

GeoEast解释特色技术

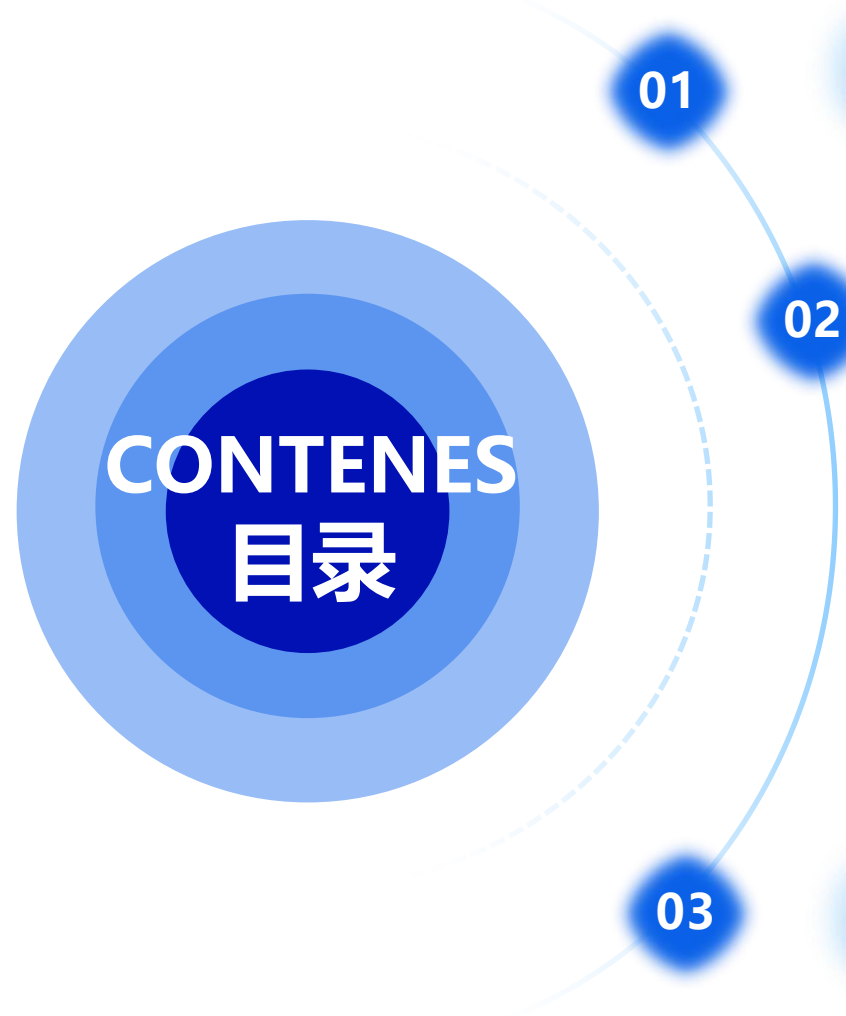
地震解释子系统(GeoSeismic)-数据显示

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中油油气勘探软件国家工程研究中心

2026年8月

GeoEast



概述

数据显示

地震数据显示

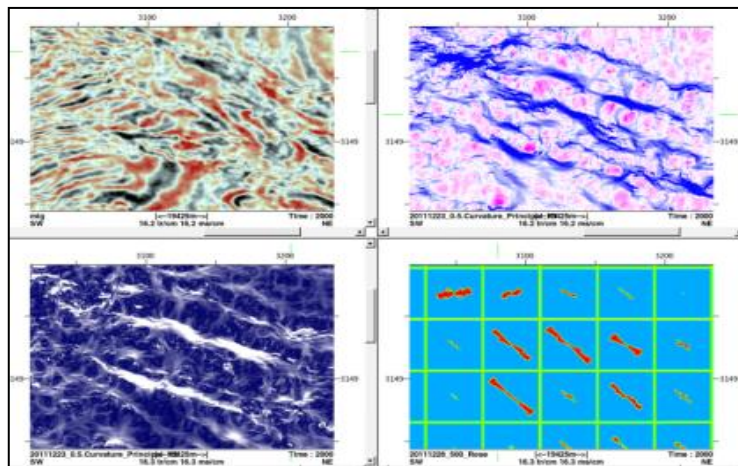
井数据显示

注意事项

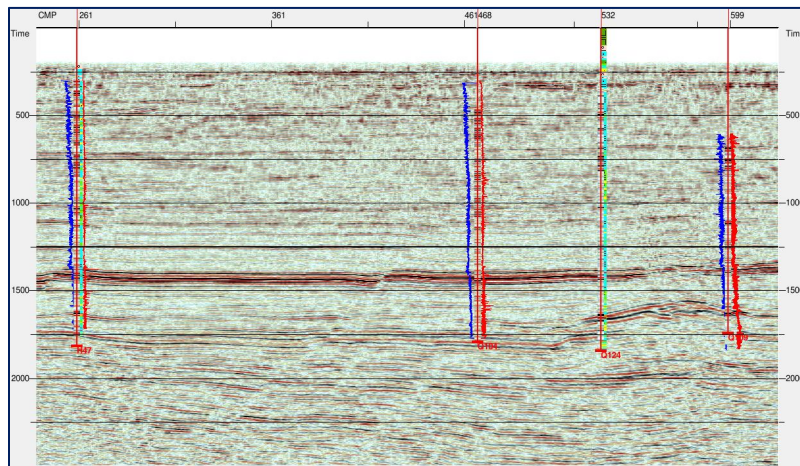


GeoSeismic地震解释子系统是GeoEast地震解释软件的重要组成部分，其解释成果（层位和断层）是构造成图、属性分析、地质建模和储层预测等工作的基础，它具有以下功能：

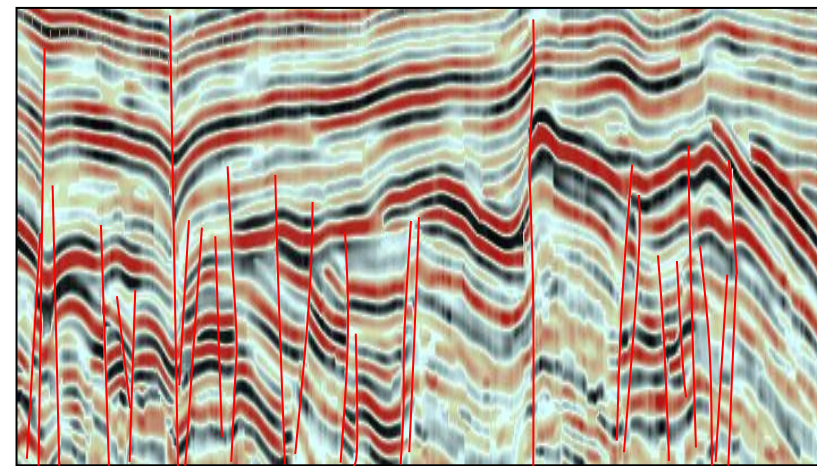
- ◆ 各种数据（地震、属性和速度）的浏览显示
- ◆ 层位、断层和地质体数据的解释与编辑
- ◆ 其它辅助功能



多属性窗口显示



连井地震剖面



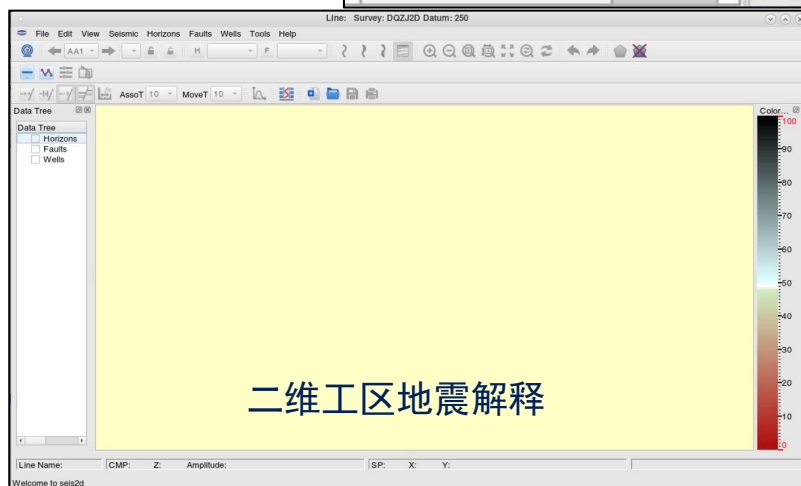
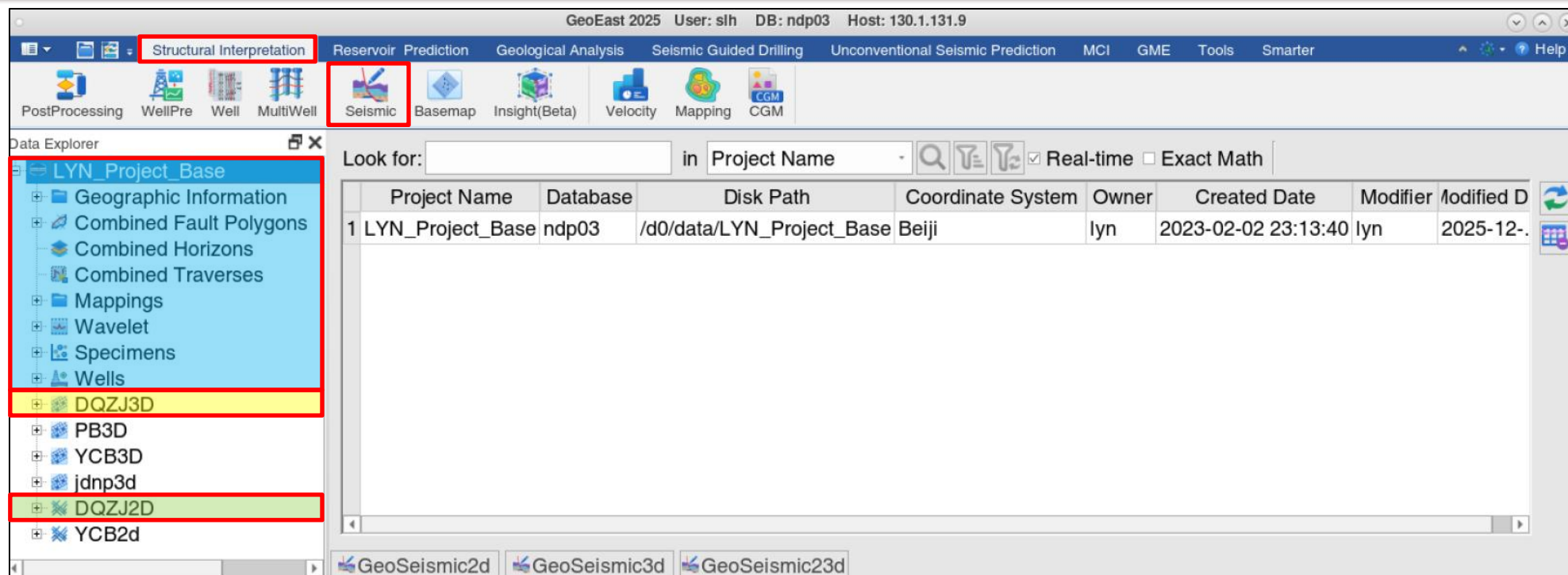
精细小断层解释



