



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

## **SER-300 - Introdução ao Geoprocessamento**

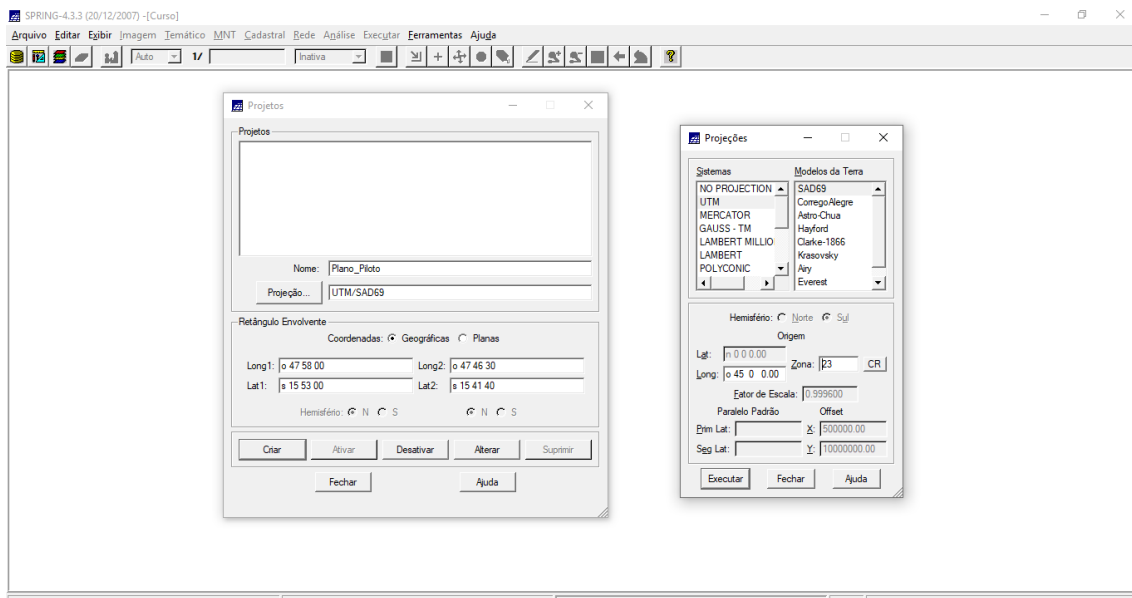
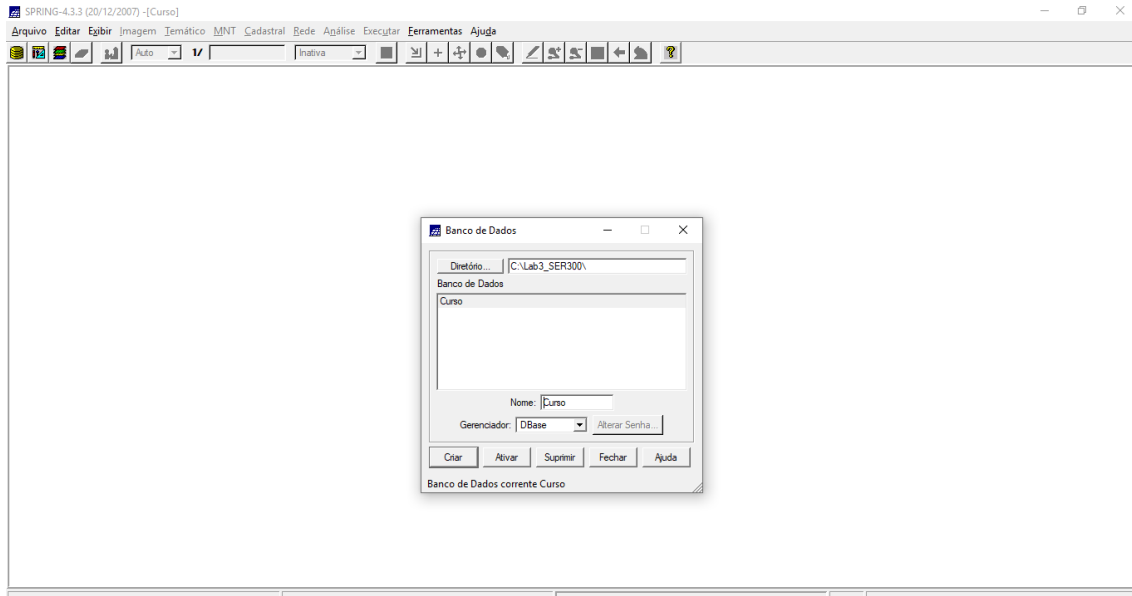
**Marcos Antônio de Almeida Rodrigues**

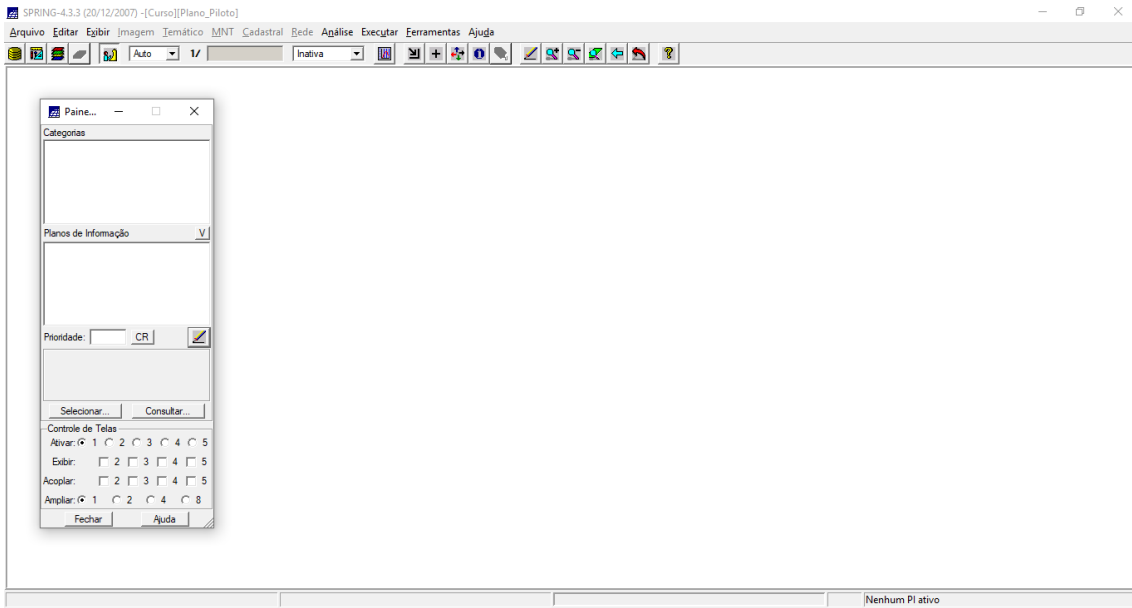
### **Laboratório 3**

*Exercícios Práticos*  
*Modelo Numérico de Terreno (MNT)*

# Exercício 1 - Definindo o Plano Piloto para o Aplicativo 1

⇒ Criando o Banco Curso e o Projeto Plano Piloto:

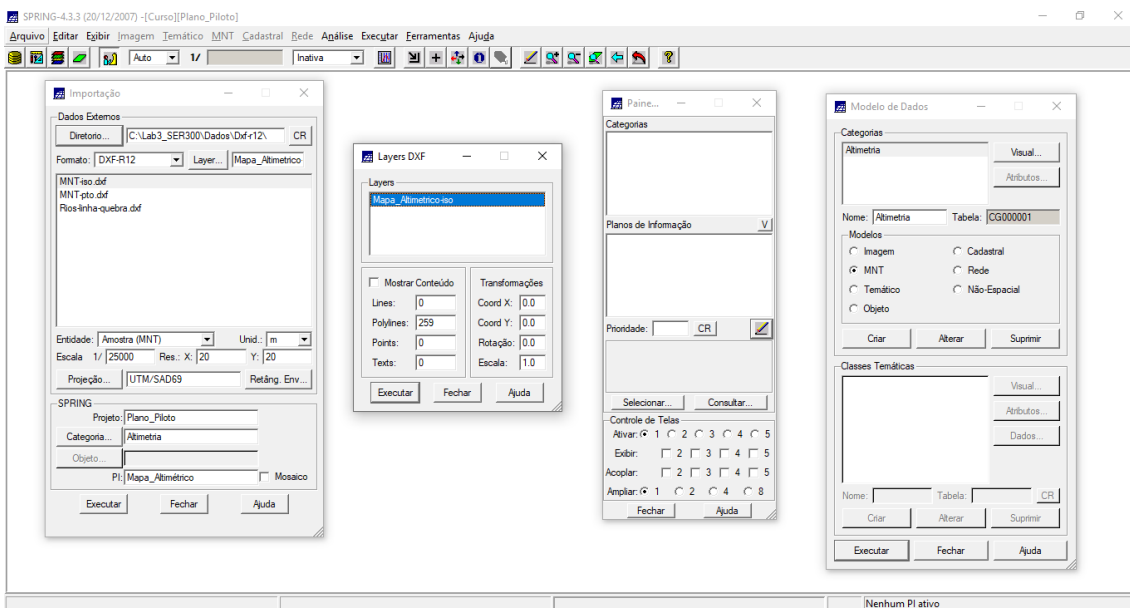
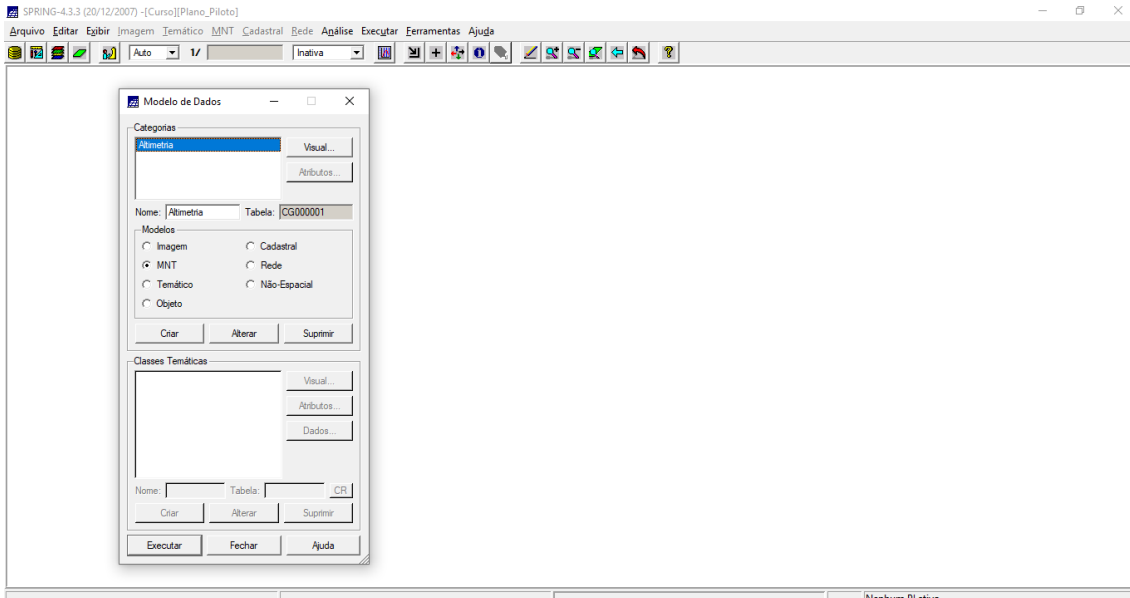


