

# CARBONATE RESERVOIR MAPPING

## STRUCTURAL INTERPRETATION

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YULIA PUTRI WULANDARI

# INTRODUCTION

## WHAT IS THE STRUCTURAL INTERPRETATION?

Directed toward the creation of structural maps of the subsurface from the observed three-dimensional configuration of arrival times. [https://wiki.aapg.org/Seismic\\_interpretation](https://wiki.aapg.org/Seismic_interpretation)

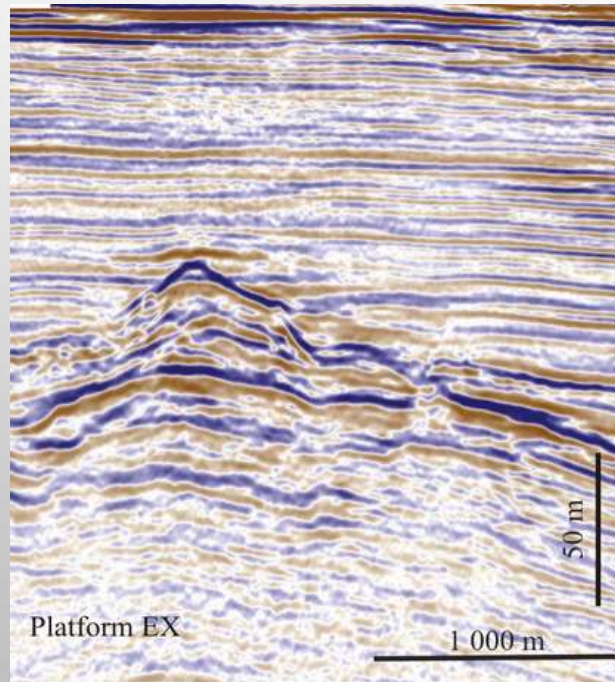
## WHAT ARE THE BENEFITS IN THE OIL AND GAS BUSINESS?

To define the petroleum system

Finding new prospect of HC accumulation

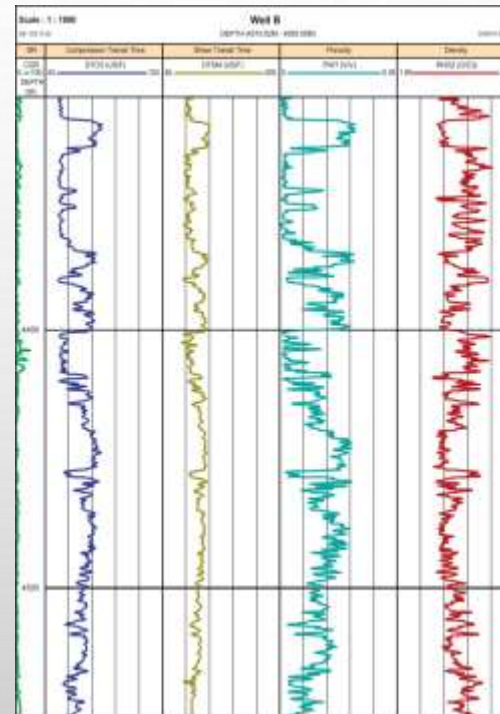
# WHAT DATA DO WE NEED TO PREPARE FOR INTERPRETATION?

## ✓ SEISMIC DATA



*Jamaludin, SN F., et al 2017*

## ✓ WELL DATA



*Gholami, R. et al 2013*

## ✓ LITERATURE



<https://seputarilmu.com/2019/11/literatur.html>

# SEISMIC DATA

**WHAT IS THE SEISMIC DATA?**

**WHAT IS THE FUNCTION  
SEISMIC DATA?**

Seismic Data Quality Depends On:

**HOW TO ACQUIRED THE  
DATA?**

**HOW TO PROCESS THE DATA**

# SEISMIC DATA

**WHAT IS THE WELL DATA?**

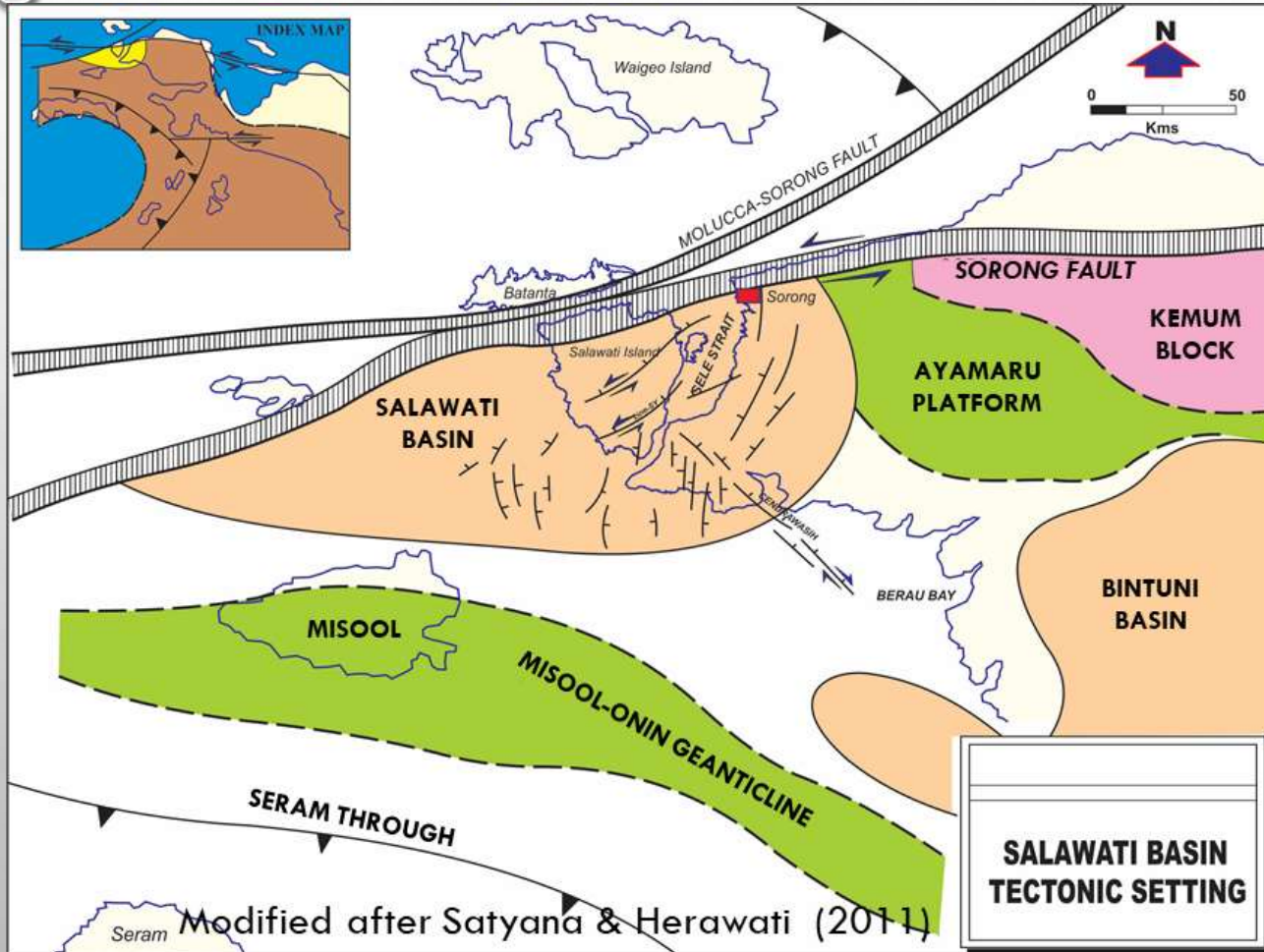
**WHAT IS THE FUNCTION OF  
WELL DATA?**

Logs Data

Well Check shot / VSP



# Regional Geology

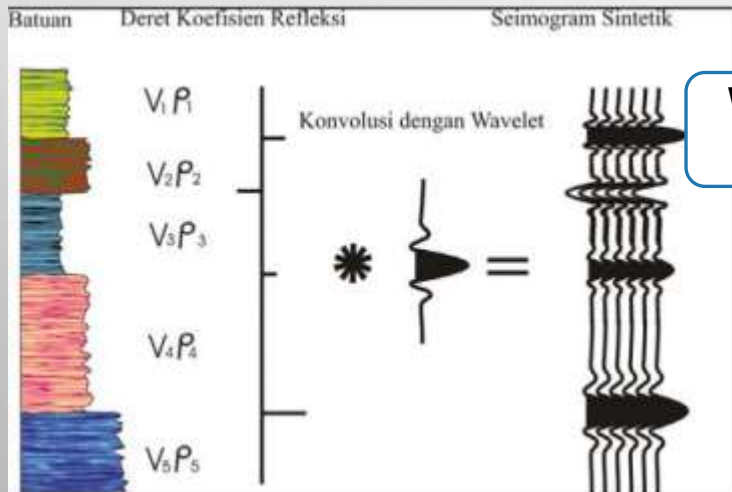


AGE		LITHOSTRATIGRAPHY	REMARKS	
TERTIARY	Q	PLEISTOCENE	SELE MOLLASSIC DEPOSITS	
	PLIOCENE	LATE	(R)	DEBRIS FLOW DEPOSITS ASSOCIATED WITH RAPID BASIN TILTING
		EARLY	(S)	SORONG FAULT INITIATION
	MIOCENE	LATE	(R) (U)	PINNACLE REEFS AND SHOAL REEFS ASSOCIATED WITH TECTONICALLY CONTROLLED CHANGE FROM CARBONATE CLASTIC SEDIMENTATION
		MIDDLE	(R)	SHALLOW SHELF CARBONATE AND CLASTICS FRINGING BASEMENT HIGHS
		EARLY	(R)	
	OLIGOCENE	LATE	(R)	SHALLOW TO MODERATELY DEEP MARINE MIXED CLASTICS POSSIBLY DELTAIC
		EARLY	(R)	SHALLOW SHELF CARBONATES WITH LOCALIZED REEFAL FACIES
	EOCENE			
	PALEOCENE			DEEP MARINE MARLY MUDSTONES
PRE-TERTIARY			KEMBELANGAN, PROBABLY PRE-BREAK UP MARGINAL TO SHALLOW MARINE SANDSTONE AND ORGANIC RICH MUDSTONES	
			TIPUMA, CONTINENTAL RE-BEDS WITH INTERBEDDED CLAYS AND SANDSTONES	
			AIFAM, SHALLOW SHELF LIMESTONES AND MUDSTONES WITH FLUID DELTAIC CLASTICS AND COALS	