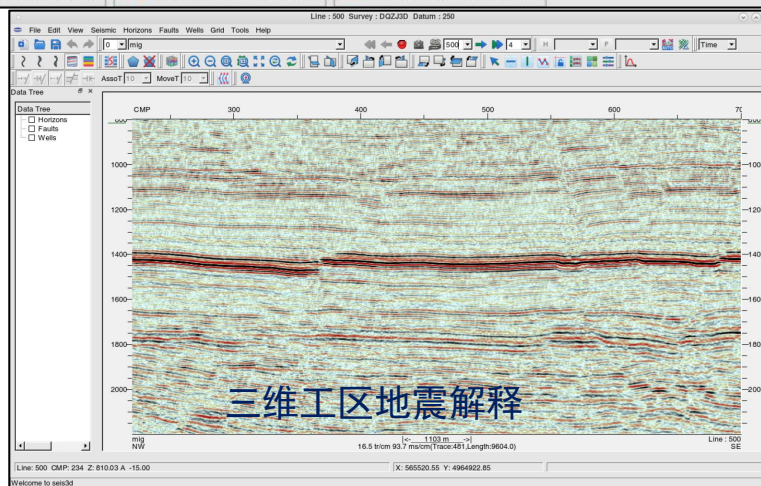
概述



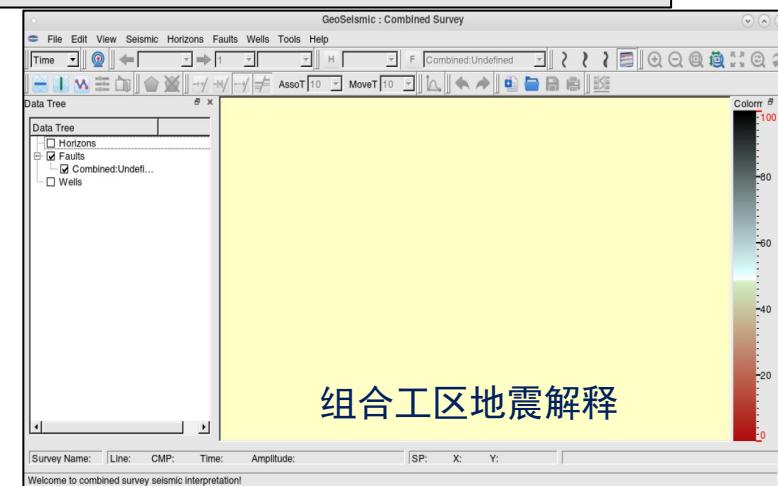
启动方式



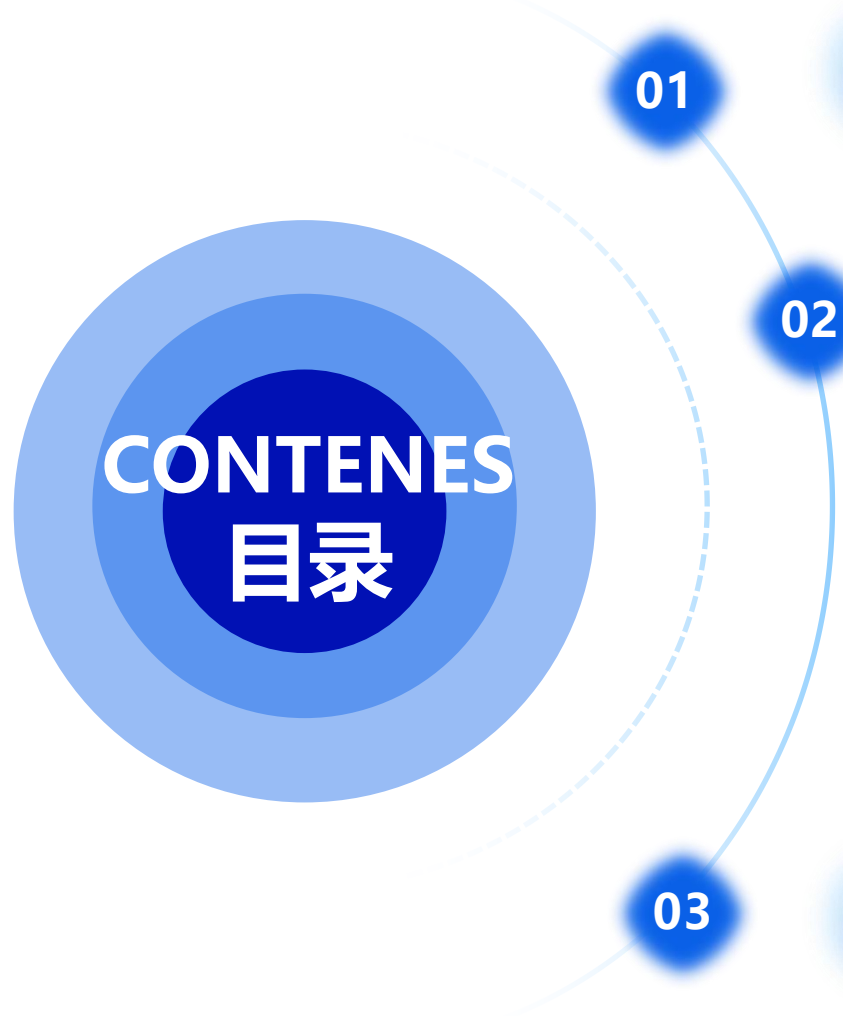
默认空白显示



默认显示的是工区第一条线和数据列表中第一个数据体



默认空白显示



01

概述

02

数据显示

地震数据显示

井数据显示

03

注意事项



地震数据显示-剖面显示



选择要显示的多个数据体（地震、属性和速度）

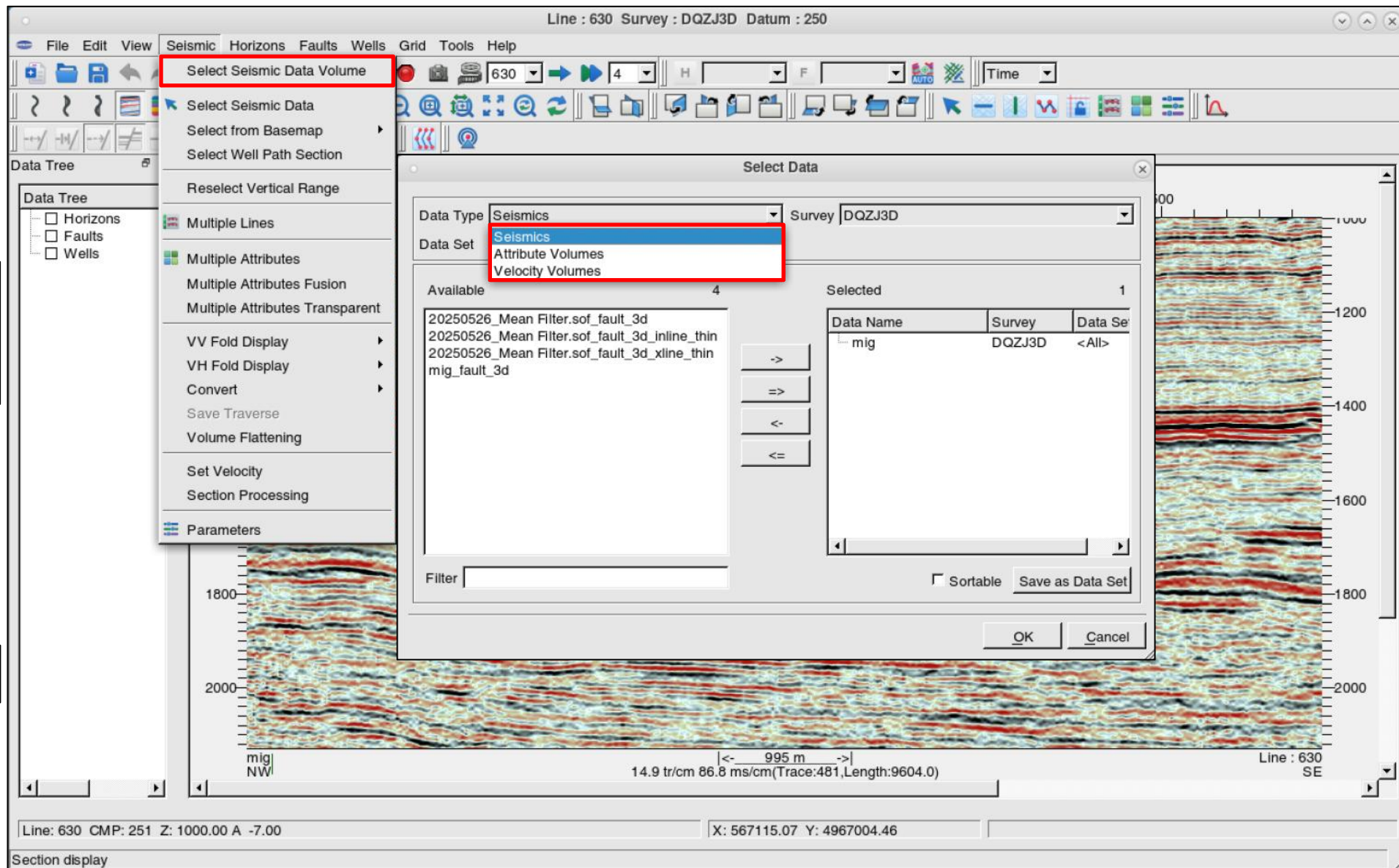
选择剖面显示数据体、切片显示数据体及剖面类型和范围

从底图上选线

选择沿井轨迹剖面

调整剖面垂直显示范围

剖面显示参数设置





地震数据显示-剖面显示



选择要显示的多个数据体（地震、属性和速度）

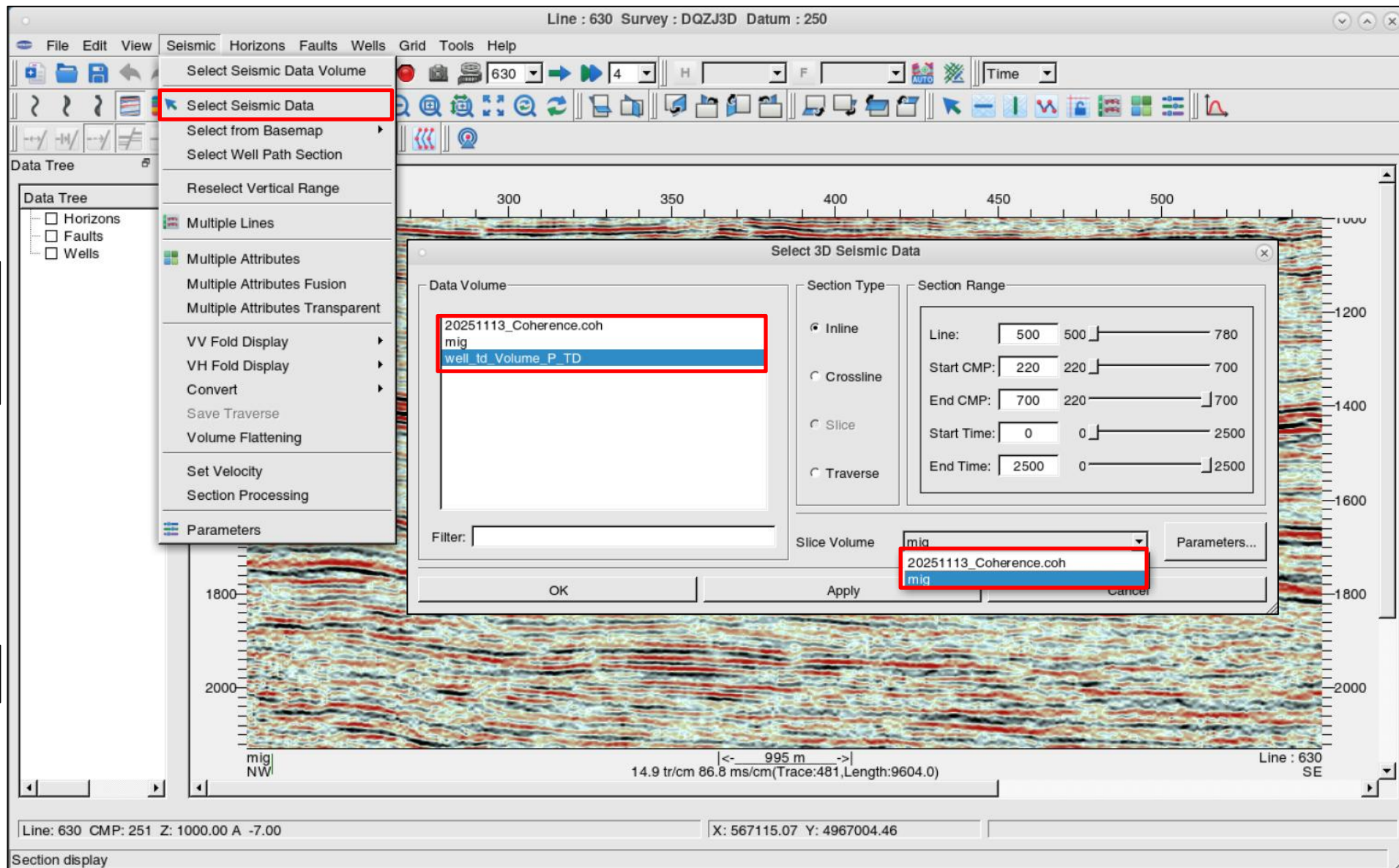
选择剖面显示数据体、切片显示数据体及剖面类型和范围

从底图上选线

选择沿井轨迹剖面

调整剖面垂直显示范围

剖面显示参数设置





地震数据显示-剖面显示



选择要显示的多个数据体（地震、属性和速度）

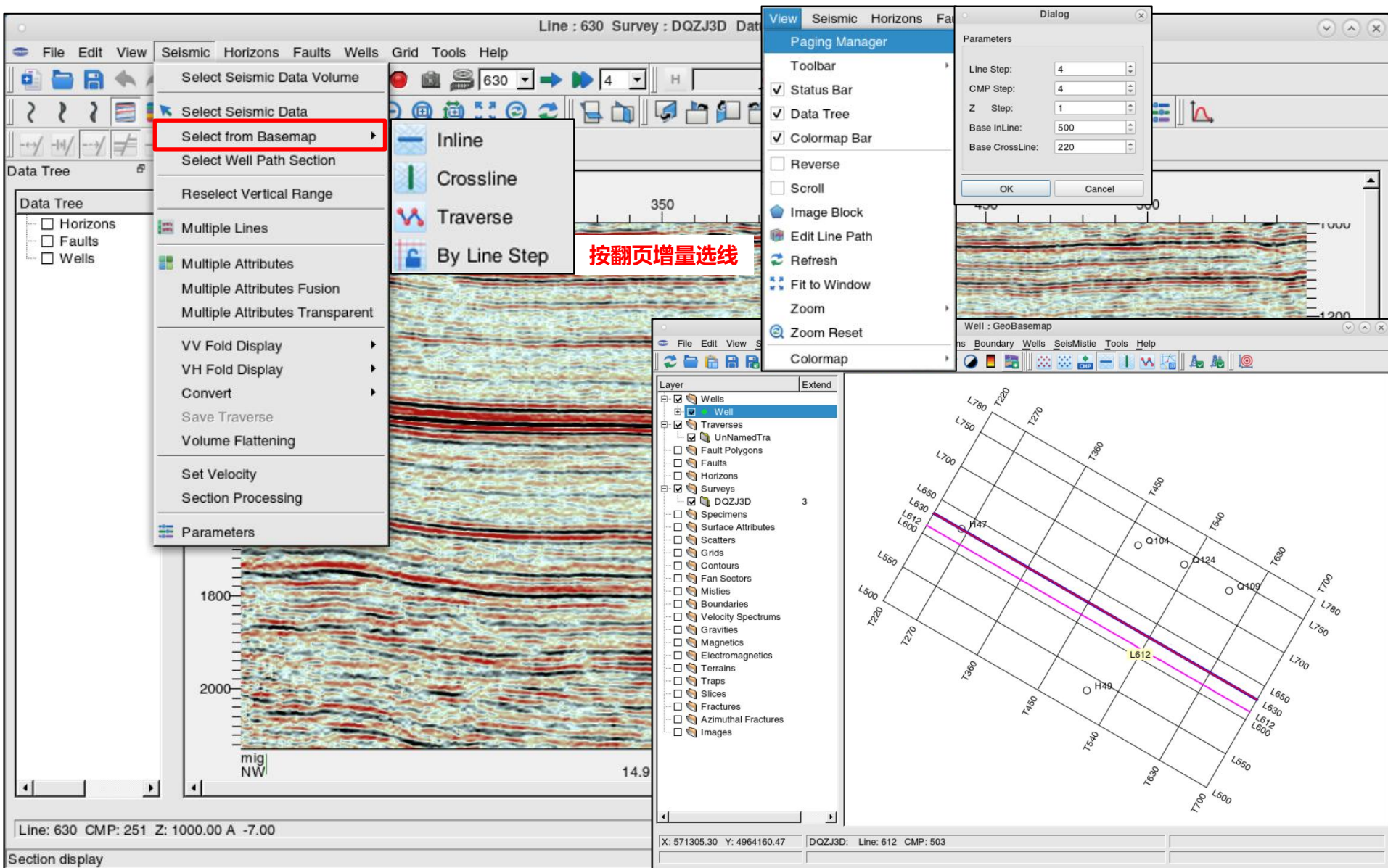
选择剖面显示数据体、切片显示数据体及剖面类型和范围

从底图上选线

选择沿井轨迹剖面

调整剖面垂直显示范围

剖面显示参数设置





地震数据显示-剖面显示



选择要显示的多个数据体（地震、属性和速度）

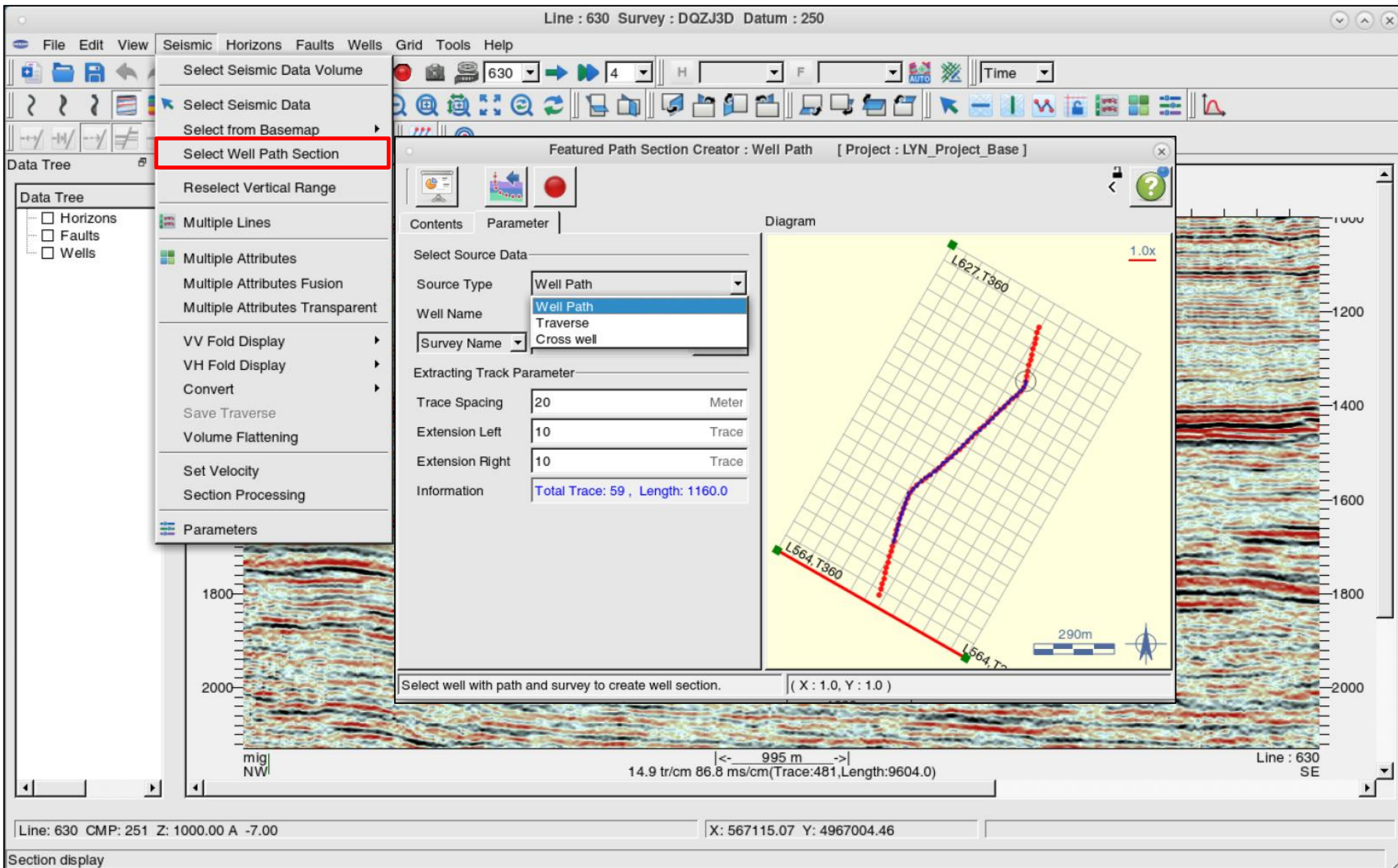
选择剖面显示数据体、切片显示数据体及剖面类型和范围

从底图上选线

选择沿井轨迹剖面

调整剖面垂直显示范围

剖面显示参数设置





地震数据显示-剖面显示



选择要显示的多个数据体（地震、属性和速度）

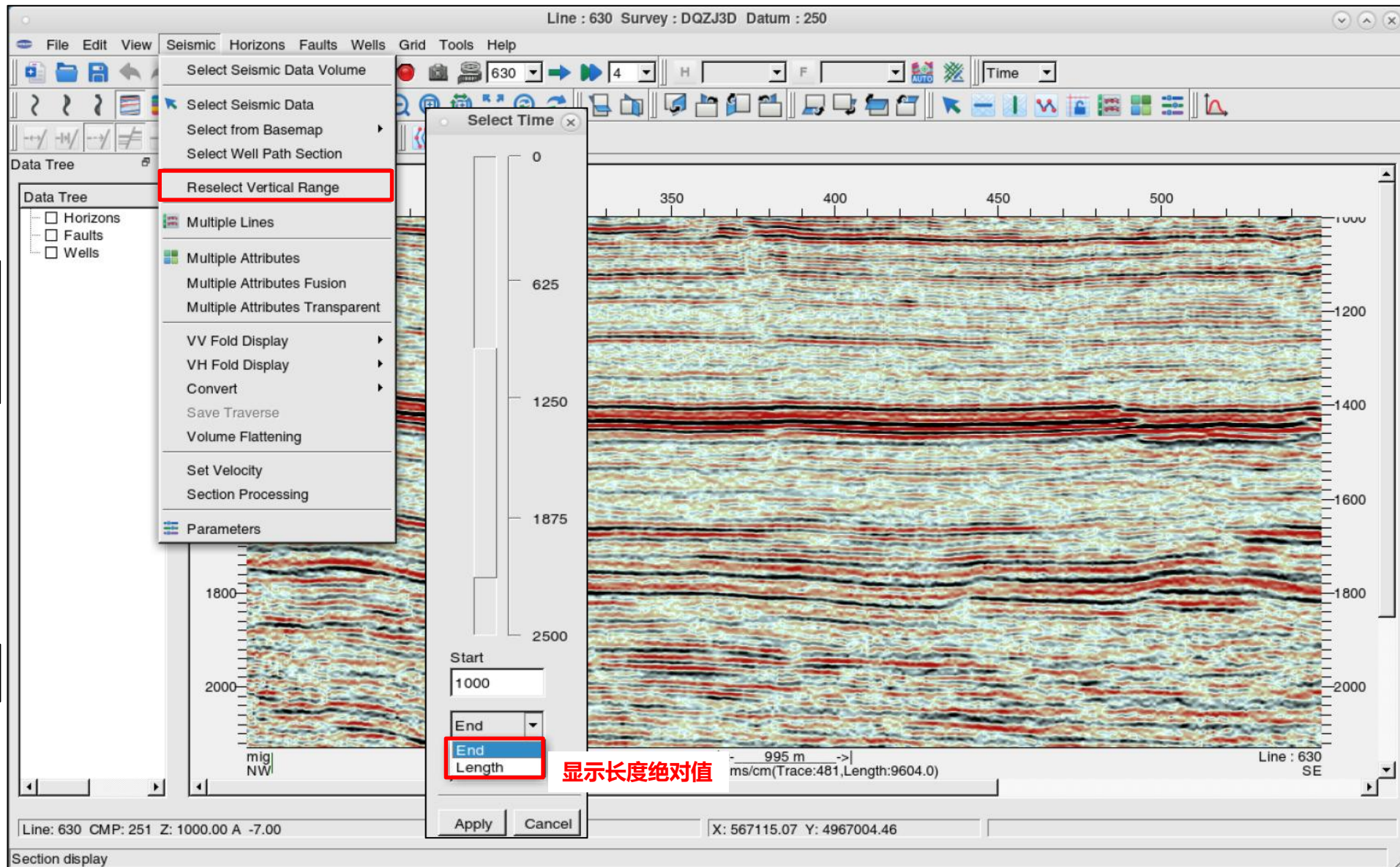
选择剖面显示数据体、切片显示数据体及剖面类型和范围

从底图上选线

选择沿井轨迹剖面

调整剖面垂直显示范围

剖面显示参数设置





地震数据显示-剖面显示



选择要显示的多个数据体 (地震、属性和速度)

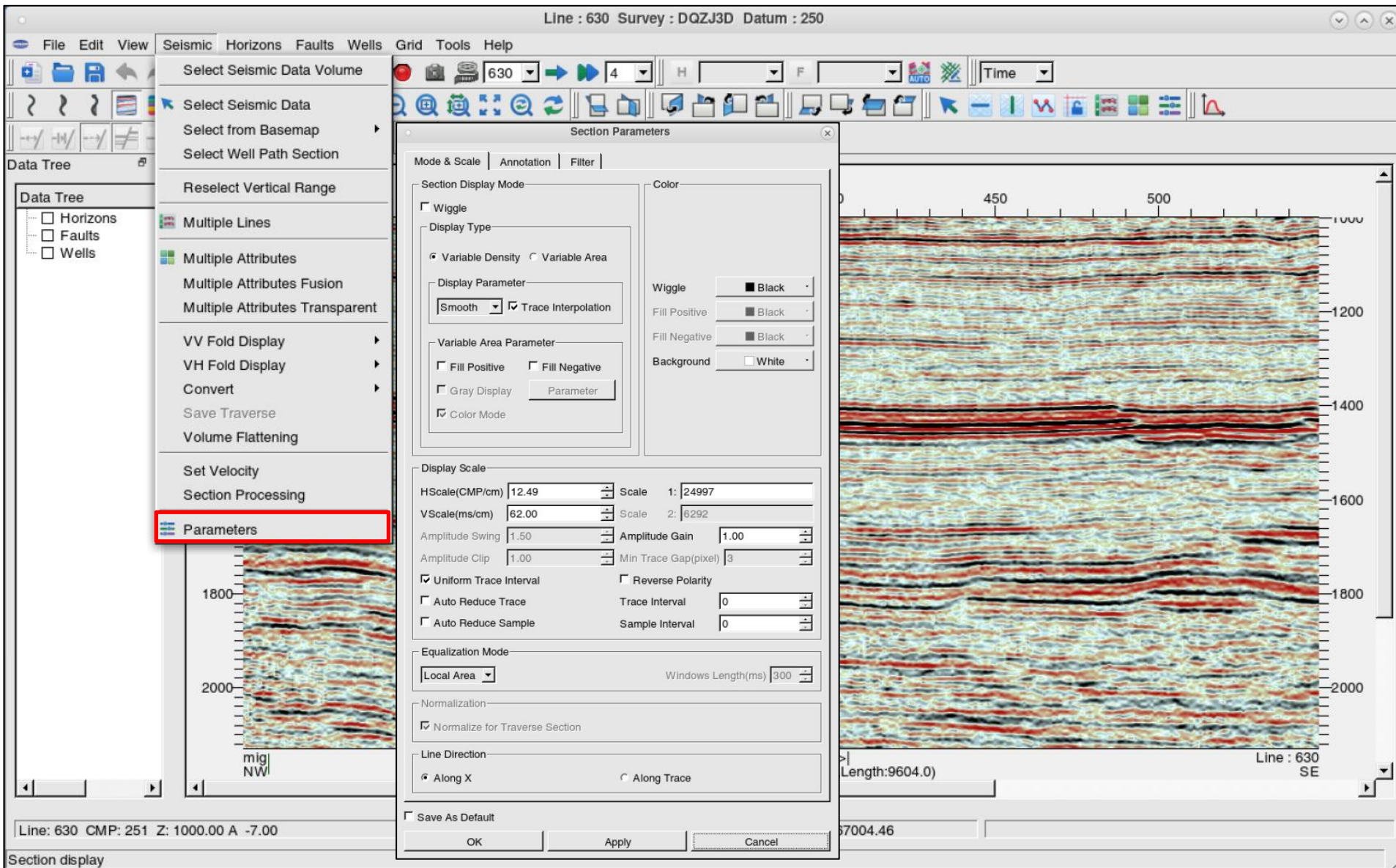
选择剖面显示数据体、切片显示数据体及剖面类型和范围

从底图上选线

选择沿井轨迹剖面

调整剖面垂直显示范围

剖面显示参数设置





地震数据显示-剖面显示



显示模式和比例页

Mode & Scale | Annotation | Filter

Section Display Mode

☐ Wiggle

Display Type

☒ Variable Density ☐ Variable Area

Display Parameter

Smooth ☒ Trace Interpolation

Variable Area Parameter

☐ Fill Positive ☐ Fill Negative

☐ Gray Display

☒ Color Mode

Color

Wiggle

Fill Positive

Fill Negative

Background

Display Scale

HScale(CMP/cm) 12.49 Scale 1: 24997

VScale(ms/cm) 62.00 Scale 2: 6292

Amplitude Swing 1.50 Amplitude Gain 1.00

Amplitude Clip 1.00 Min Trace Gap(pixel) 3

☒ Uniform Trace Interval ☐ Reverse Polarity

☐ Auto Reduce Trace Trace Interval 0

☐ Auto Reduce Sample Sample Interval 0

Equalization Mode

Local Area Windows Length(ms) 300

Normalization

☒ Normalize for Traverse Section

Line Direction

☒ Along X ☐ Along Trace

☐ Save As Default

OK Apply Cancel

在剖面显示模式

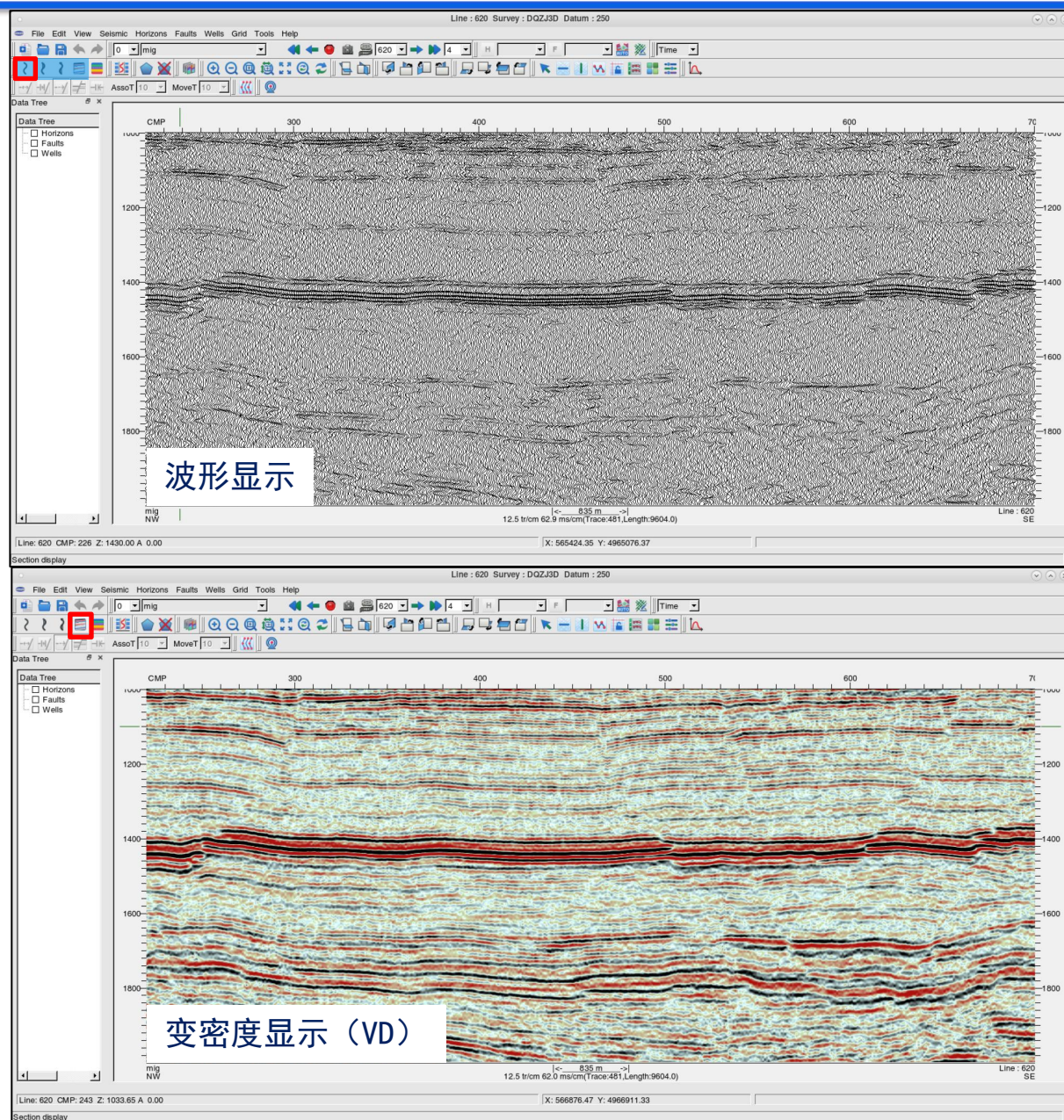
和比例页中可以设置地震剖面的显示方式，也可以在地震解释主窗口的工具栏中进行选择。

三种主要显示方式：

- 1、波形显示
- 2、变密度显示 (VD)
- 3、变面积显示 (VA)