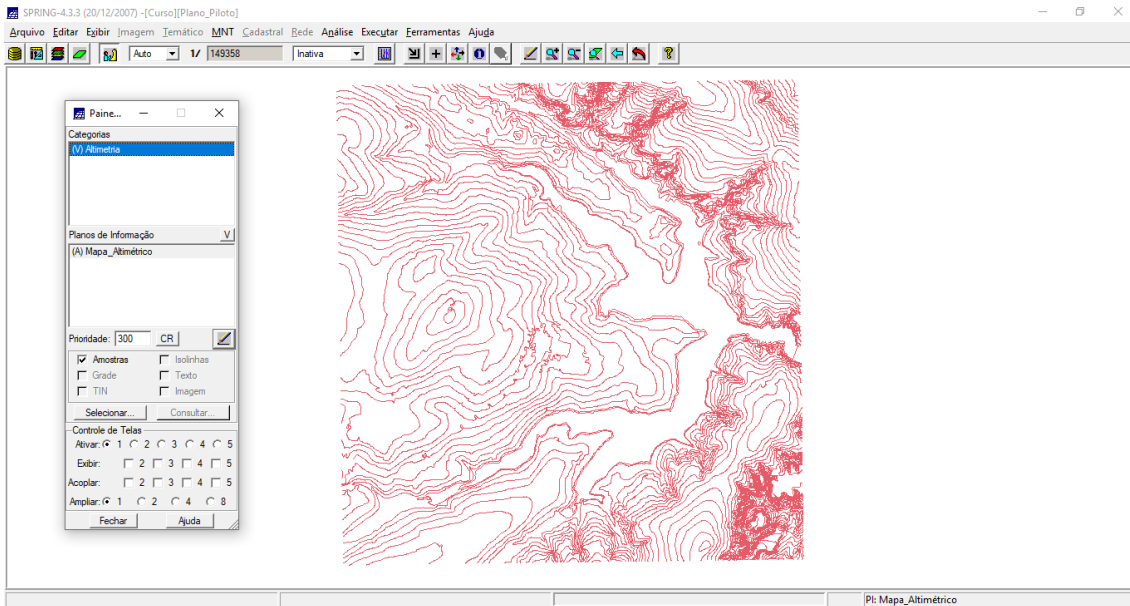


## Exercício 2 - Importação de amostras de modelo numérico de terreno

### Passo 1 - Importar arquivo DXF com isolinhas num PI numérico

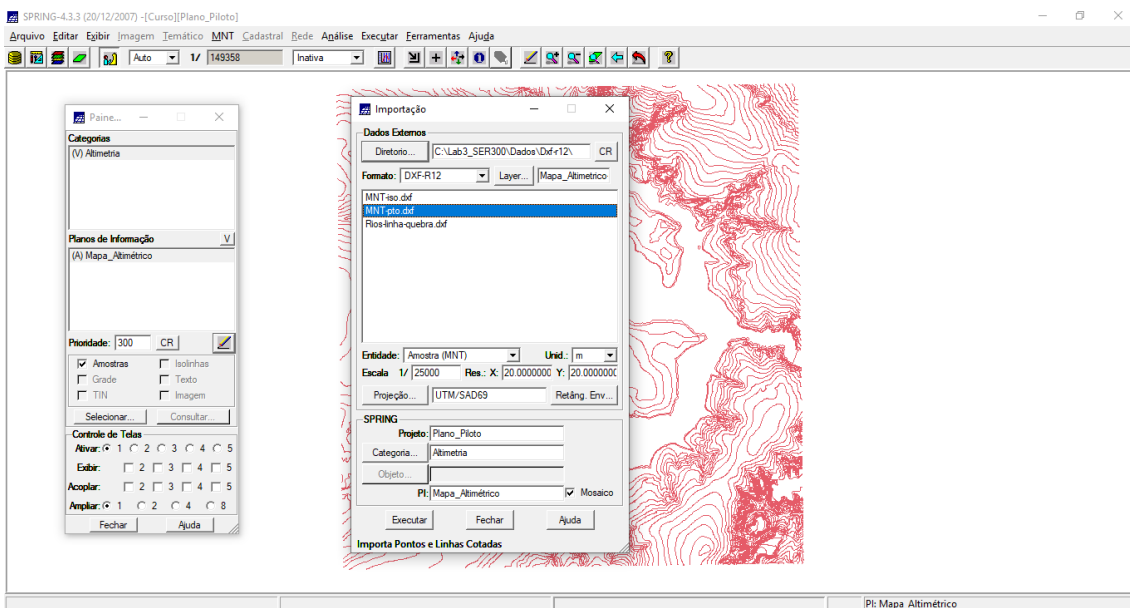
⇒ Importando isolinhas de arquivo DXF:

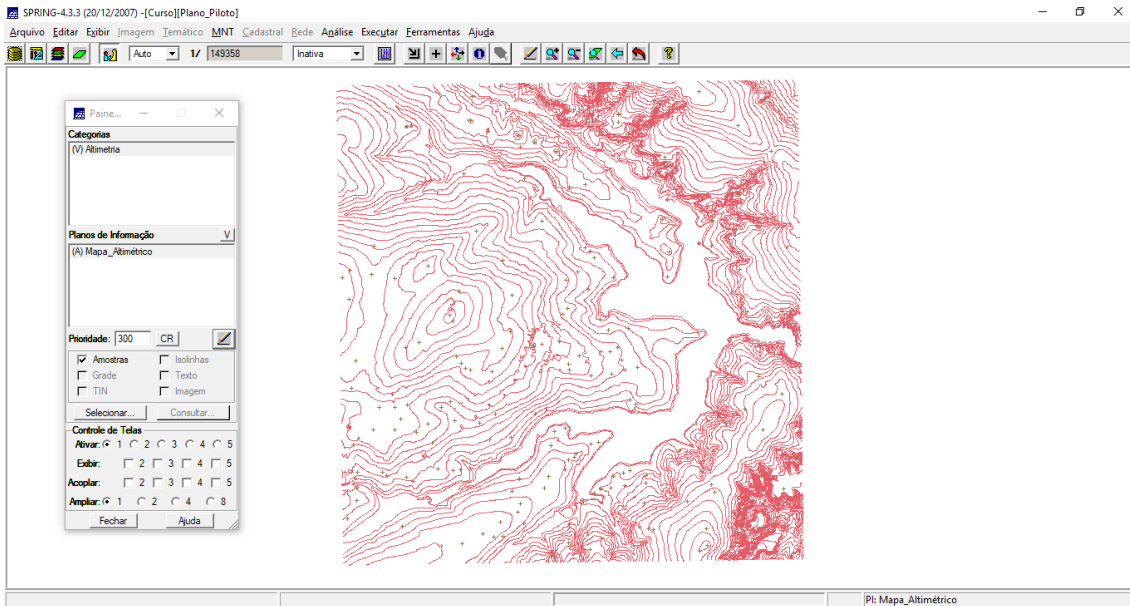




## Passo 2 - Importar arquivo DXF com pontos cotados no mesmo PI das isolinhas

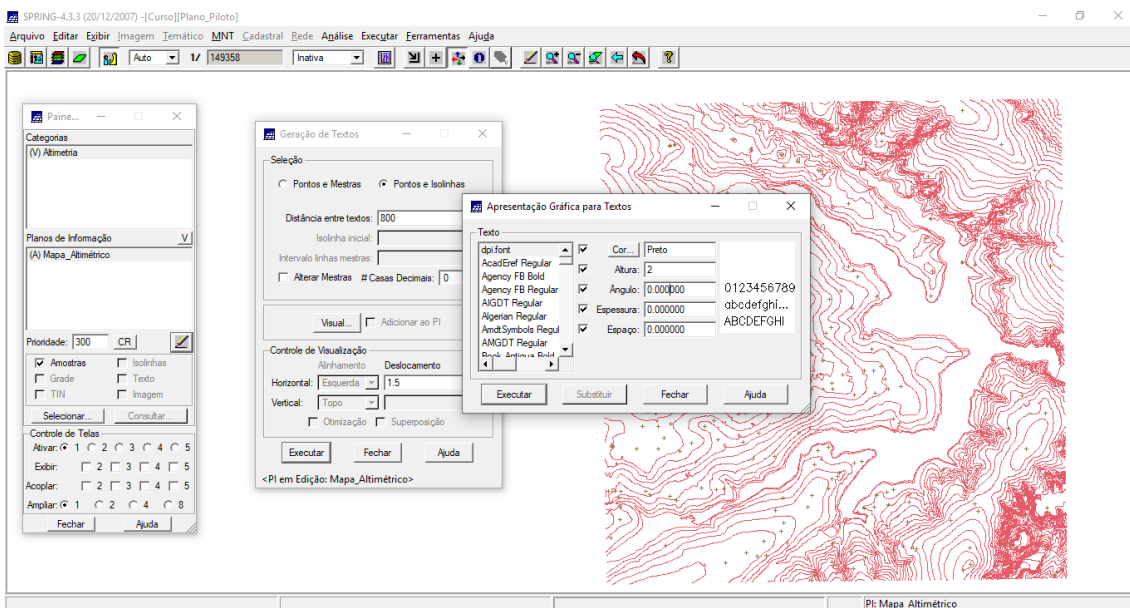
⇒ *Importando pontos cotados de arquivo DXF:*

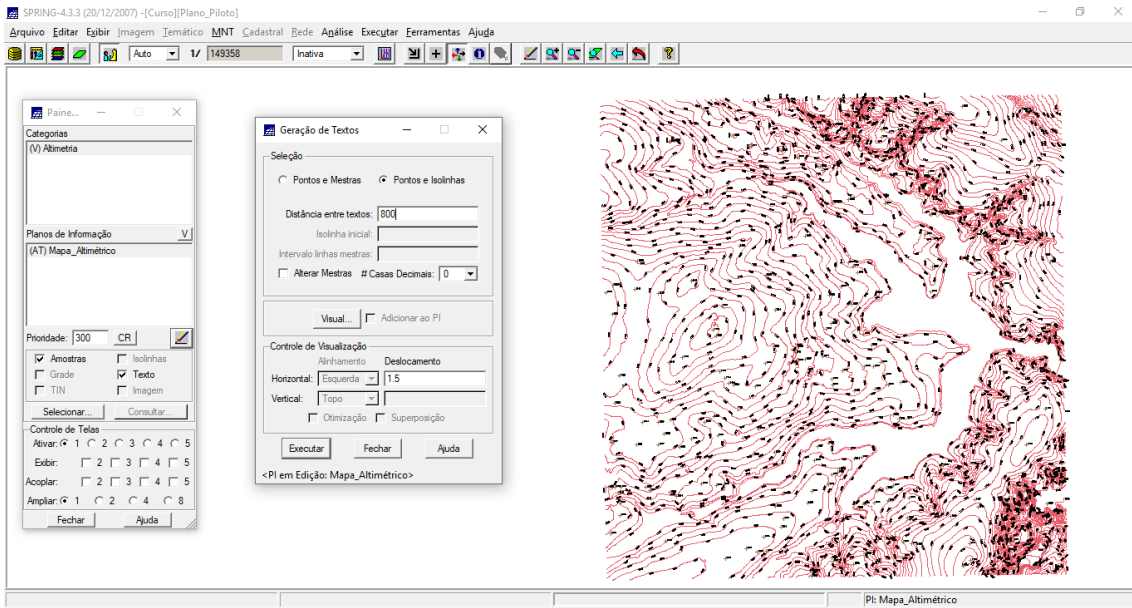




### Passo 3 - Gerar toponímia para amostras

⇒ Gerando textos p/ amostras de PI numérico:

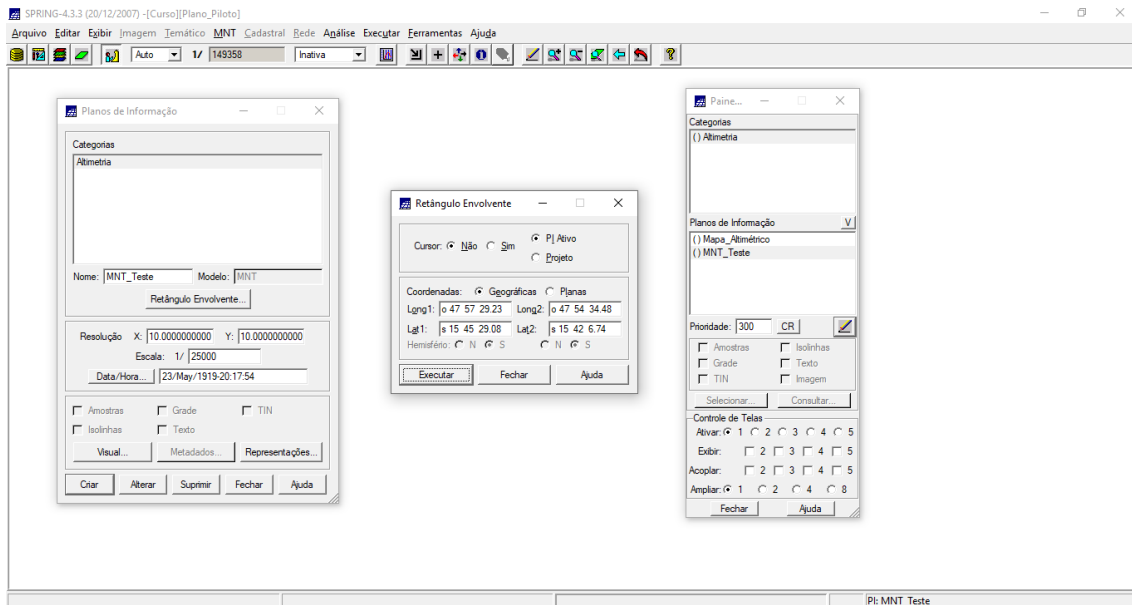




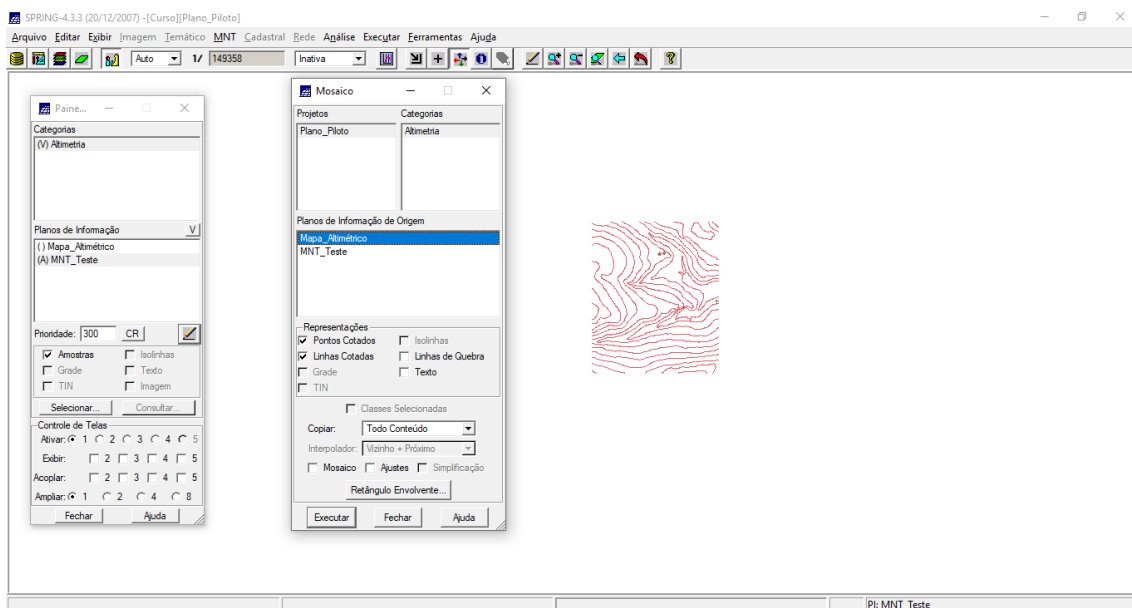
## Exercício 3 - Edição de modelo numérico de terreno

### Passo 1 - Criar um novo PI numérico e fazer cópia do mapa altimétrico

⇒ *Criando PI para edição na tela:*



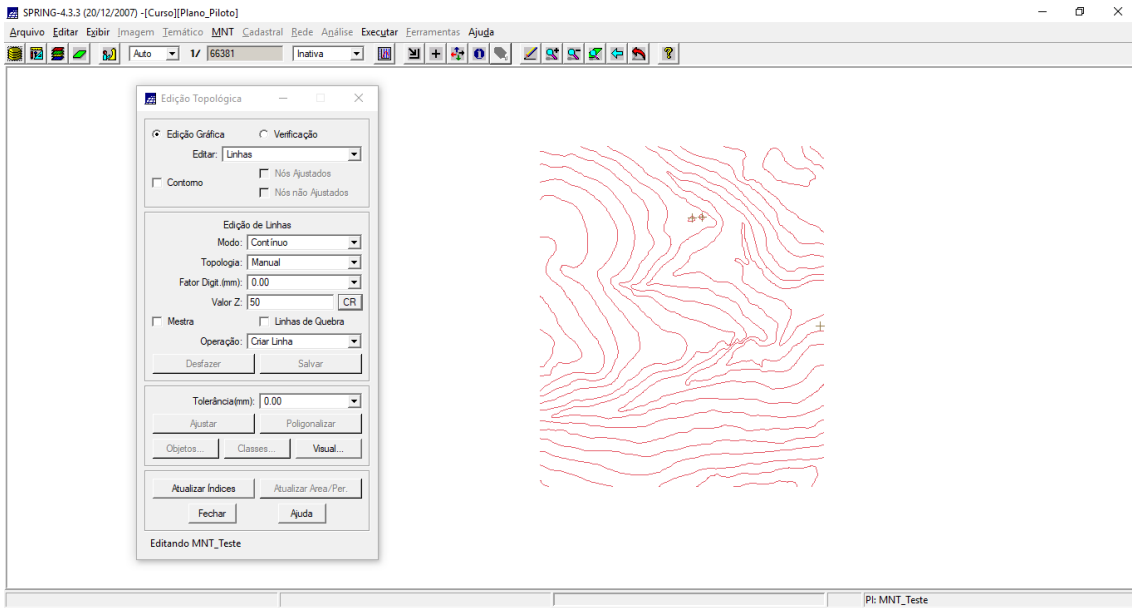
⇒ *Copiando dados de um PI para outro:*



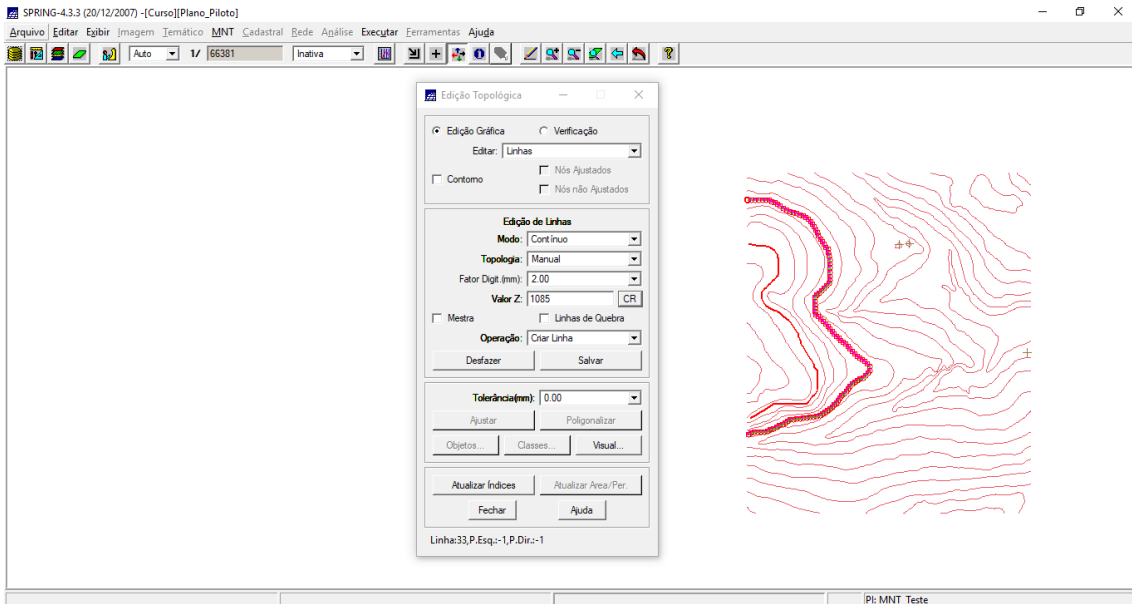
### Passo 2 - Editar isolinhas e pontos cotados num PI numérico

