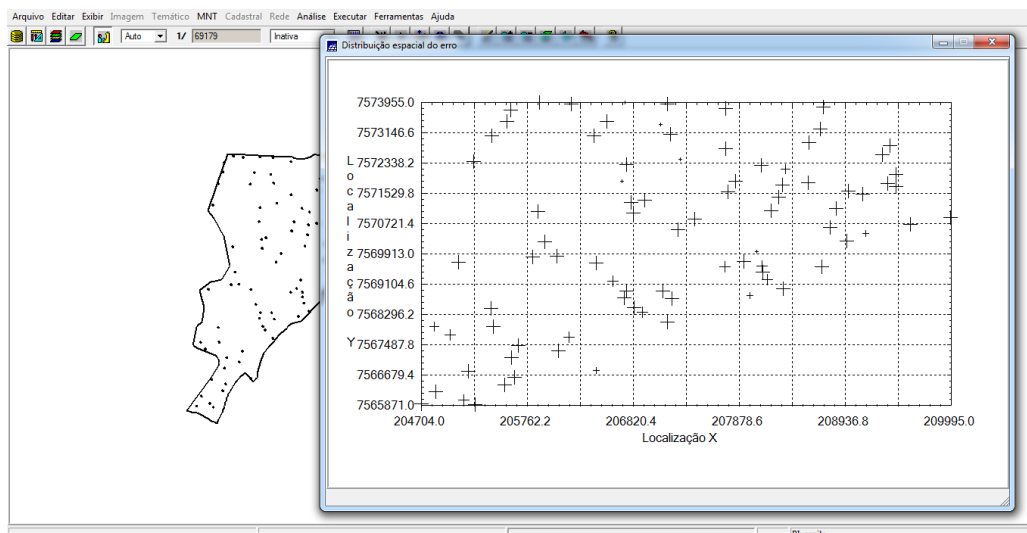


Figura 11 – Diagrama espacial do erro

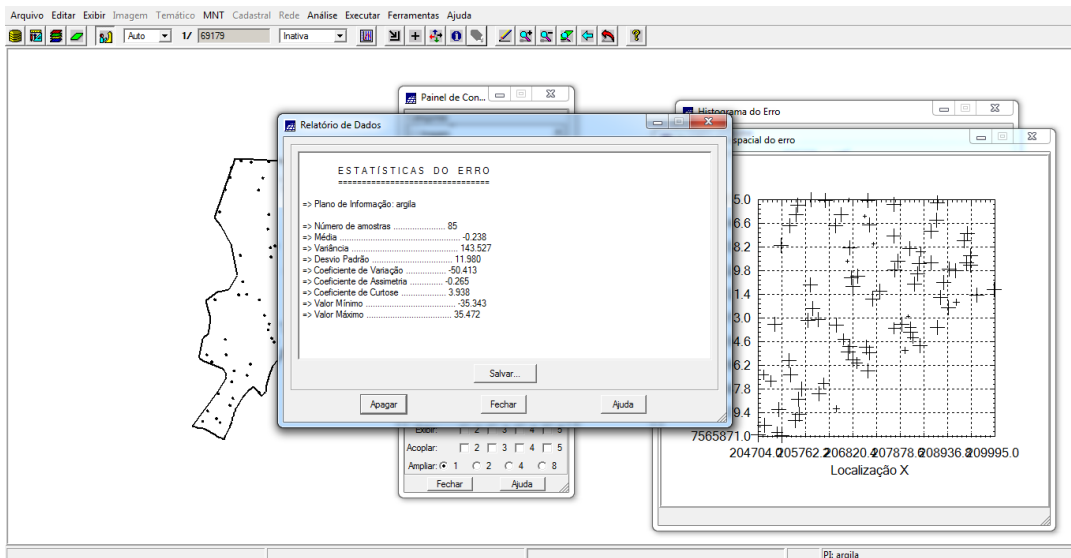


Figura 12 - Estatística do erro

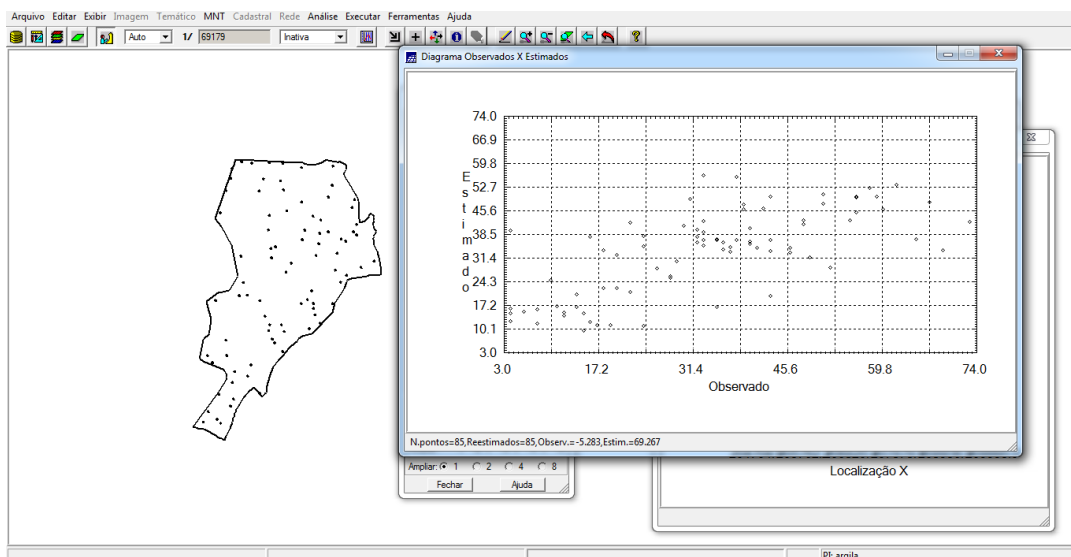


Figura 13 – Diagrama de valores observados versus estimados

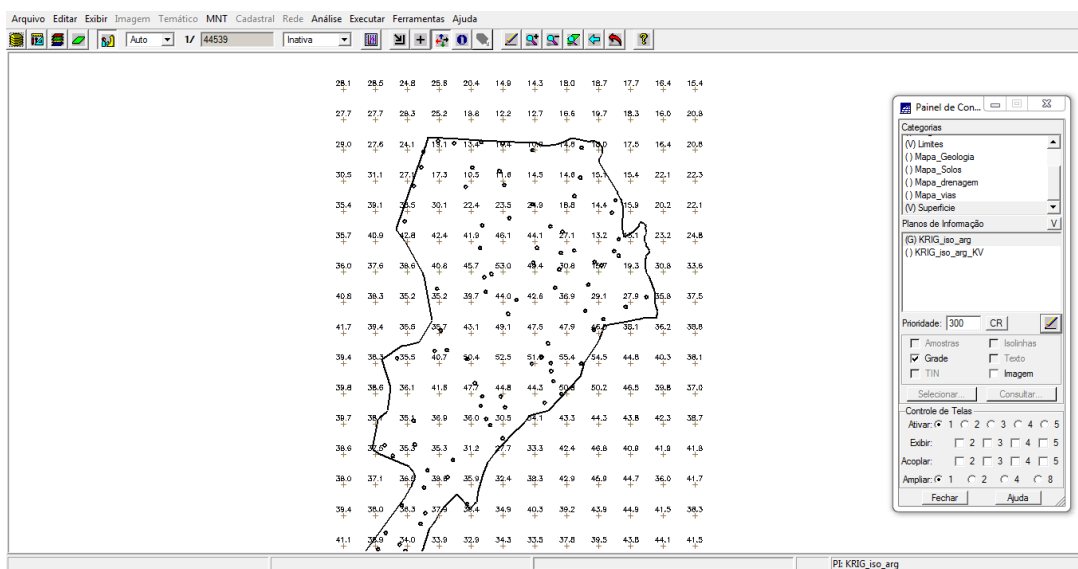


Figura 14 - Interpolação por krigeagem ordinária

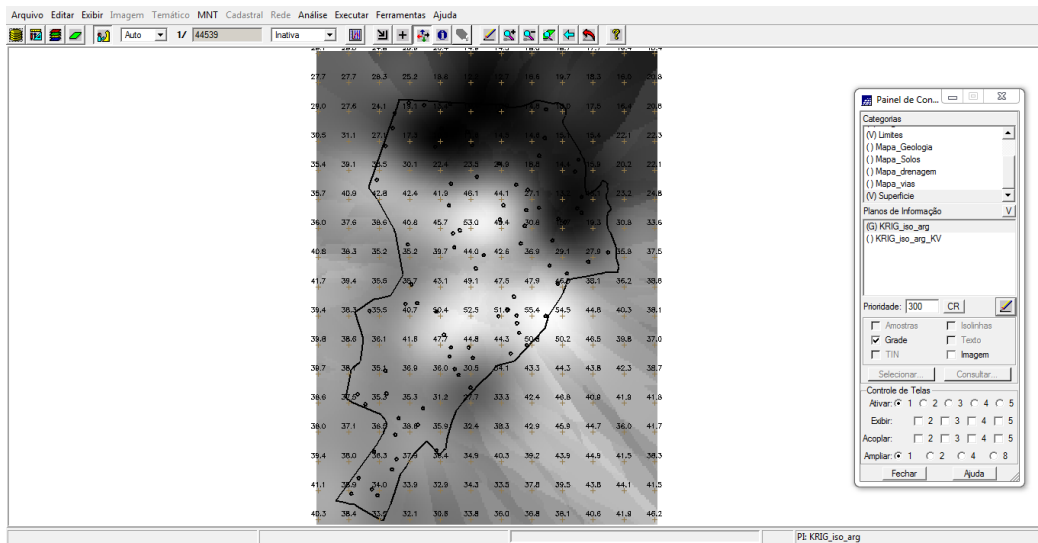


Figura 15 – Superfície de argila gerada por krigeagem

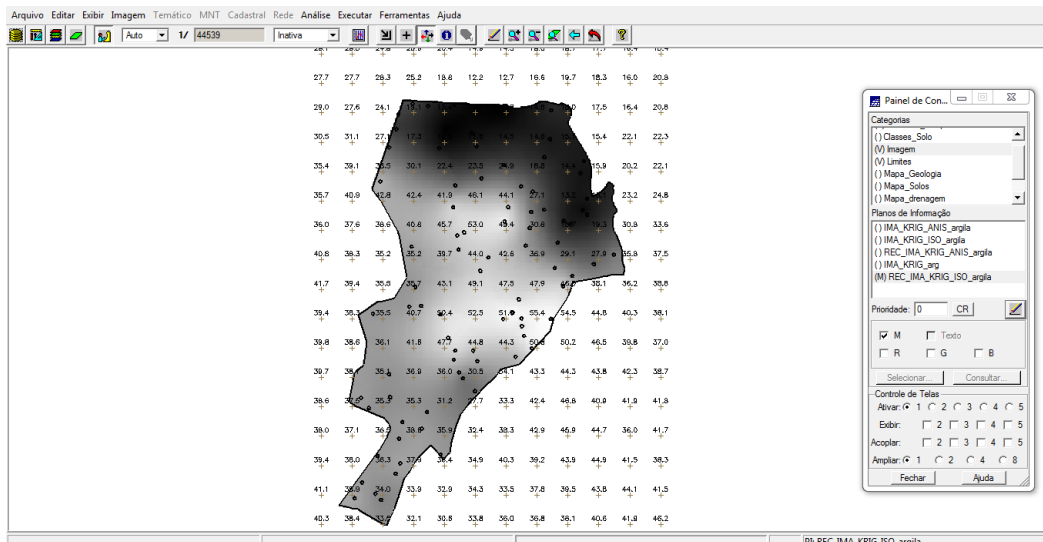


Figura 16 – Recorte superfície de argila para os limites da fazenda

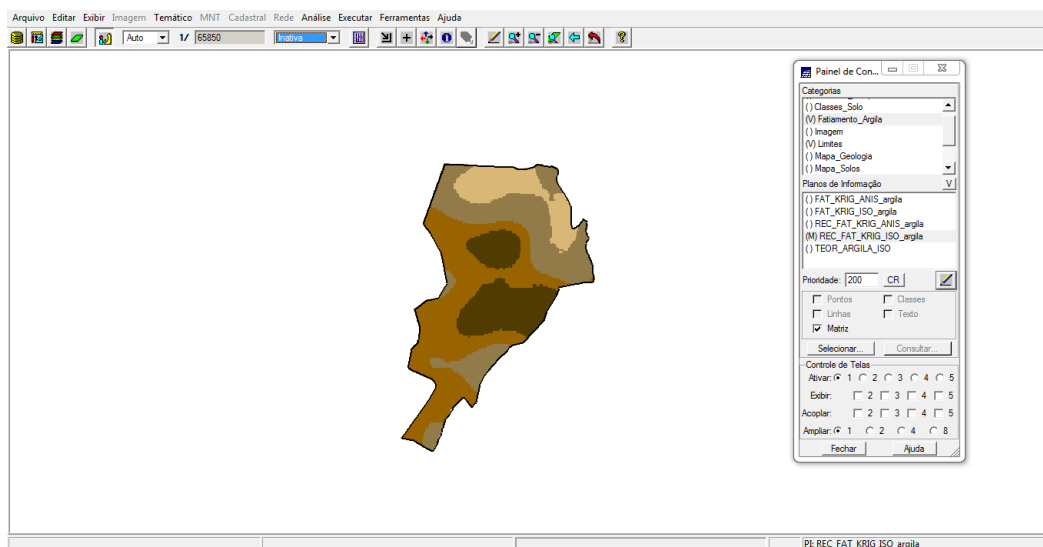


Figura 17– Fatiamento e recorte da grade do teor de argila no modelo de anisotropia

Caso anisotrópico

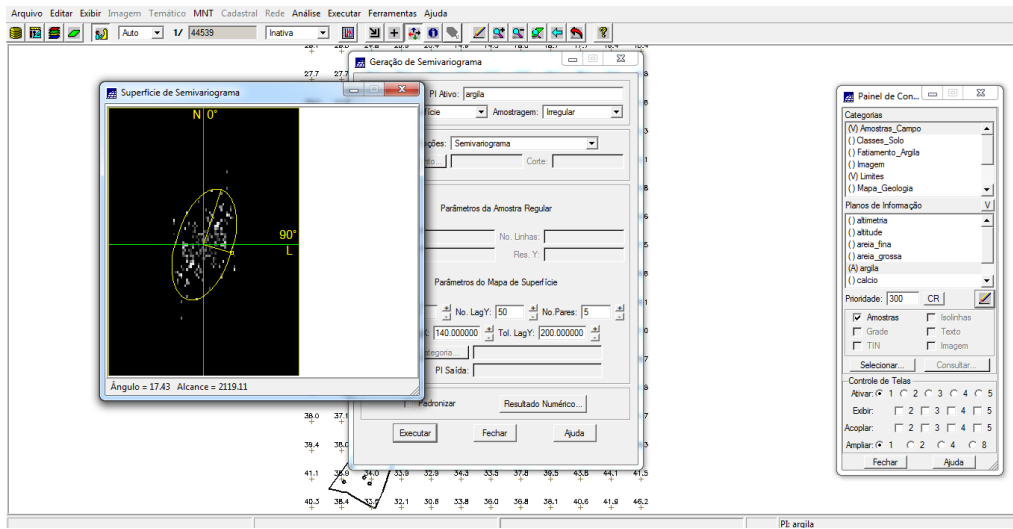


Figura 18 – Detecção de anisotropia.

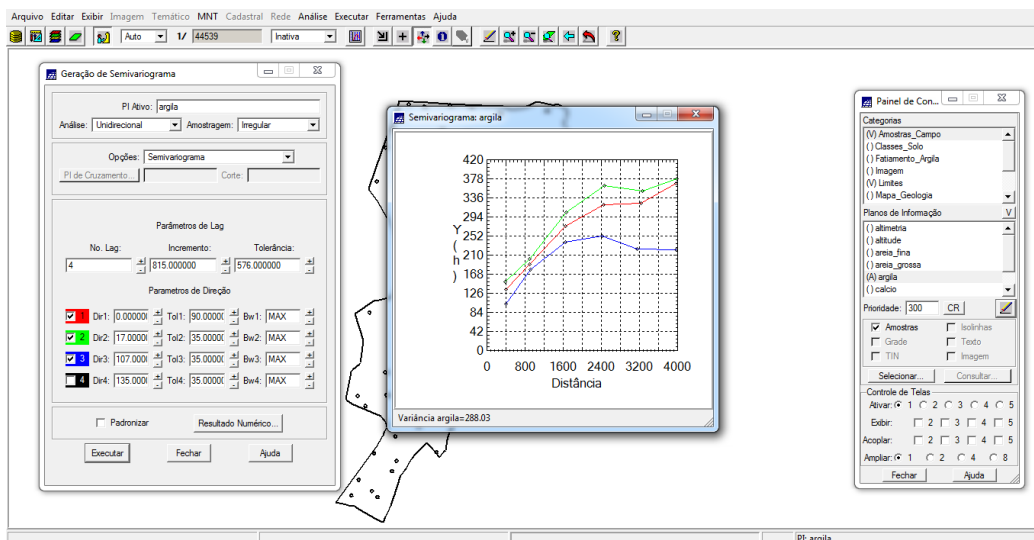


Figura 19 – semivariogramas relativo à direção de maior continuidade (verde), outro à direção de menor continuidade (azul) e o semivariograma omnidirecional (vermelho), que foi gerado somente a título de ilustração

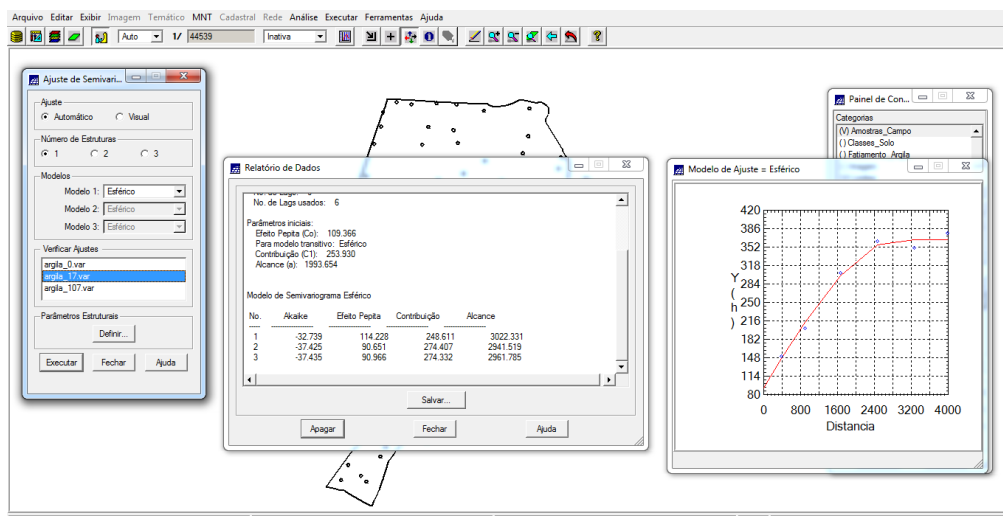


Figura 20 – modelo de ajuste 17°

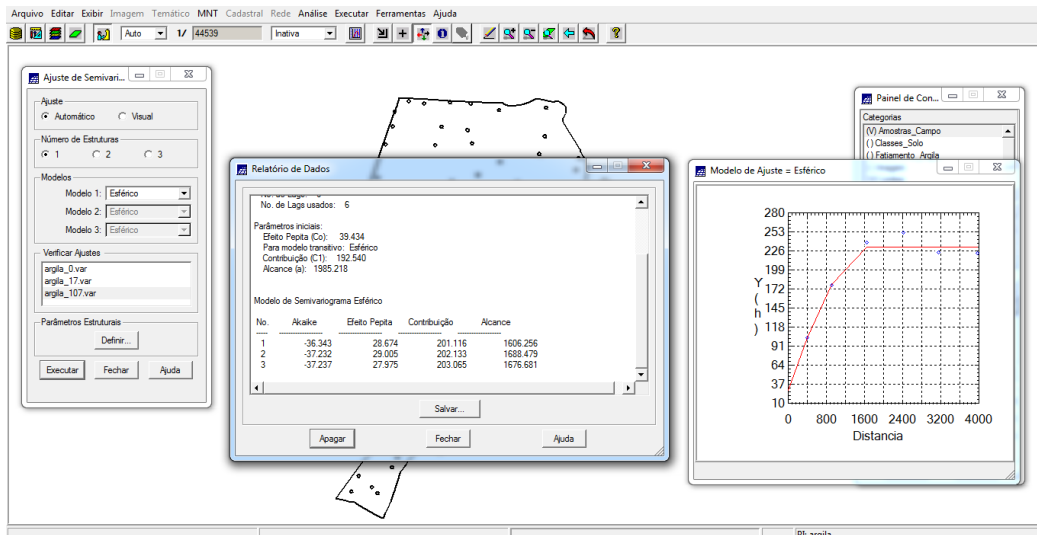


Figura 21 – Modelo ajuste 107°

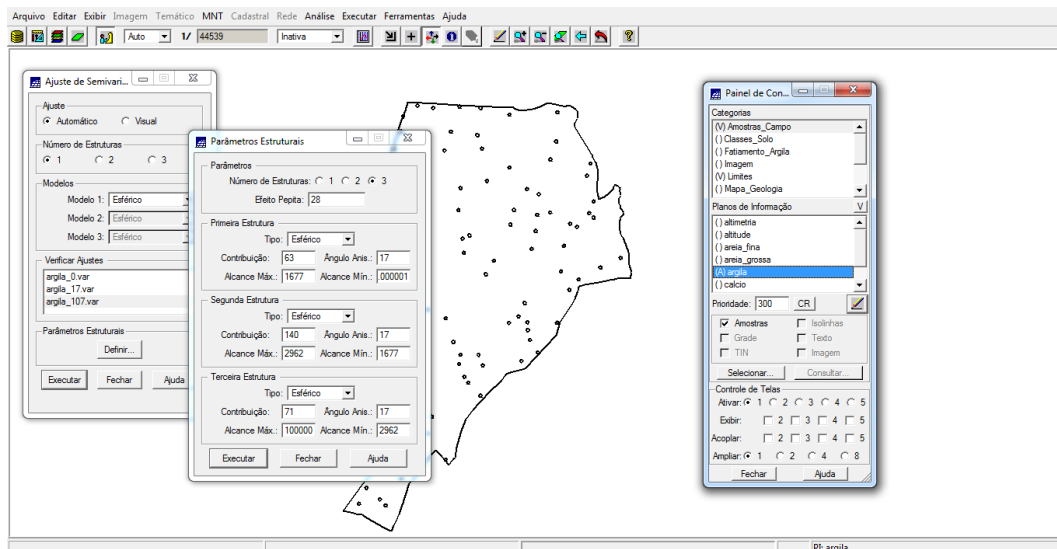


Figura 22 – Gravação do modelo proposto

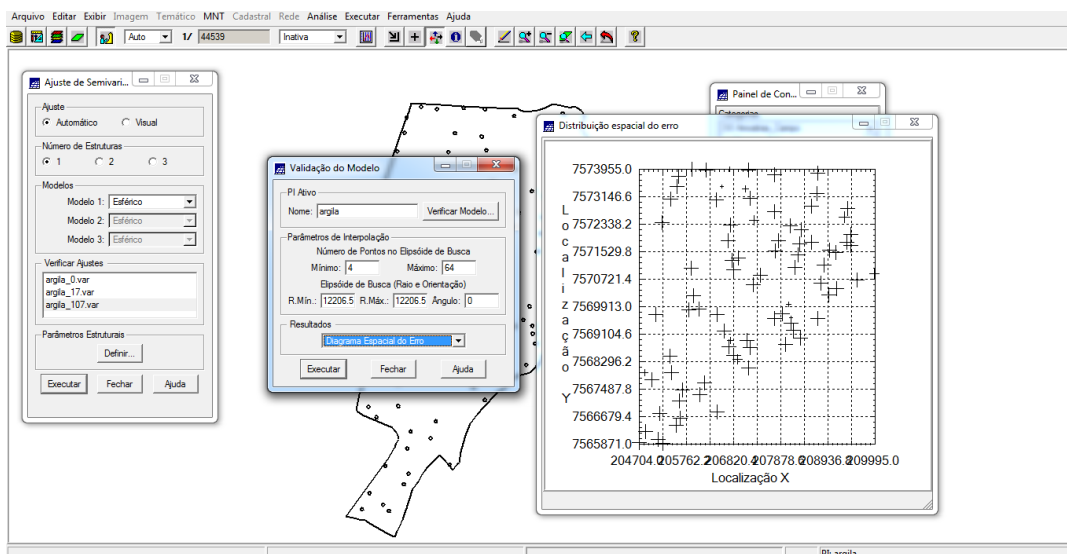


Figura 23 – Diagrama espacial de erro do modelo de anisotropia

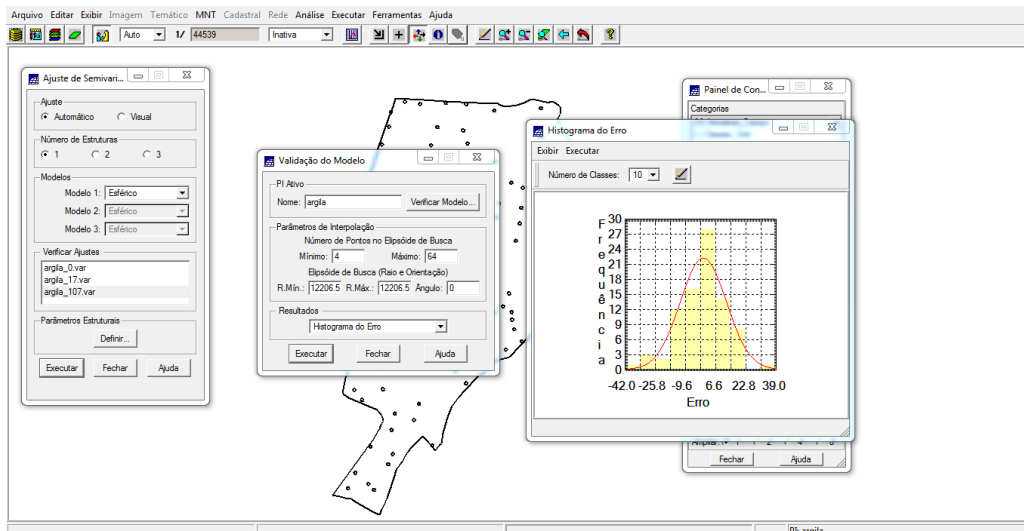


Figura 24 – Histograma do modelo de anisotropia

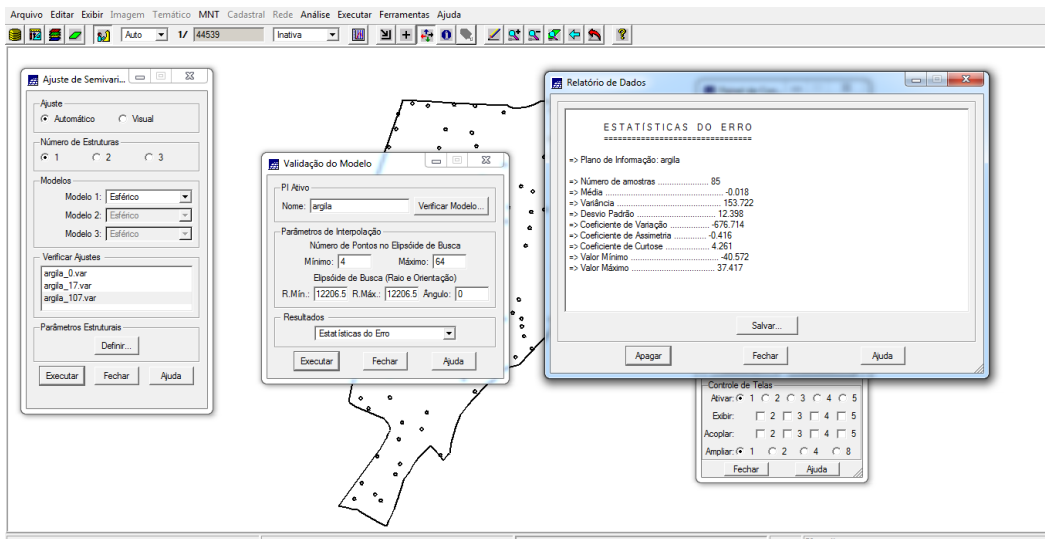


Figura 25 – Estatística do erro do modelo de anisotropia

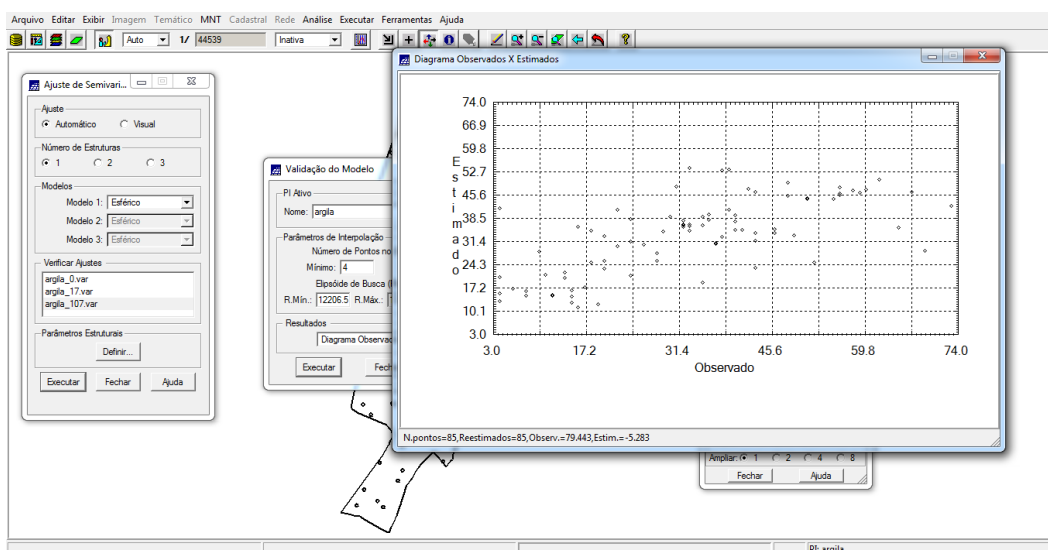


Figura 26 - Diagrama de valores observados versus Estimados do modelo de anisotropia

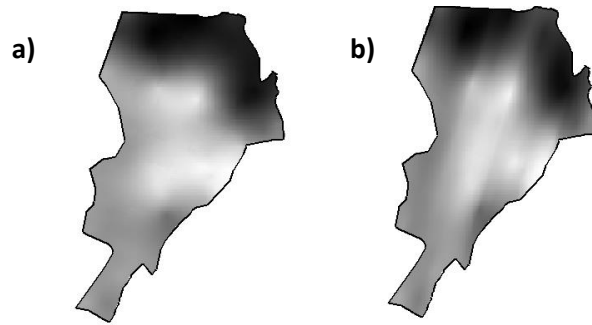


Figura 30 – Krigagem considerando isotropia (a) e anisotropia (b)

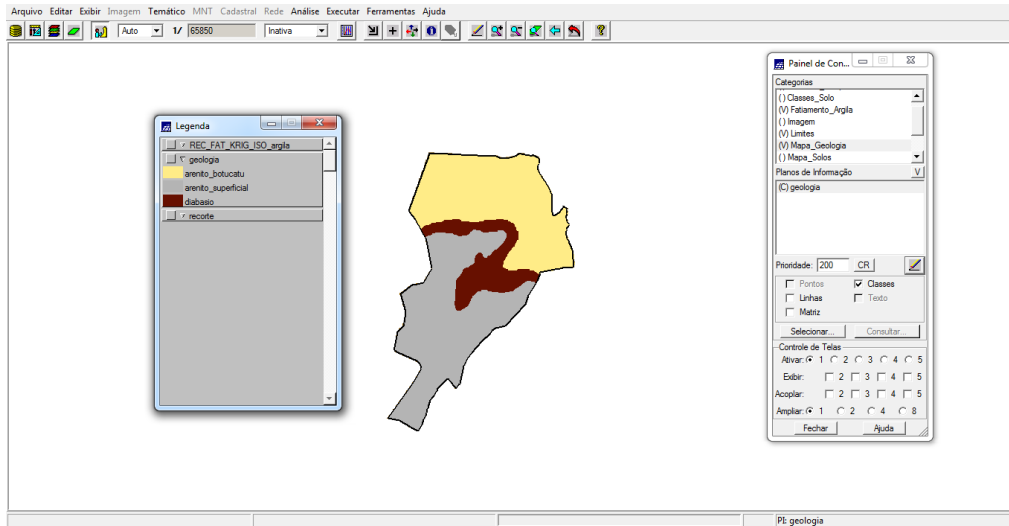


Figura 31 – Mapa geológico

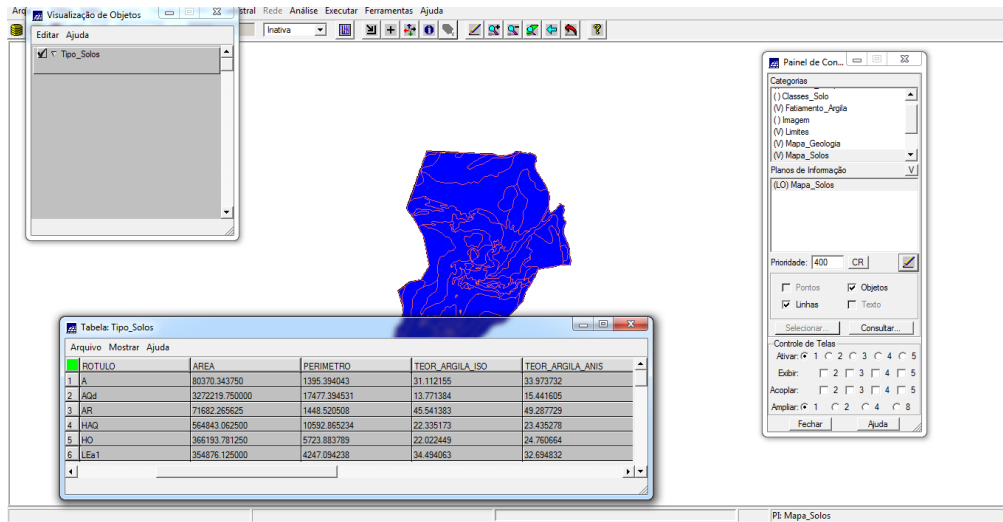


Figura 32 - Tabela de atributos com valores de teor de argila

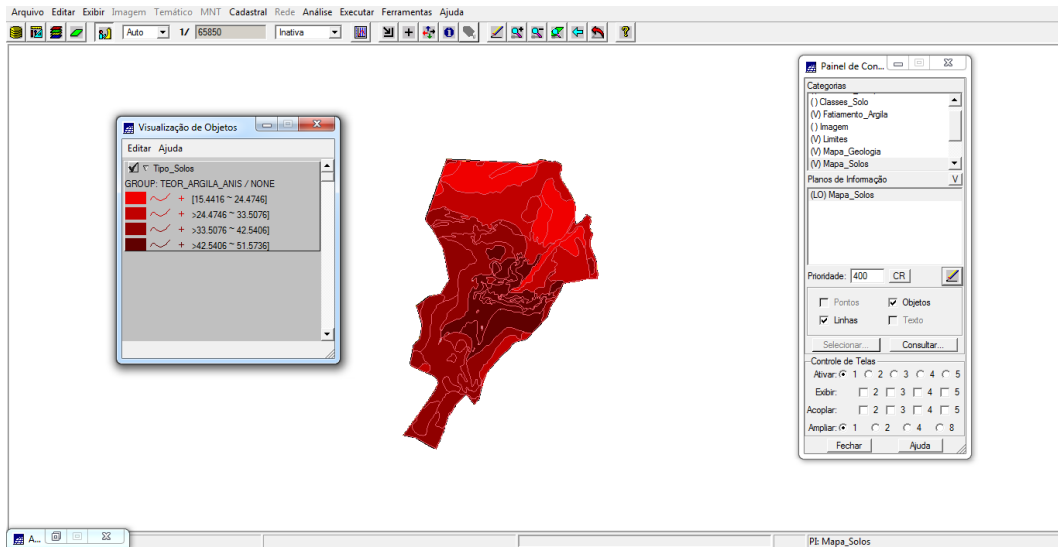


Figura 33 - Agrupamento para o caso anisotrópico

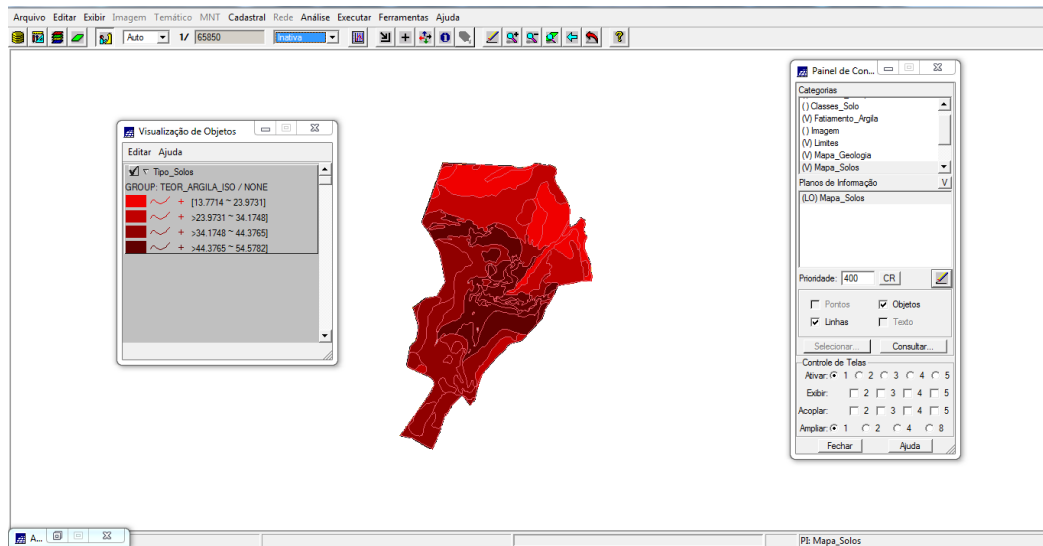


Figura 33 - Agrupamento para o caso anisotrópico