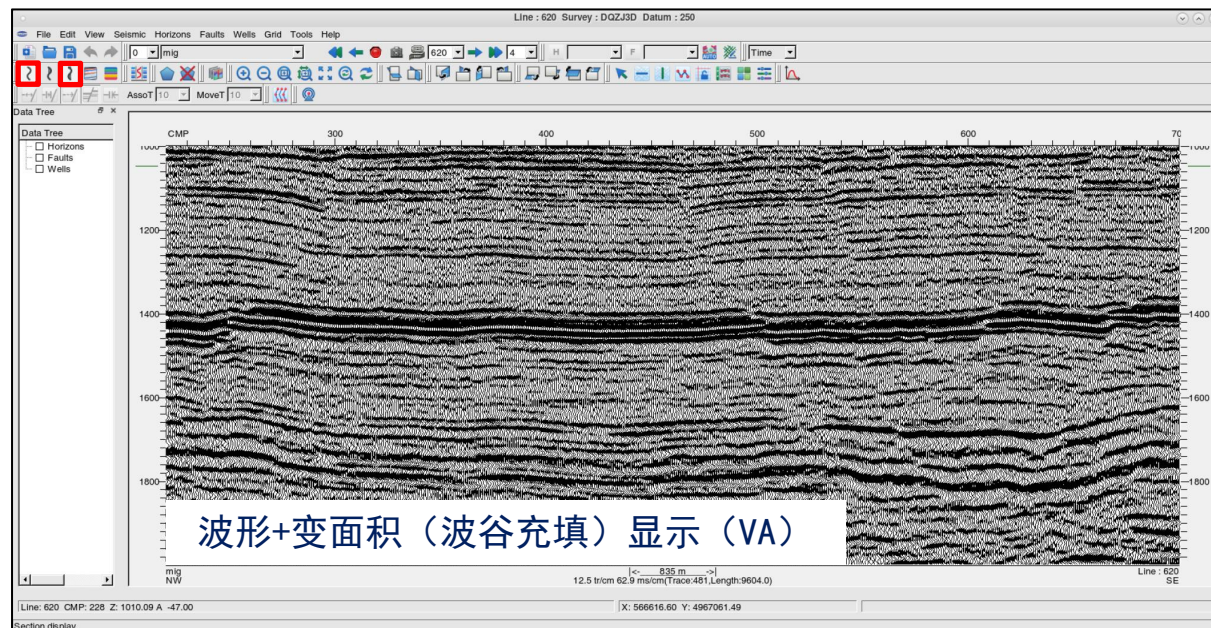
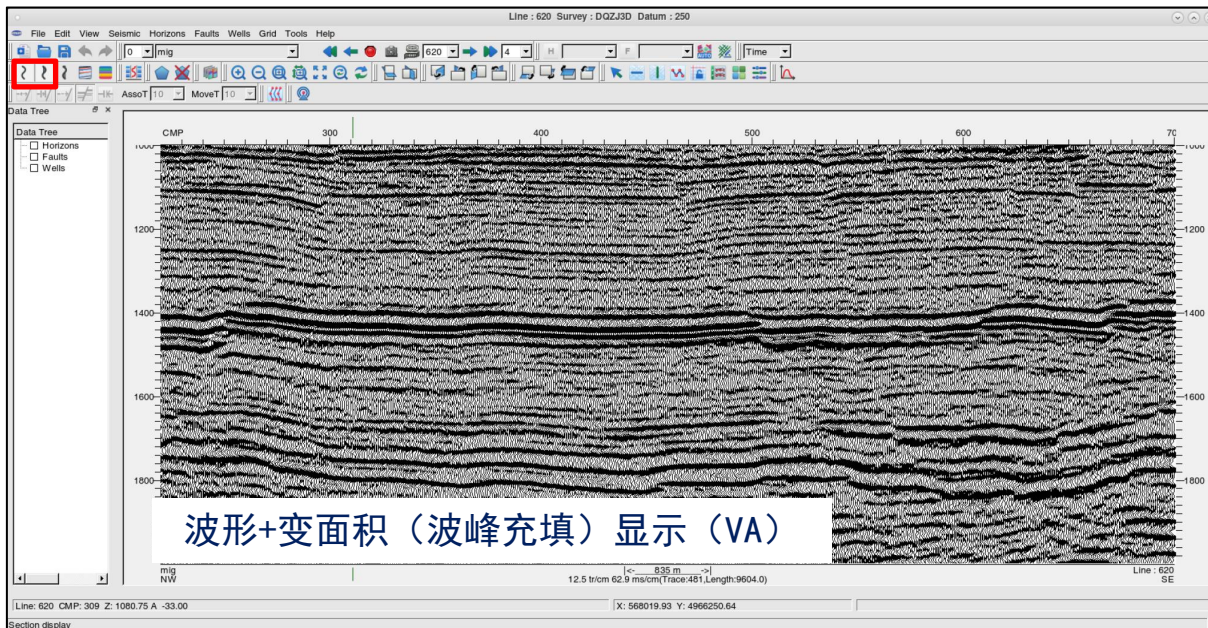
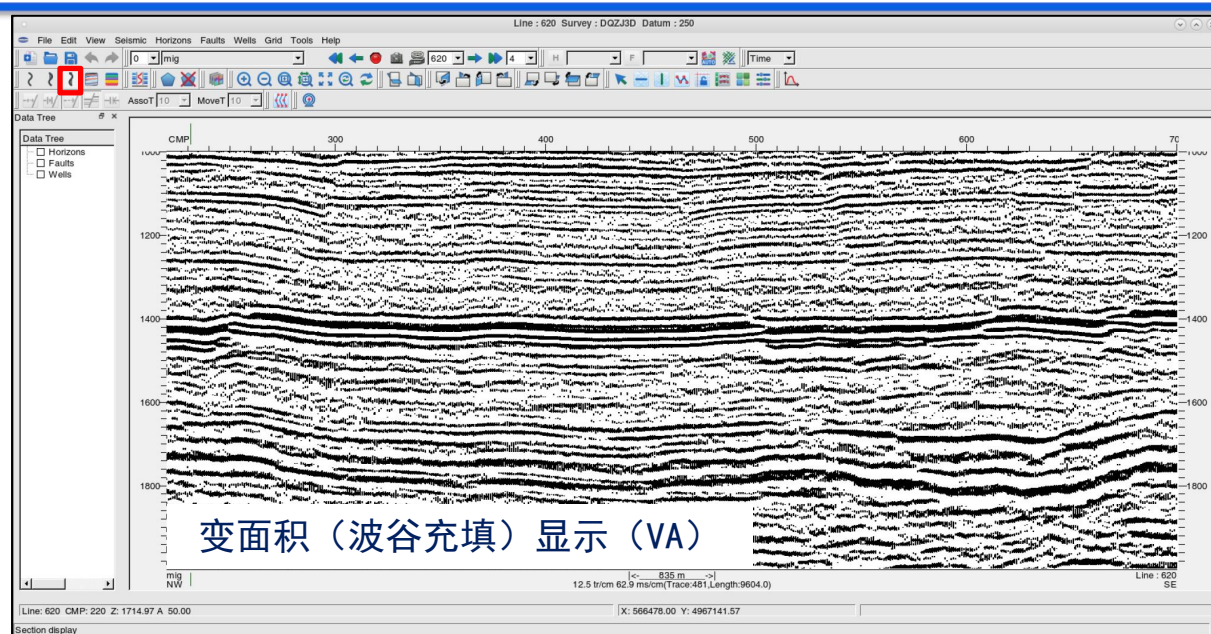
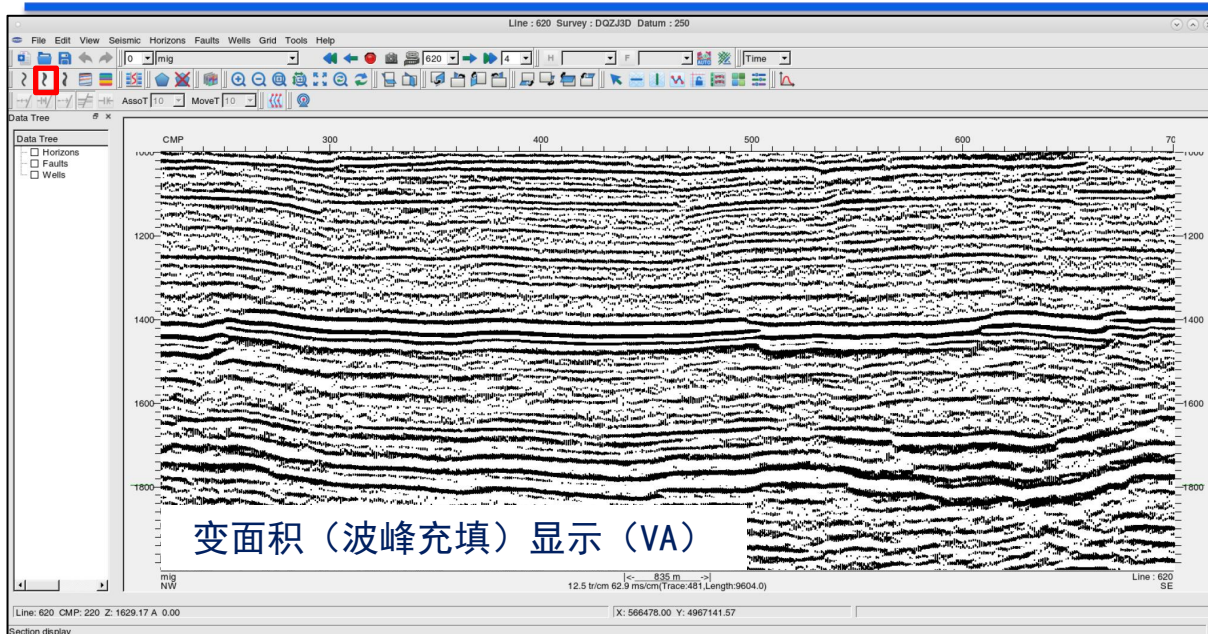
波谷和波峰充填

四种方式组合可形成10多种显示方式。



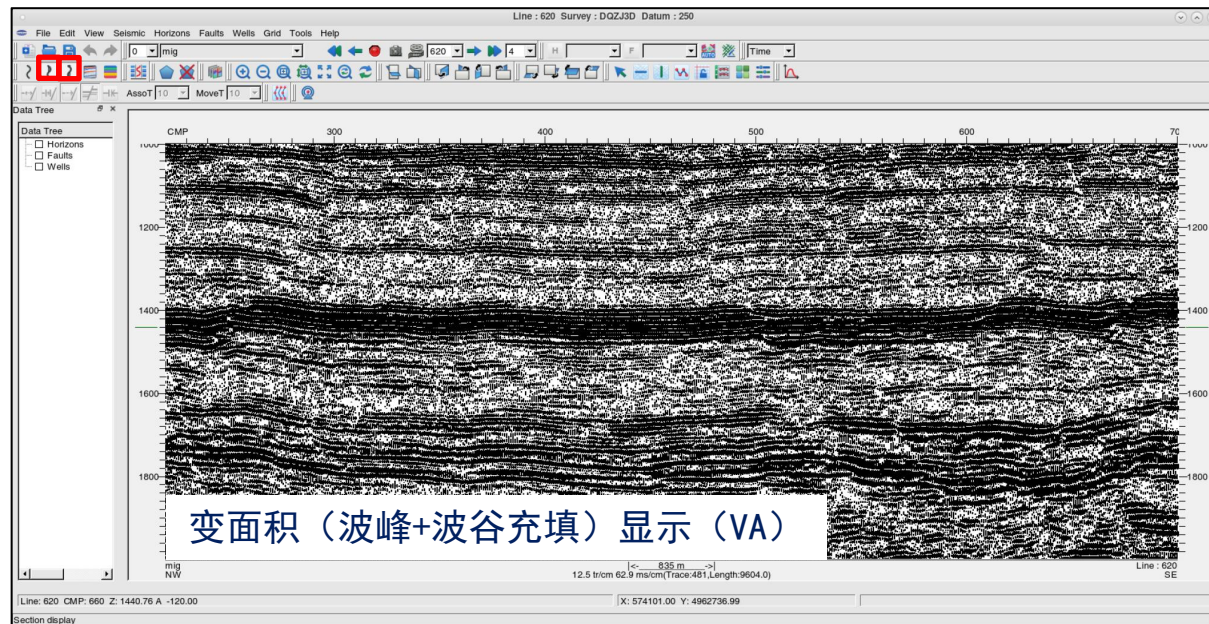
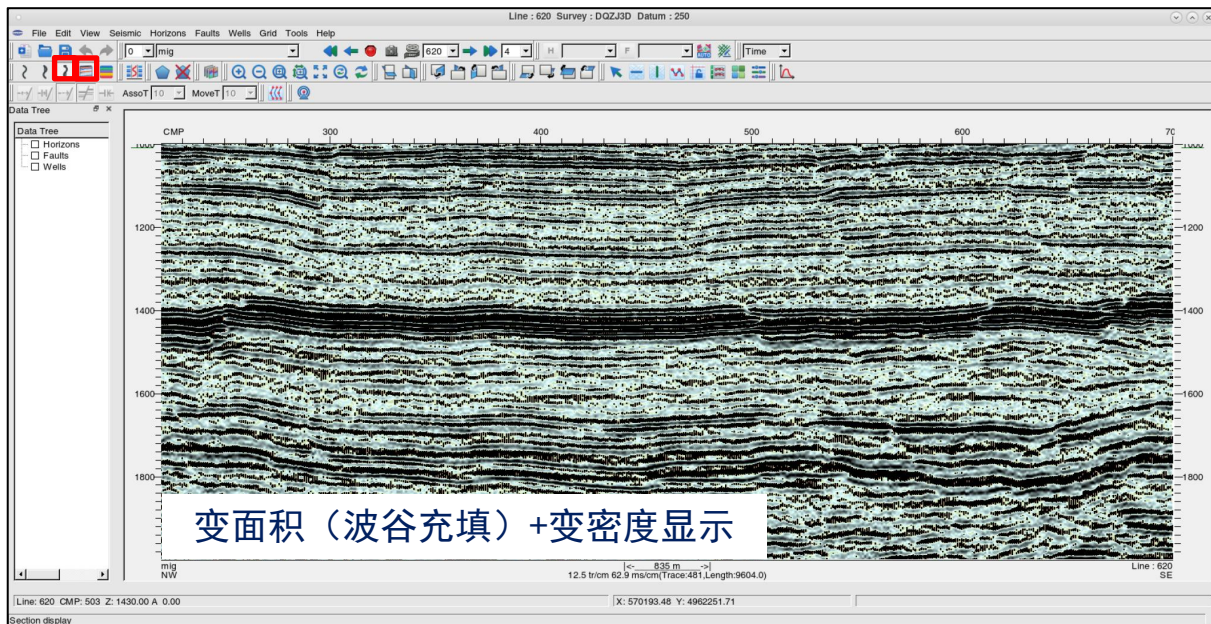
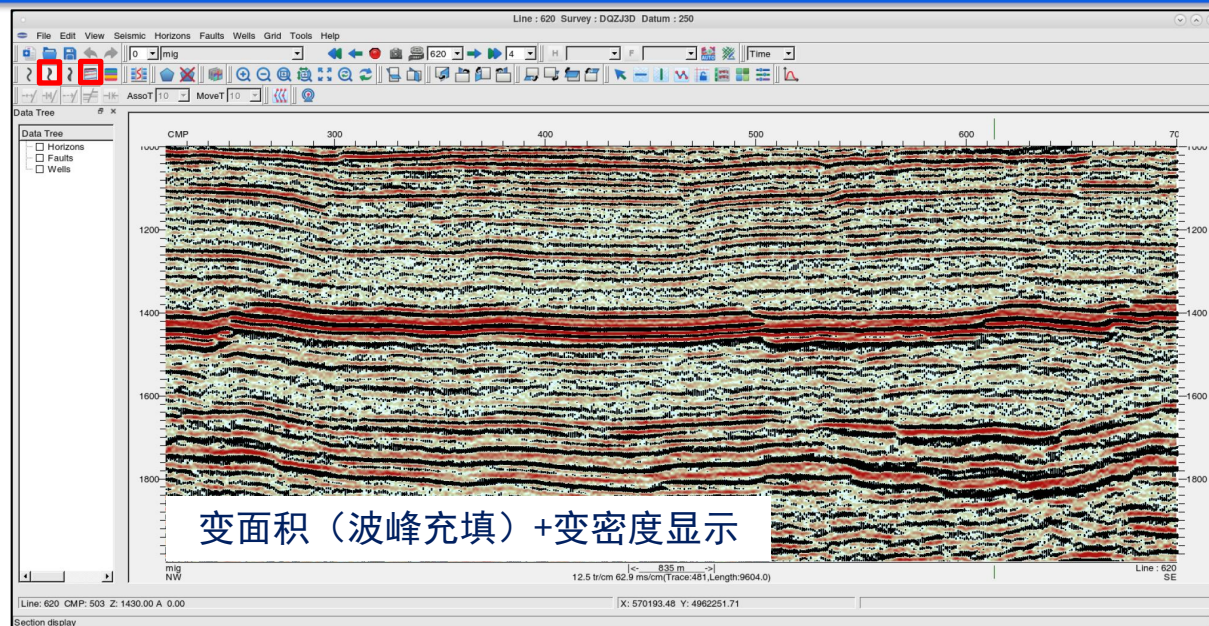
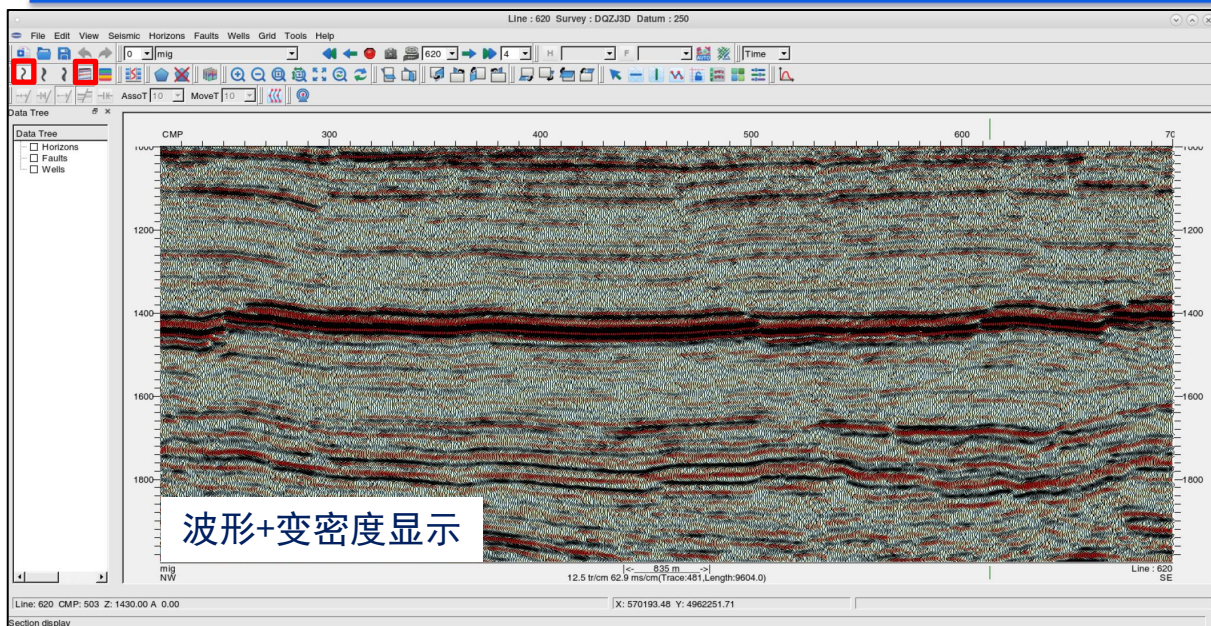


地震数据显示-剖面显示





地震数据显示-剖面显示





地震数据显示-剖面显示



显示模式和比例页

Mode & Scale | Annotation | Filter

Section Display Mode

☐ Wiggle

Display Type

☐ Variable Density ☒ Variable Area

Display Parameter

Smooth ☒ Trace Interpolation

Variable Area Parameter

☒ Fill Positive ☐ Fill Negative

☐ Gray Display

☐ Color Mode

Color

Wiggle

Fill Positive

Fill Negative

Background

Display Scale

HScale(CMP/cm) Scale 1:

VScale(ms/cm) Scale 2:

Amplitude Swing Amplitude Gain

Amplitude Clip Min Trace Gap(pixel)

☐ Uniform Trace Interval ☐ Reverse Polarity

☐ Auto Reduce Trace Trace Interval

☐ Auto Reduce Sample Sample Interval

Equalization Mode

Windows Length(ms)