General Stratigraphy  
modified after Satyana, et al. (2002)

# HOW TO DO THE STRUCTURAL INTERPRETATION?

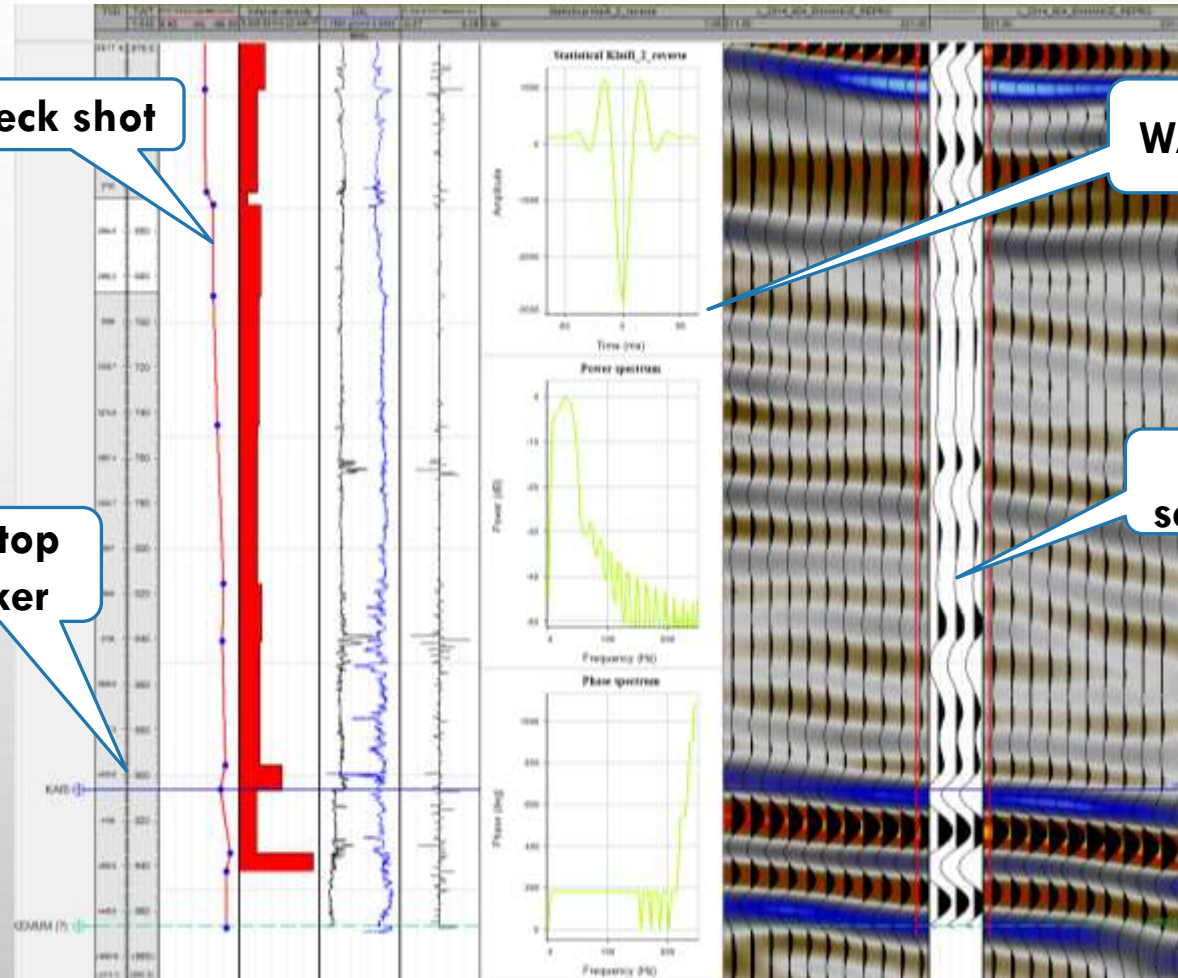
Well to seismic tie



(Sukmono, 1999)