⇒ *Editando vetores:*

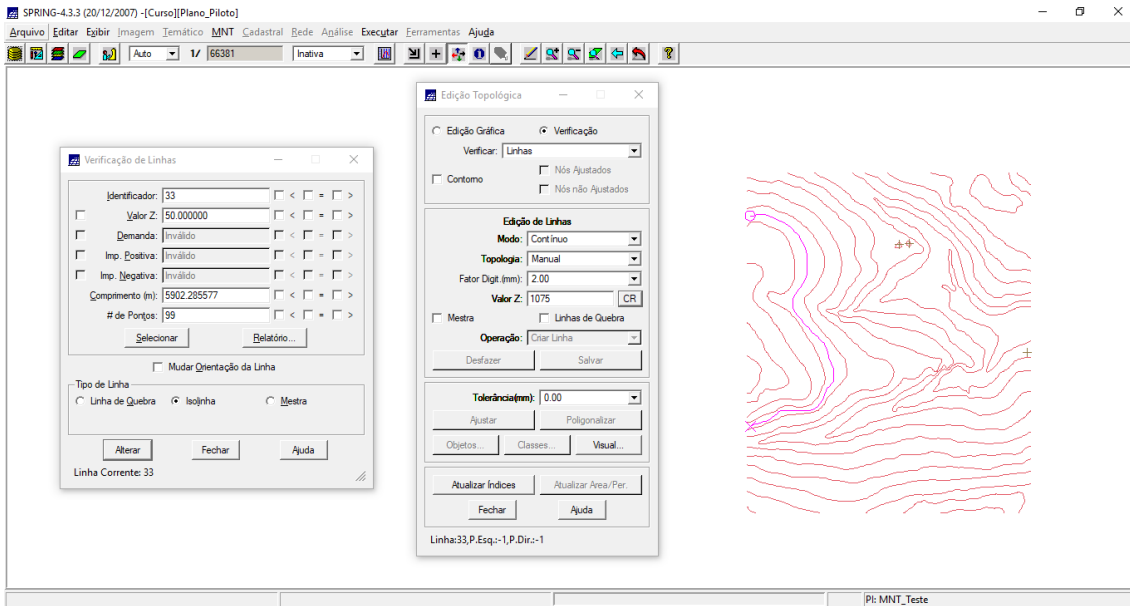




⇒ *Editando isolinhas:*

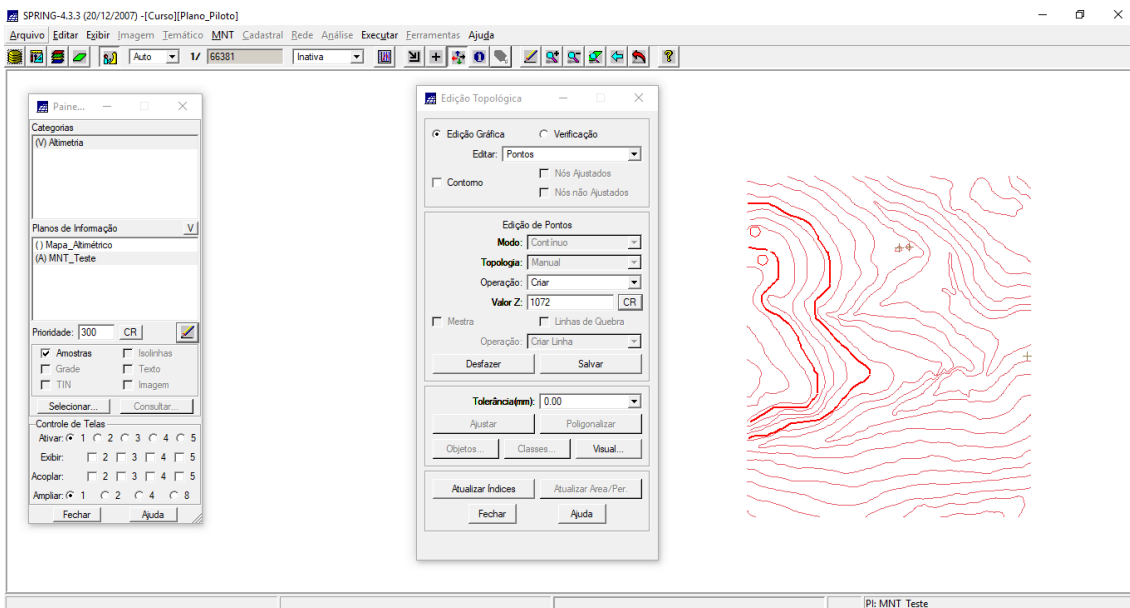


⇒ *Verificando isolinhas:*

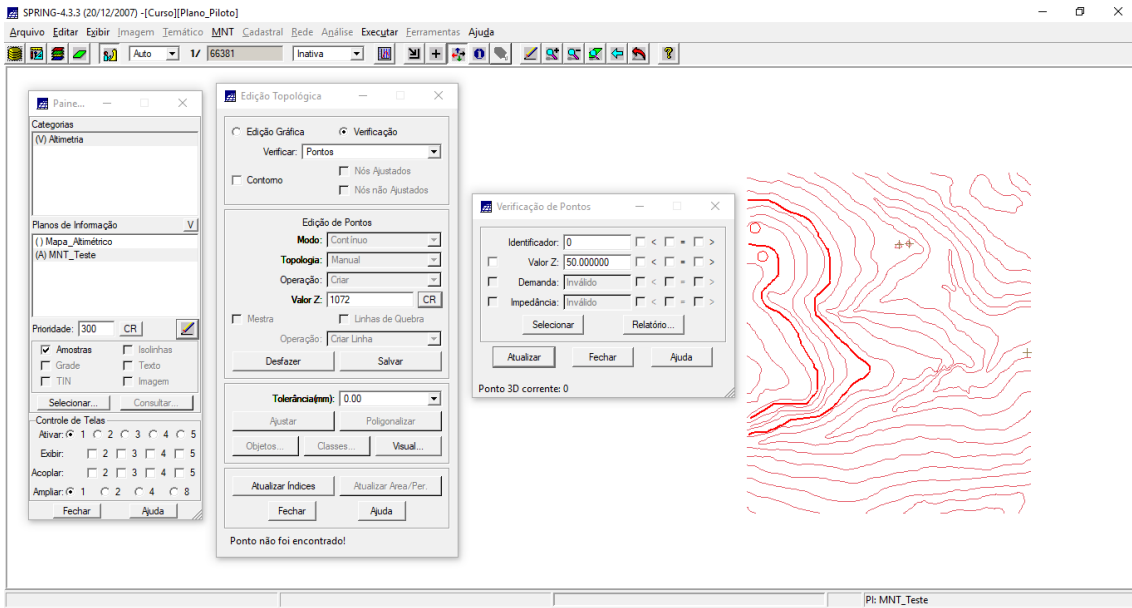


## Edição de pontos cotados

⇒ *Editando pontos cotados:*

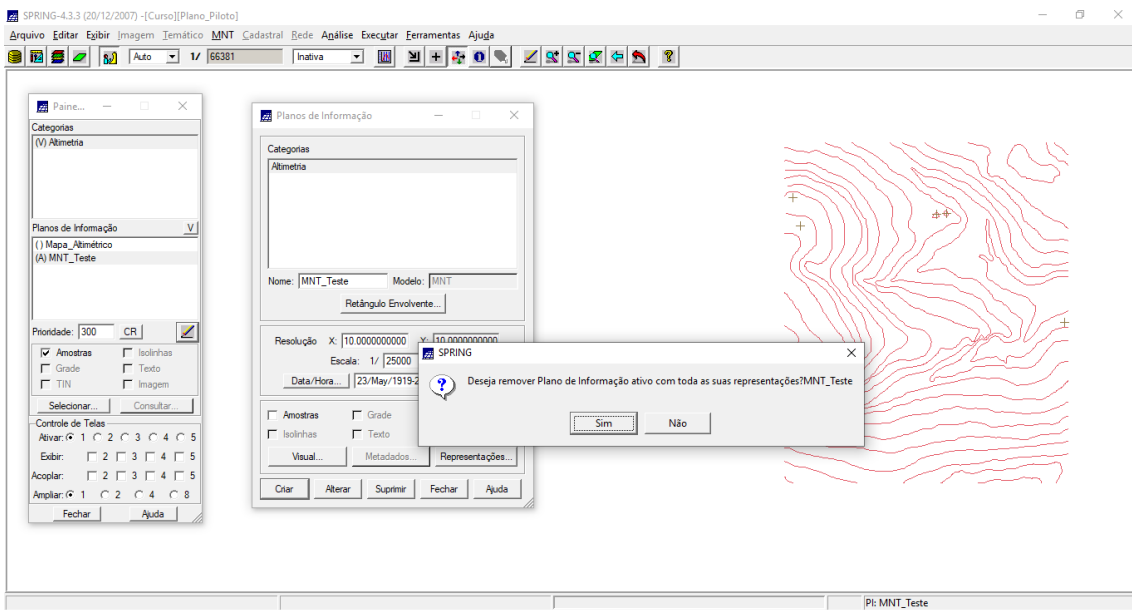


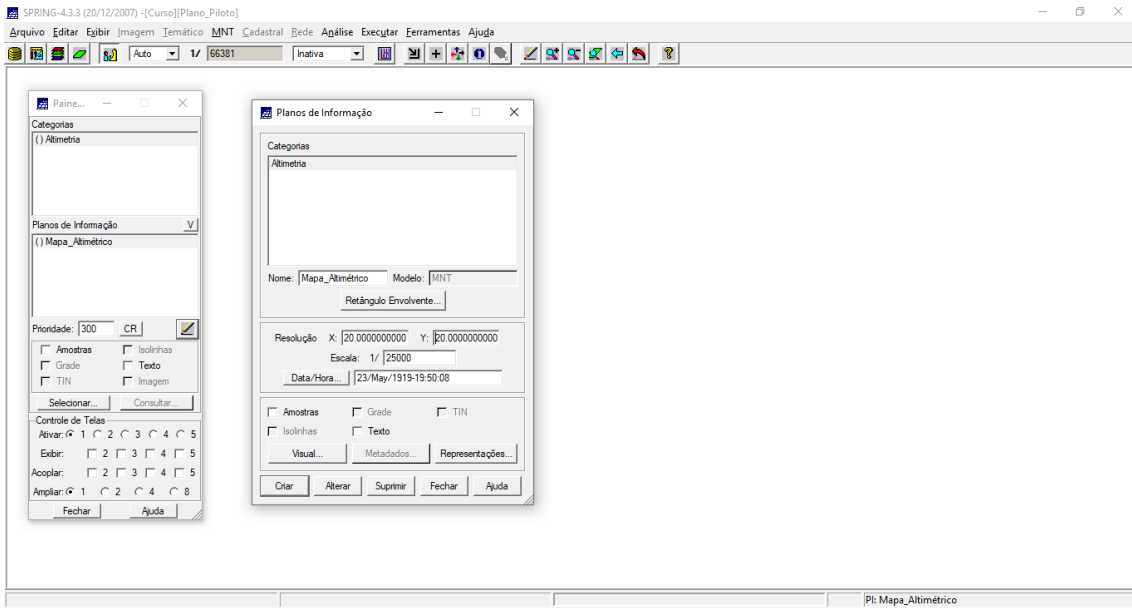
⇒ *Verificando pontos cotados:*



### Passo 3 - Suprimir o PI MNT\_Teste

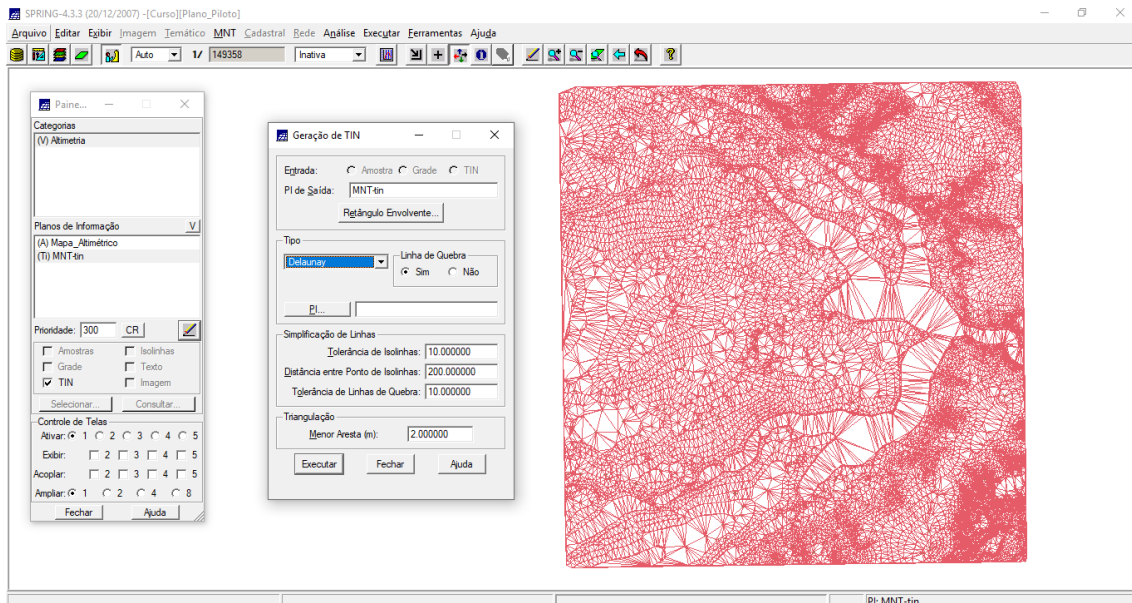
⇒ *Suprimindo um PI :*





## Exercício 4 - Gerar grade triangular com e sem linha de quebra

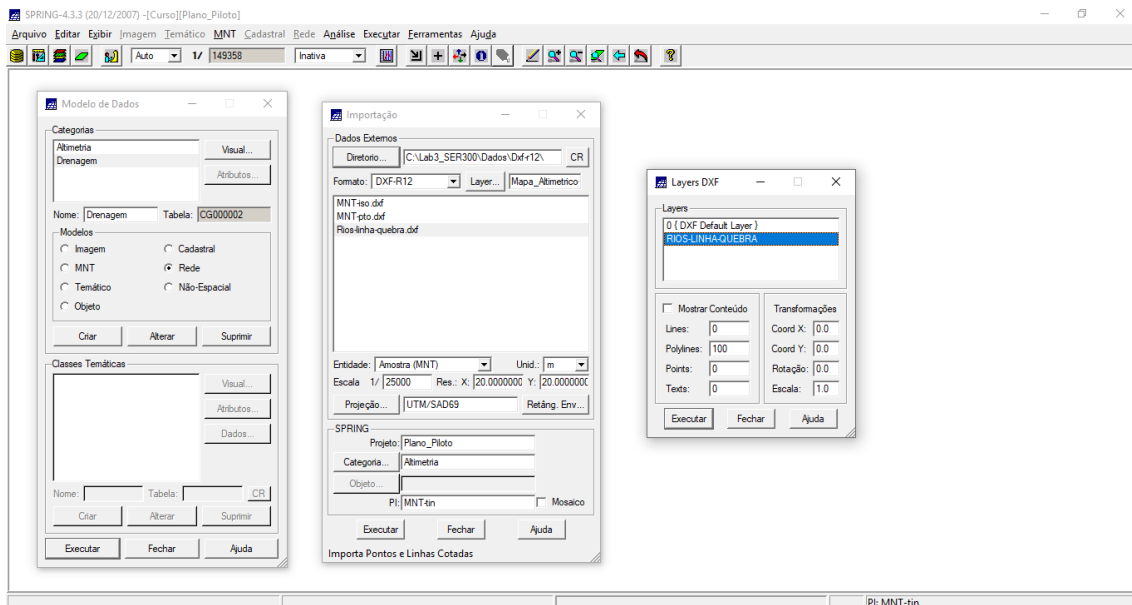
⇒ **Geração de Grade Triangular sem linha de quebra:**