Normalization

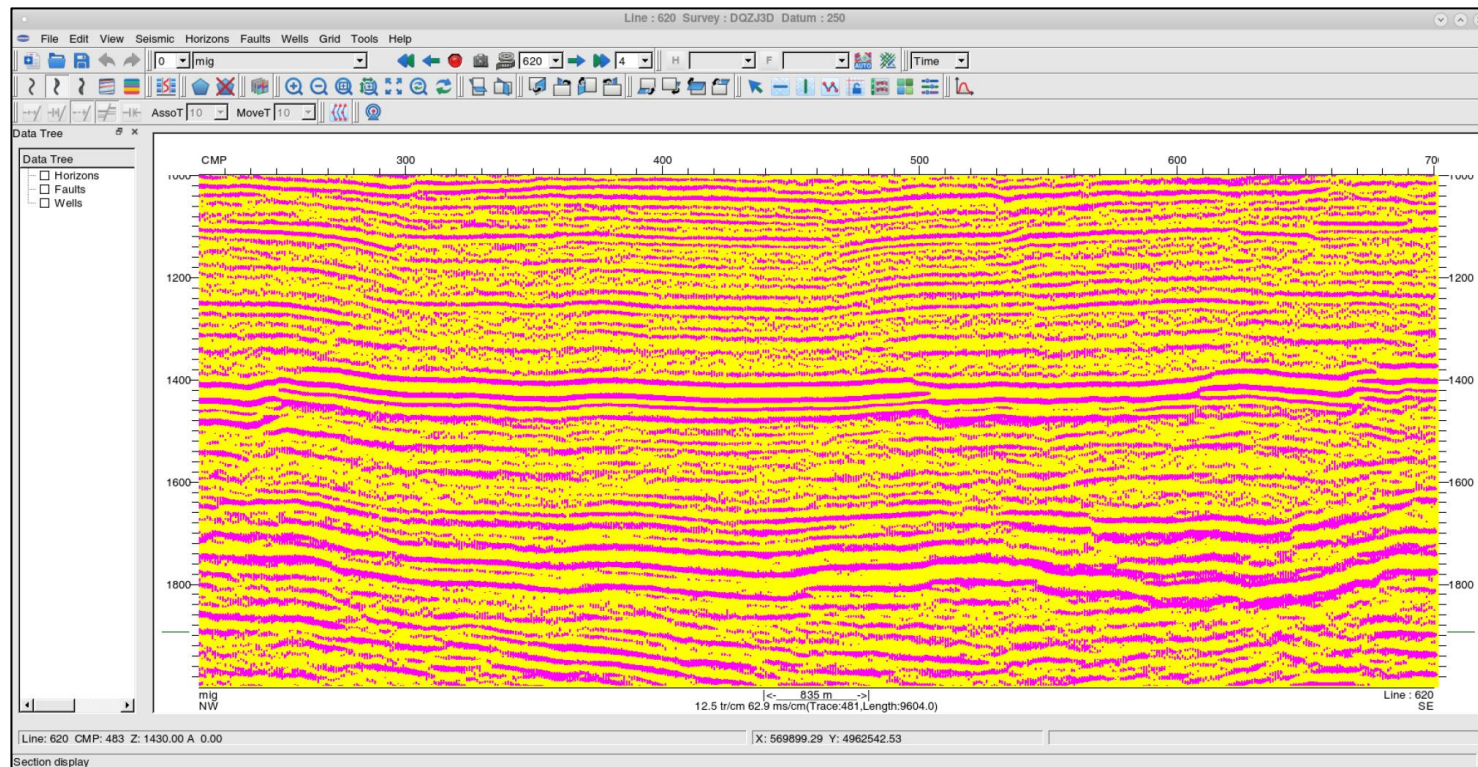
☒ Normalize for Traverse Section

Line Direction

☒ Along X ☐ Along Trace

☐ Save As Default

波形和变面积显示时，可以改变波形、波峰充填和波谷充填以及背景色的颜色。



地震剖面显示比例参数的设置，以及振幅增益、衰减和道间距均匀显示、自动抽道显示、自动样点抽稀显示、地震数据极性反转显示等，同时可以调节地震数据振幅均衡方式。



地震数据显示-剖面显示



显示标注页

标注显示开关及标注字体类型及大小的设置

标注显示位置的设置

剖面比例尺和首尾坐标标注显示的设置

剖面标注背景色和前景色的设置

剖面标注增量和标注刻度的设置

剖面时间线显示开关、颜色及间隔的设置

任意线剖面拐点线显示开关及颜色的设置

切片上显示其他窗口剖面位置线的开关及位置线颜色的设置

纵向标注的单位及标题的设置



地震数据显示-剖面显示



可以对当前显示的地震剖面数据进行低通滤波、高通滤波和带通滤波显示。

剖面滤波页

Mode & Scale Annotation Filter

☒ Apply Filter

Low Pass High Pass Band Pass

Frequency1(Hz) 2 Frequency2(Hz) 72

Length(ms) 512

☐ Save As Default

OK Apply Cancel

☒ Apply Filter

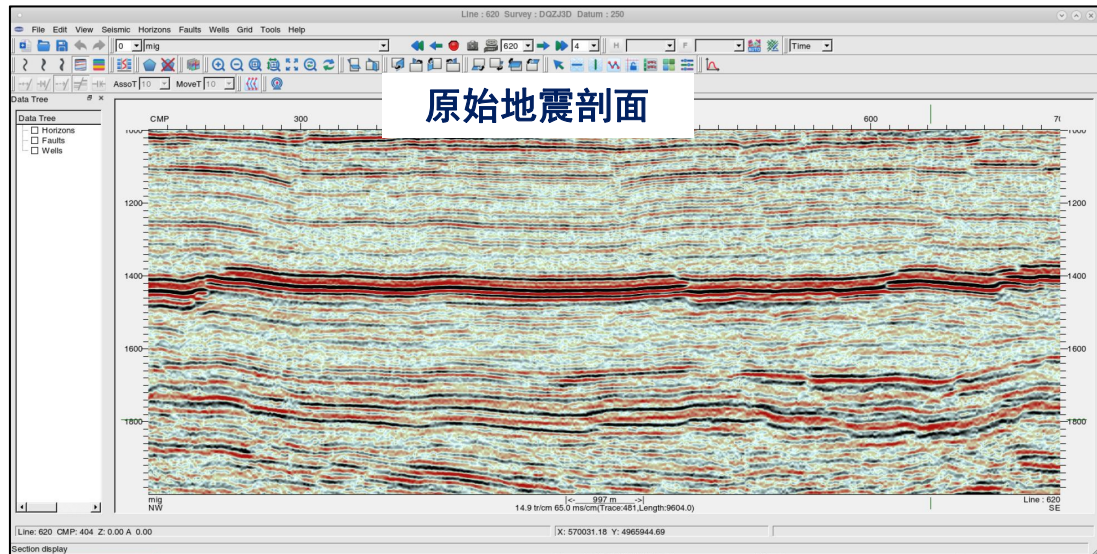
Low Pass High Pass Band Pass

Frequency1(Hz) 6 Frequency2(Hz) 20

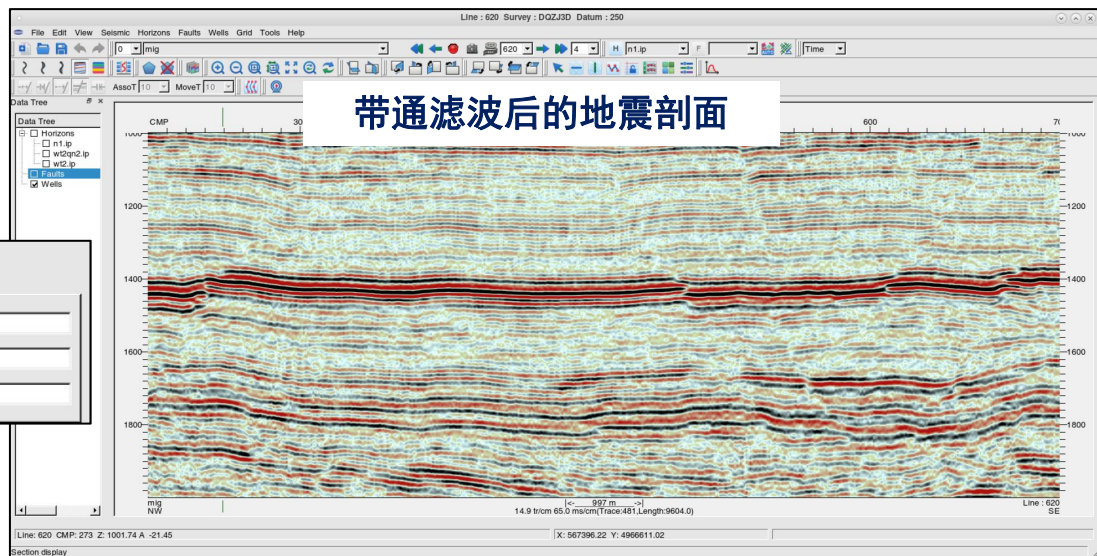
Frequency3(Hz) 45 Frequency4(Hz) 80

Length(ms) 512

原始地震剖面



带通滤波后的地震剖面

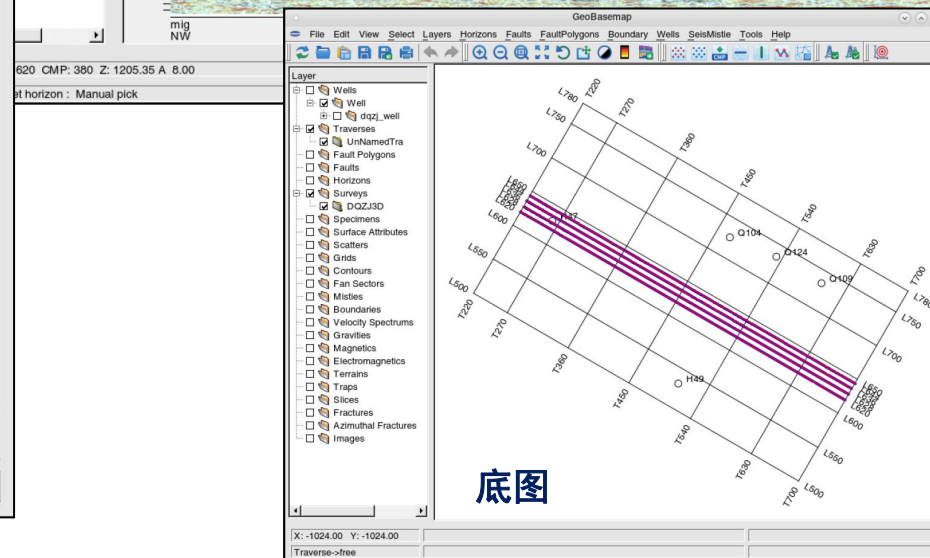
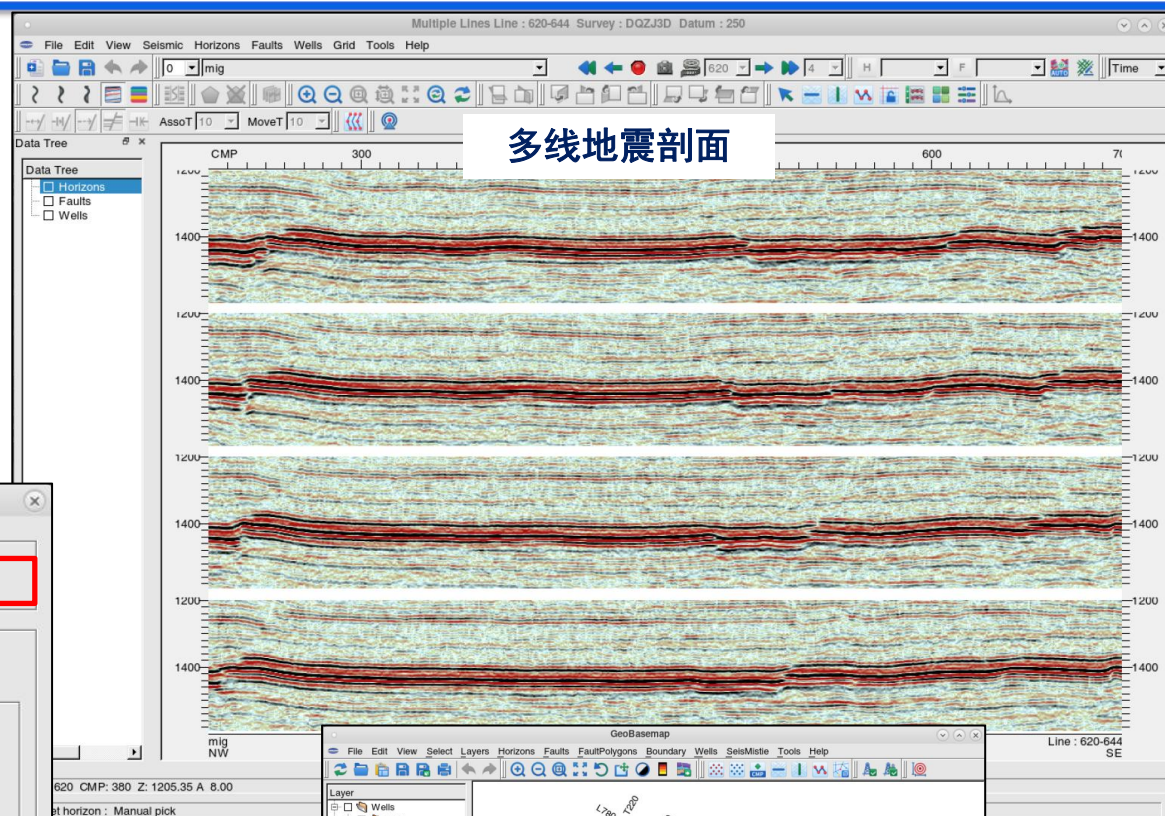
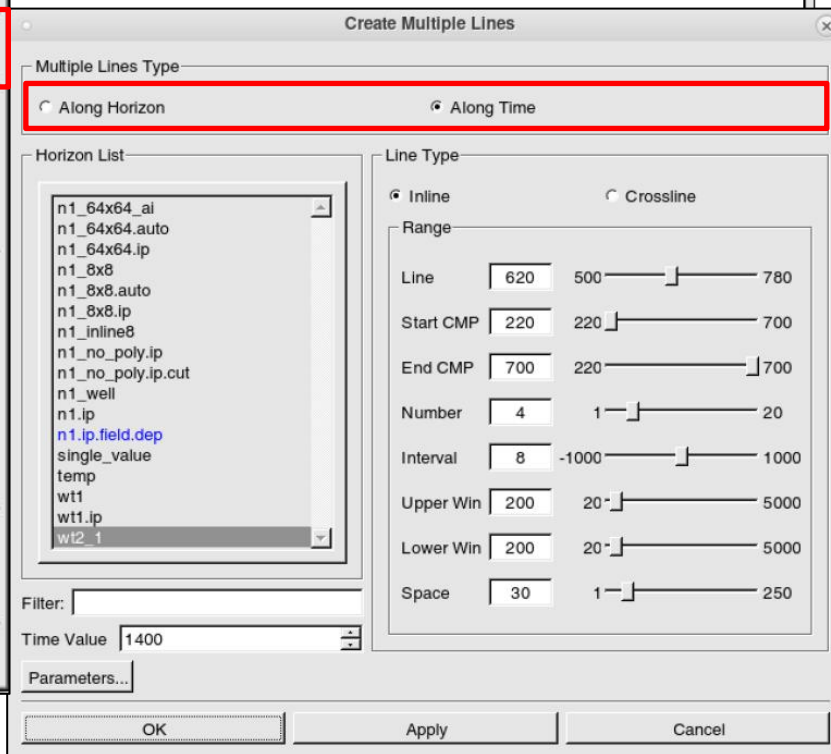
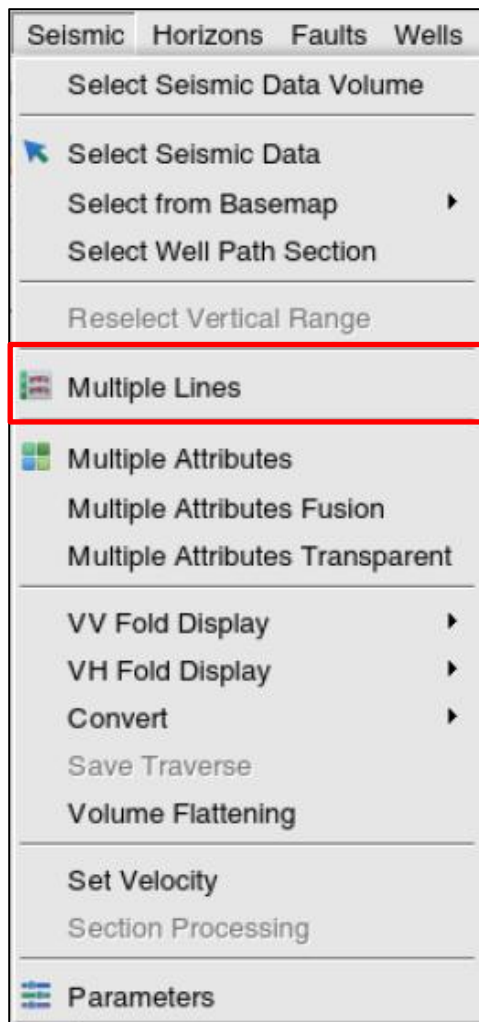




地震数据显示-多线剖面



Multiple Lines: 多线剖面
(三维): 方便相邻测线的对比分析, 以提高层位和断层解释效率和精度。

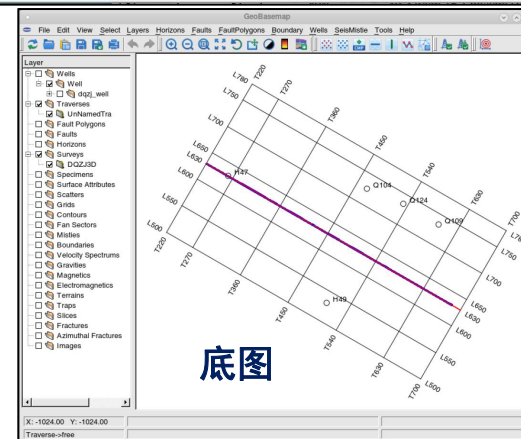
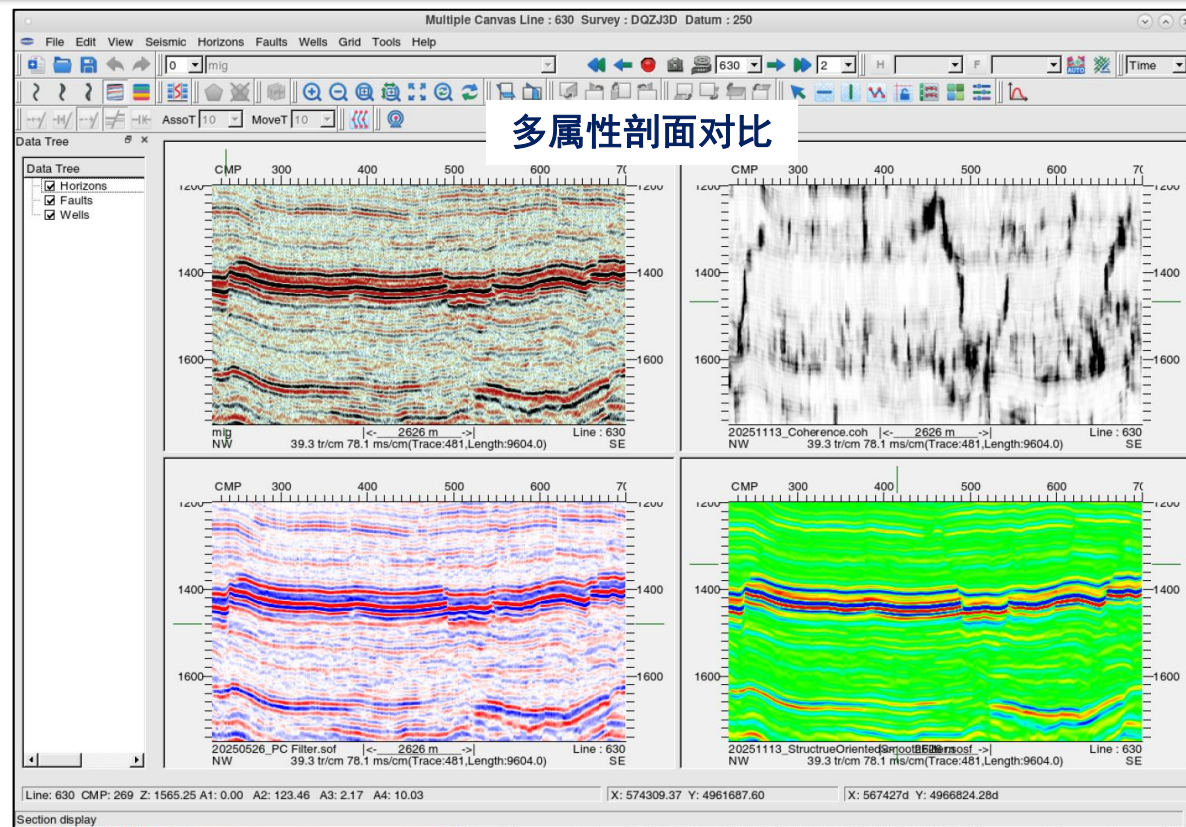
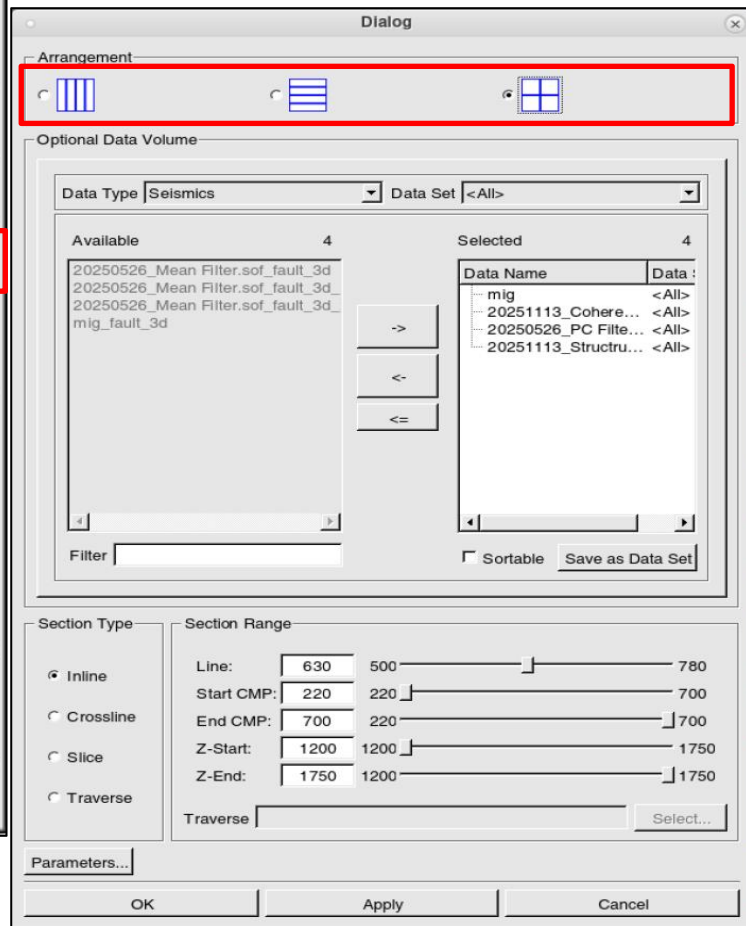
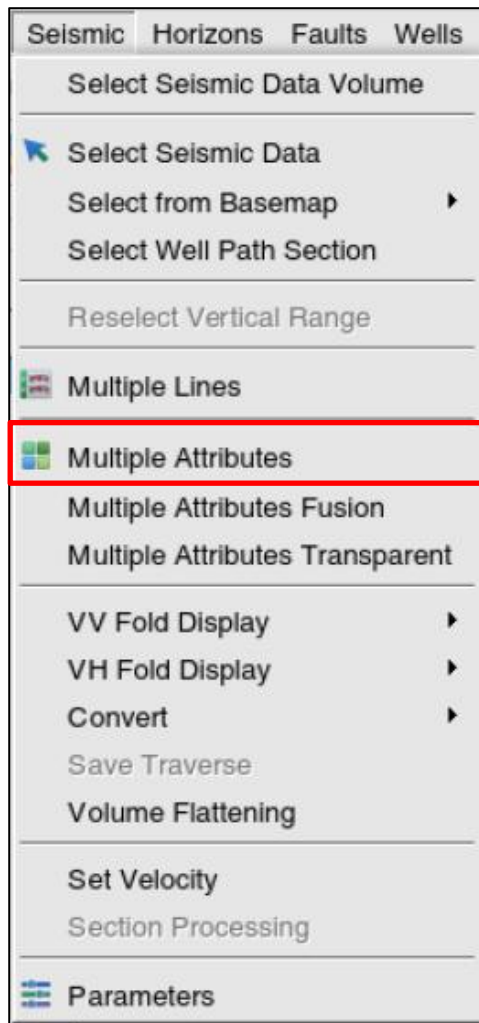




地震数据显示-多属性对比显示



Multiple Attributes-多属性对比显示（三维）：方便同一测线的不同数据（地震、属性和速度）的对比分析。



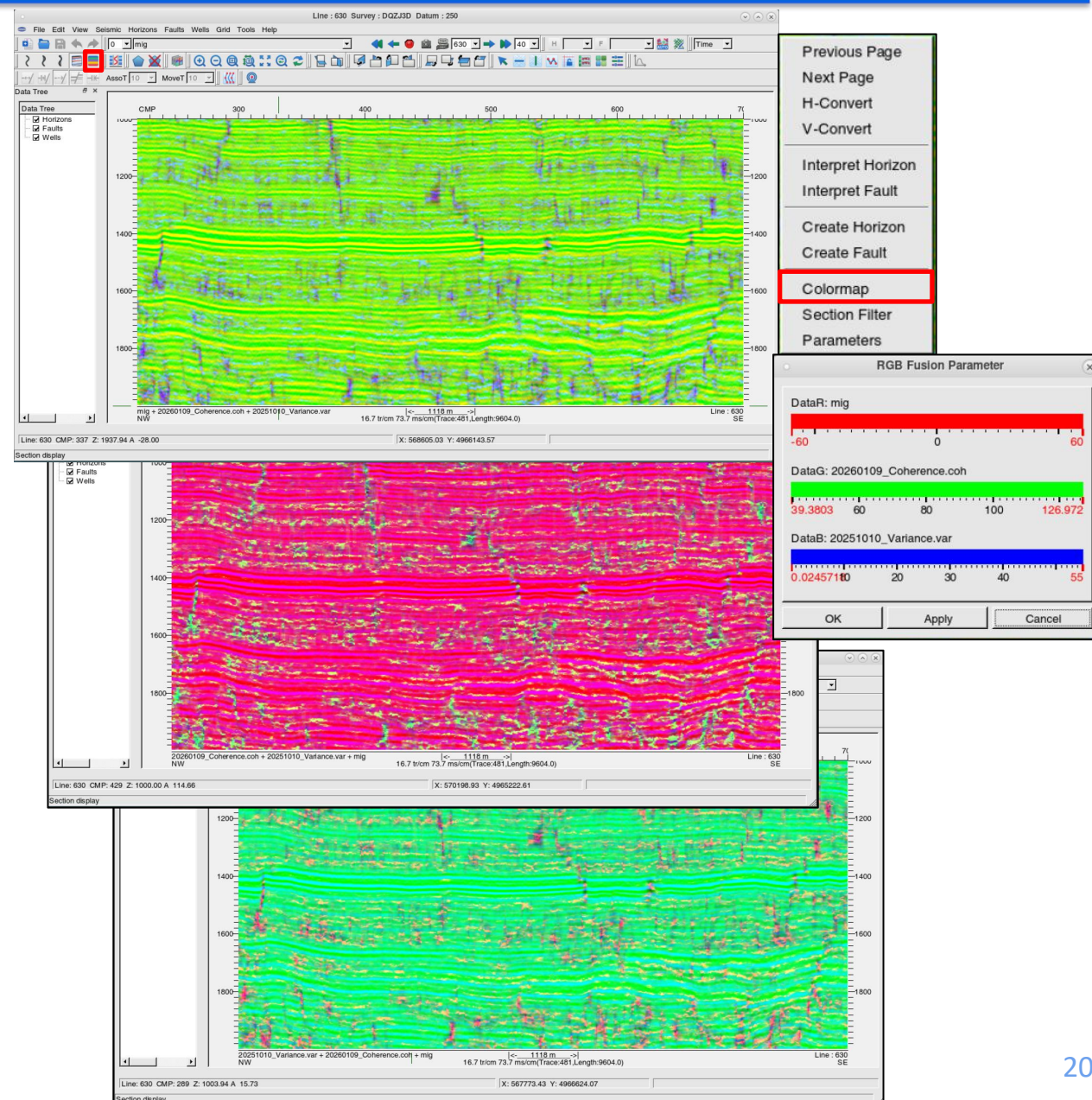
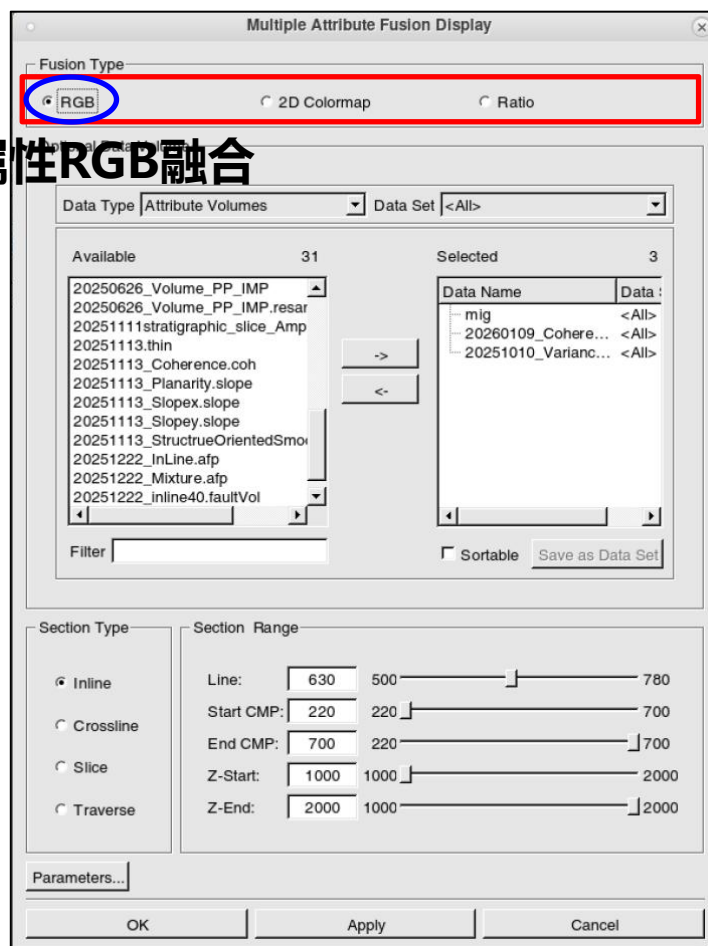
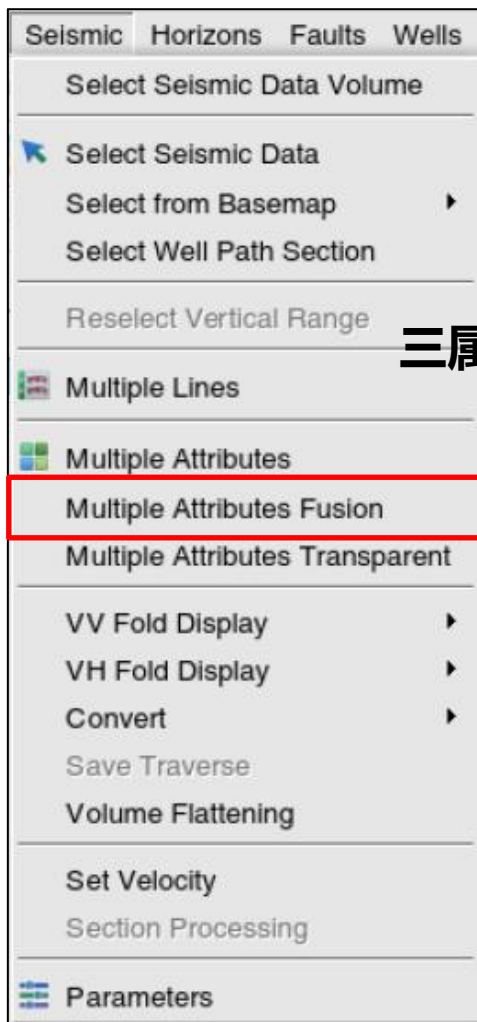