Check shot

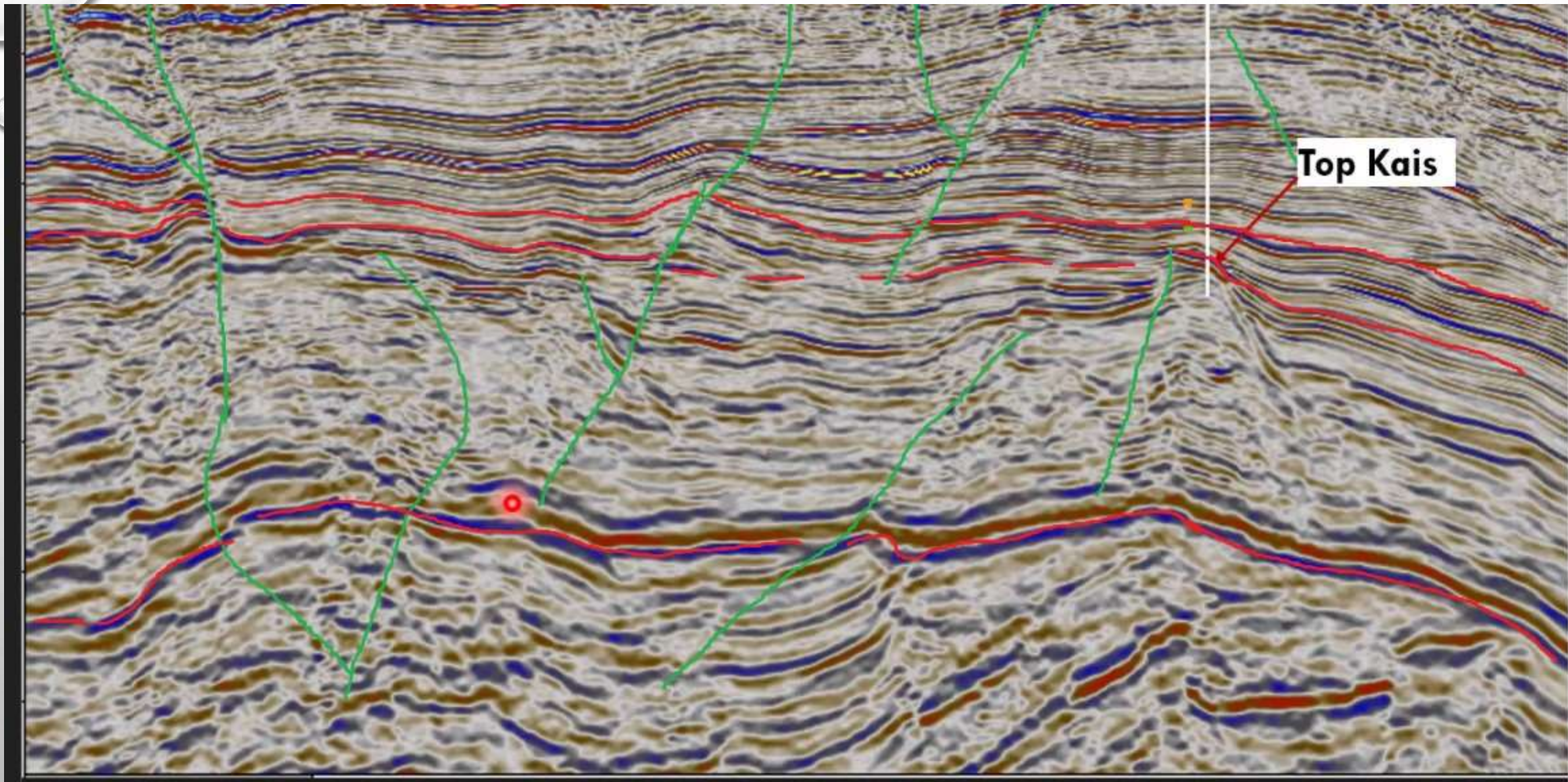
Well top marker



WAVELET

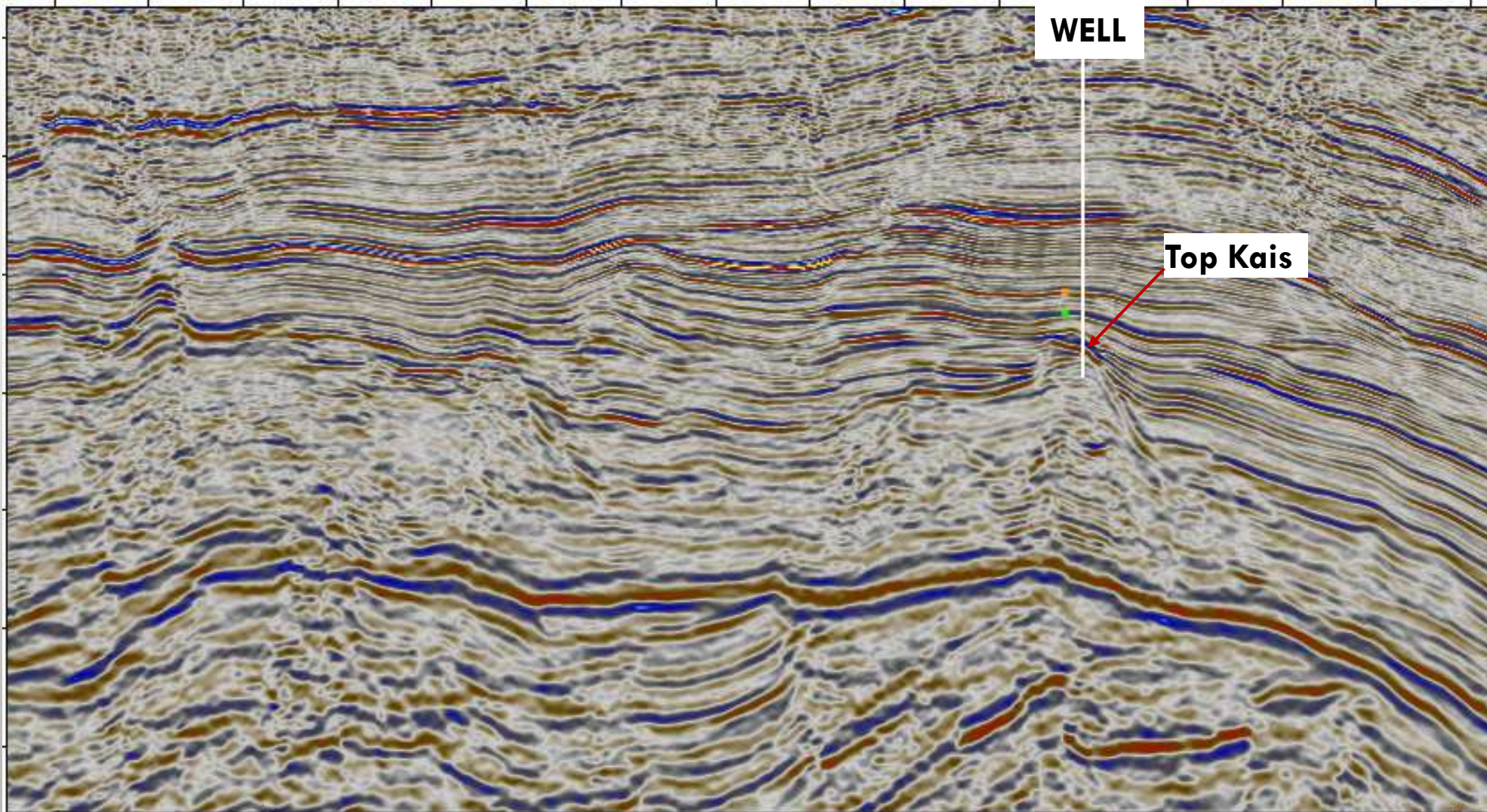
Synthetic seismogram







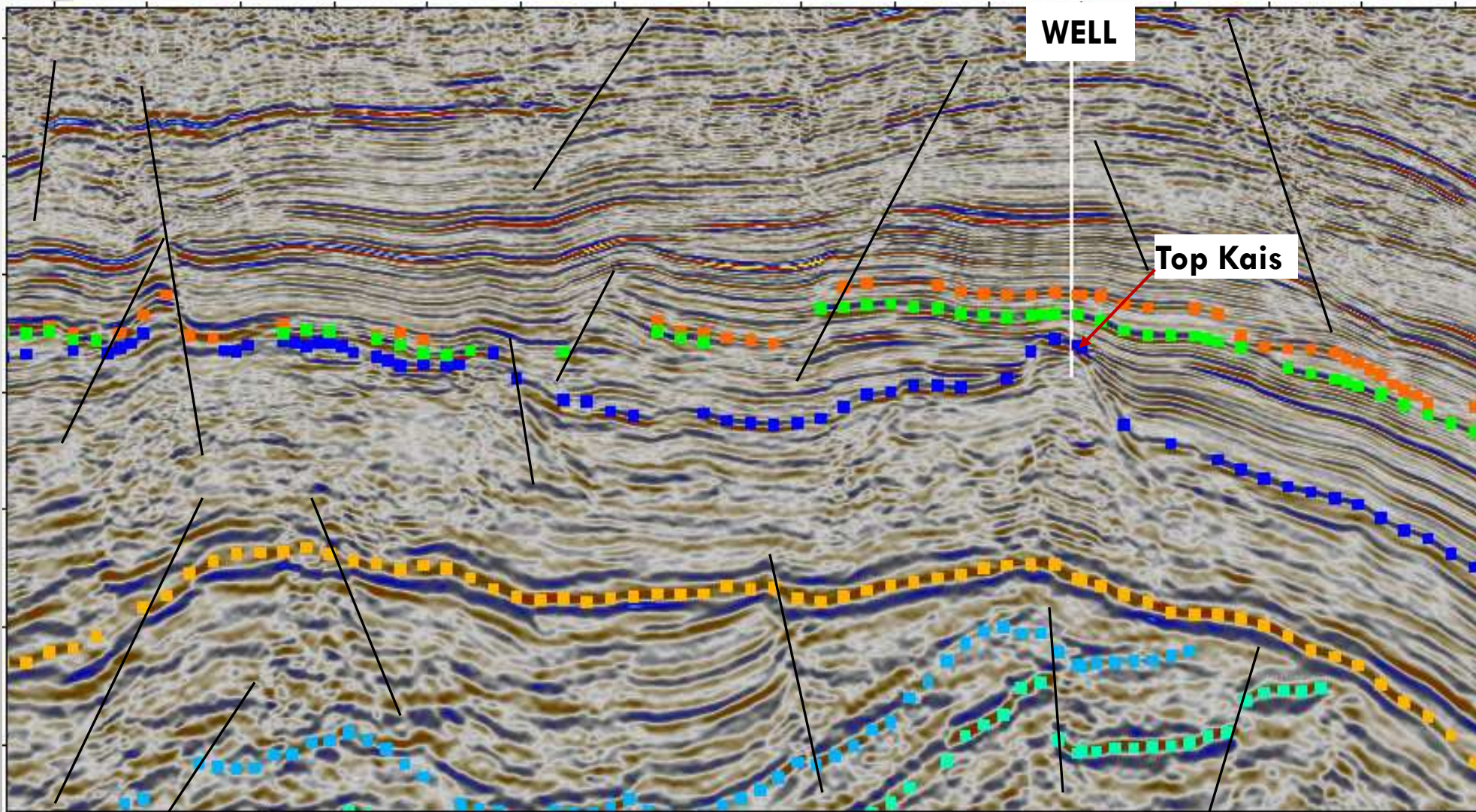
# LETS GO !!!



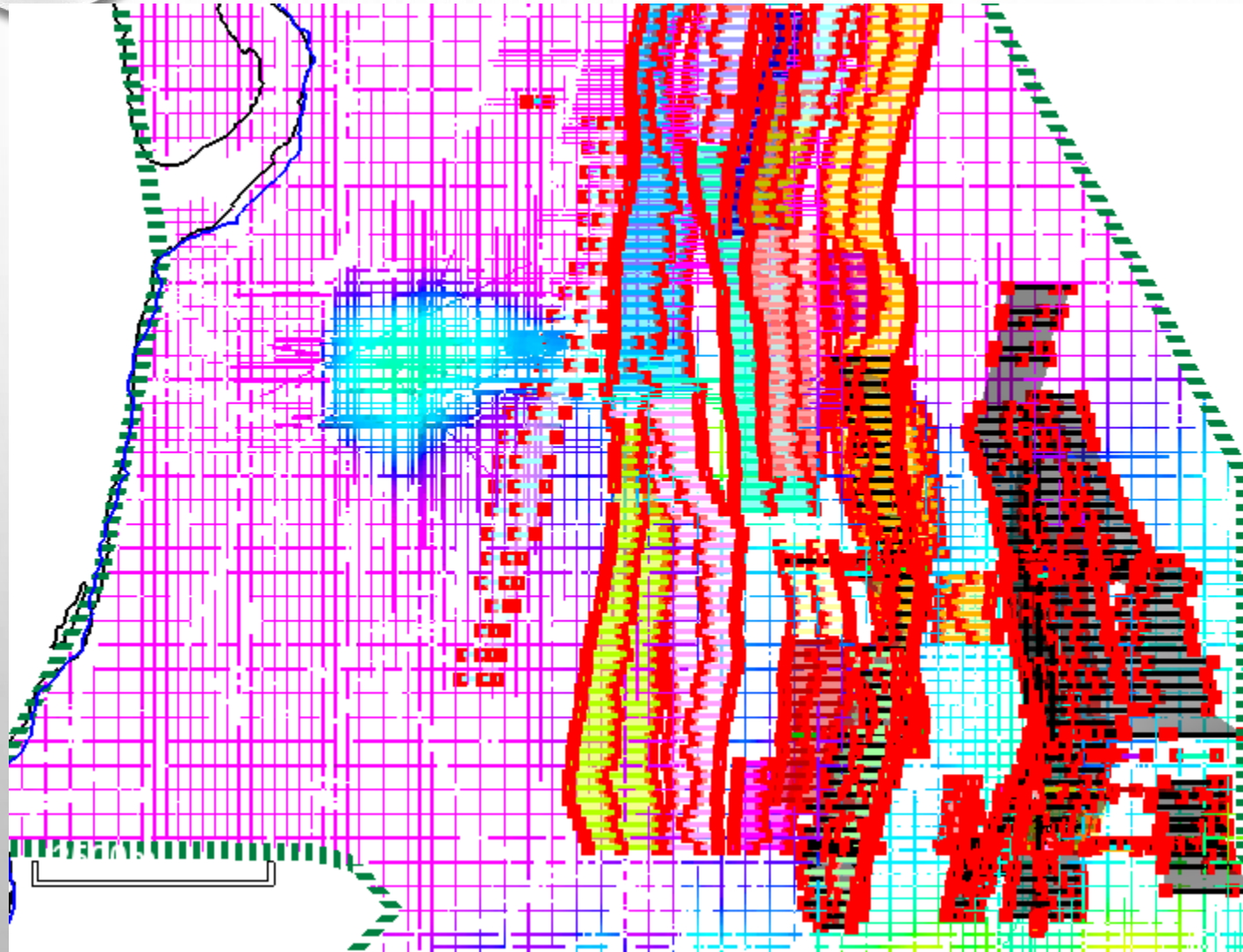
- Pick the top of carbonate
- Pick the base of carbonate
- Pick the faults



# RESULT !







**Make/edit surface** [Close]

Make surface **Hints**

**Main input:** [Select File]

**Boundary:** [Select File]

Use data inside boundary only

**Fault center lines/polygons:** [Select File]

**Result surface:**

Name: Surface

Run for all main input in the same folder

[Suggest settings from input]

Geometry Pre proc Algorithm Post proc Well adjustment Additional inputs

**Grid size and position**

Automatic (from input data/boundary)

User defined: [Get all settings from selected] [Get limits from selected]

X min: 0 [Spinners]

Y min: 0 [Spinners]

X max: 1000 [Spinners] Width: 1000 [Spinners] [Expand]

Y max: 1000 [Spinners] Height: 1000 [Spinners] [Shrink]

Rotation: 0 [Spinners]

**Grid increment**

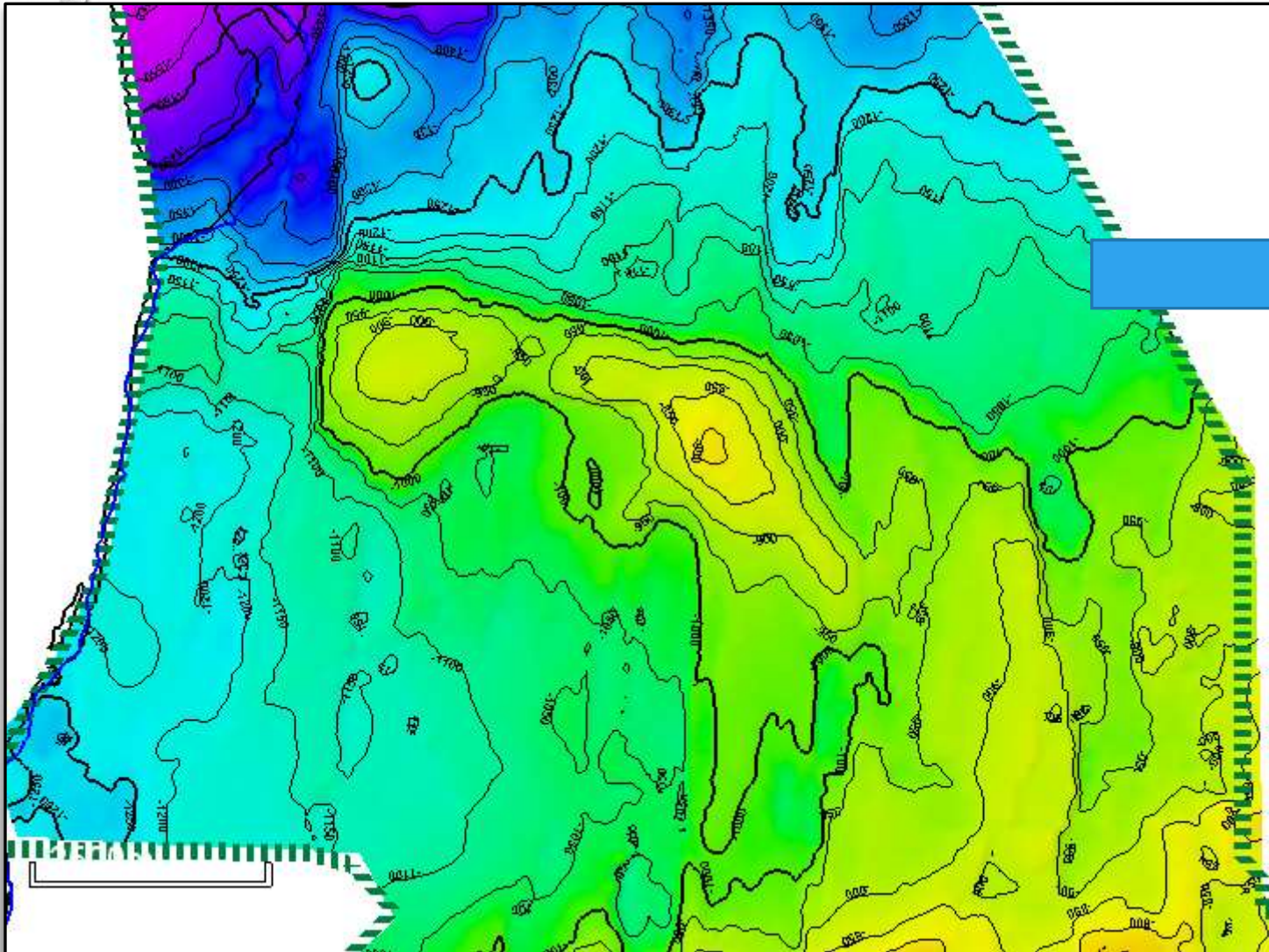
X inc: 50 Y inc: 50 Nodes: 21 x 21

**Boundary**

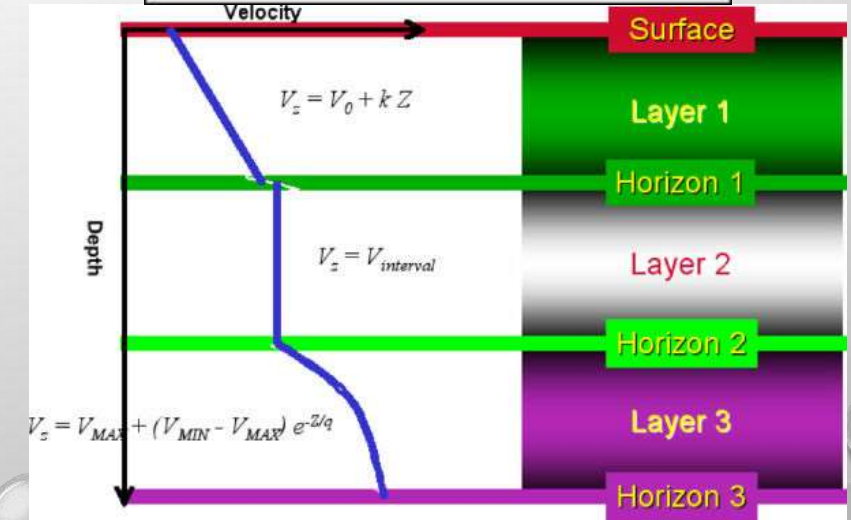
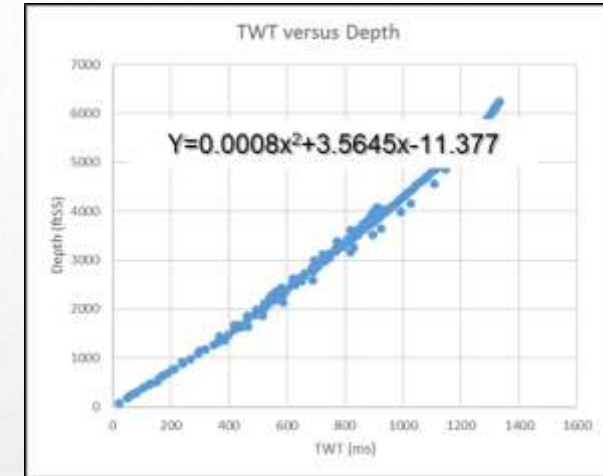
Make boundary from input and extend it with 3 nodes.  
Note: If toggled on, the boundary in the input data will not be used.

Save computed boundary for: data edge

# TIME STRUCTURE MAP

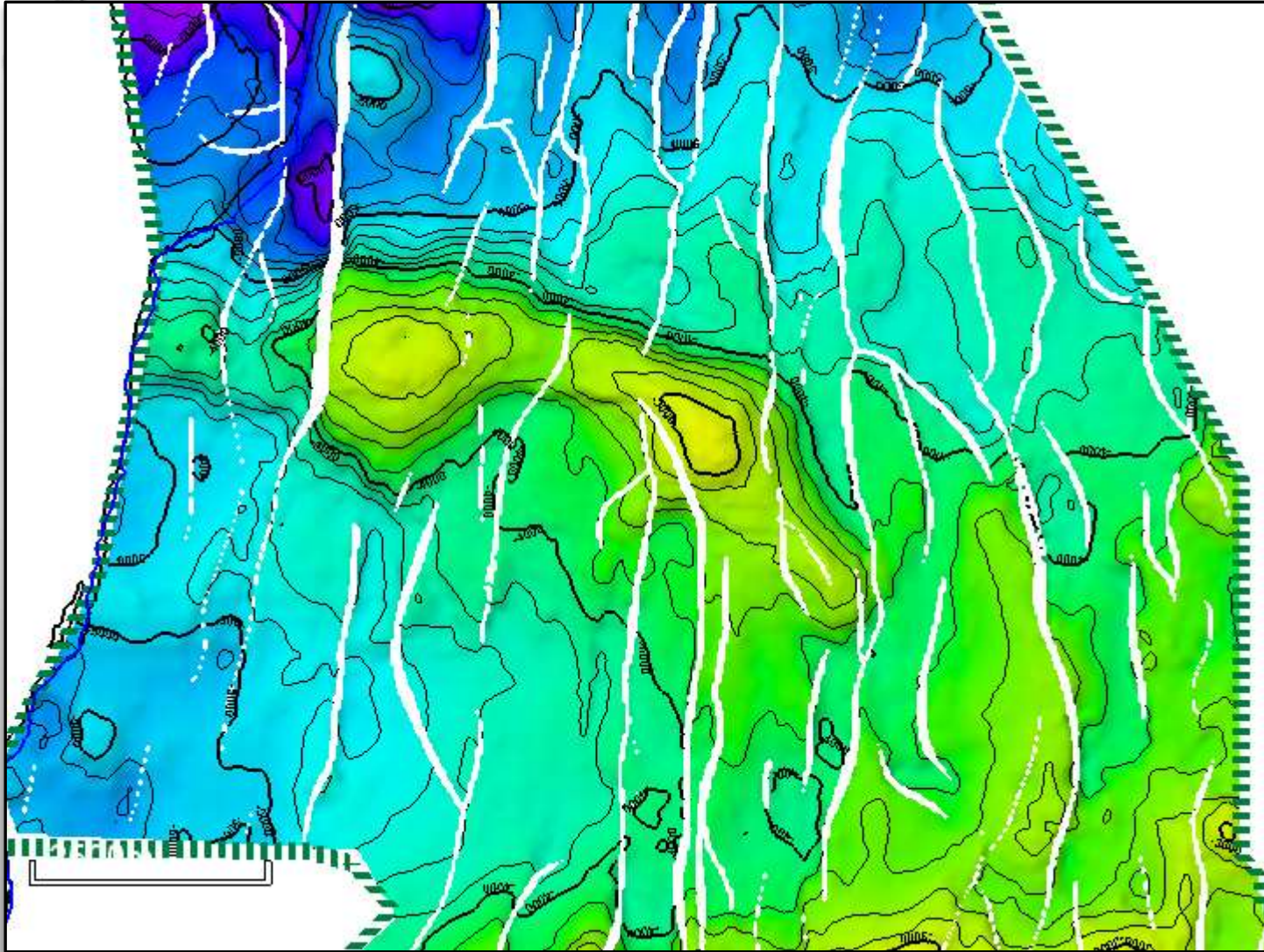


# VELOCITY MODEL

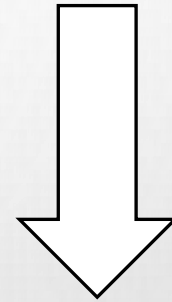




# DEPTH STRUCTURE MAP



**DEPTH MAP → DIRECTLY FROM  
T-D CONVERSION**



**FINAL DEPTH MAP → AFTER  
ADJUSTED TO WELL MARKER**

The image features a light gray background with a subtle radial gradient. In the corners, there are several realistic water droplets of various sizes, some overlapping, with highlights and shadows that give them a three-dimensional appearance. The text "THANK YOU" is centered in the middle of the page.

**THANK YOU**



The image features a light gray background with a subtle gradient. In the top-left and bottom-right corners, there are several realistic water droplets of various sizes, rendered with soft shadows and highlights to give them a three-dimensional appearance. The central text is bold and black, standing out against the light background.

**PLEASE VOLUNTEER FOR SUMMARIZE!**

# Q&A