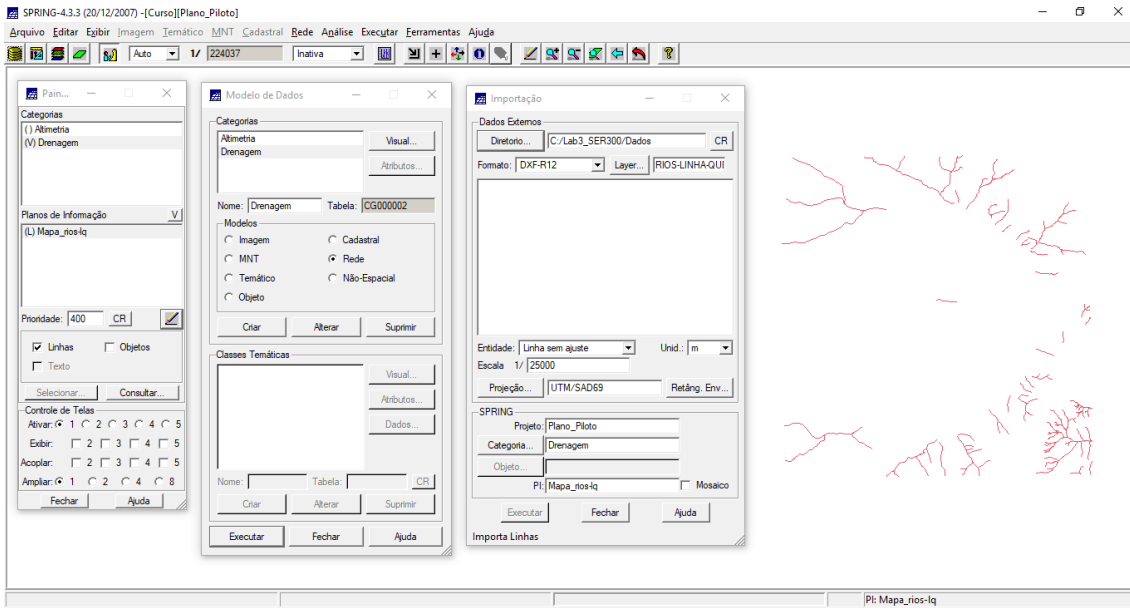


⇒ **Geração de Grade Triangular com linha de quebra:**

**Passo 1 - Importar a drenagem de arquivo DXF para PI temático**

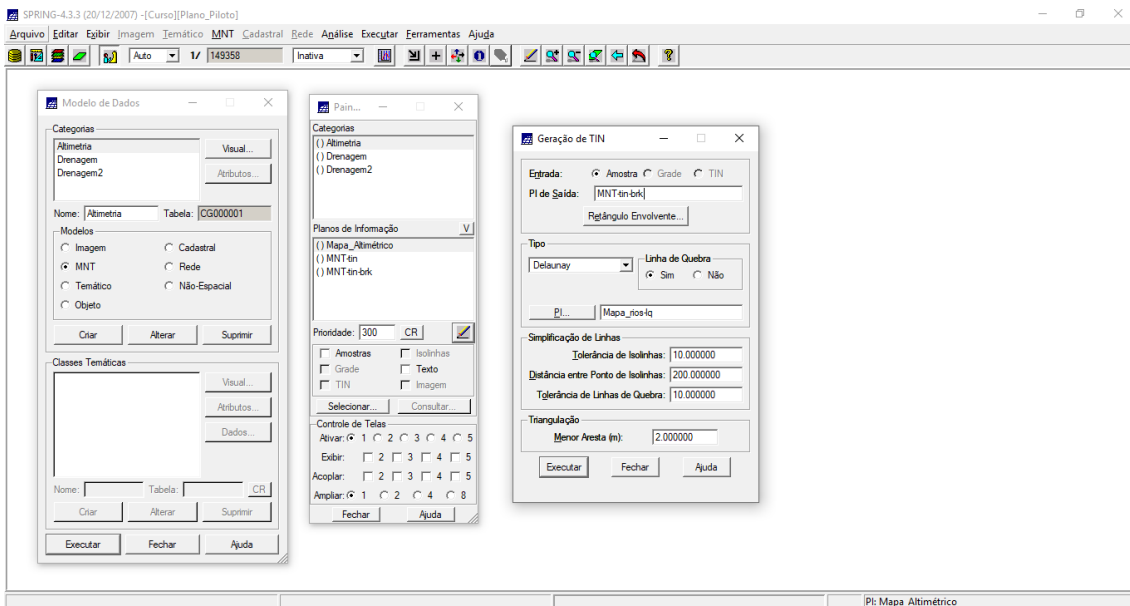
⇒ **Importando linhas de drenagem de arquivo DXF:**

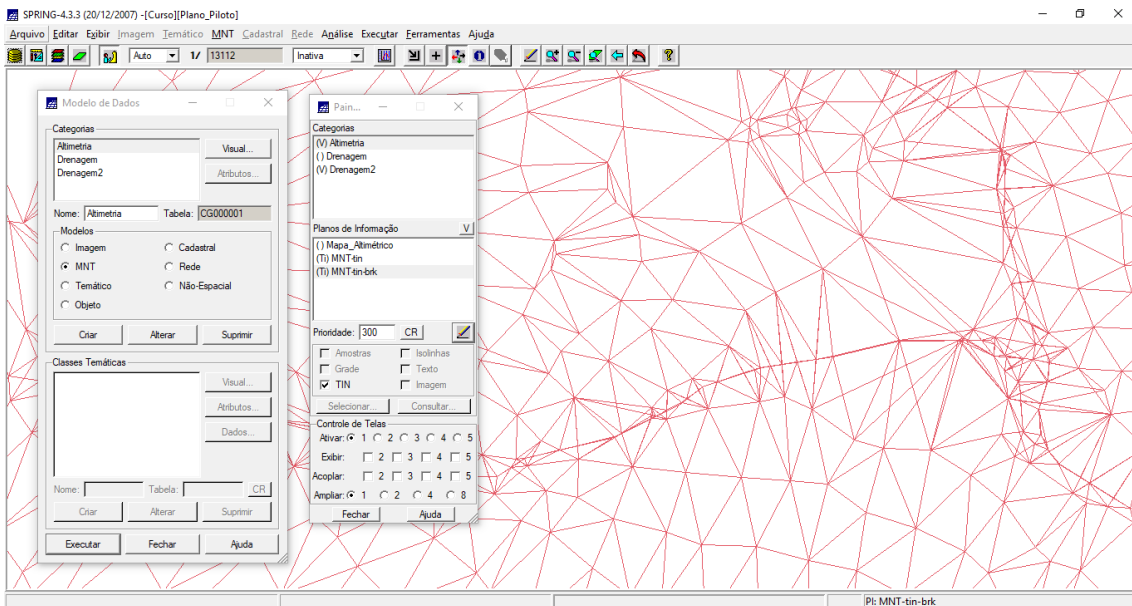
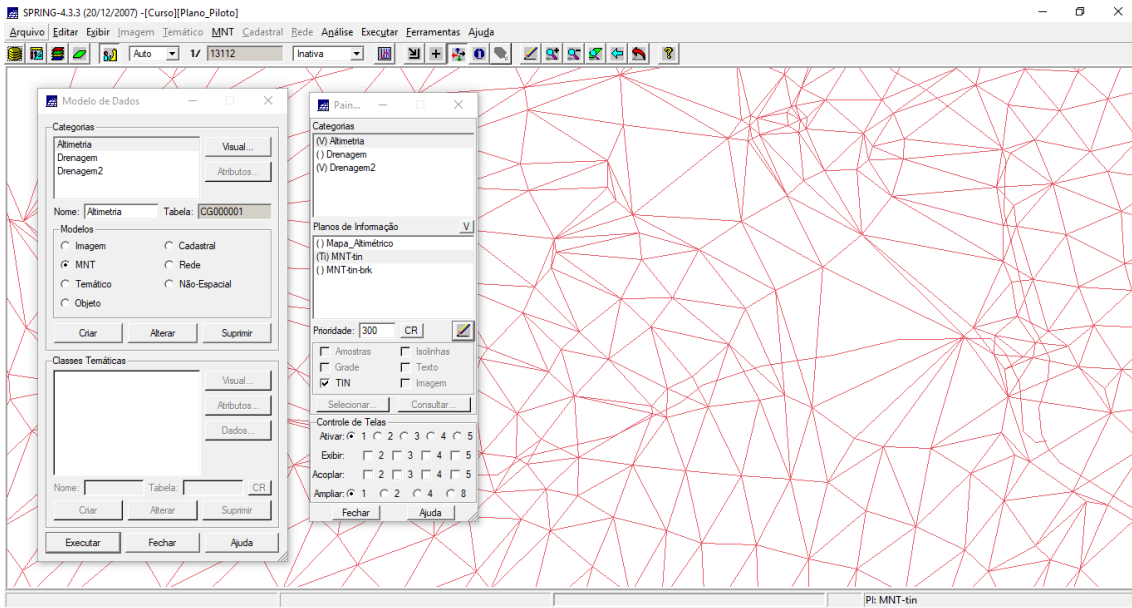




## Passo 2 - Gerar grade triangular utilizando o PI drenagem como linha de quebra

⇒ Gerando TIN com linhas de quebra

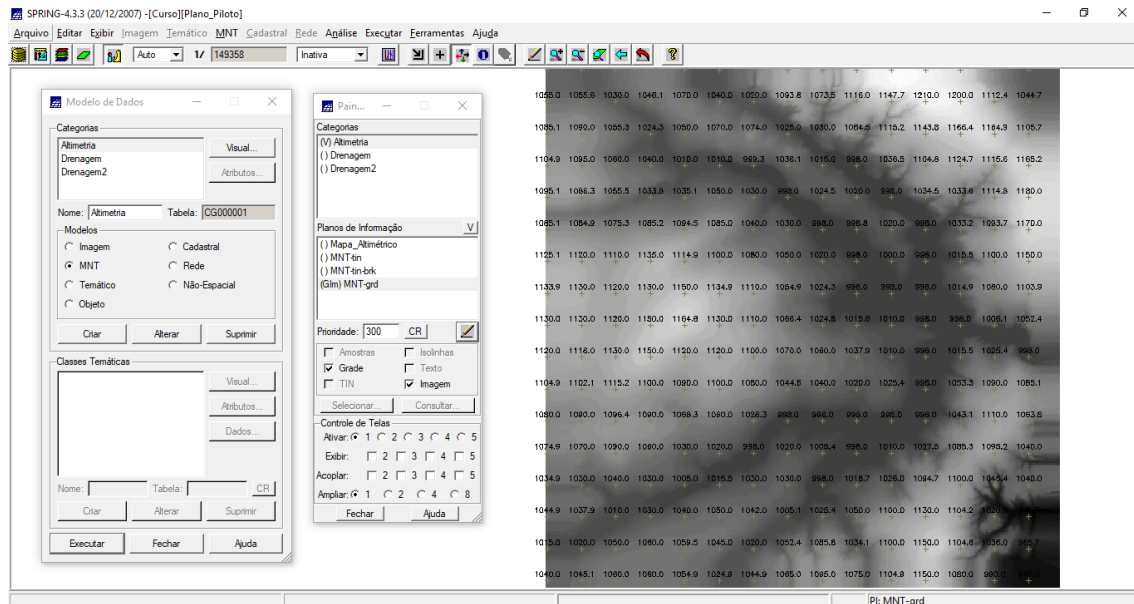




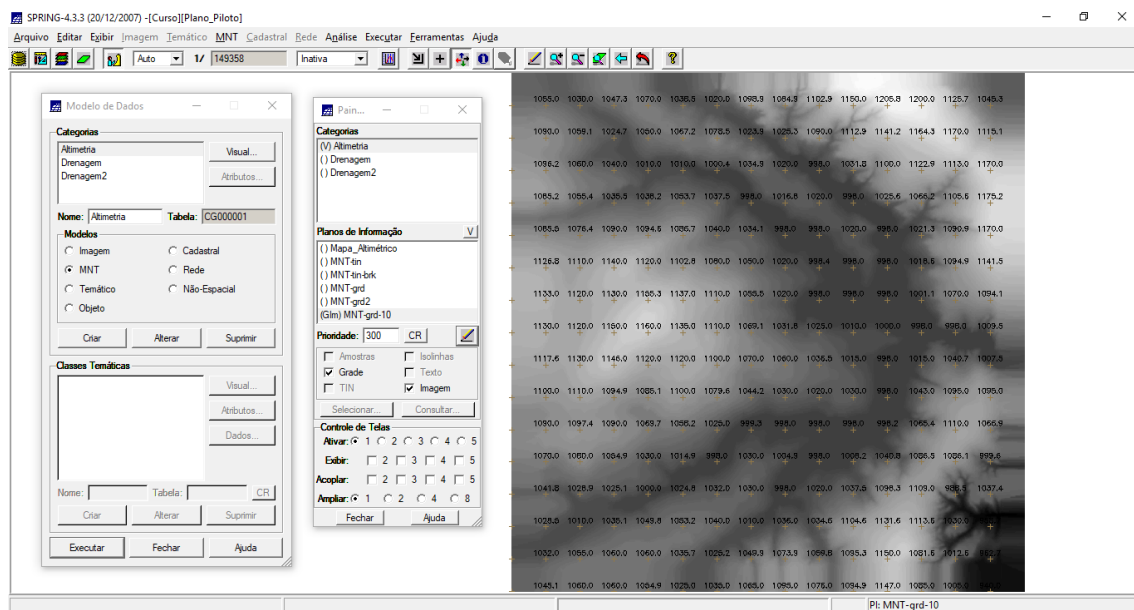
## Exercício 5 - Gerar grades retangulares de amostras e de outras grades