地震数据显示-多属性融合显示



**Multiple Attributes Fusion-
多属性融合显示（三维）：**将
多个属性值融合成一个颜色值，
突出地质体显示，方便解释。

三属性RGB融合

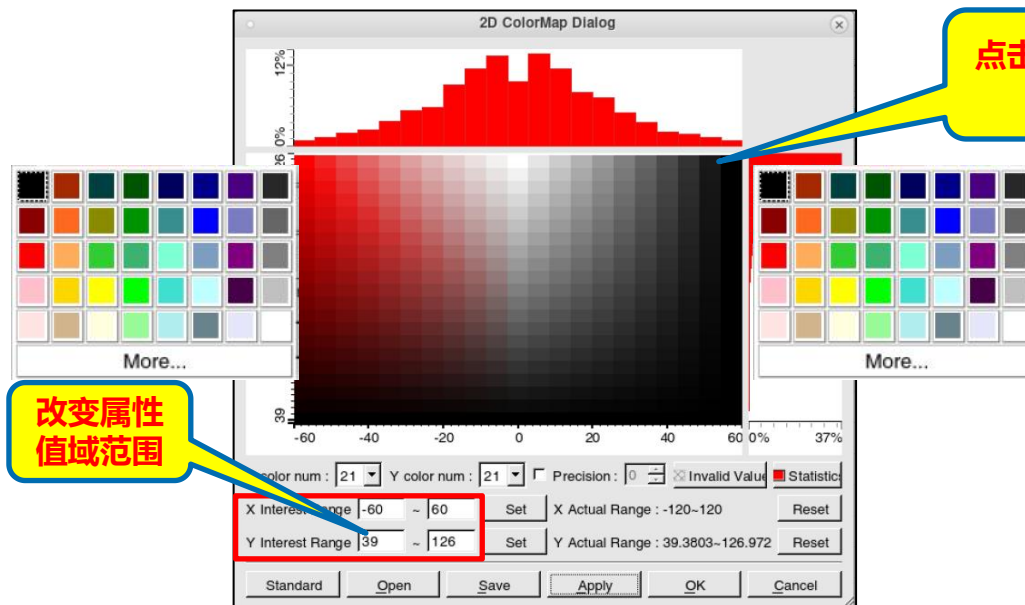
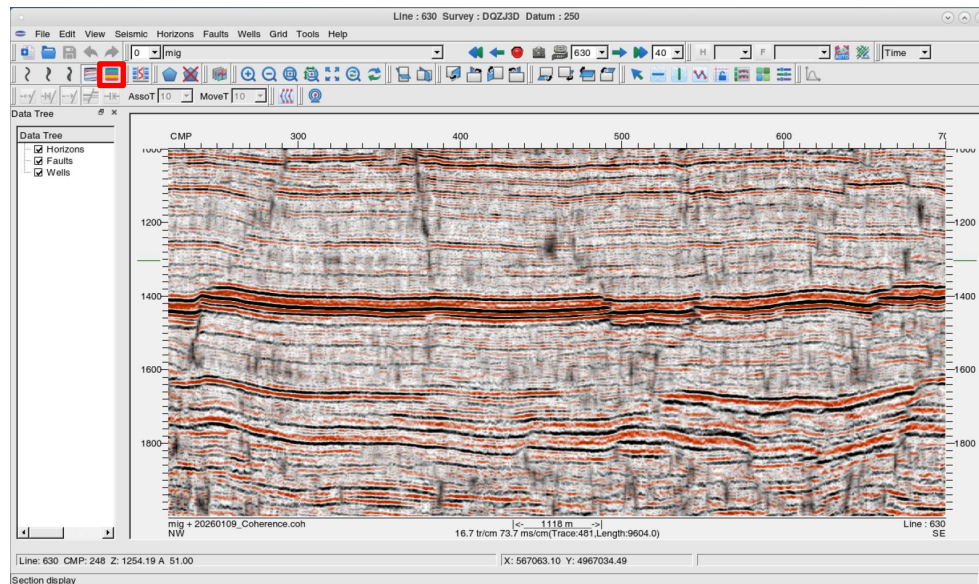
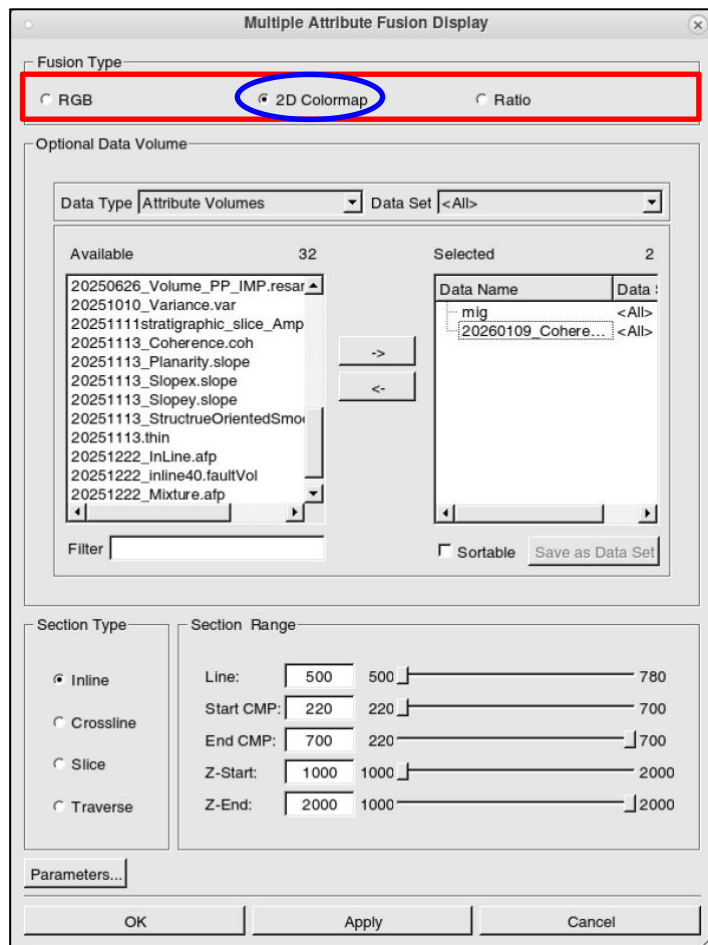




地震数据显示-多属性融合显示



两属性二维色表融合



点击鼠标右键改变色标颜色

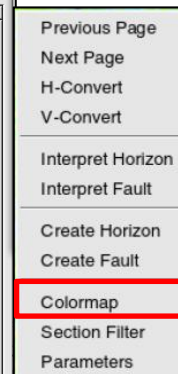
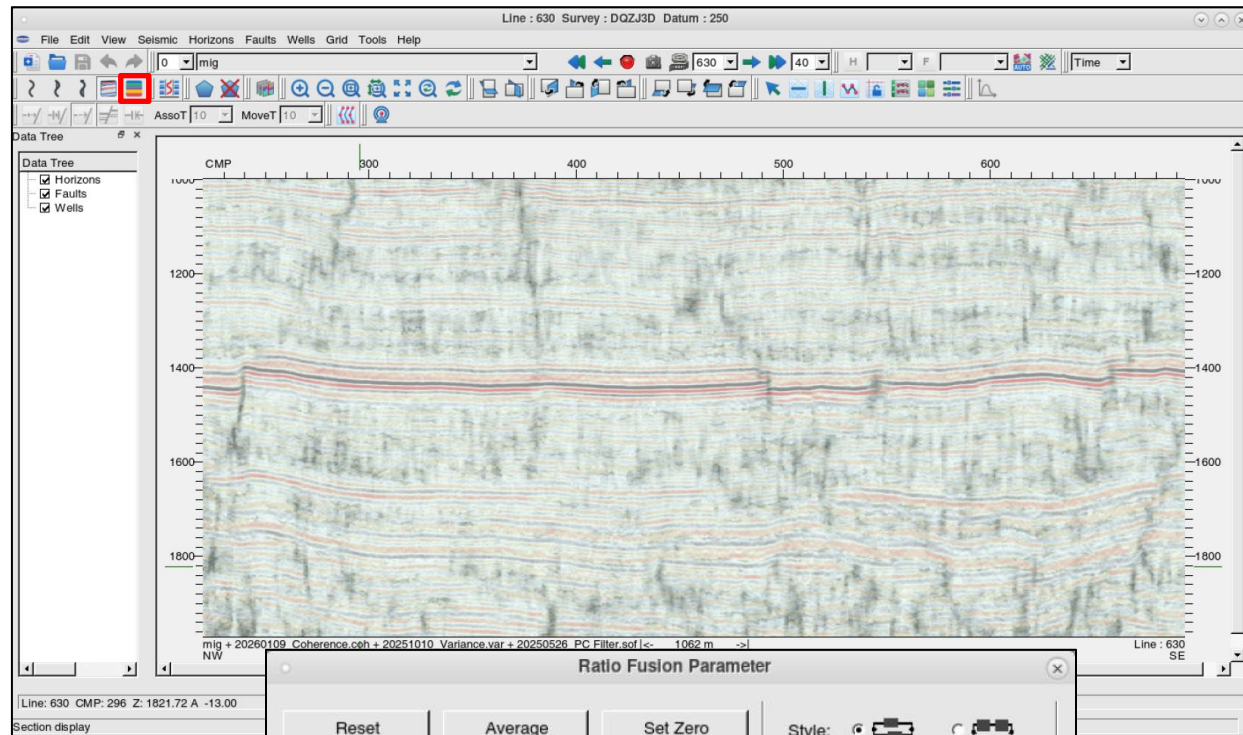
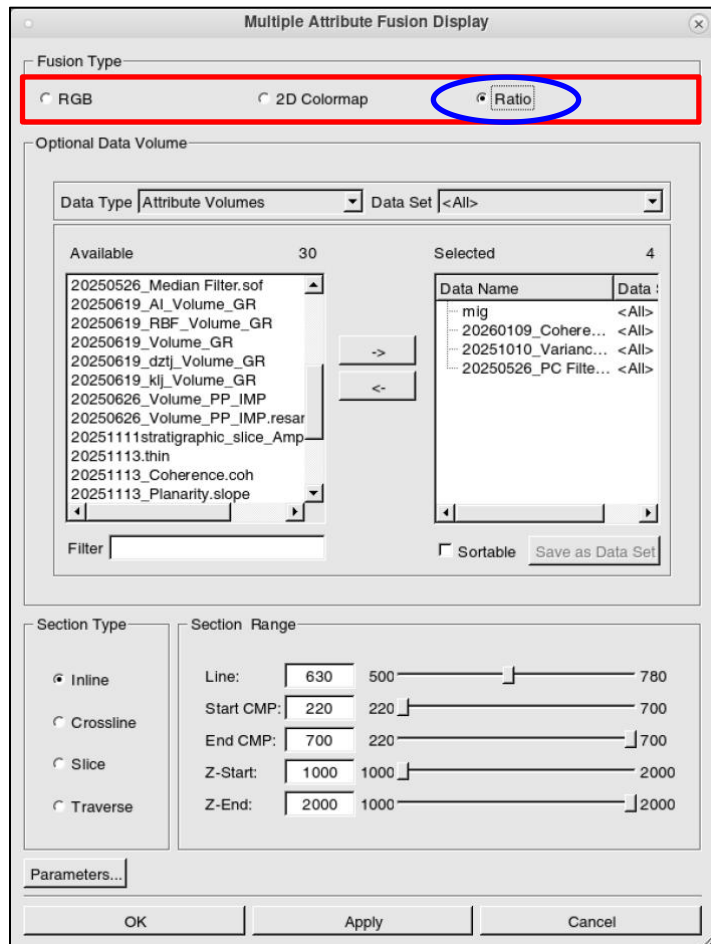
改变属性值域范围



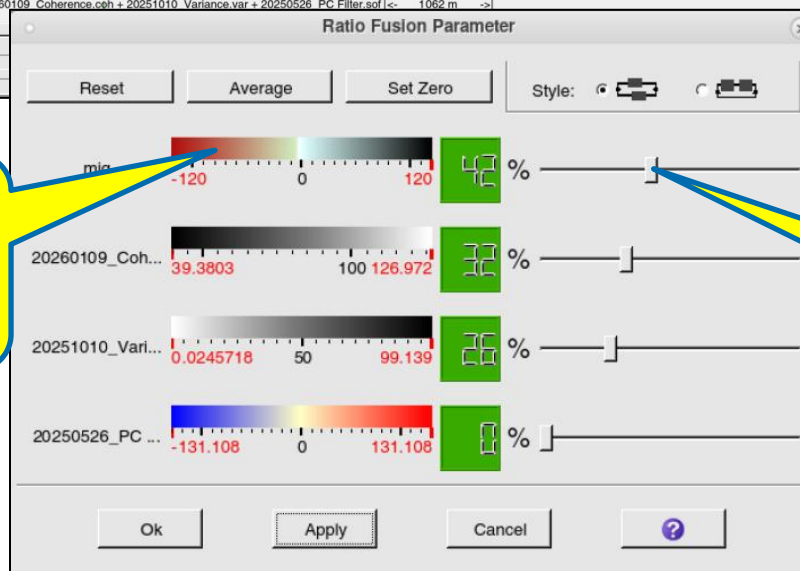
地震数据显示-多属性融合显示



多属性（最多4个）颜色比例融合



双击鼠标左键，
在出现的窗口
中可以改变色
标颜色及其
值域范围



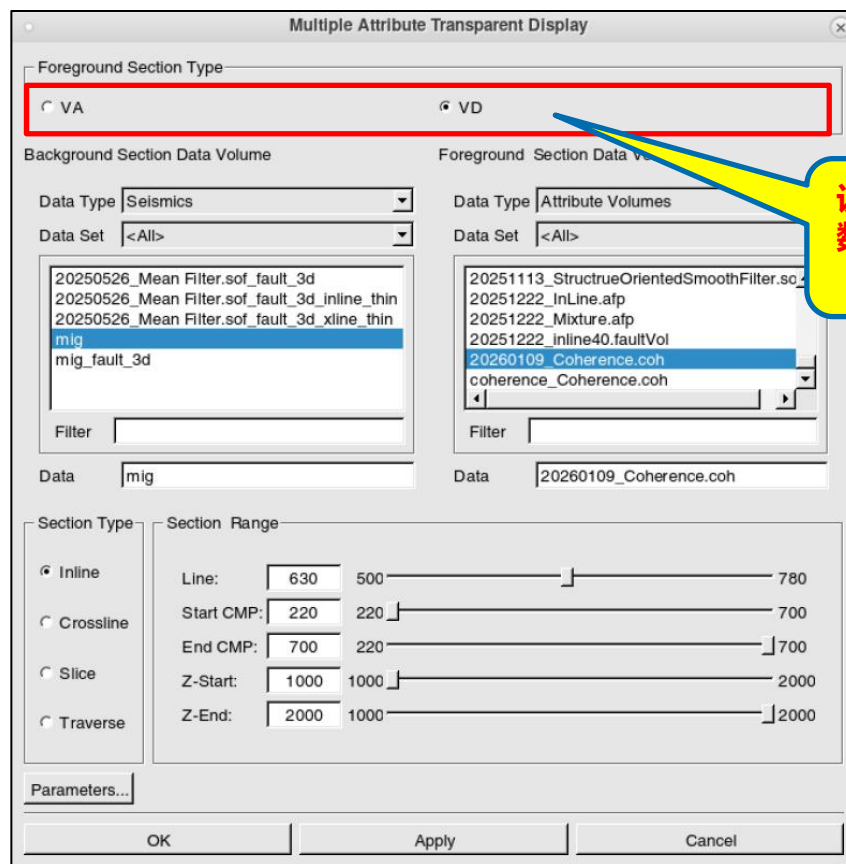
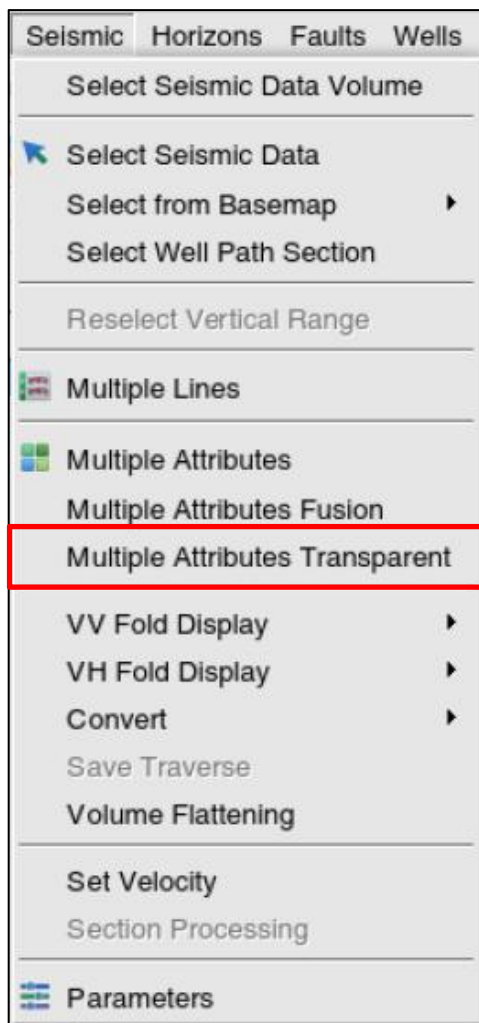
可以调
节本数
据占比



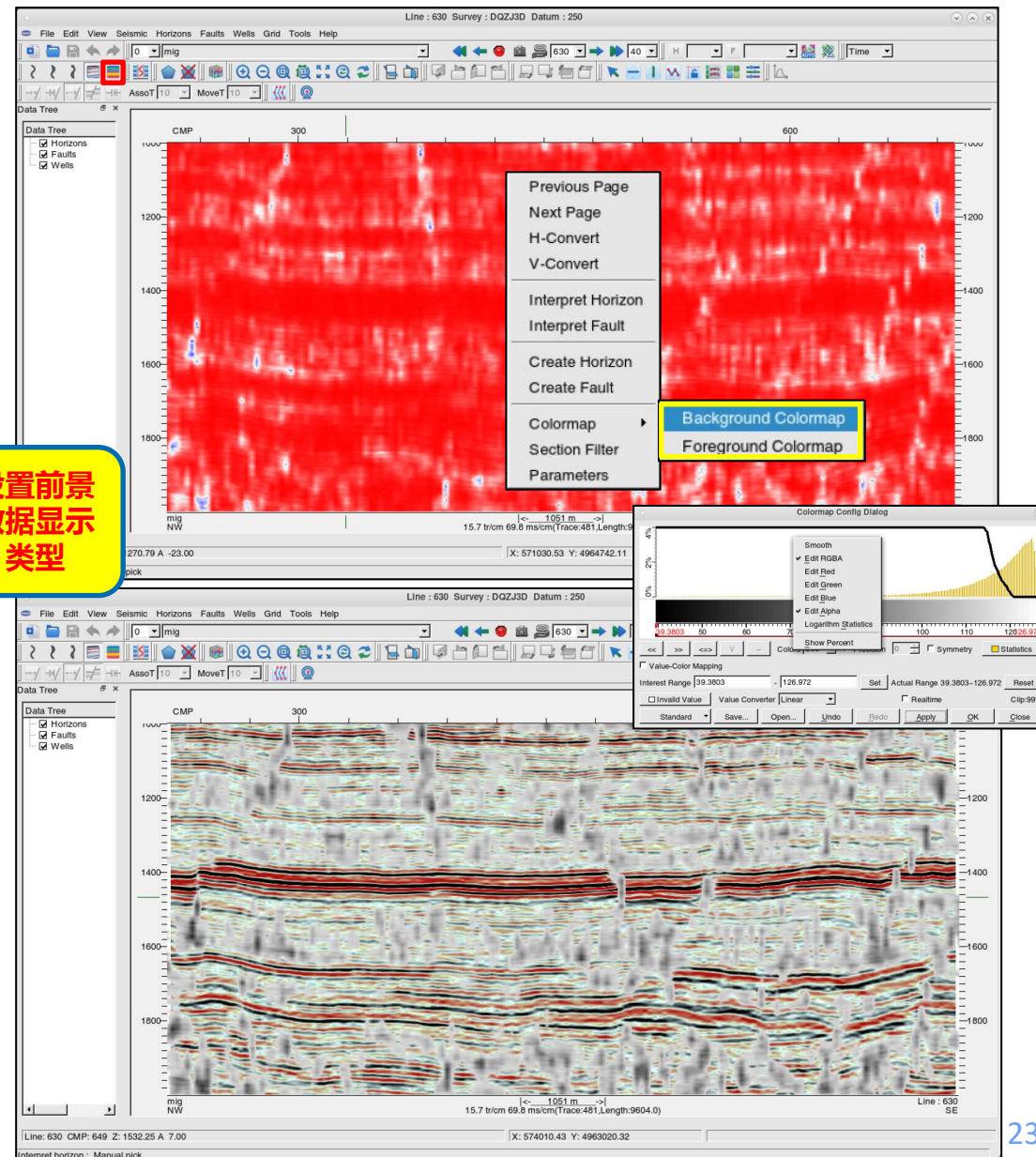
地震数据显示-多属性透明显示



Multiple Attributes Transparent-多属性透明显示（三维）：将两个属性进行叠合显示，通过对剖面颜色透明度的调节，达到需要的显示效果。



设置前景
数据显示
类型

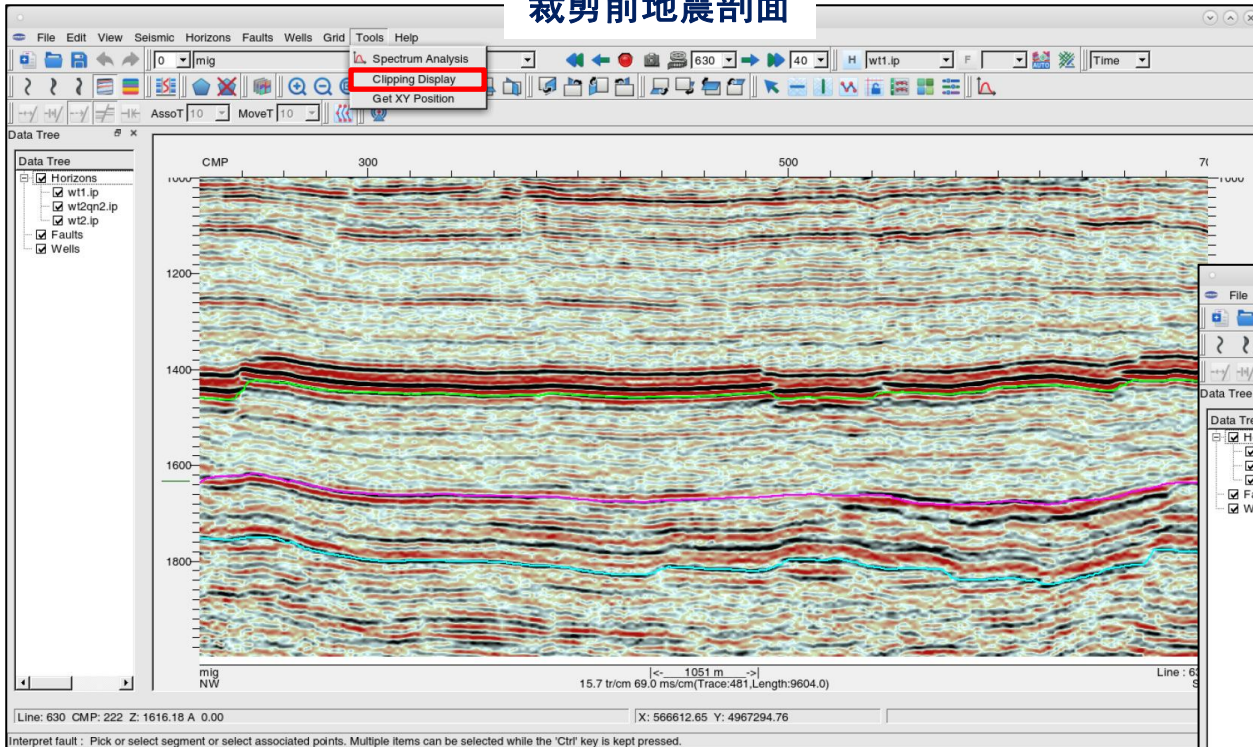




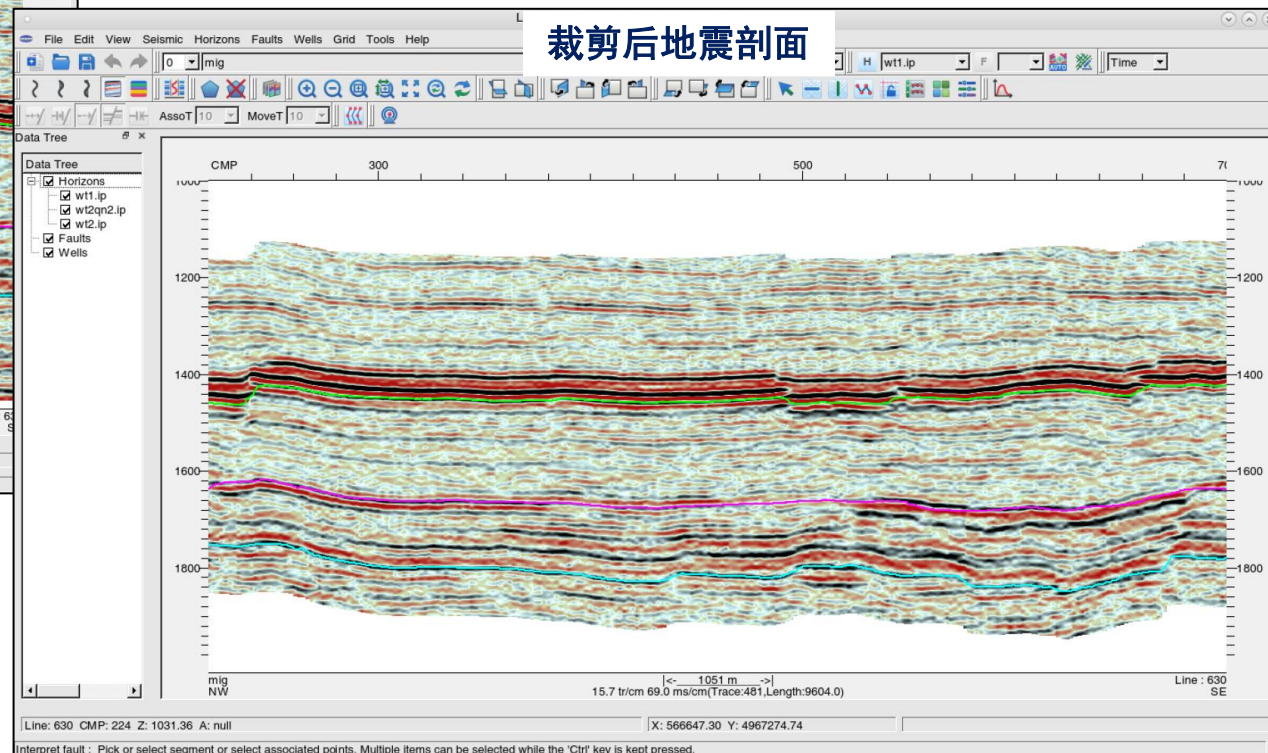
地震数据显示-裁剪显示



裁剪前地震剖面



裁剪后地震剖面



Clipping Display-
裁剪显示：只显示沿
层给定时窗或沿两层
间特定范围内的剖面。

Clipping Display

Select Type

☐ Single Horizon ☒ Between Horizons

Upper Horizon: wt1.ip

Lower Horizon: wt2.ip

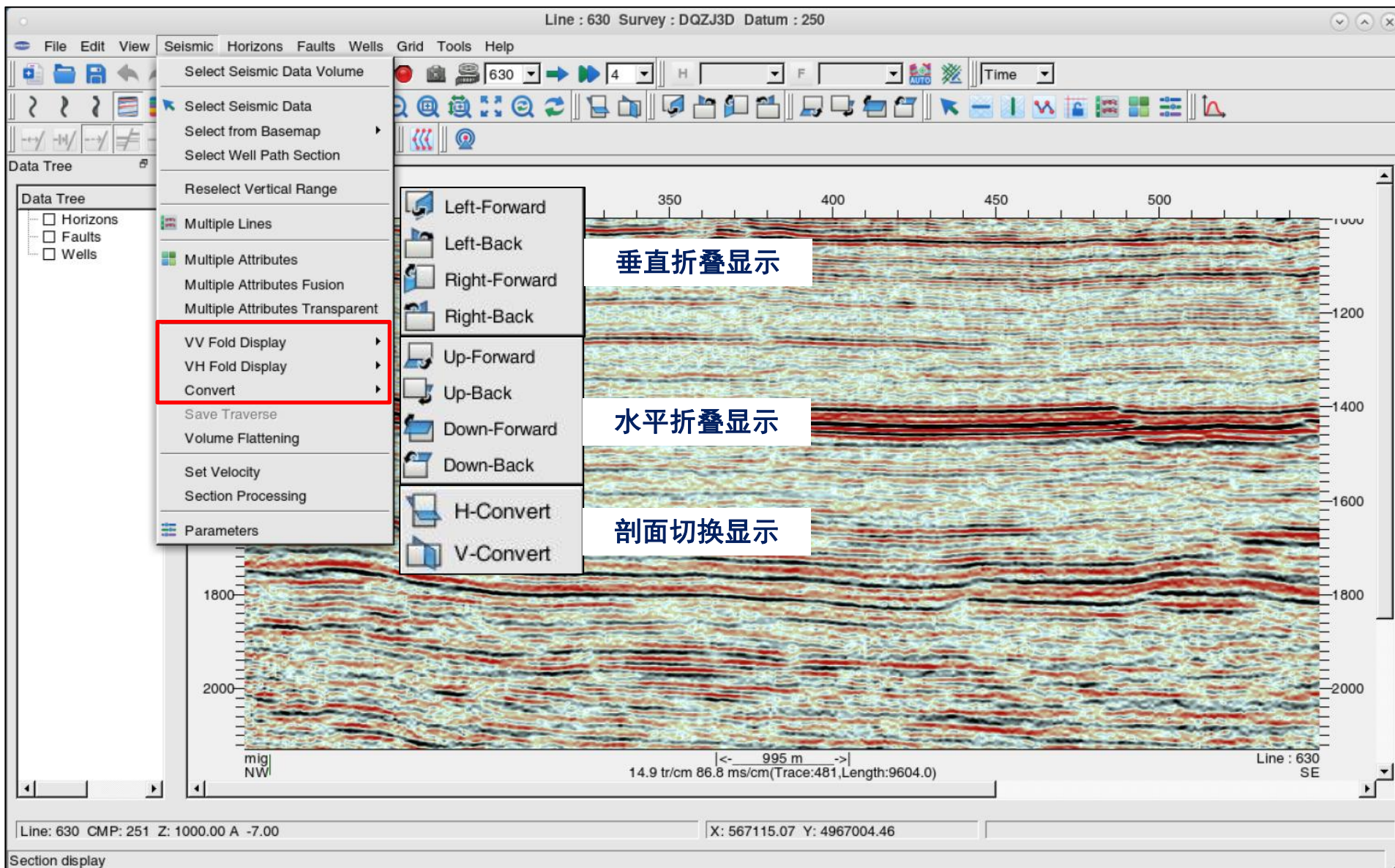
Upper Window: 300

Lower Window: 100

OK Apply Cancel

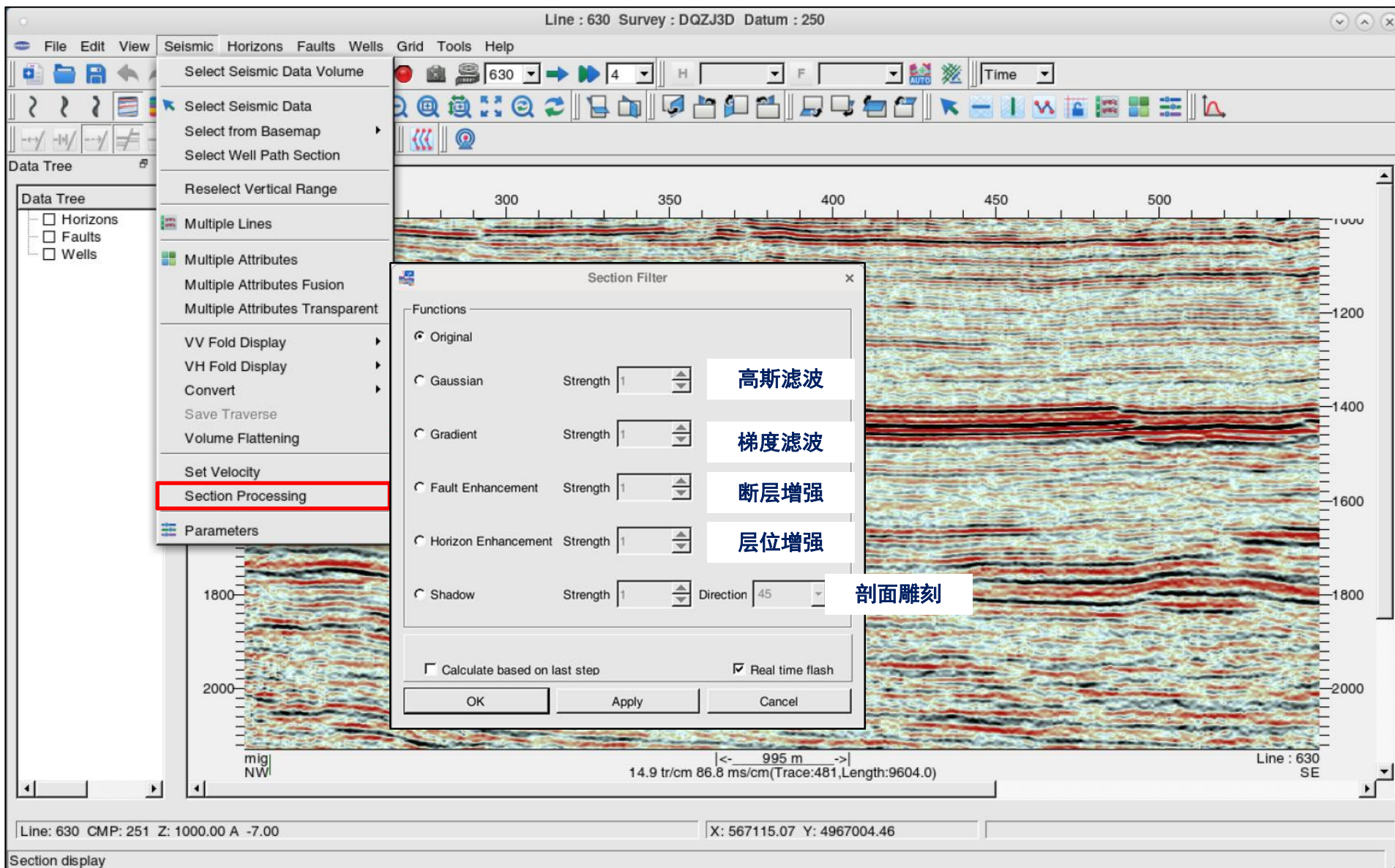


地震数据显示-折叠显示





地震数据显示-剖面滤波





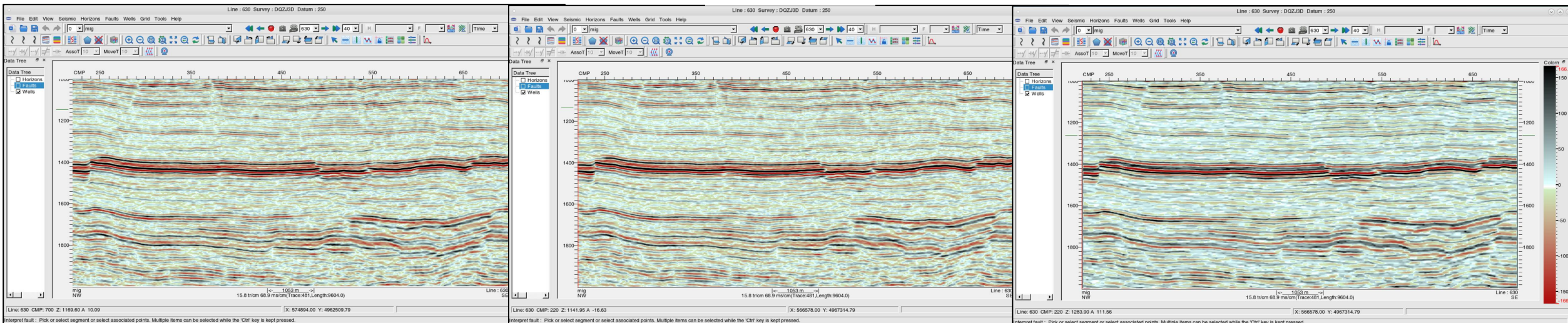
地震数据显示



原始剖面

高斯滤波后剖面

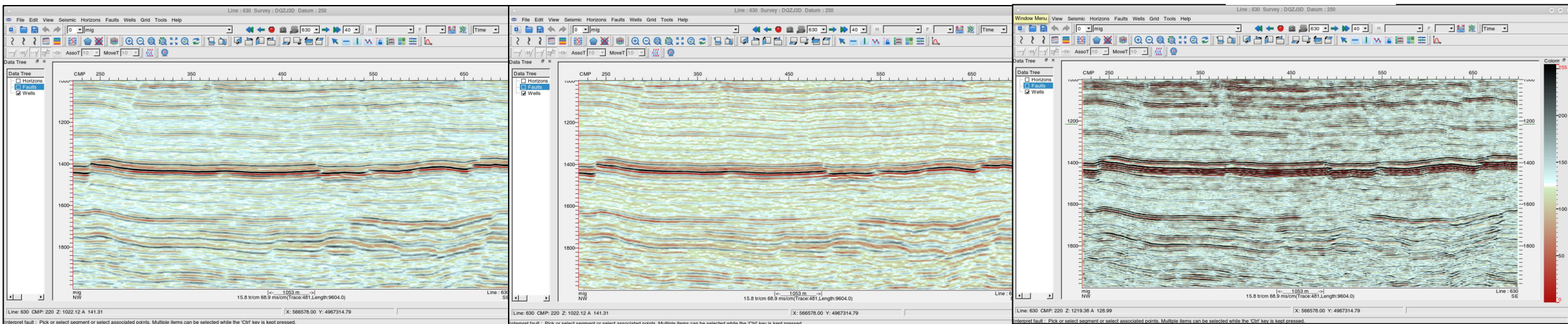
梯度滤波后剖面



断层增强后剖面

层位增强后剖面

雕刻后剖面

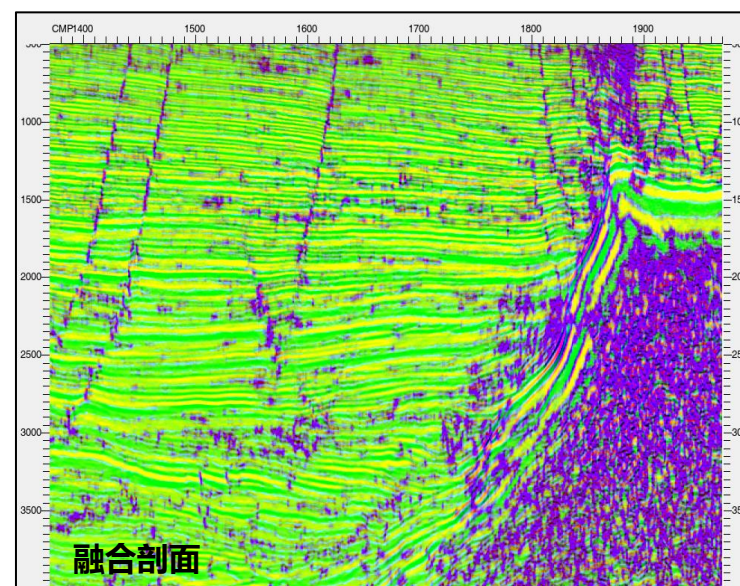
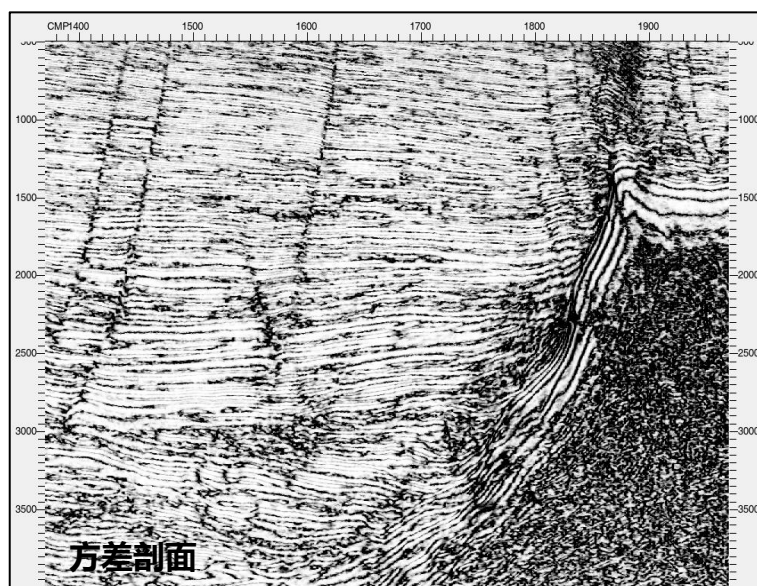
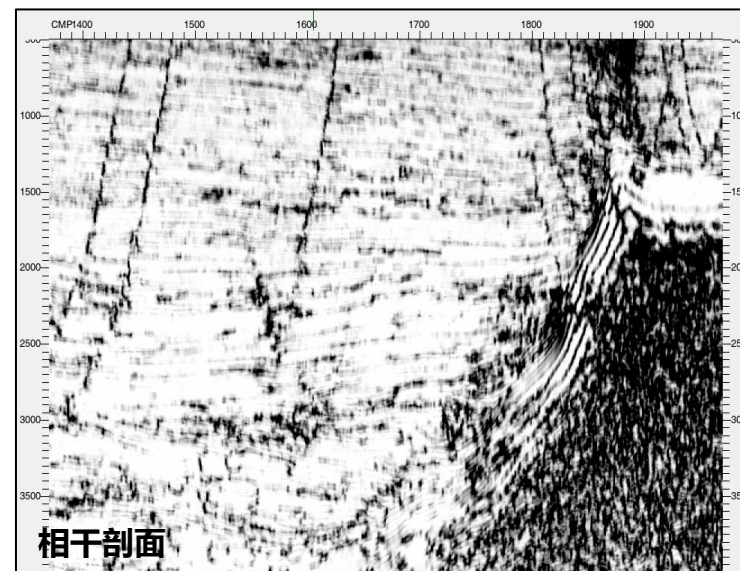
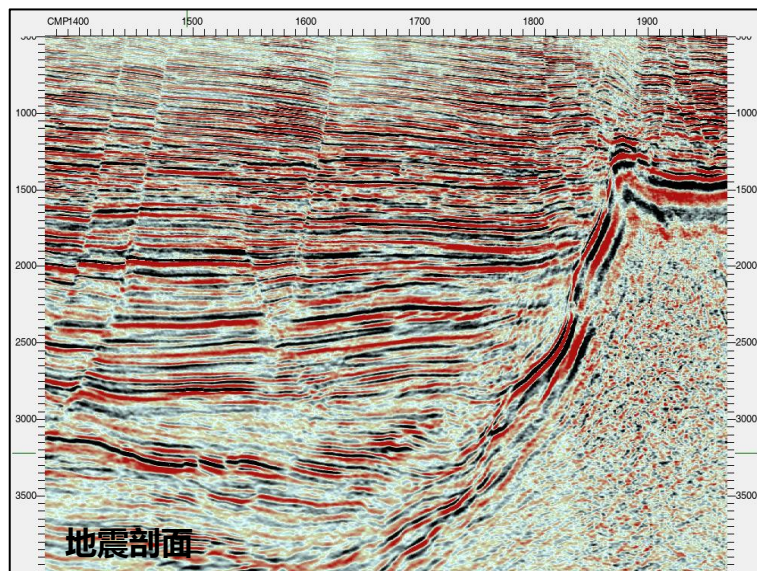




地震数据显示-融合显示实例

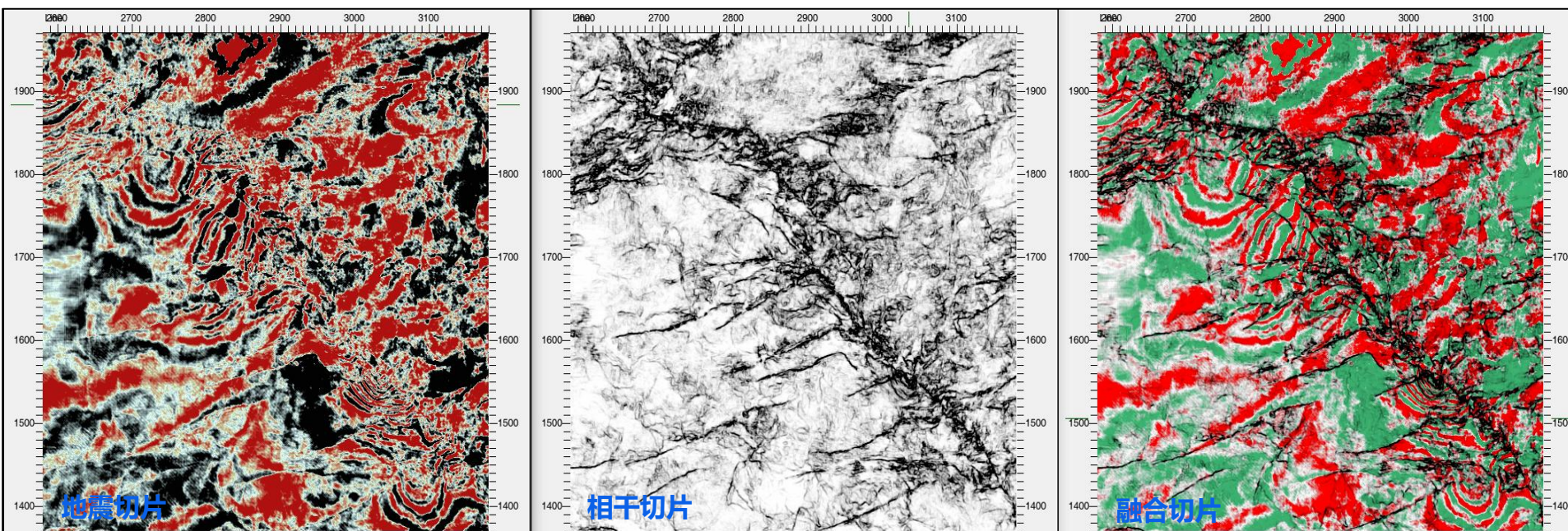
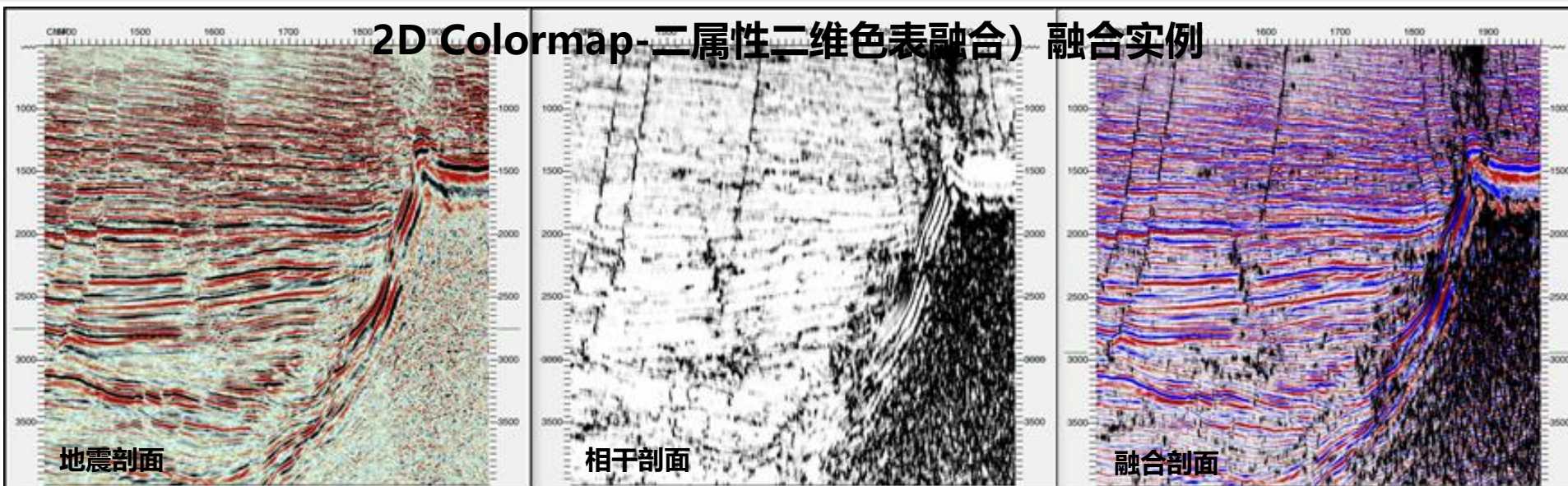


三属性RGB三色融合实例





地震数据显示-融合显示实例

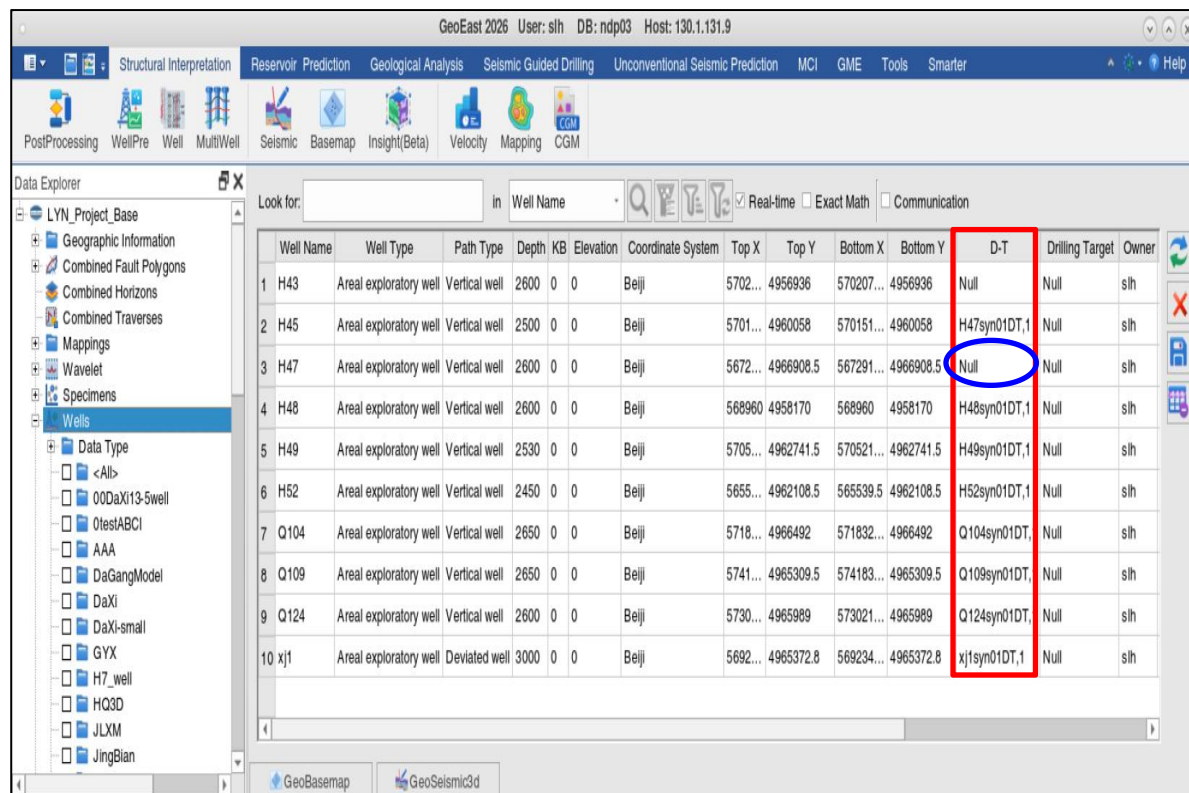




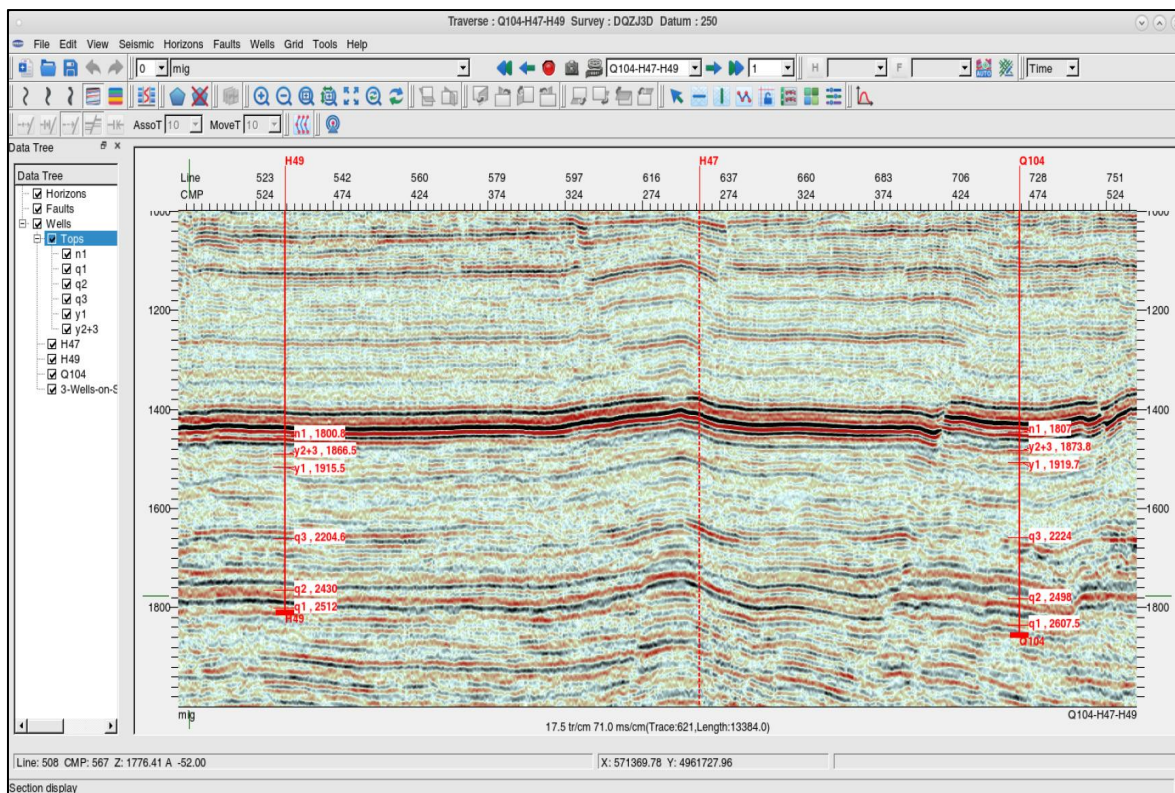


在时间地震剖面上显示钻井数据的前提：要显示的井必须设置了时深关系，则该井在剖面上用实线显示真实深度，否则用虚线显示，并且画到剖面的底部。

GeoEast主控窗口



地震解释窗口





井数据显示



井数据显示基本流程

- ①、利用测井时深关系设置工具来设置
- ②、在地震地质层位标定子系统（GeoWell）中设置
- ③、在三维可视化子系统（GeoSEM和GeoInsight）中设置

设置钻井时深关系

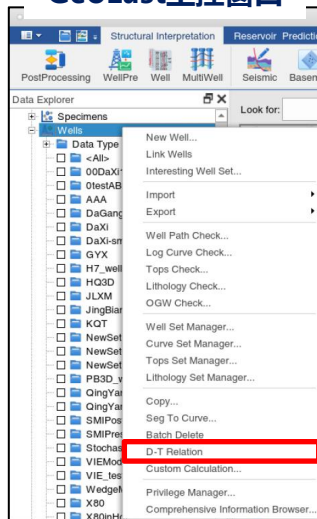
选择显示的钻井

选择显示的钻井数据
(地质分层.合成记录.
岩性.油气水和测井曲线)

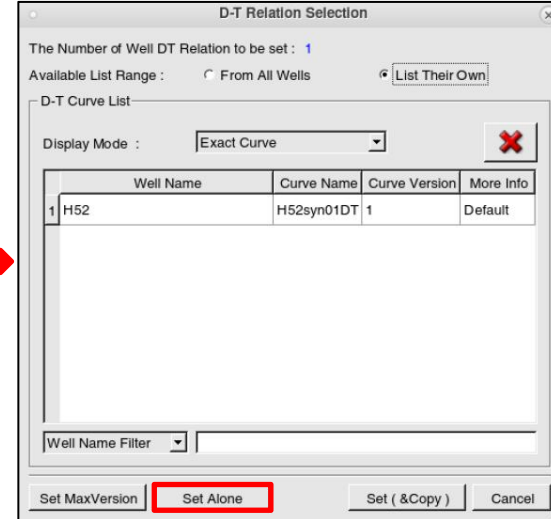
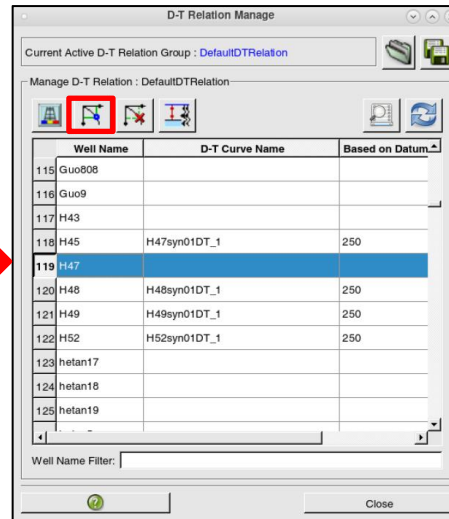
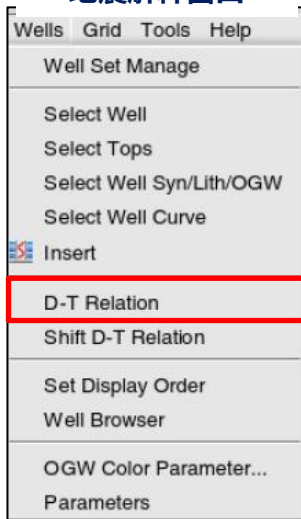
调整钻井数据显示参数

①

GeoEast主控窗口

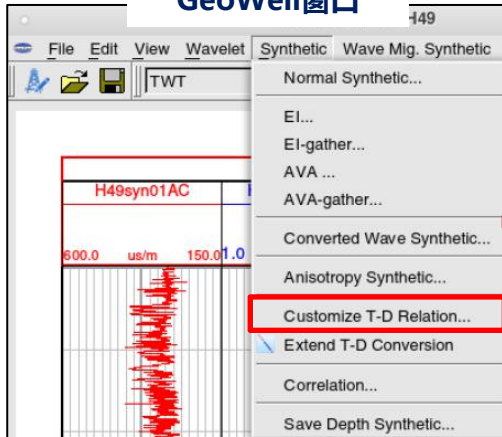


地震解释窗口

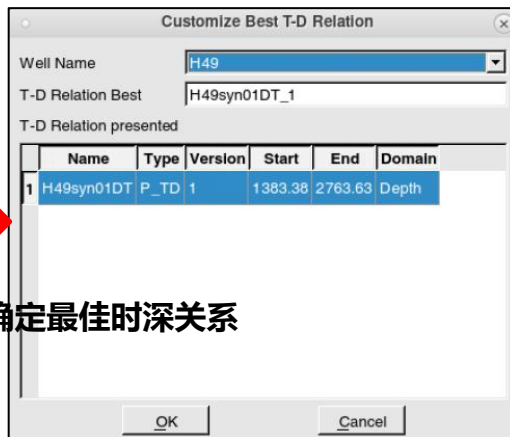


②

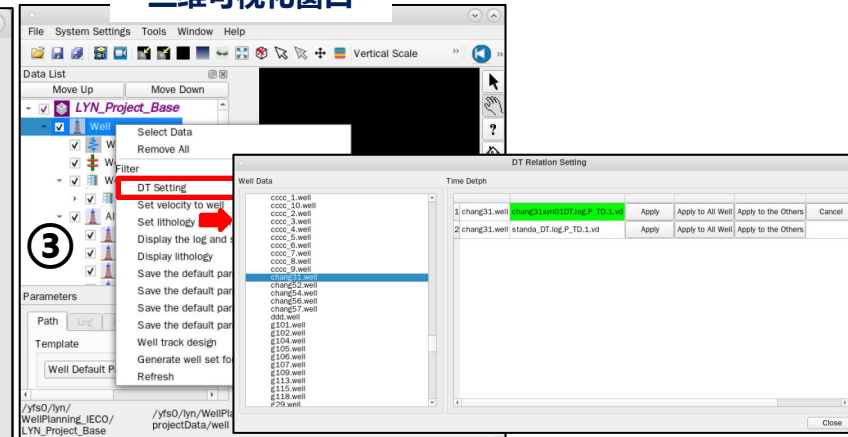
GeoWell窗口



确定最佳时深关系



三维可视化窗口





井数据显示



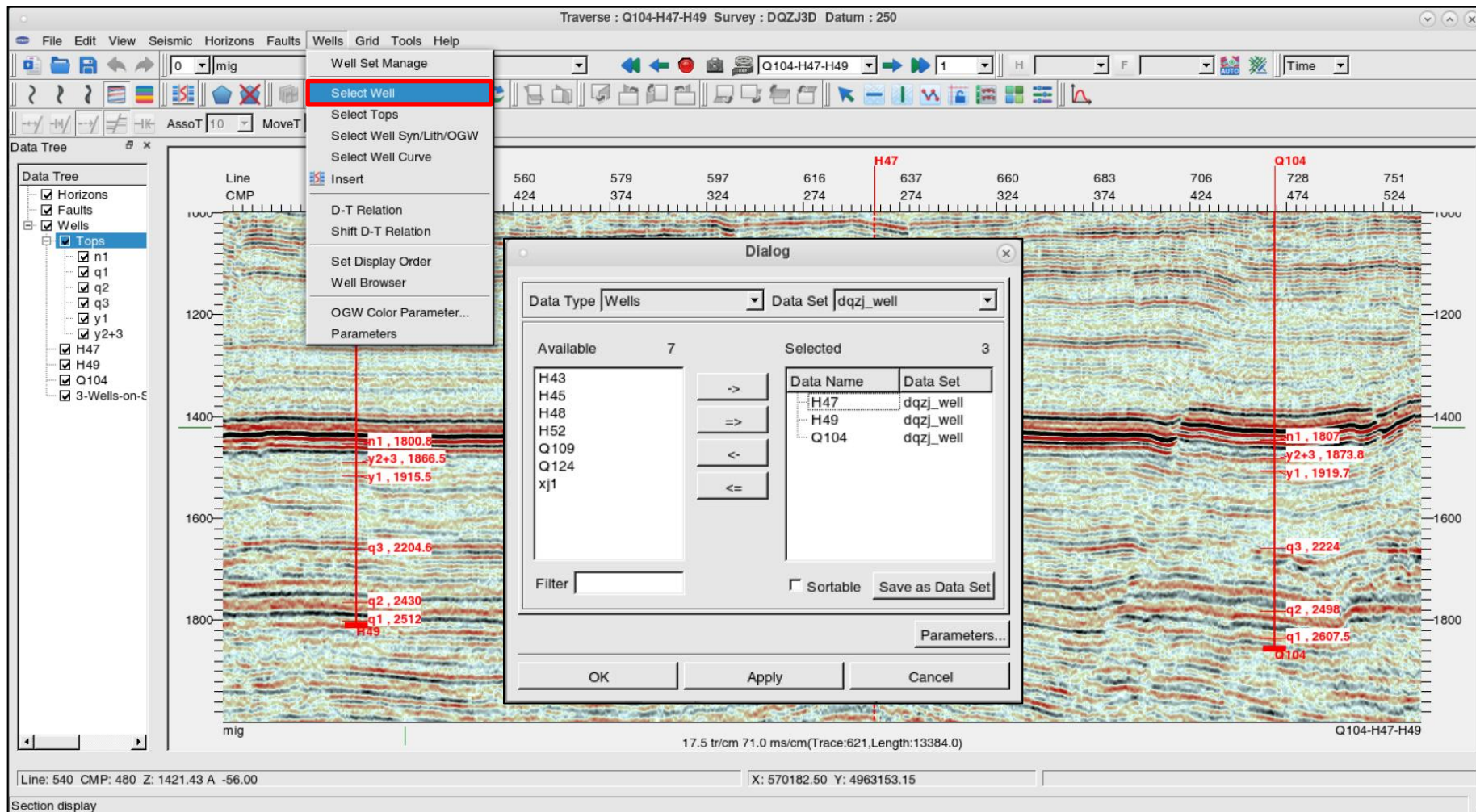
井数据显示基本流程

设置钻井时深关系

选择显示的钻井

选择显示的钻井数据
(地质分层.合成记录.
岩性.油气水和测井曲线)

调整钻井数据显示参数





井数据显示



井数据显示基本流程

设置钻井时深关系

选择显示的钻井

选择显示的钻井数据
(地质分层.合成记录.
岩性.油气水和测井曲线)

调整钻井数据显示参数

The screenshot illustrates the workflow for displaying well data in GeoEast. The main window shows a seismic section with well logs. The 'Wells' menu is open, highlighting 'Select Tops', 'Select Well Syn/Lith/OGW', and 'Select Well Curve'. The 'Select Well Data' dialog is open, showing a table of wells and their data sets. The 'Select Well Curve' dialog is also open, showing a table of log types and their versions.

Select Well Data Dialog:

Well Name	Syn Name	Set
1 H47	H47syn02	Set
2 H49	H49syn01	Set
3 Q104	Q104syn01	Set

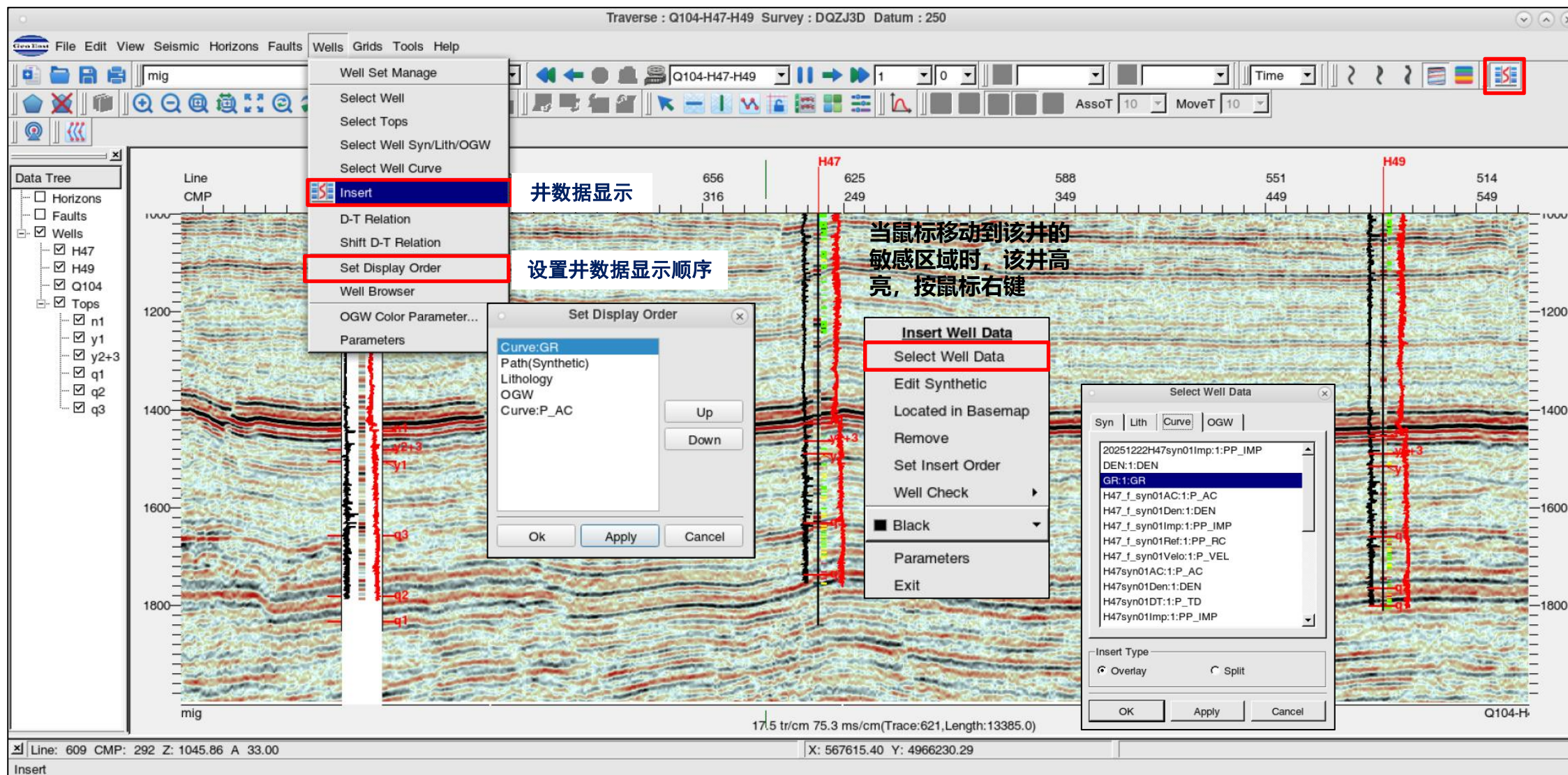
Select Well Curve Dialog:

Log Type	Log Version	Set
1 P_AC	Last Version	Set
2 DEN	Last Version	Set
3 GR	Last Version	Set
4 SP	Last Version	Set
5 RT	Last Version	Set
6 POR	Last Version	Set
7 P_VEL	Last Version	Set
8 PP_IMP	Last Version	Set
9 PP_RC	Last Version	Set
10 P_TD	Last Version	Set

Callout: 该界面只可批量选择名称与类型一致的曲线，对于自定义名的曲线可通过Insert（井数据显示）单独选择。



井数据显示





井数据显示



井数据显示基本流程

设置钻井时深关系

选择显示的钻井

选择显示的钻井数据
(地质分层.合成记录.
岩性.油气水和测井曲线)

调整钻井数据显示参数

Traverse : Q104-H47-H49 Survey : DQZJ3D Datum : 250

File Edit View Seismic Horizons Faults Wells Grids Tools Help

Well Set Manage
Select Well
Select Tops
Select Well Syn/Lith/OGW
Select Well Curve
Insert
D-T Relation
Shift D-T Relation
Set Display Order
Well Browser
OGW Color Parameter...
Parameters

Data Tree

- Horizons
- Faults
- Wells
 - H47
 - H49
 - Q104
 - Tops
 - n1
 - y1
 - y2+3
 - q1

Line CMP

1200

656 316 625 249 588 349 551 449 514 549

H47 H49

1200

井轨迹页

Path Tops Synthetic Lithology Curve OGW Tip

Path Visible

Path Color Black

Path Width 4

Projection Criteria

- Top Location
- Bottom Location
- Well Path

Distance(m) 100.00

连续透视法投影

Projection Method

- Orthogonal 正交投影
- Continuous Perspective

Project all the points to the nearest segment(Along the well tr

Distance from line(m) 100.00

Name

Visible

Size 10

Color Red

Position Top

Start Depth Added by the Shift

Well Shift

Save As Default

OK Apply Cancel

地质分层页

Path Tops Synthetic Lithology Curve OGW Tip

Top Visible

Color Red

Background White

Name

Visible

Top Depth (MD)

Position Right

Size 10

Marker

Position Middle

Length 4

Width 4

Display Style

- Horizontal
- Vertical well trajectory

Save As Default

OK Apply Cancel

合成记录页

Path Tops Synthetic Lithology Curve OGW Tip

Visible

Synthetic Visible

Wiggle

Visible

Color Blue

Display Type

- Variable Area
- Variable Density

Variable Area Fill Mode

- Positive
- Negative

Others

Traces 3

Amplitude Swing 1.0

Polarity Normal

AGC 100

Save As Default

OK Apply Cancel

井曲线页

Path Tops Synthetic Lithology Curve OGW Tip

Curve Visible

Display Type

- Curve
- Variable Density

Display Mode

- Horizontal
- Vertical well trajectory**

Filter Type : NONE

Parameters...

Track Width 8

Reverse

Define Curve Range By User

Reset Original Curve Range

Curve Type	Color	Style	Width	Left	Right
1 GR	Black	Solid	2	36.458	300.000
2 P_AC	Red	Solid	2	150.000	450.000

Set curve range to all

Save As Default

OK Apply Cancel

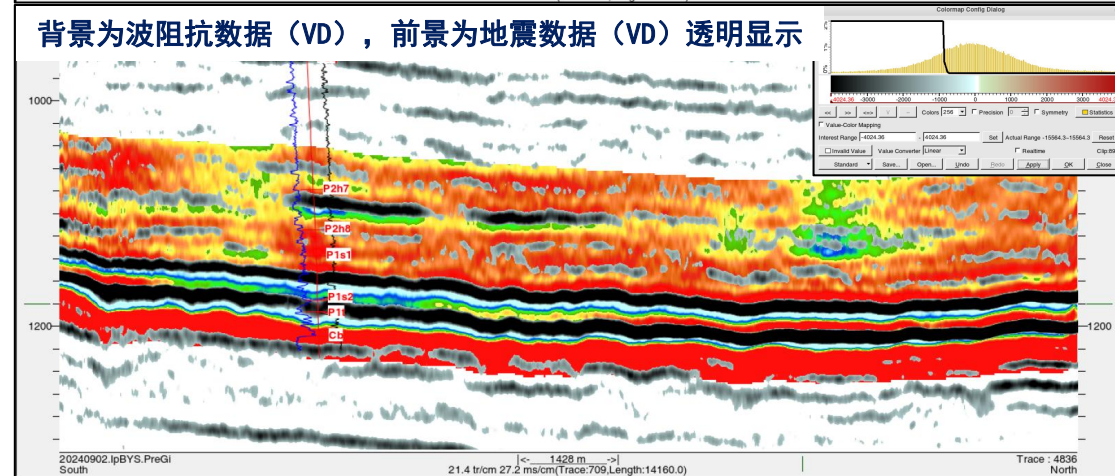
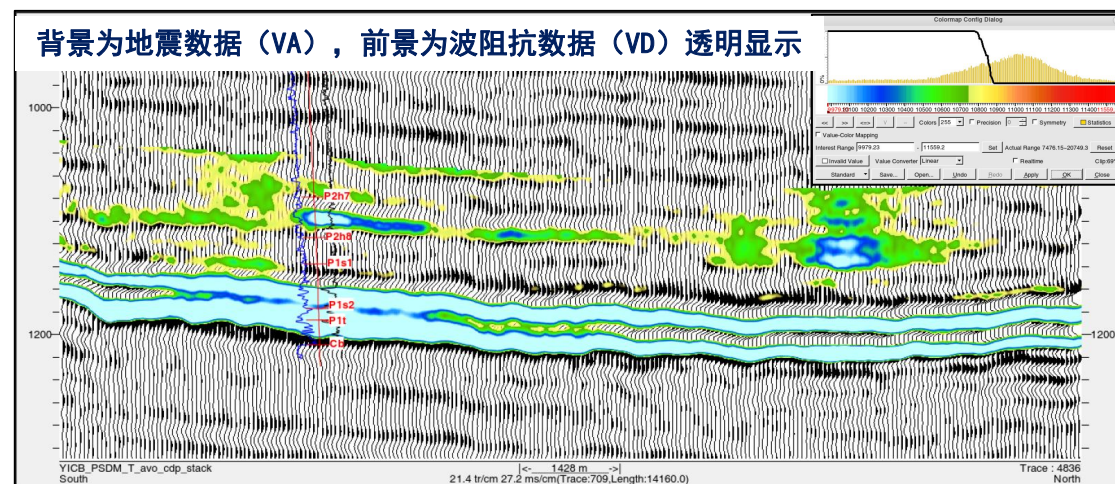
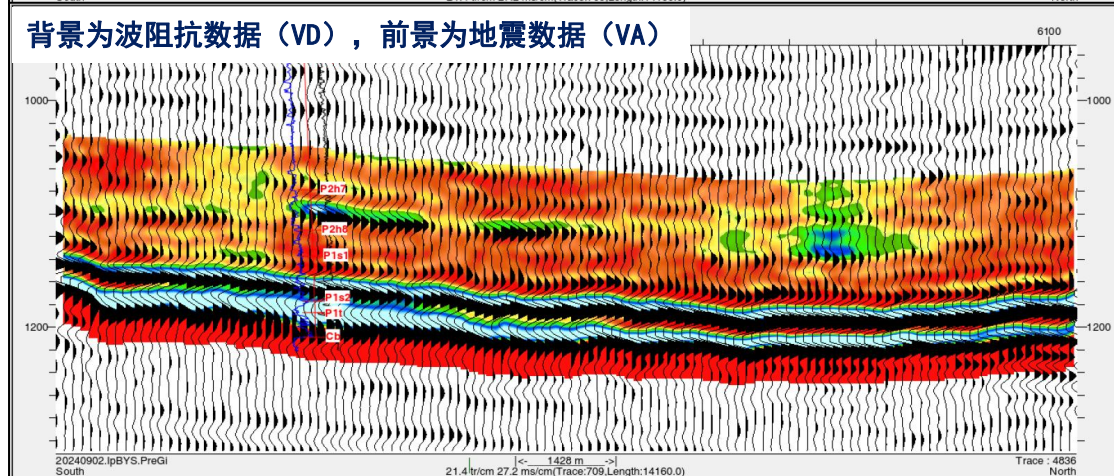
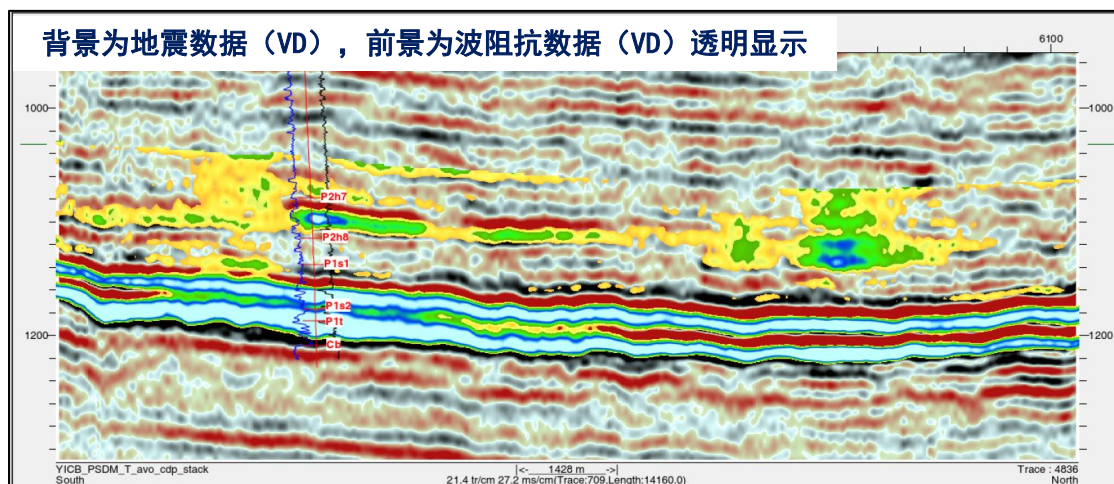




注意事项

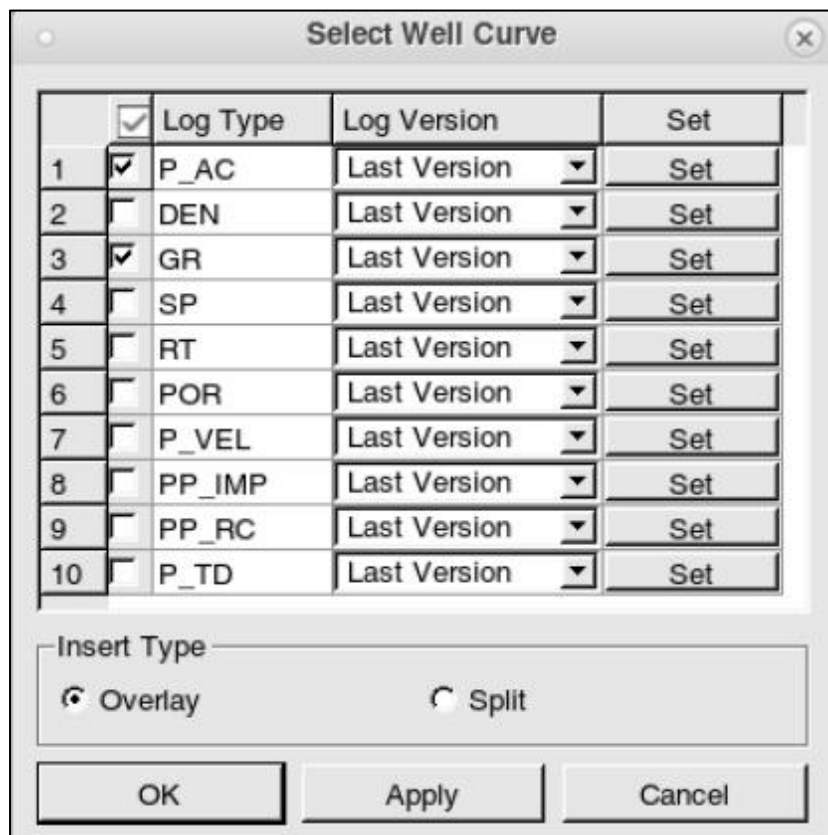


1、当选择两种数据透明显示时，如果一个数据为地震类数据，不管是在前景还是在背景，其显示类型可以选择变面积（VA）和变密度（VD）显示方式，而如果数据是波阻抗数据等就只能选择变密度显示方式，其在前景的时候，可以调节颜色透明度，才能达到需要的显示效果。

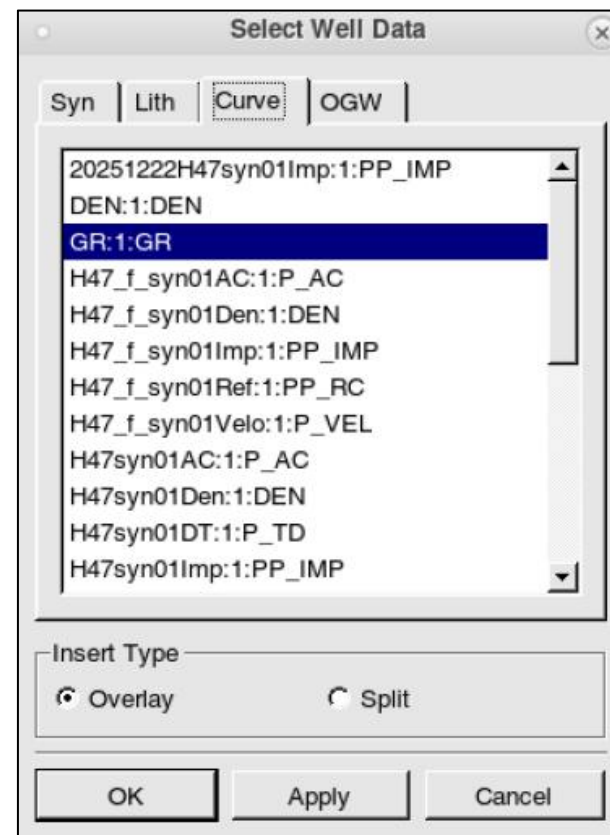




2、当测井曲线名称与其类型名称一致时，可利用菜单栏Wells→Select Well Curve 批量选择进行显示，而对于自定义名的曲线可通过Insert  井数据显示) 单独选择。建议加载井曲线时，曲线名称尽量要与曲线类型名称一致。



Wells → Select Well Curve只能选择曲线类型



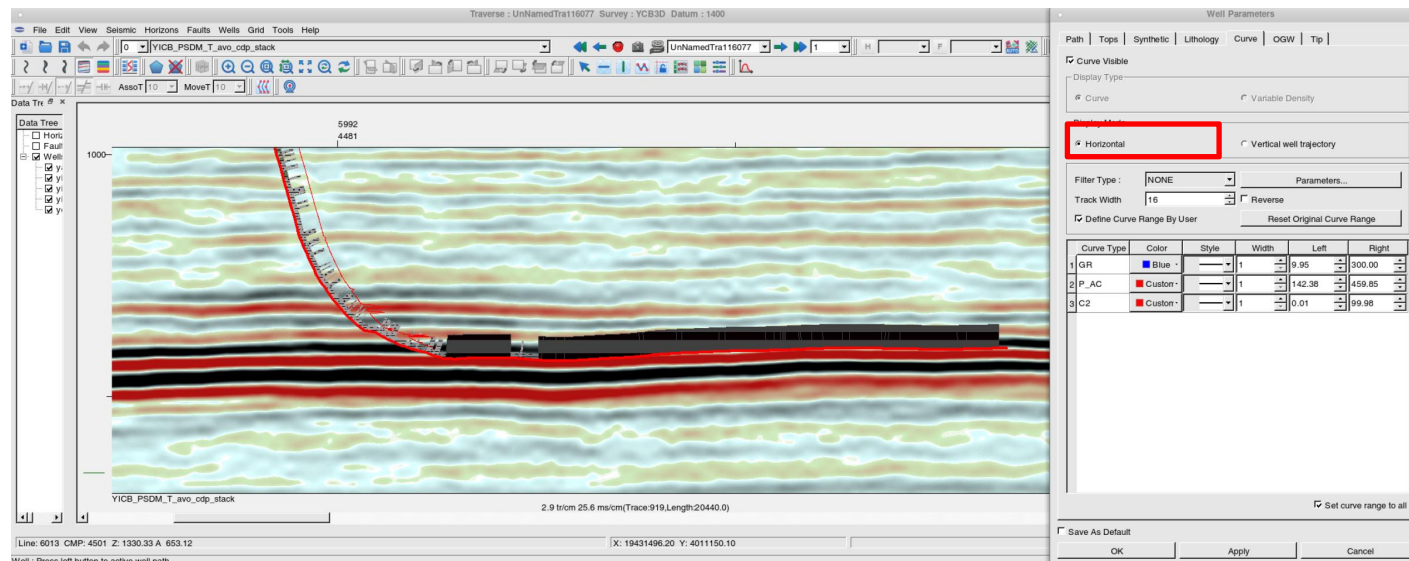
可以选择曲线明细和类型



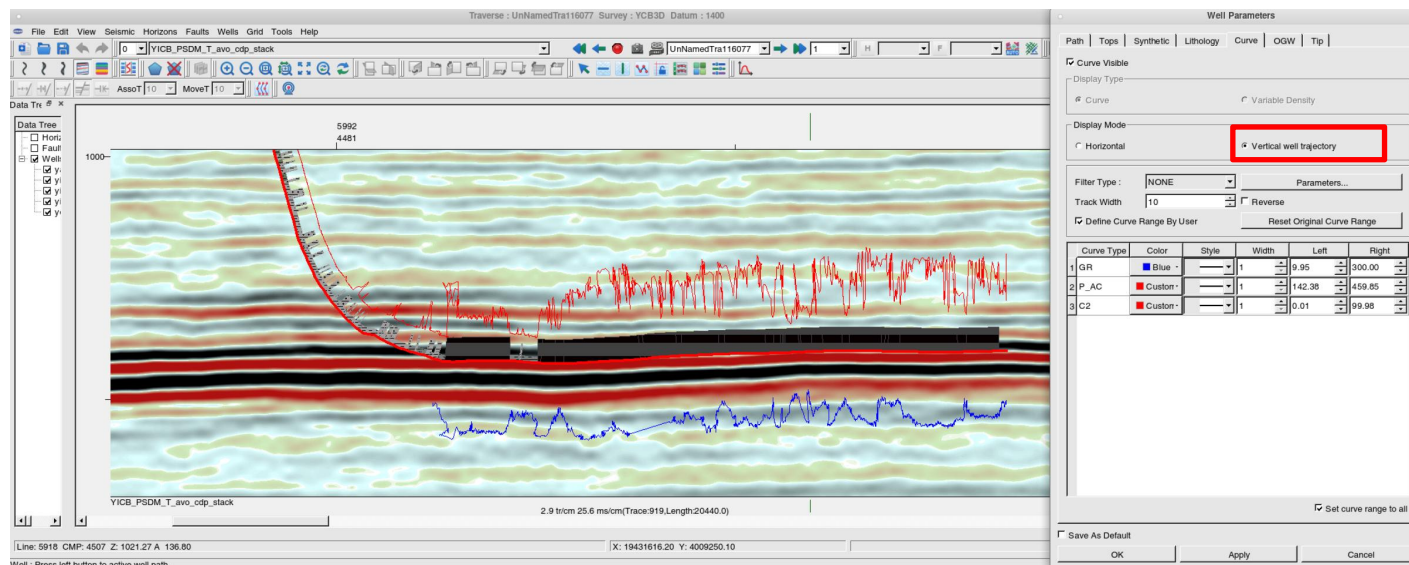
注意事项



3、水平井显示井曲线时，选择Vertical well trajectory（垂直井轨迹方向）方式进行显示（4.4版本）



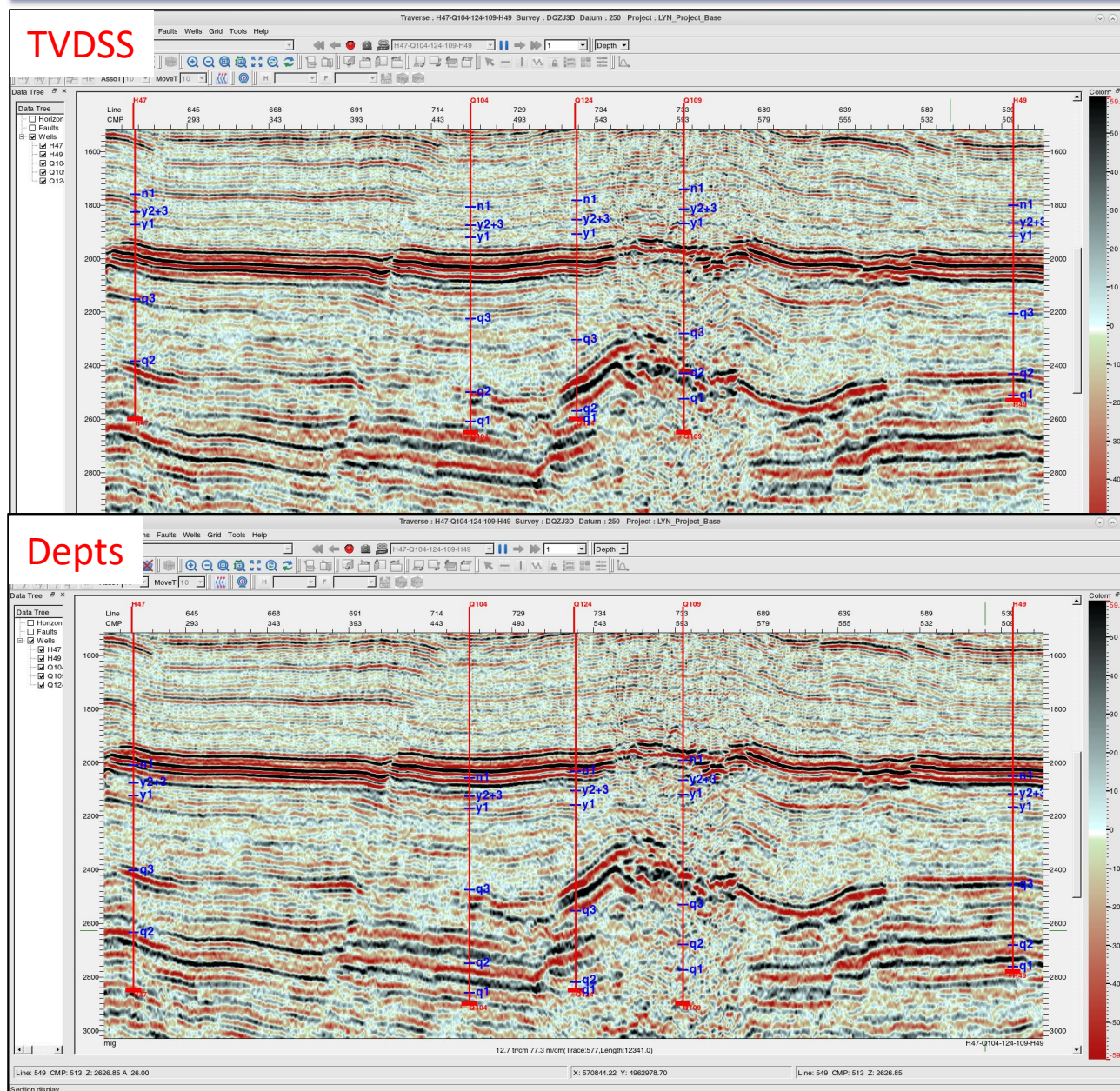
水平方向



垂直井轨迹方向



注意事项



4、进行深度域地震数据显示时，其基准面的选择有两种：TVDSS-海拔基准面，Depth-地震基准面。只有选择Depth时，显示井数据才与标定结果一致。

Section Parameters

Mode & Scale | Annotation | Filter

Annotation

☒ Annotation Visible Label Font Helvetica,10

☒ Top ☒ Bottom ☒ Left ☒ Right

☒ SP ☒ Scale ☐ Coordinate

Background Custom Foreground Black

Ruler Interval Trace Interval 50 Trace Tick 10 Depth Interval 200 Depth Tick 20

Datum of original seismic data TVDSS TVDSS Depth

Depth Line ☐ Visible Black Line Interval 250

Traverse Parameter ☐ Turn Point Red Section Line Path ☐ Visible Green

Intersection Line ☒ Name Vi ☒ Path Vi Blue Font Helvetica,10

Intersectant Survey Intersectant Survey Select Survey

Vertical Annotation Title Depth Unit Second Millisecond

☐ Save As Default

OK Apply Cancel

感谢大家对GeoEast软件的 信任和支持!

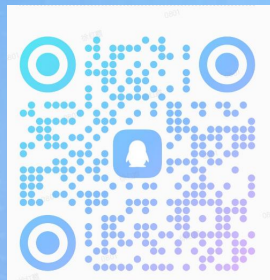
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服务邮箱: geoeast@cnpc.com.cn

问题管理系统: <https://wt.gs.com.cn>

QQ交流群: 196011710、340847471

官网网址: <http://www.gs.com.cn>

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