⇒ *Geração de Grade Retangular:*

⇒ *Gerando grade retangular a partir das amostras:*



⇒ *Refinar grade retangular a partir de outra grade retangular:*



⇒ *Gerando grade retangular a partir de grade triangular:*



SPRING-4.3.3 (20/12/2007) - [Curso]Plano\_Piloto

Arquivo Editar Exibir Imagem Temático MNT Cadastral Rede Agilizar Executar Ferramentas Ajudas

Auto 1/ 149358 Inativa

**Modelo de Dados**

**Categorias**

Altimetria Visual...  
Drenagem Atributos...  
Drenagem2

**Nome:** Altimetria **Tabela:** CG000001

**Modulos**

Imagem  Cadastral  
 MNT  Rede  
 Temático  Não-Espacial  
 Objeto

Criar Alterar Suprimir

**Classes Temáticas**

Visual...  
Atributos...  
Dados...

Nome: Tabela: CR

Criar Alterar Suprimir

Executar Fechar Ajuda

**Paill...**

**Categorias**

Altimetria  
 Drenagem  
 Drenagem2

**Planos de Informação**

MNT-tn-bk  
 MNT-grd  
 MNT-grd2  
 MNT-grd-10  
 MNT-grd-10\_2  
 MNT-grd-tn

**Prioridade:** 300 CR

Amostras  Isolinhas  
 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

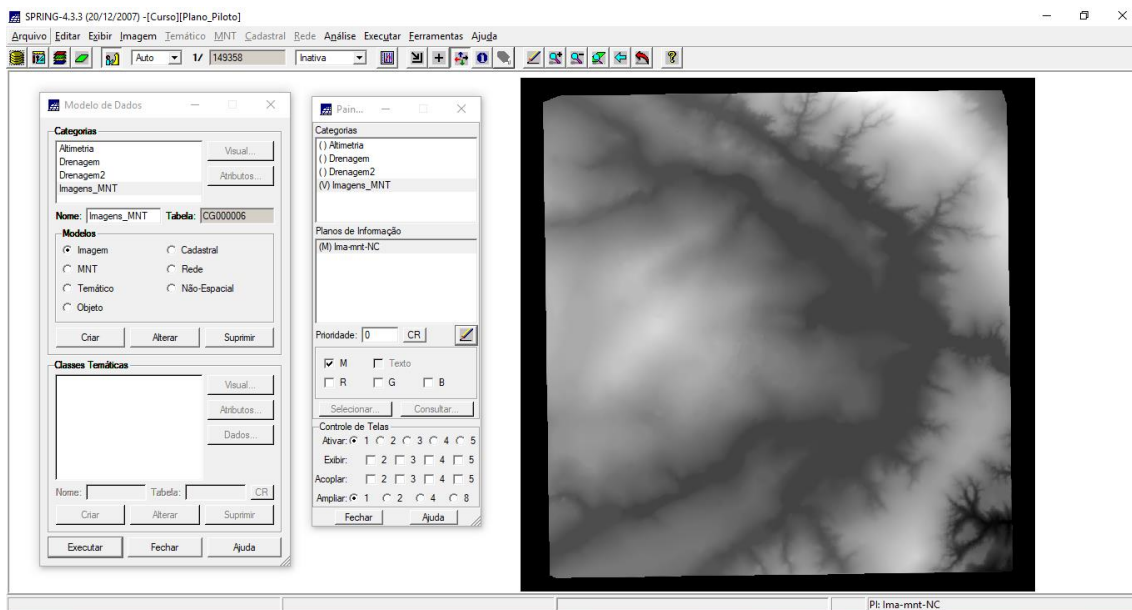
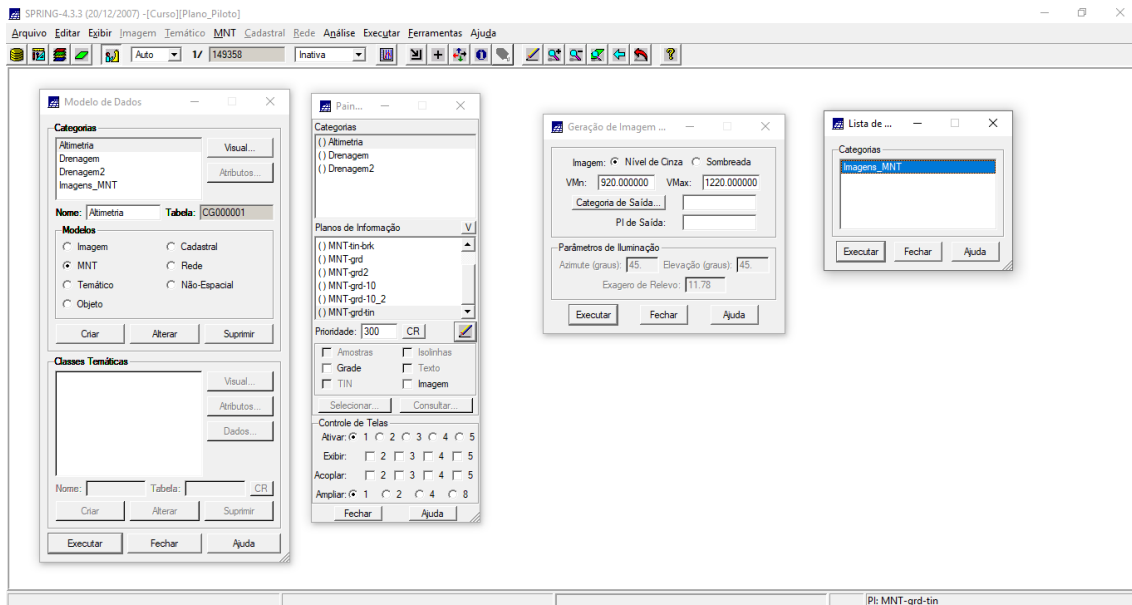
Fechar Ajuda

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1087.6	1088.1	1023.6	1048.2	1067.2	1080.2	1024.0	1024.7	1090.2	1109.5	1137.4	1160.0	1173.3	1120.9
1085.8	1061.2	1041.0	1019.0	1011.9	1001.6	1031.8	1020.0	998.0	1025.9	1085.0	1121.4	1116.2	1170.0
1085.8	1083.8	1034.8	1036.9	1063.9	1038.8	998.0	1016.2	1020.2	998.0	1027.1	1070.0	1027.5	1171.1
1086.8	1078.0	1089.8	1094.5	1067.6	1040.0	1035.6	998.0	998.0	1020.0	998.0	1019.0	1033.3	1168.2
1126.6	1112.4	1137.9	1120.0	1104.1	1080.4	1033.2	1021.8	1000.6	998.0	998.0	1017.3	1088.8	1137.9
1124.5	1120.0	1131.8	1156.5	1137.5	1111.2	1098.0	1022.9	998.0	998.0	998.0	998.0	1073.2	1088.6
1128.0	1120.0	1150.8	1158.8	1136.4	1112.4	1072.2	1035.0	1026.8	1008.6	1004.1	998.0	898.0	899.4
1116.8	1128.3	1146.3	1116.8	1120.0	1122.0	1068.7	1080.0	1038.5	1018.0	998.0	1008.4	1046.3	1028.0
1097.6	1110.4	1094.9	1084.5	1100.1	1078.2	1045.0	1032.8	1019.7	1030.0	998.3	1033.8	1063.1	1099.9
1080.0	1097.4	1090.0	1068.7	1057.8	1027.5	998.4	998.0	998.0	998.0	999.4	1065.9	1108.7	1079.8
1088.8	1078.4	1054.3	1027.9	1013.6	998.2	1029.3	1006.4	998.0	1004.1	1032.2	1084.7	1090.7	1005.6
1042.4	1028.3	1026.0	1000.0	1024.4	1033.3	1035.7	998.0	1019.3	1042.8	1085.1	1108.7	1048.0	1040.1
1027.1	1010.0	1035.8	1048.8	1054.0	1043.0	1010.0	1027.2	1025.8	1103.2	1129.6	1120.5	1030.1	
1031.6	1085.2	1080.0	1057.4	1039.0	1024.4	1069.7	1086.7	1061.3	1091.7	1147.7	1100.7	1061.8	998.0

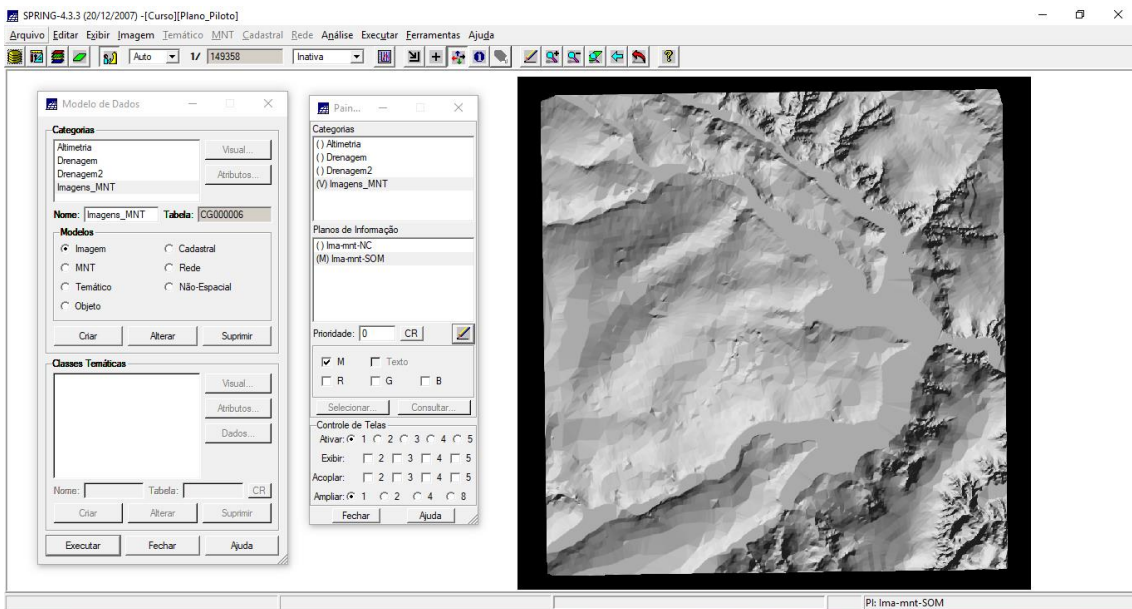
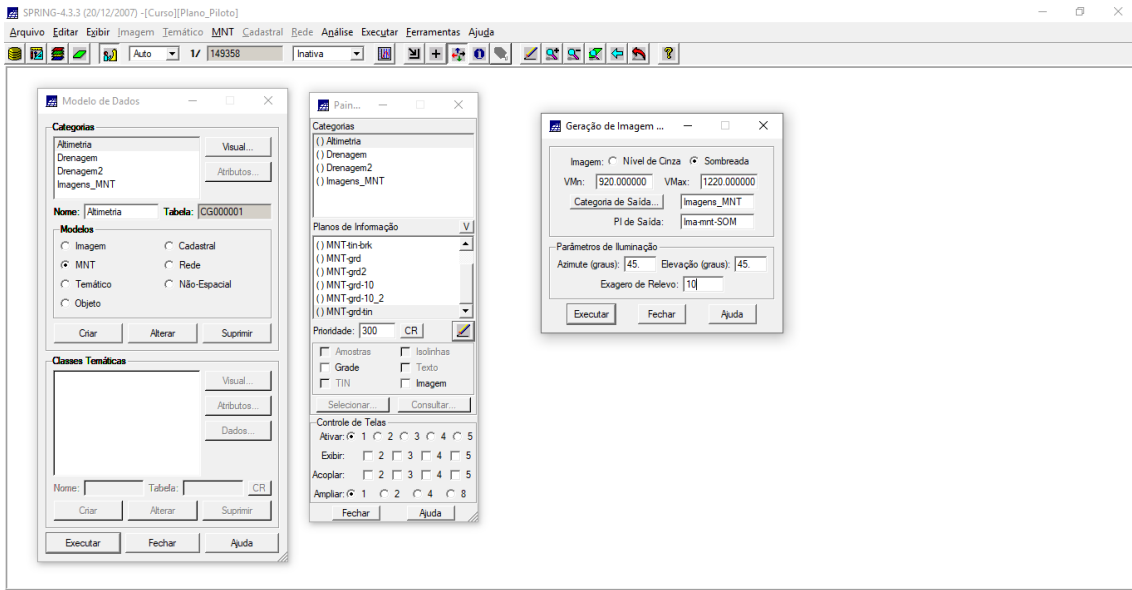
Pl: MNT-grd-tn

## Exercício 6 - Geração de Imagem para Modelo Numérico

⇒ Gerando imagem em nível de cinza:

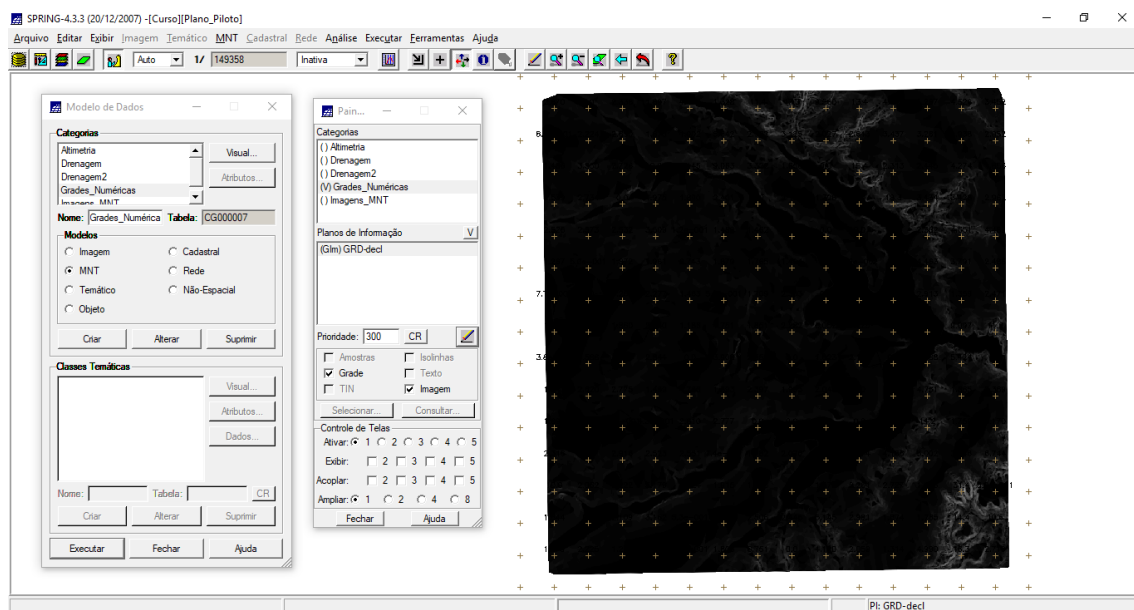
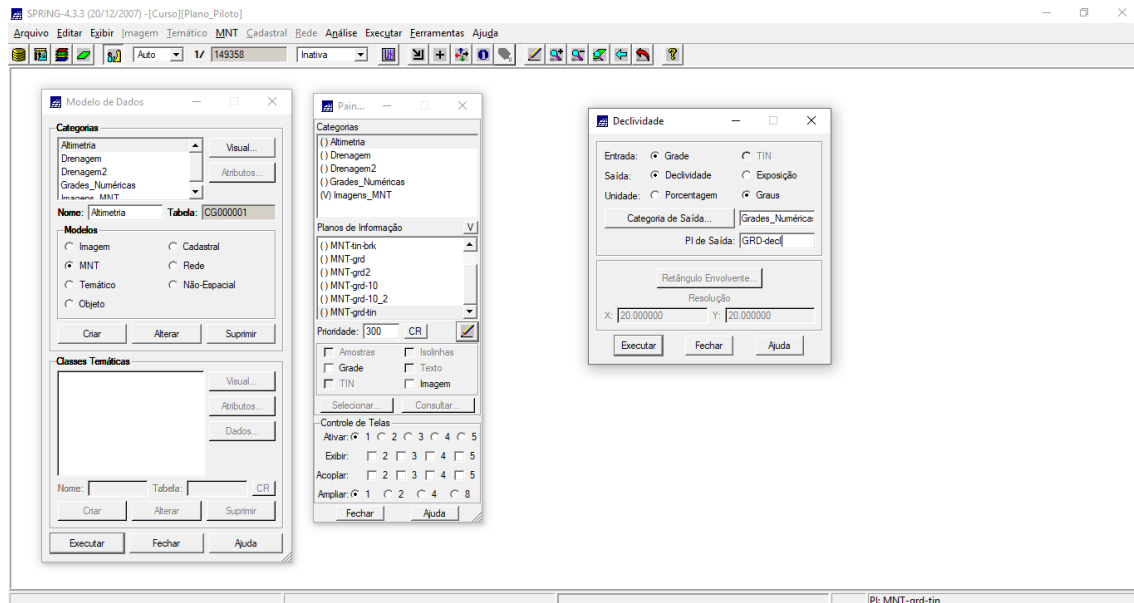


⇒ Gerando imagem sombreada:

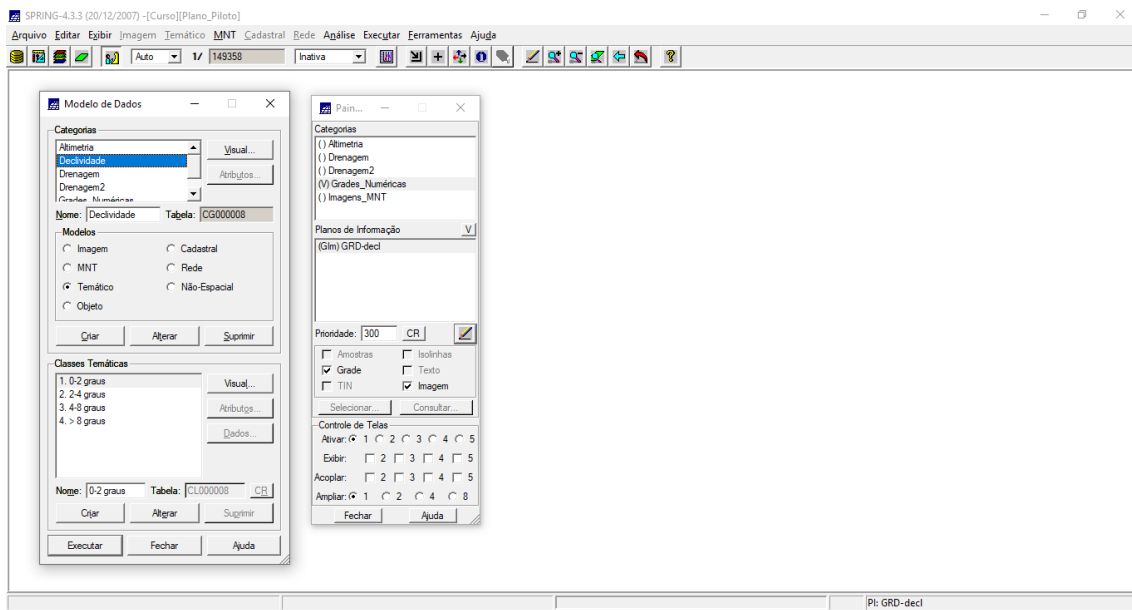


## Exercício 7 - Geração de Grade Declividade

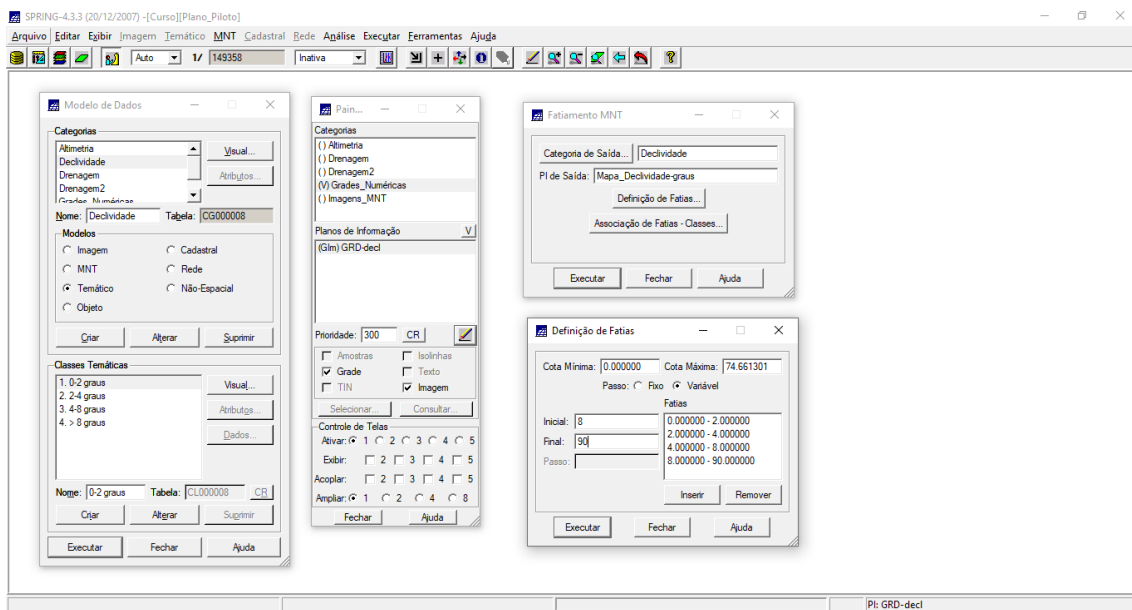
⇒ Gerando declividade em graus a partir de grade retangular:

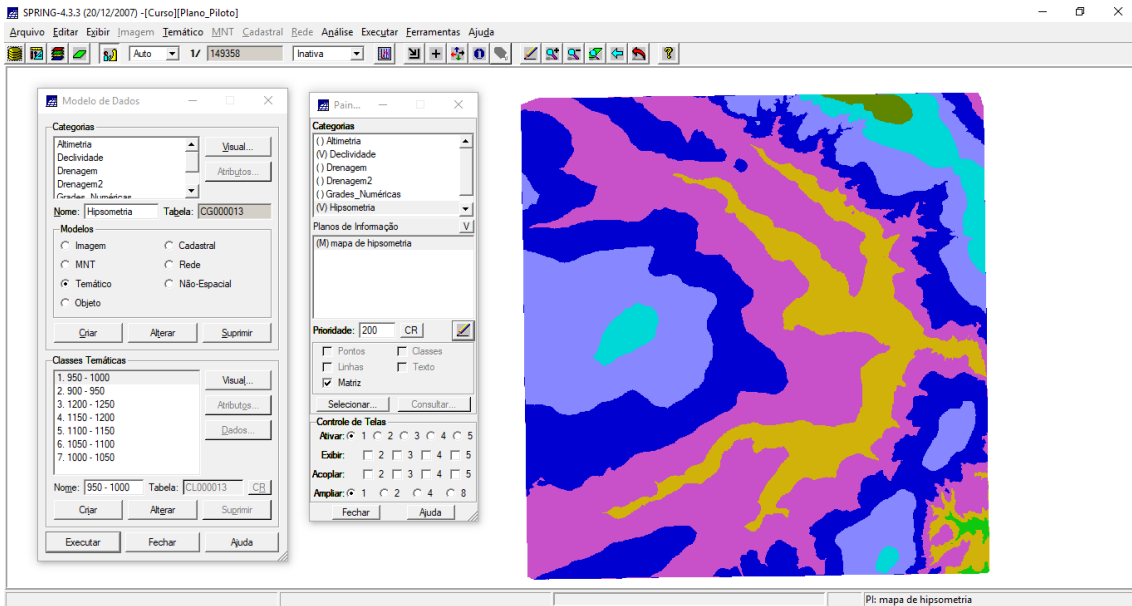
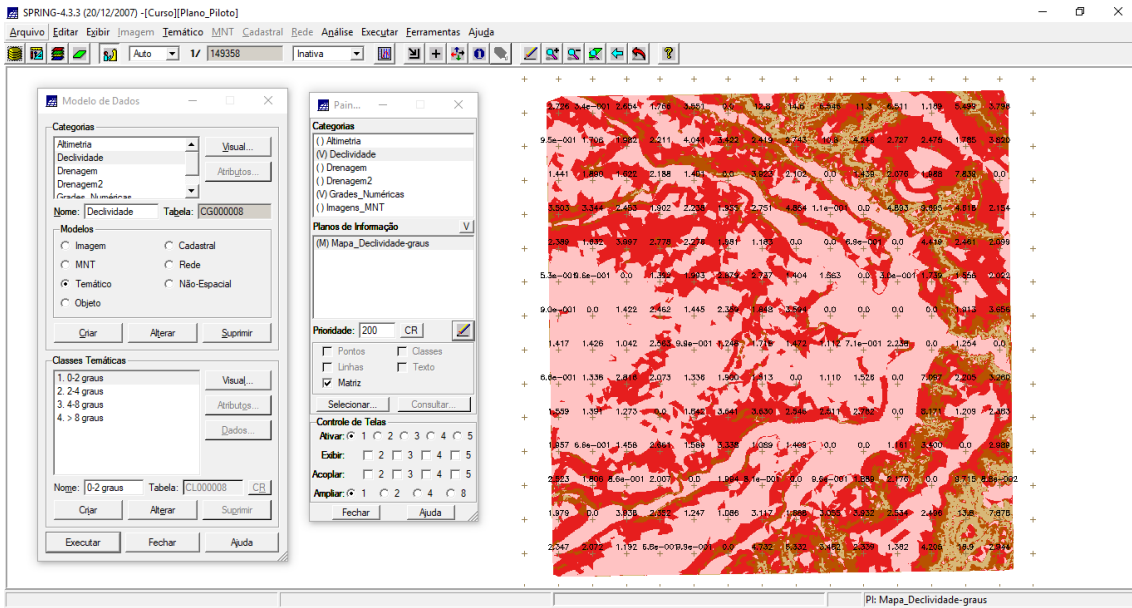


## Exercício 8 - Fatiamento de Grade Numérica – Mapa de Declividade



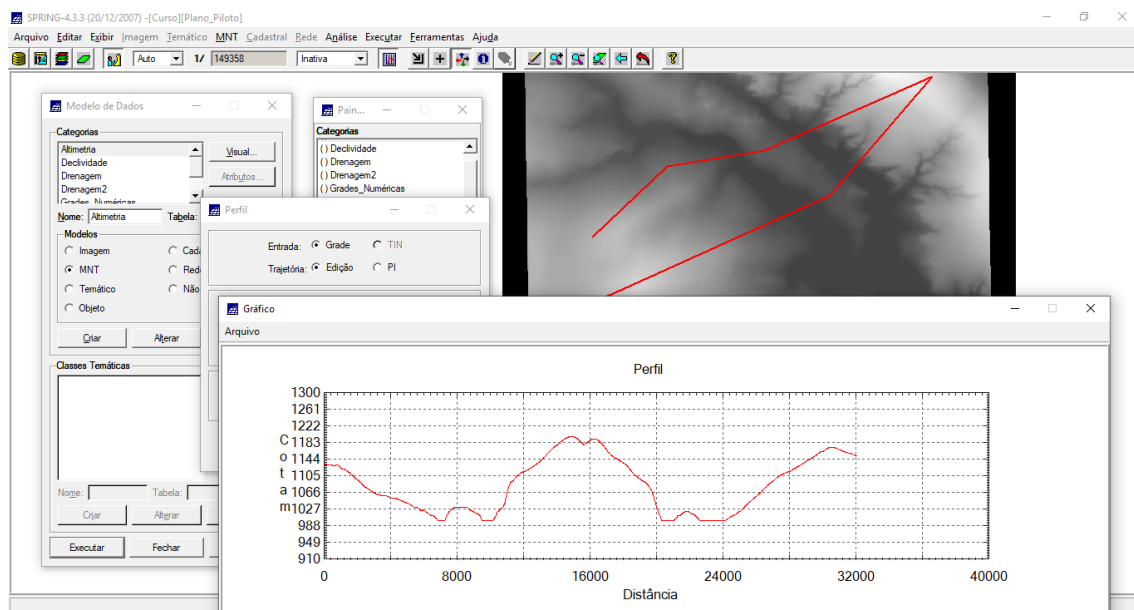
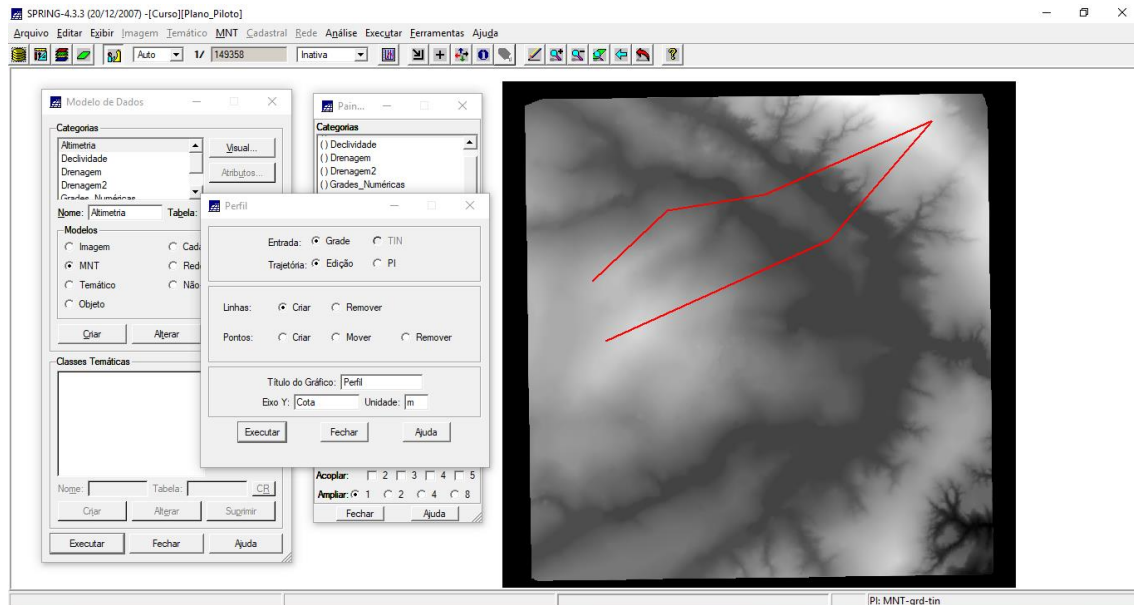
⇒ **Fatiamento de grade regular de declividade:**





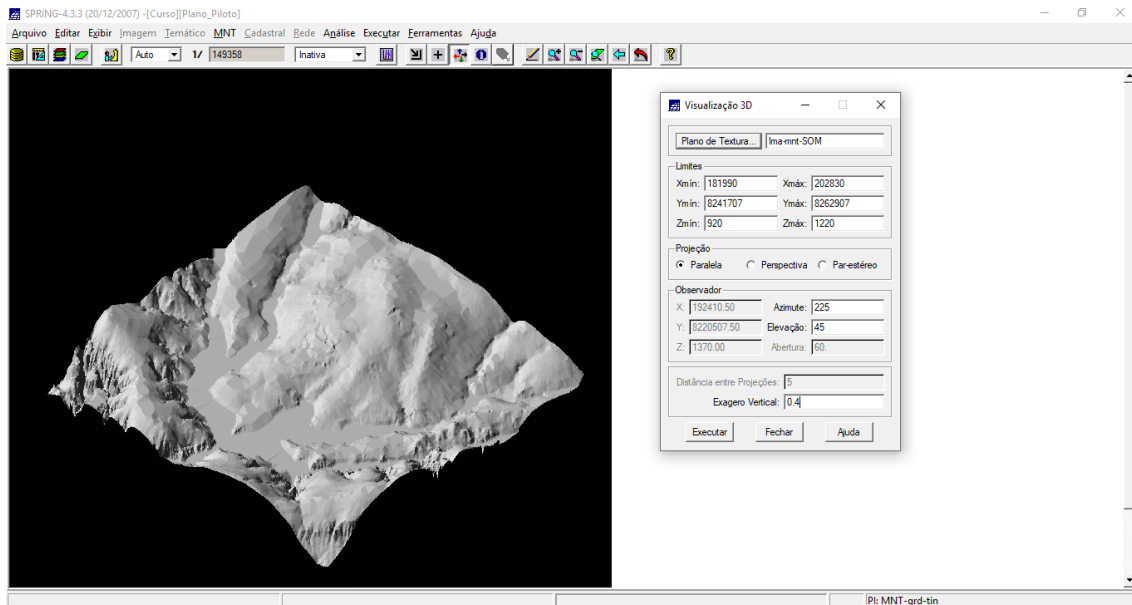
## Exercício 9 - Geração de Perfil a partir de grades

⇒ Gerando perfil de trajetória editada na tela:

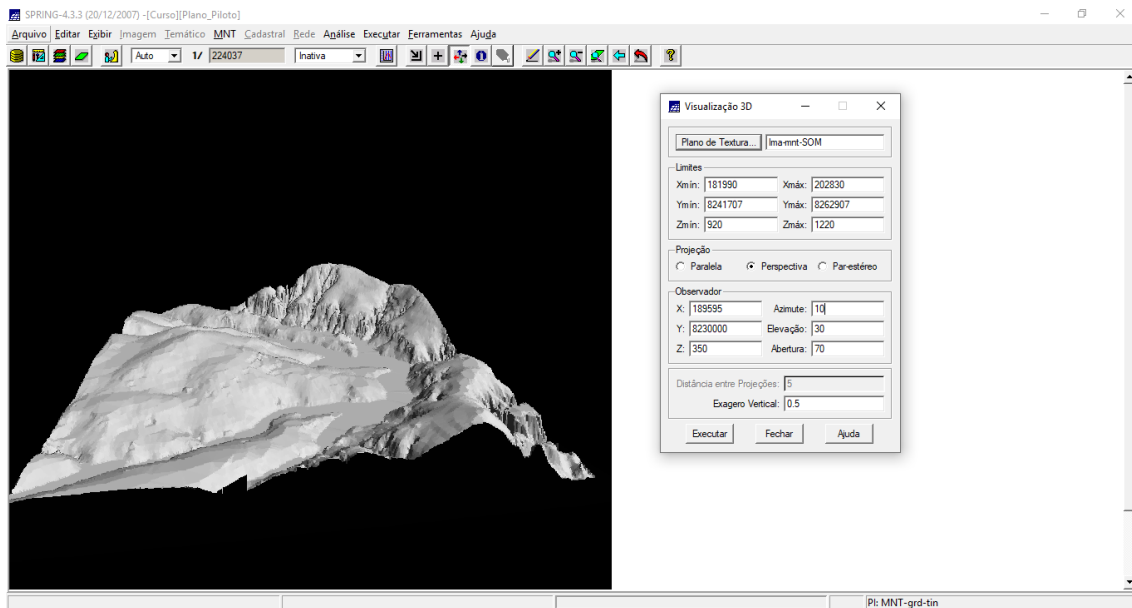


## Exercício 10 - Visualização de Imagem em 3D

⇒ Visualizando em projeção paralela:



⇒ Visualizando em projeção perspectiva:



⇒ Visualizando em projeção paralela-estéreo:



