



# Deepwater Colombia:

## Data Reprocessing Results and Observations

SEPTEMBER 10, 2021



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Geologist



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Geologist

- 1 Project Overview
- 2 Seismic Reprocessing Results
  - Legacy versus New (PSTM)
- 3 Observations in the Deepwater Region
  - Basement Architecture
    - Evidence of magmatic activity
  - Neogene Unconformity
- 4 Mega-Regional Transect

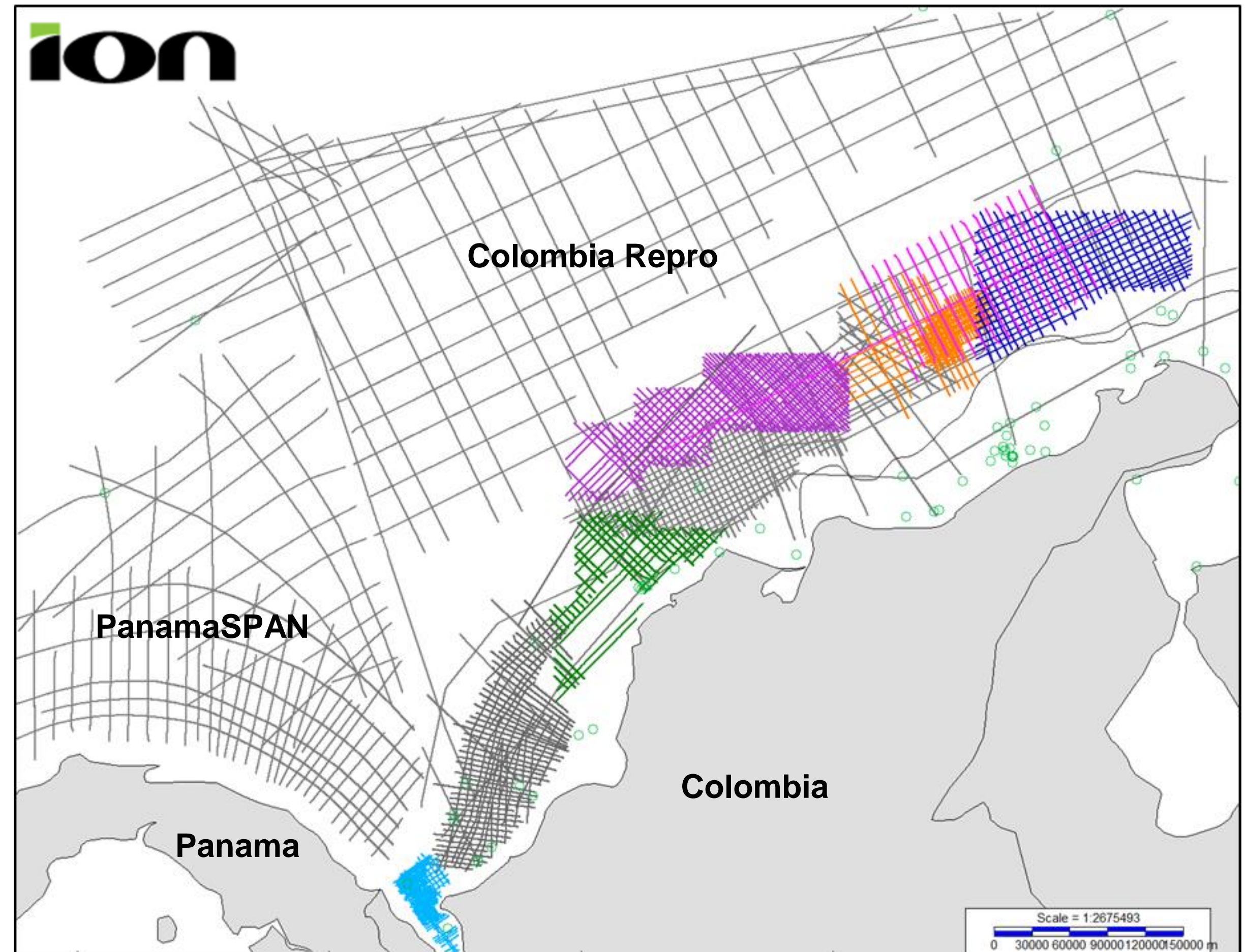


# Colombia Reprocessing Project

## Details of Project

- Colombia Reprocessing
  - > ~60,000 km
  - > 18 surveys
  - > Vintages range from 1982-2014
  - > 12 Wells used in project for velocity model building and interpretation
- These data encompass:
  - > Sinu Offshore Foldbelt
  - > South Caribbean Deformed Belt (SCDB)
  - > Magdalena Fan
  - > Ultra Deep (this presentation)

## Region







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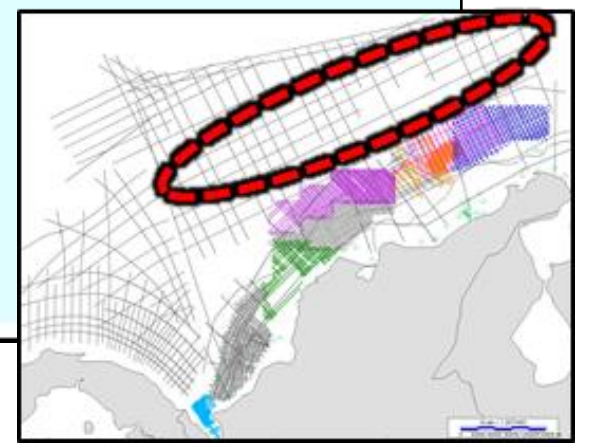
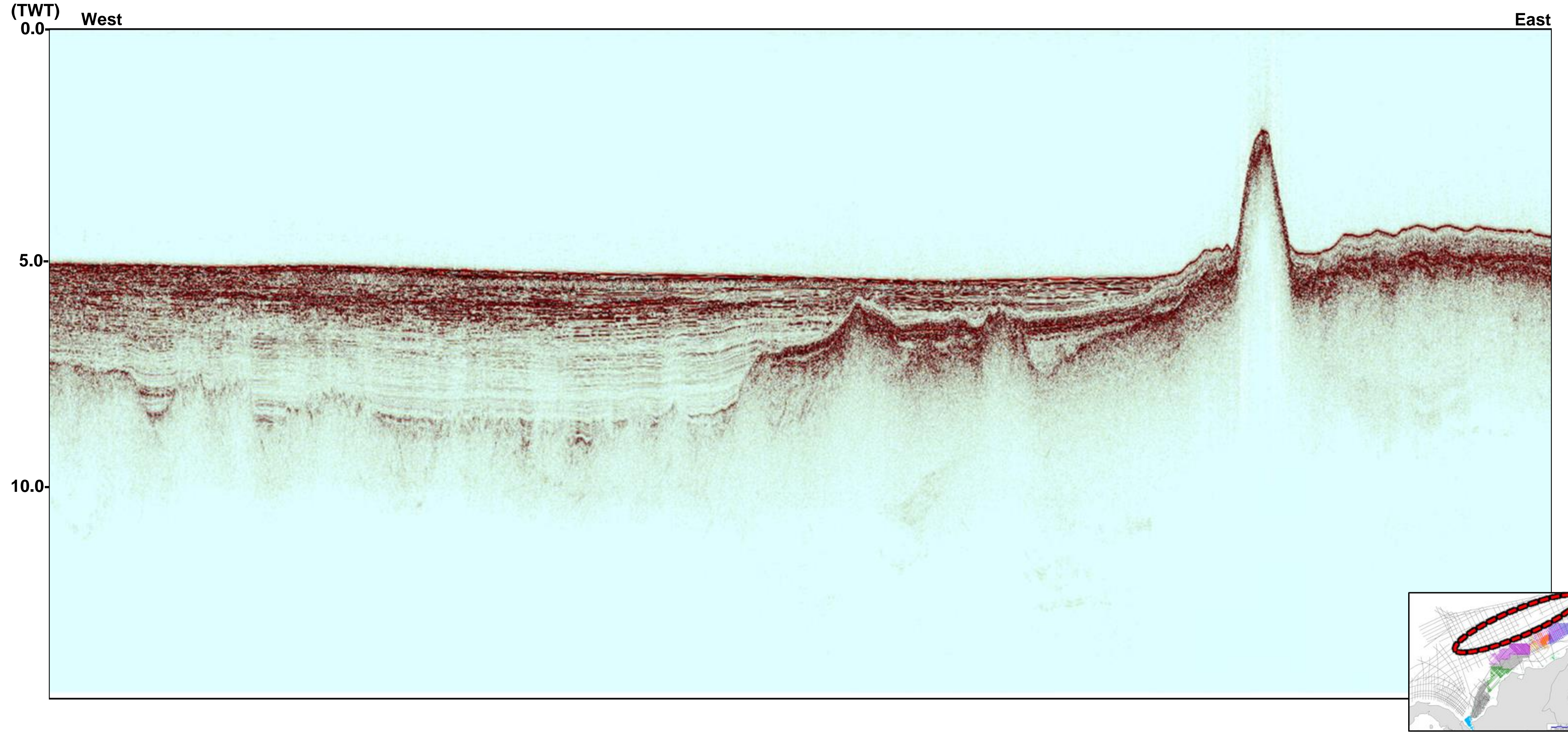
El futuro  
es de todos  
Minenergía  
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# Legacy versus New (PSTM)



# Deepwater Colombia

## COR1-0426 Legacy





# Deepwater Colombia

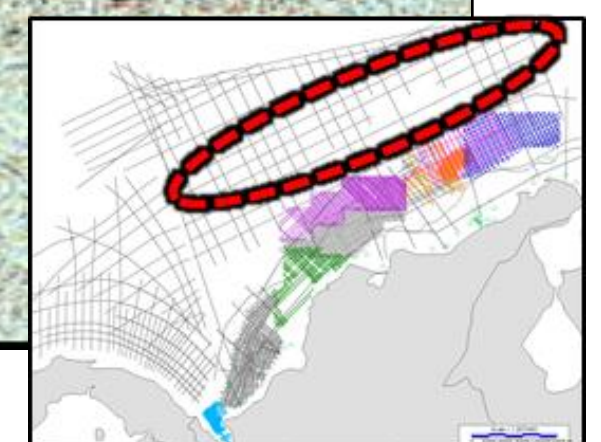
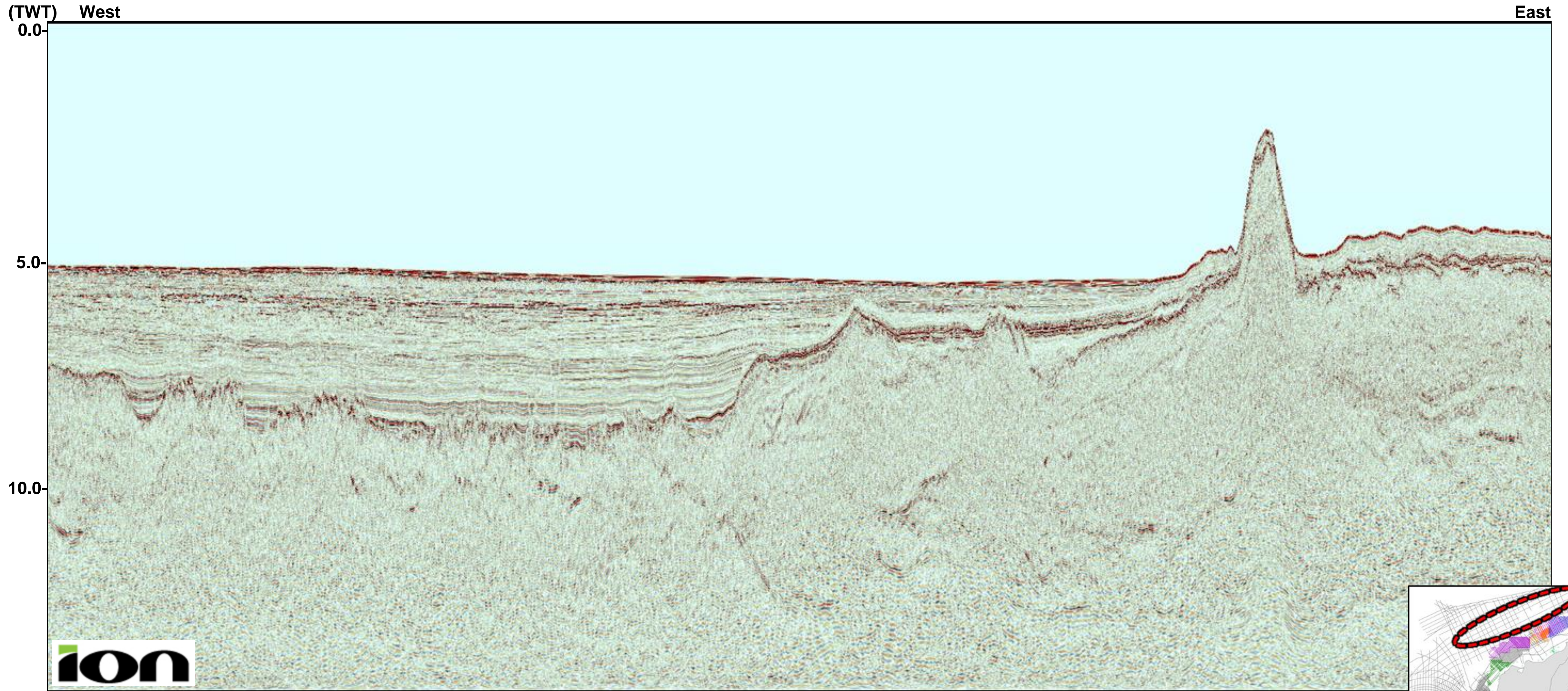
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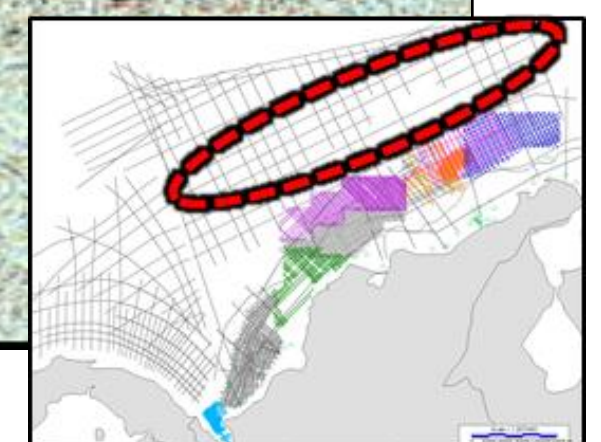
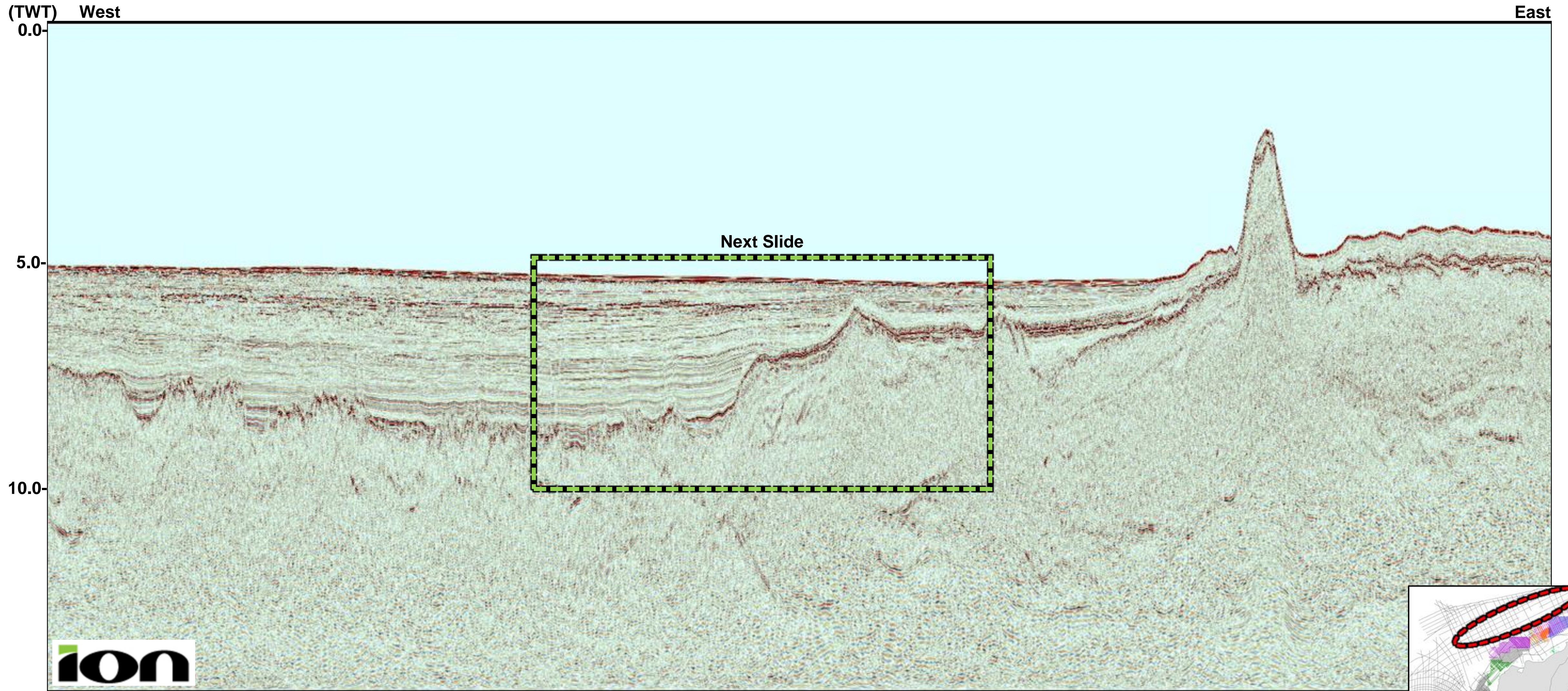
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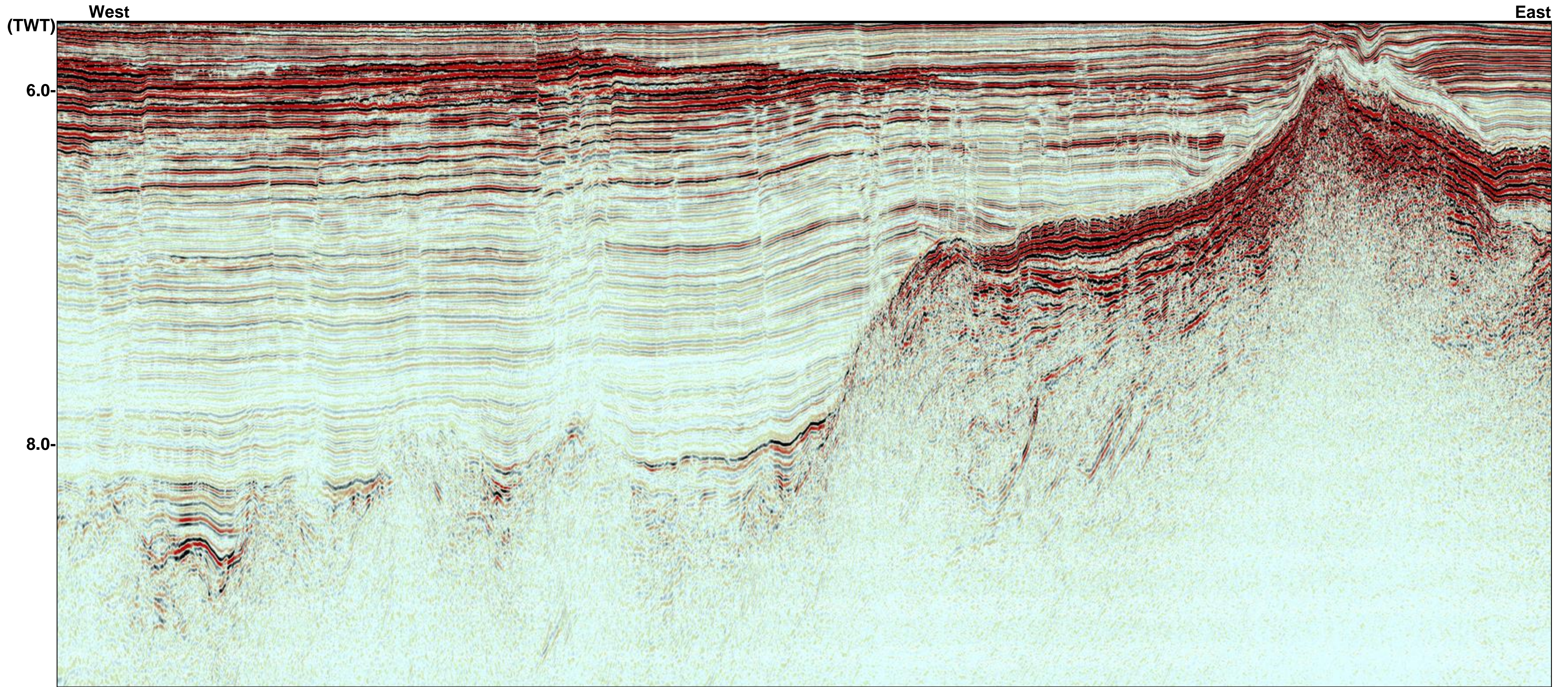
## COR1-0426 Legacy



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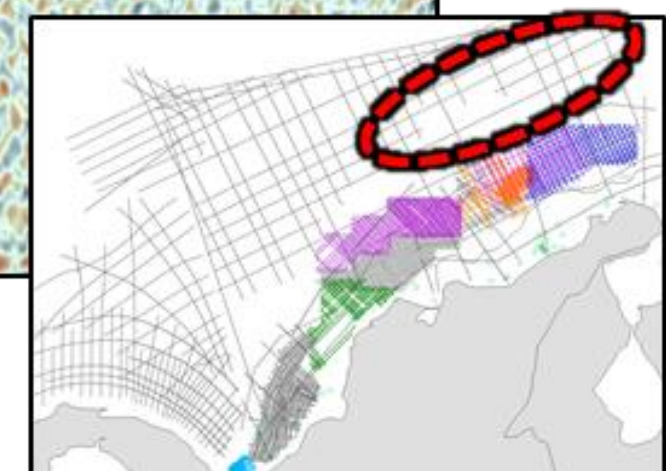
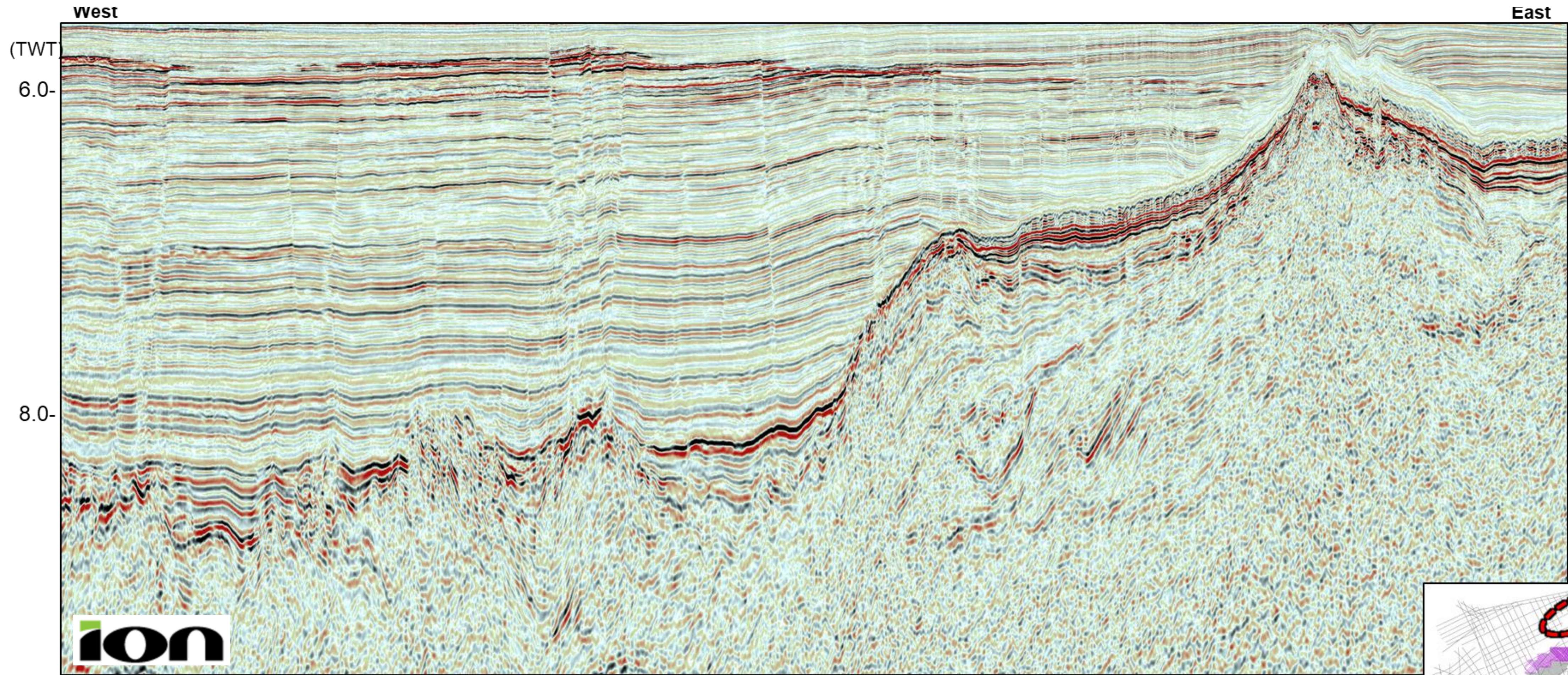
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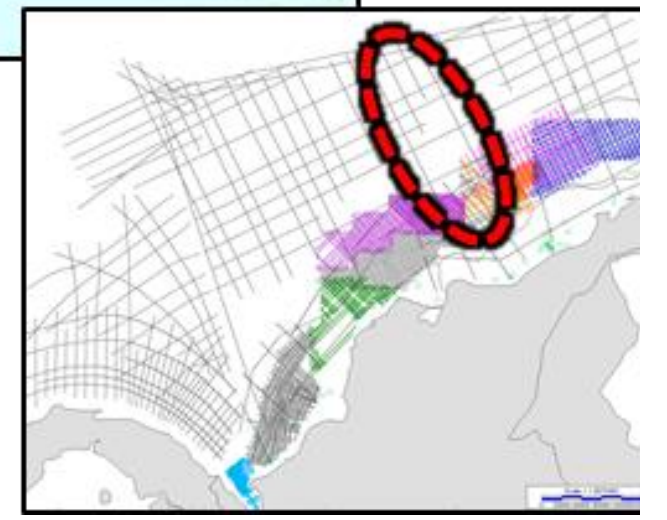
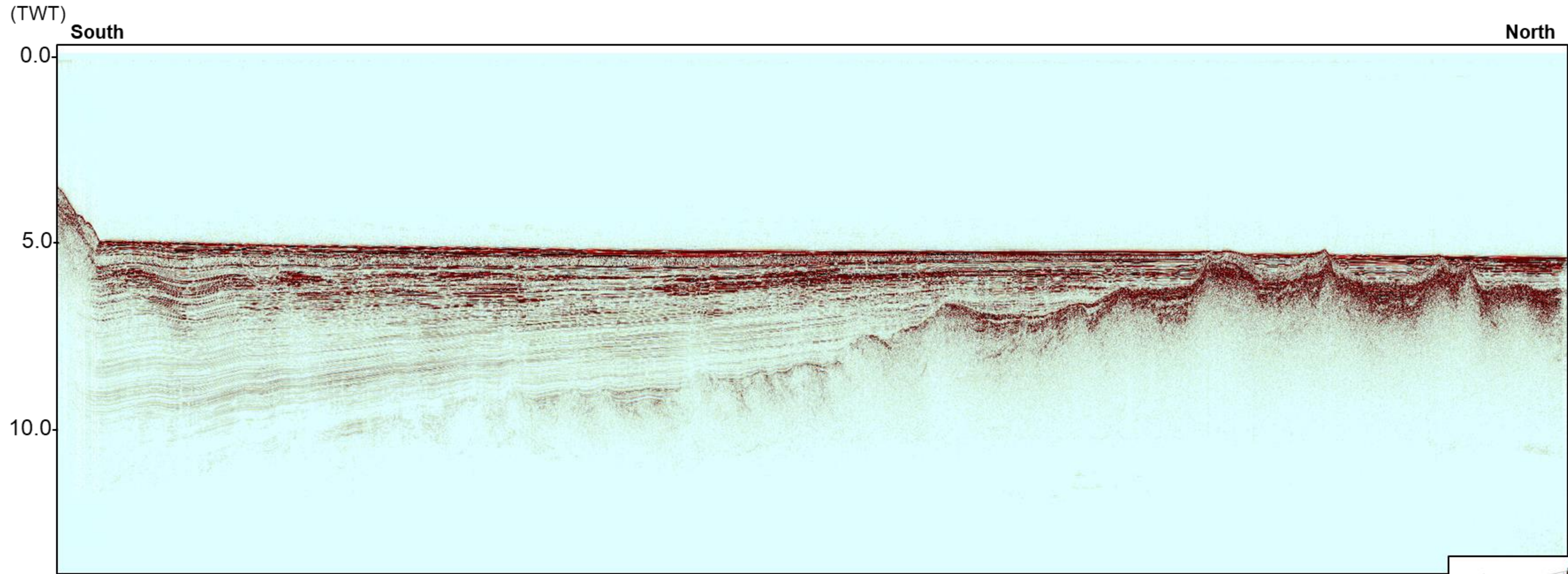
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# Deepwater Colombia

## COR1-0426 Legacy





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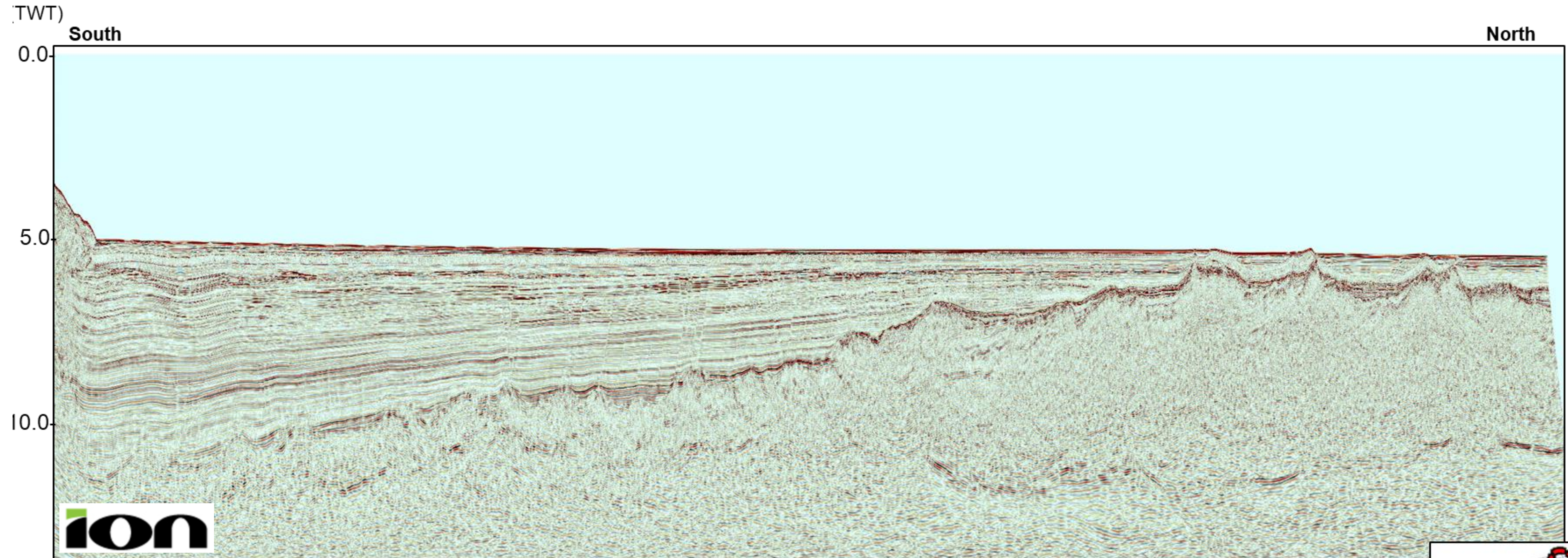
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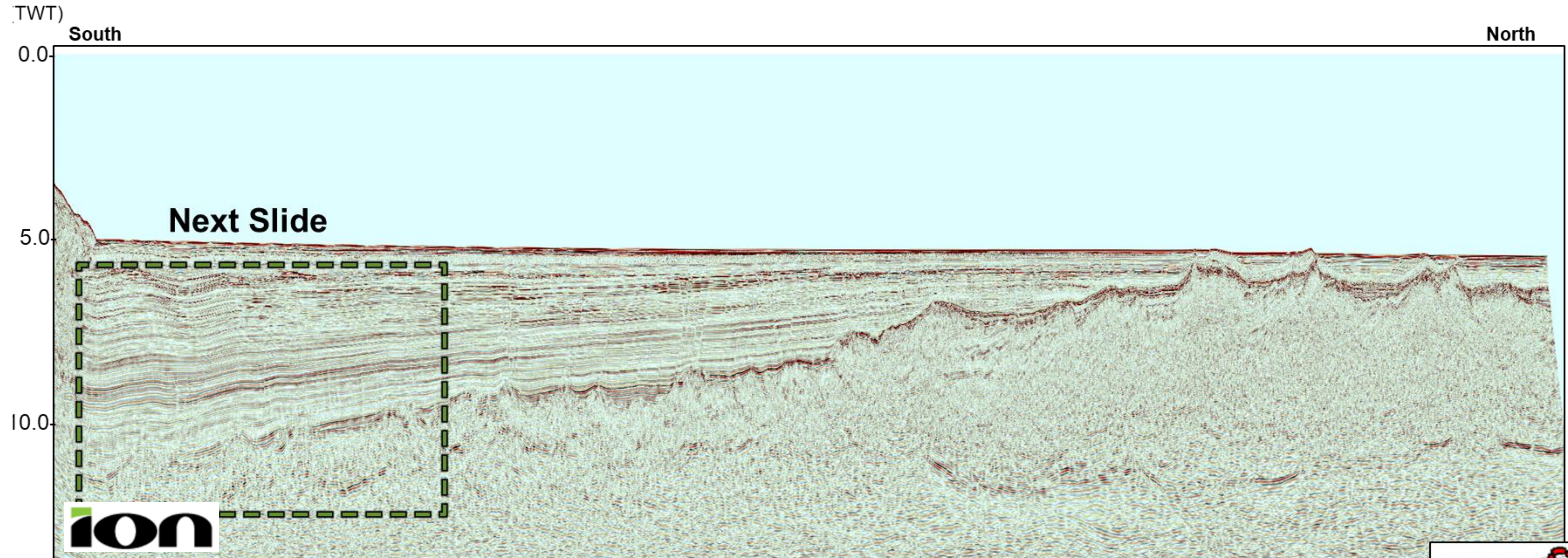
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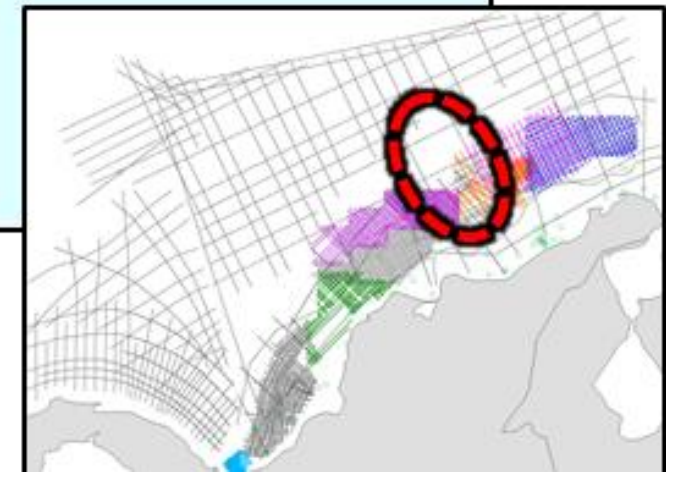
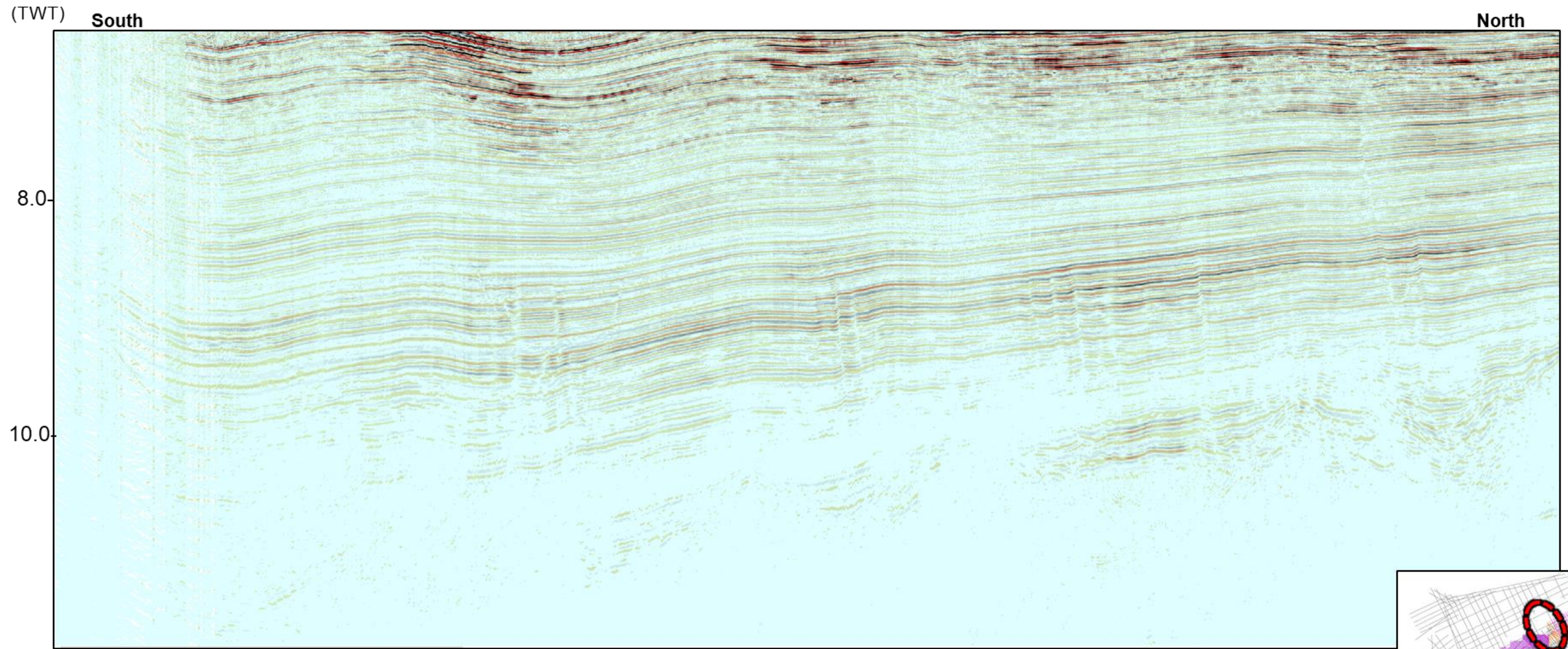
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## COR1-0426 Legacy





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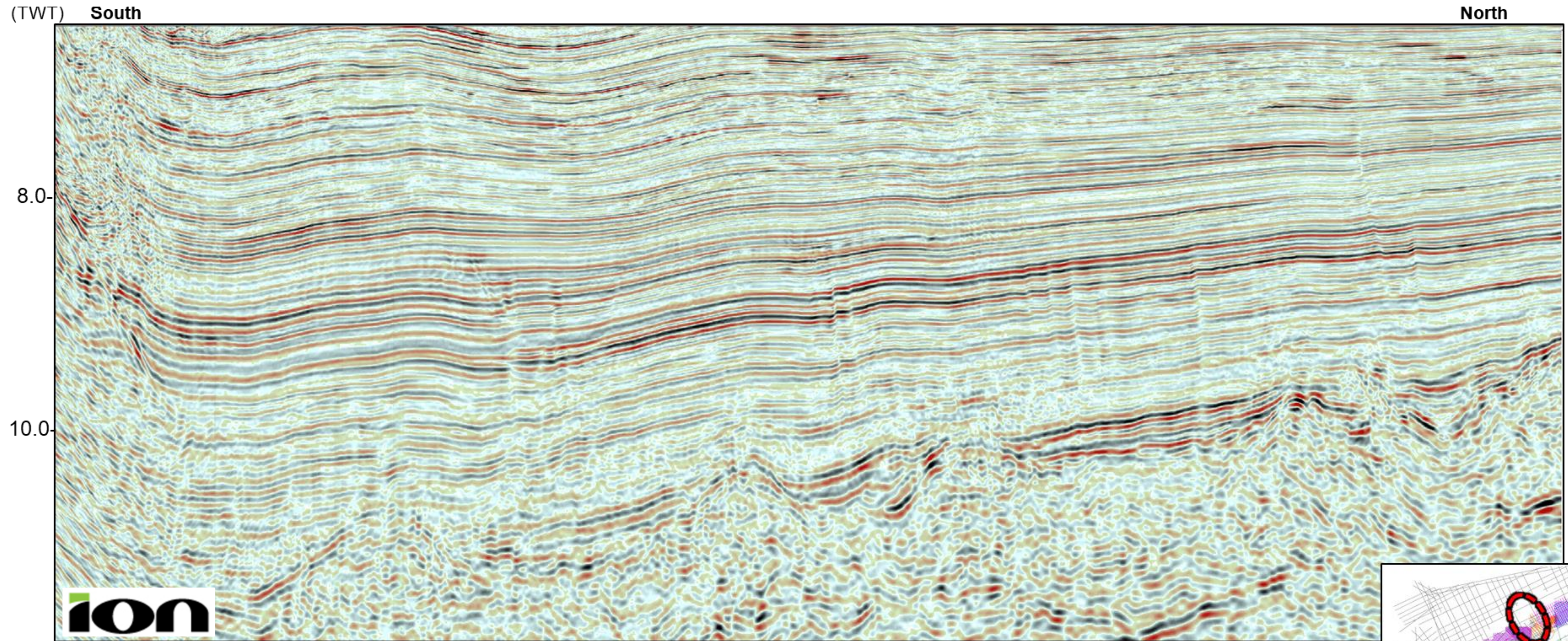
## COR1-0426 Reprocessed



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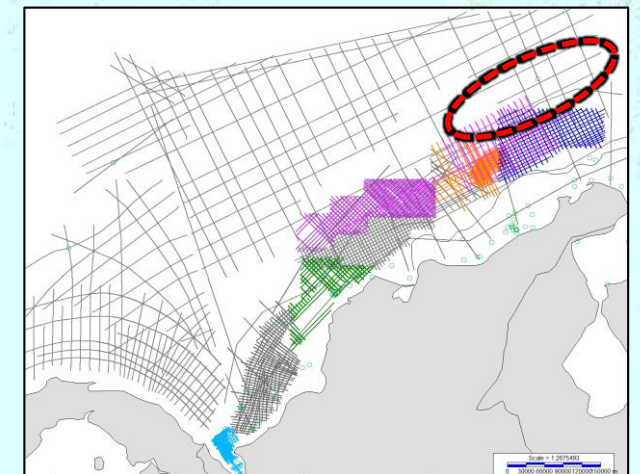
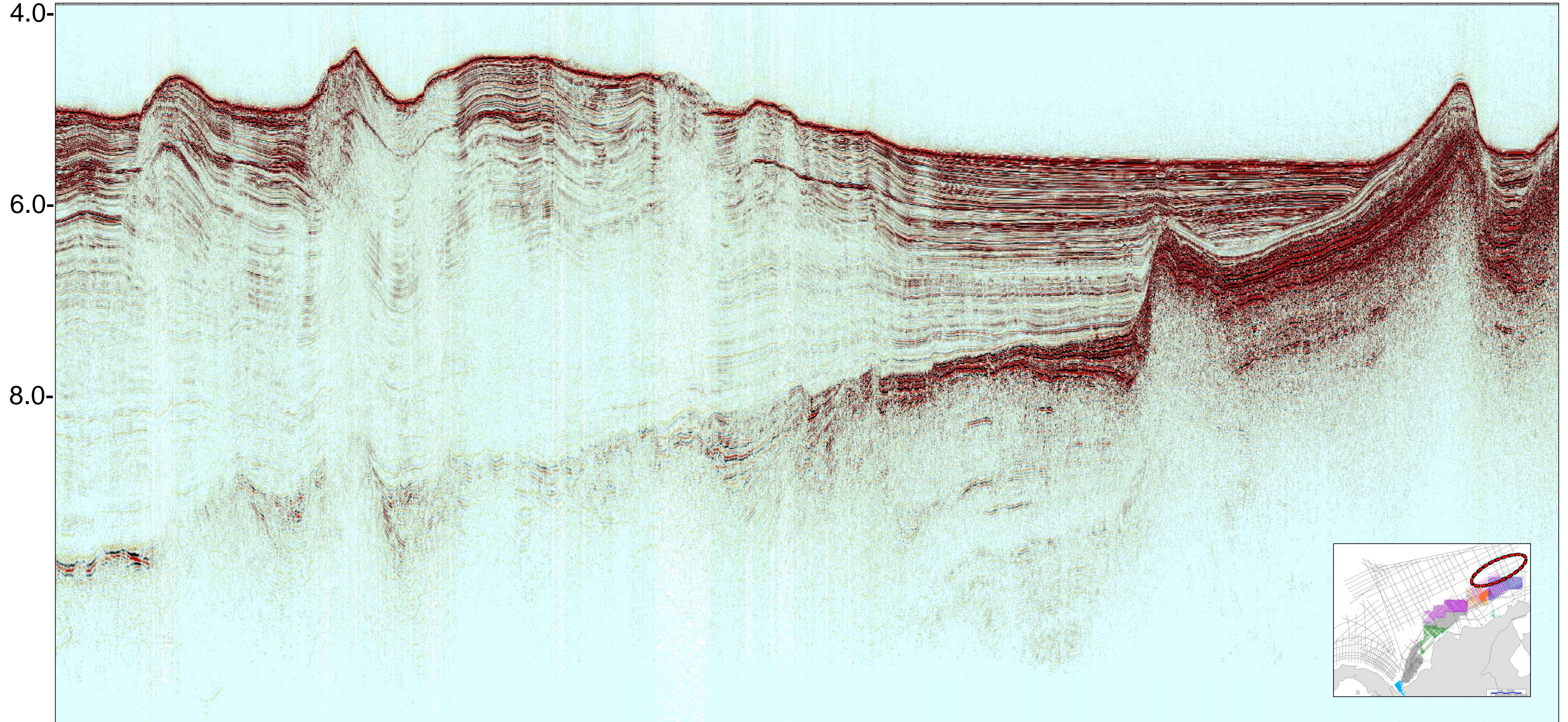
Moho



# Deepwater Colombia

## COR1-0429 Legacy

(TWT)

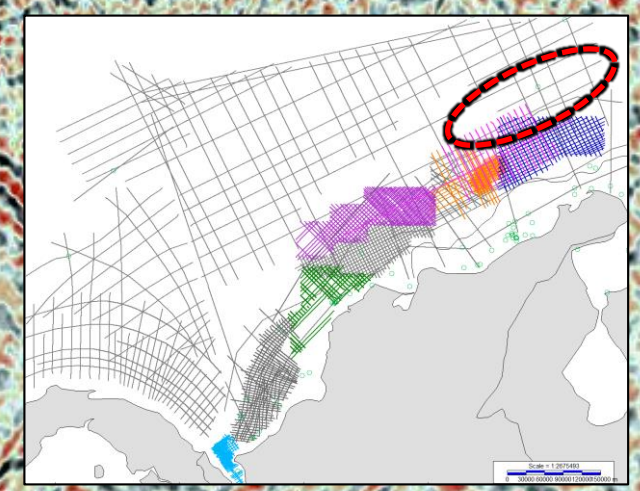
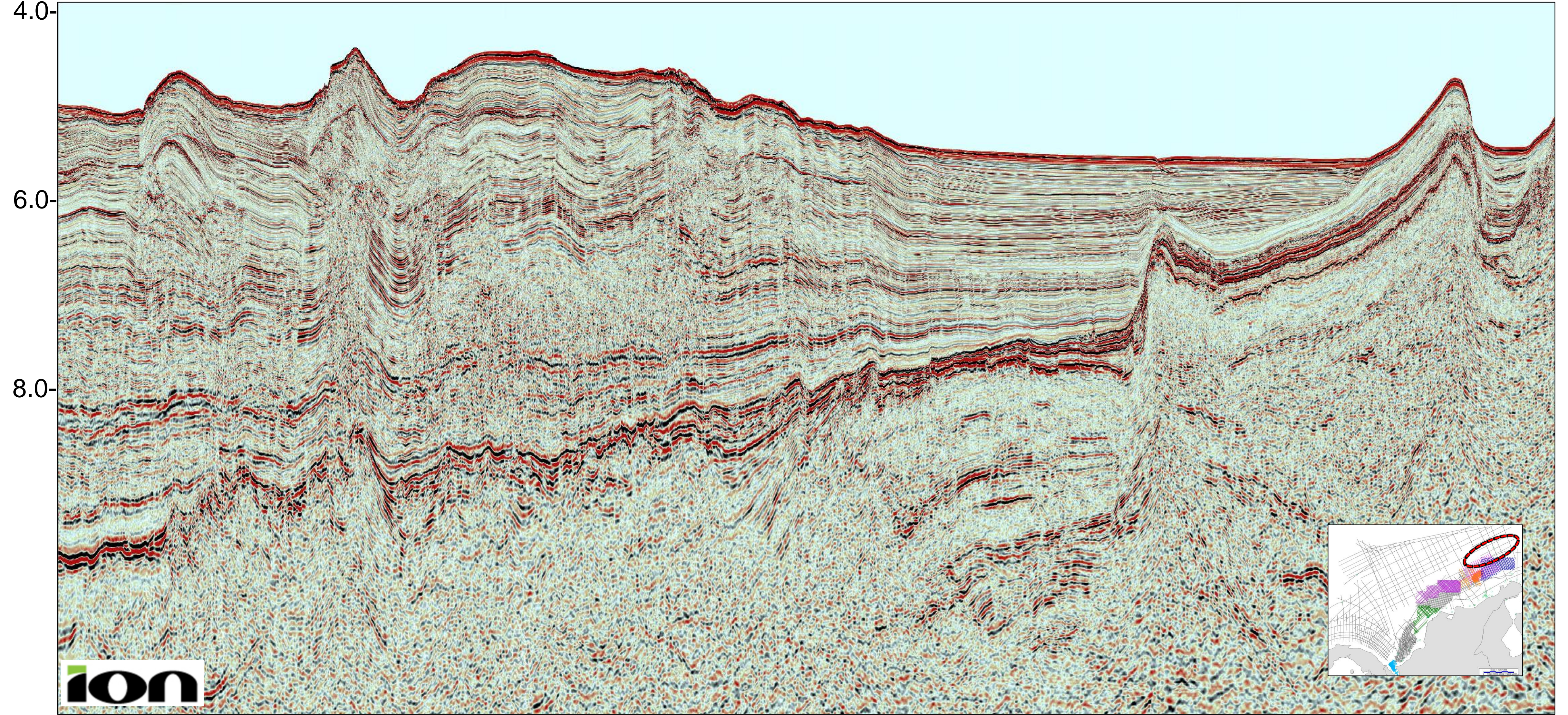




# Deepwater Colombia

## COR1-0429 Reprocessed

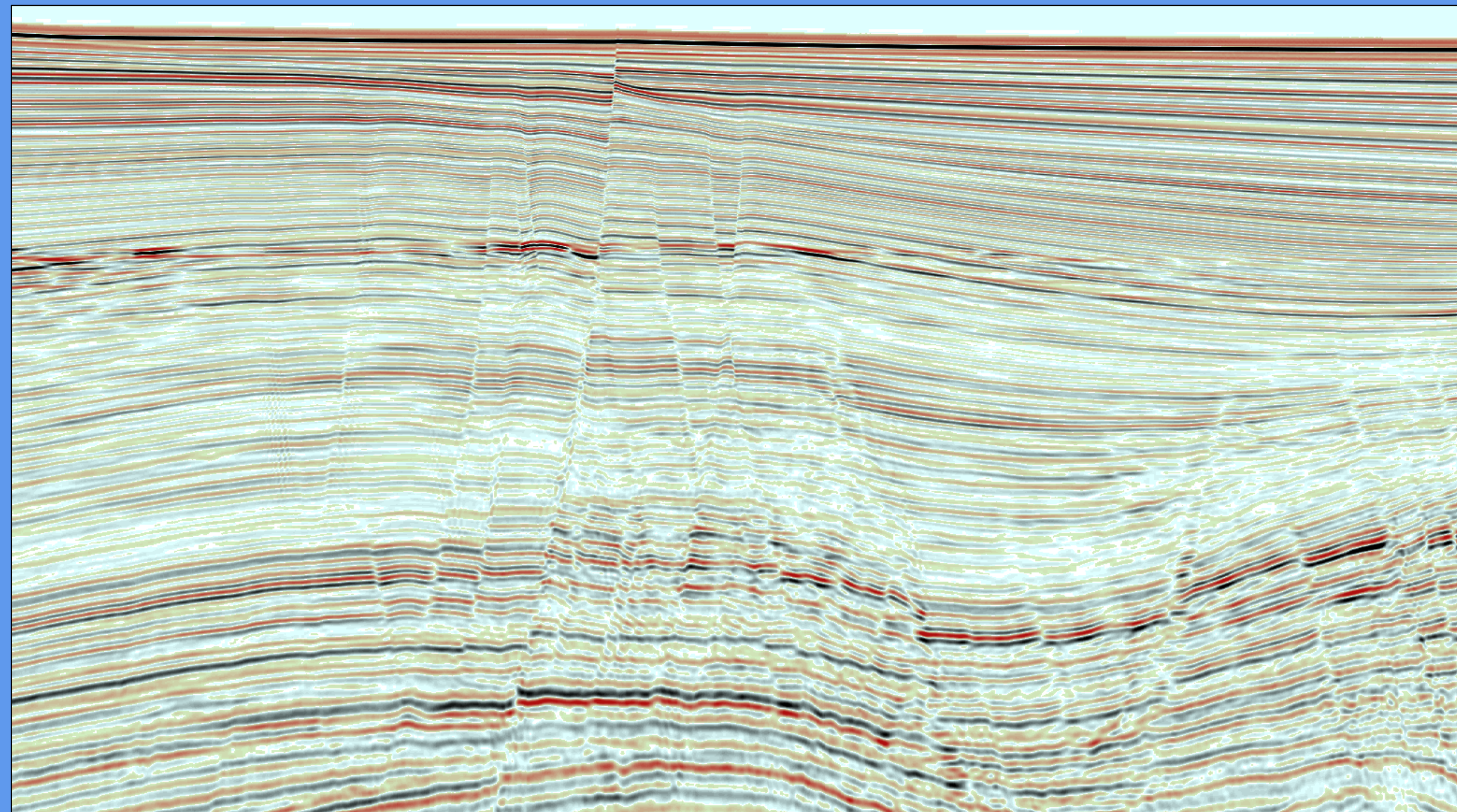
(TWT)







# Observations from the Deepwater





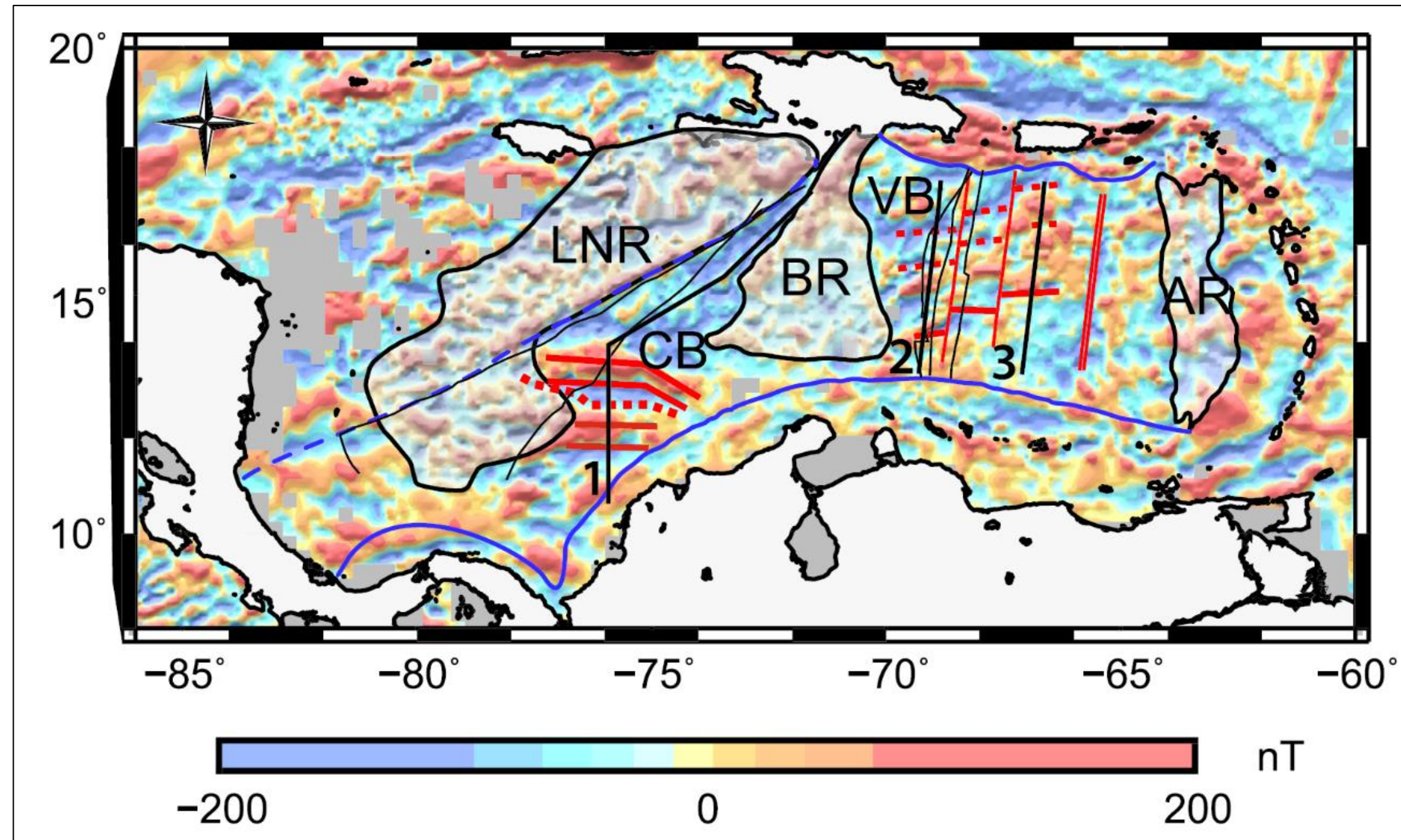
# Observations from Deepwater



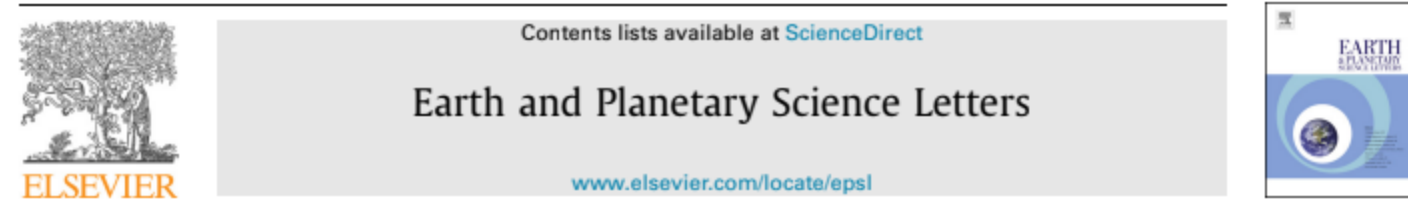
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García-Reyes & Dymont 2021

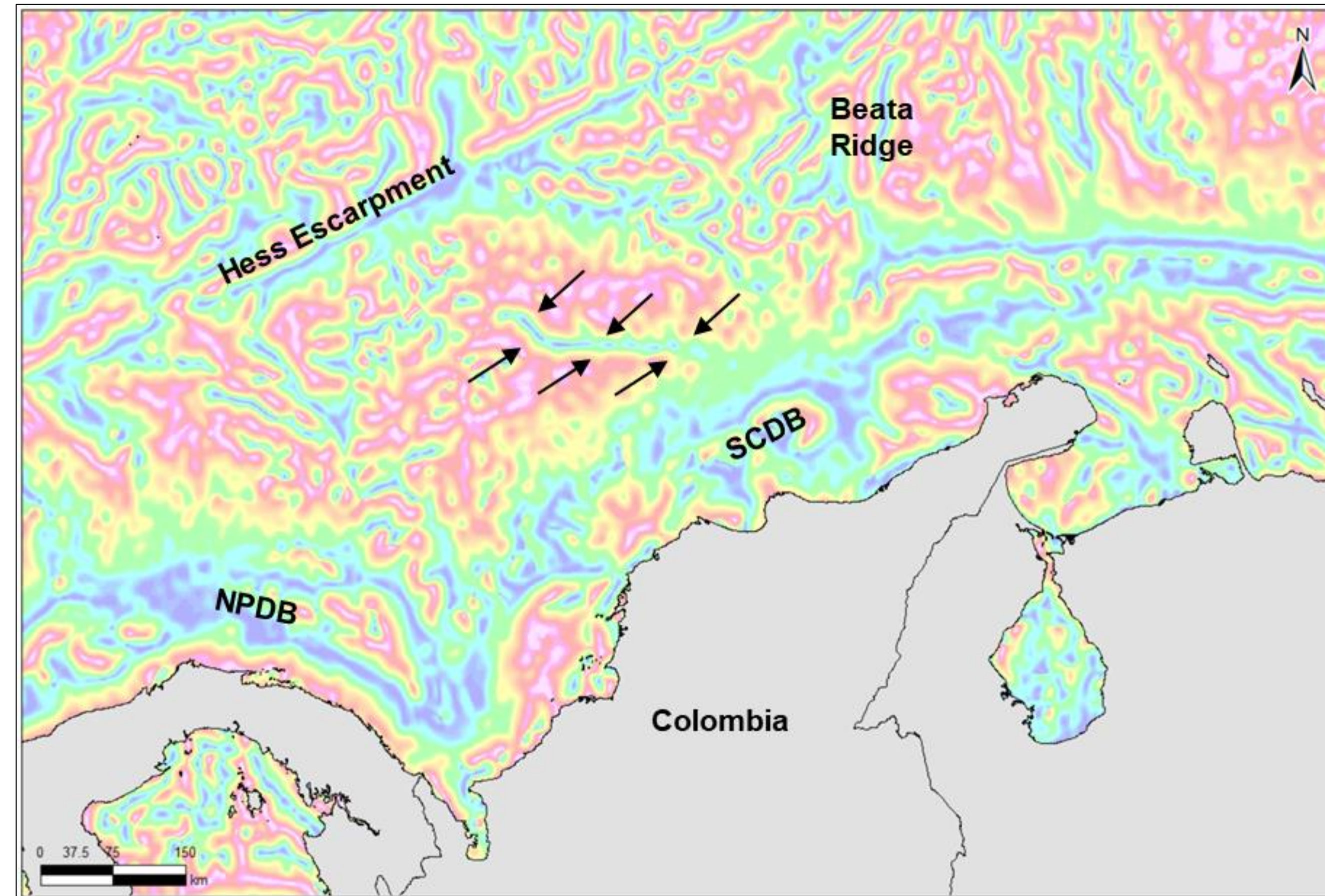


Structure, age, and origin of the Caribbean Plate unraveled

Andréina García-Reyes, Jérôme Dymont\*

Université de Paris, Institut de physique du globe de Paris, CNRS, F-75005 Paris, France

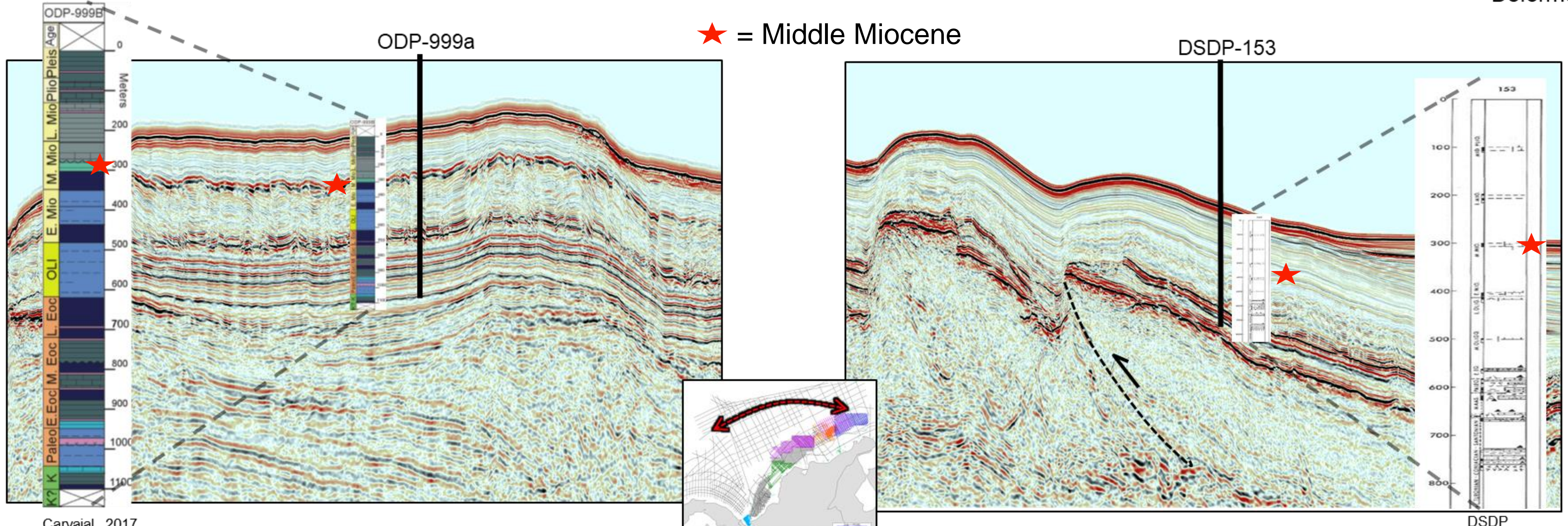
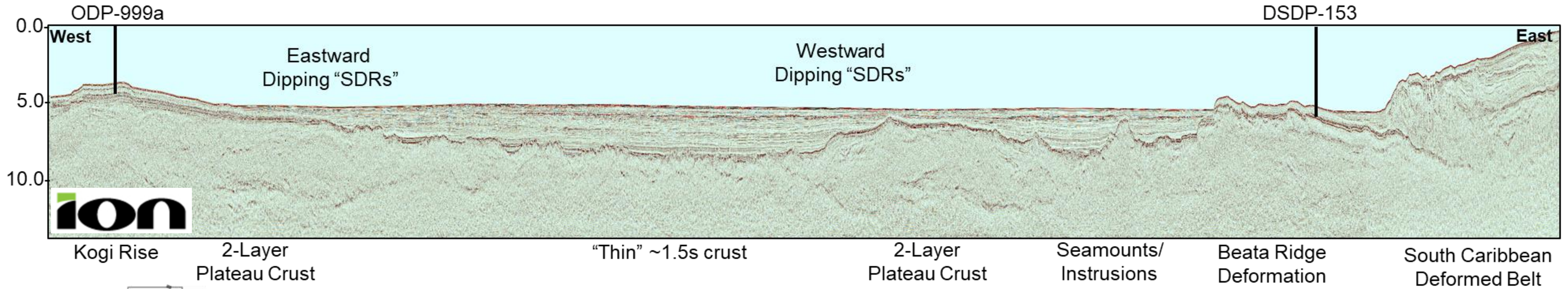
- Utilized total marine magnetic field measurements
- Extracted models of the internal geomagnetic field to obtain magnetic anomalies.
- Concluded that:
  - The Colombian Basin has an Albian aged extinct spreading center that initiated while the CLIP was in the Pacific space



Free Air Gravity Low Pass 20km Tilt Derivative



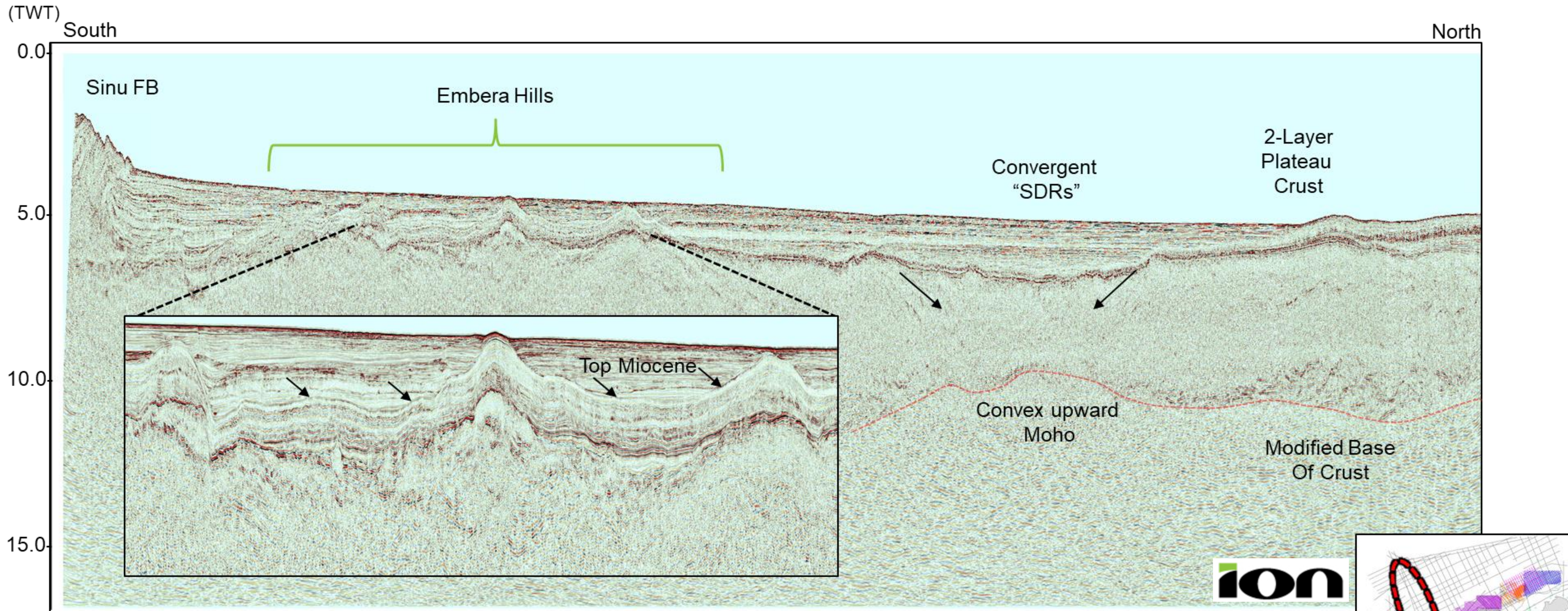
# Deepwater Colombia Composite Section





# Deepwater Colombia

## COR1-0433

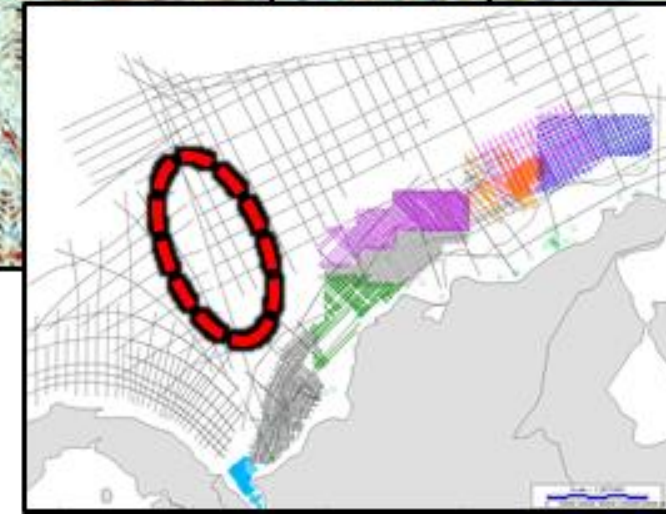
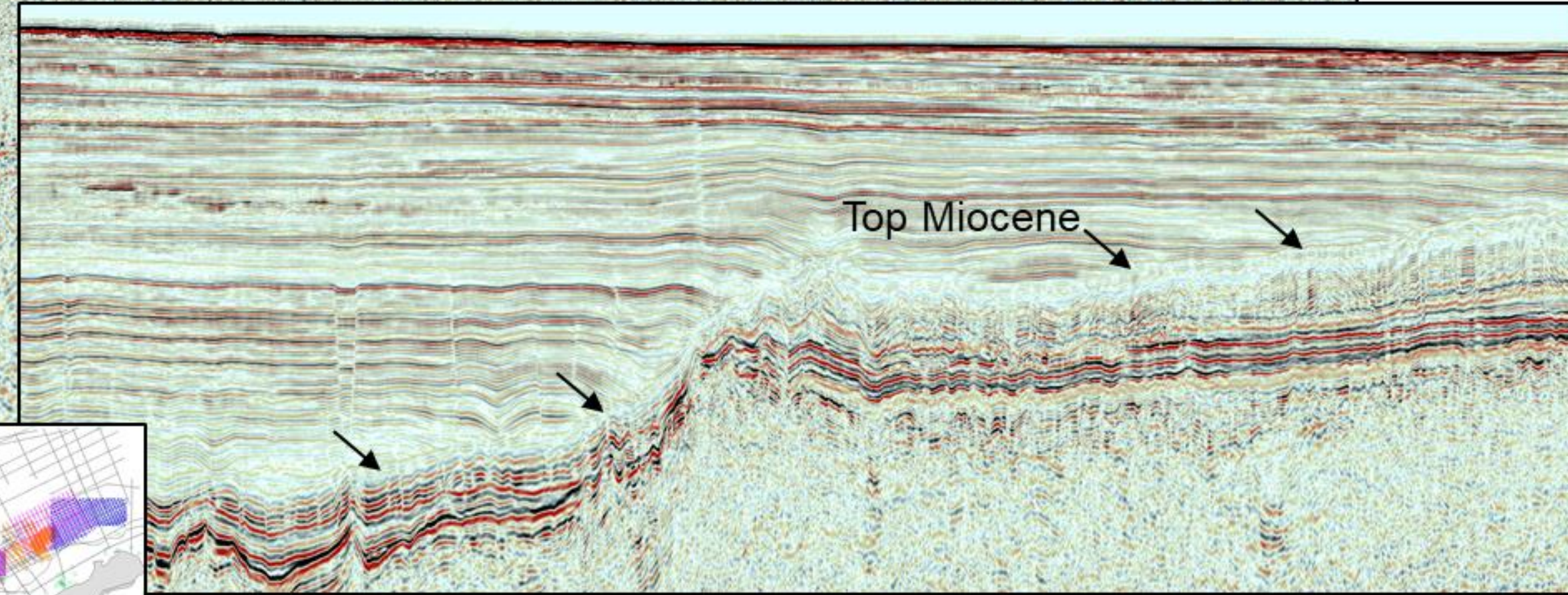
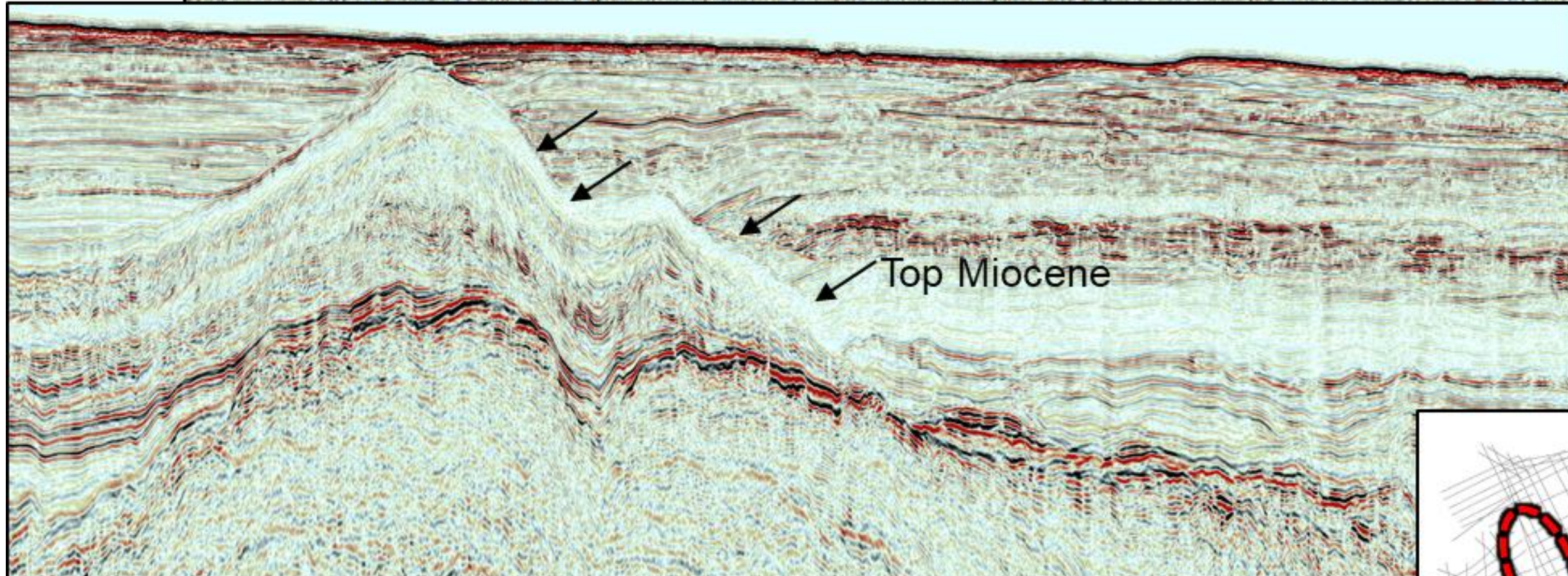
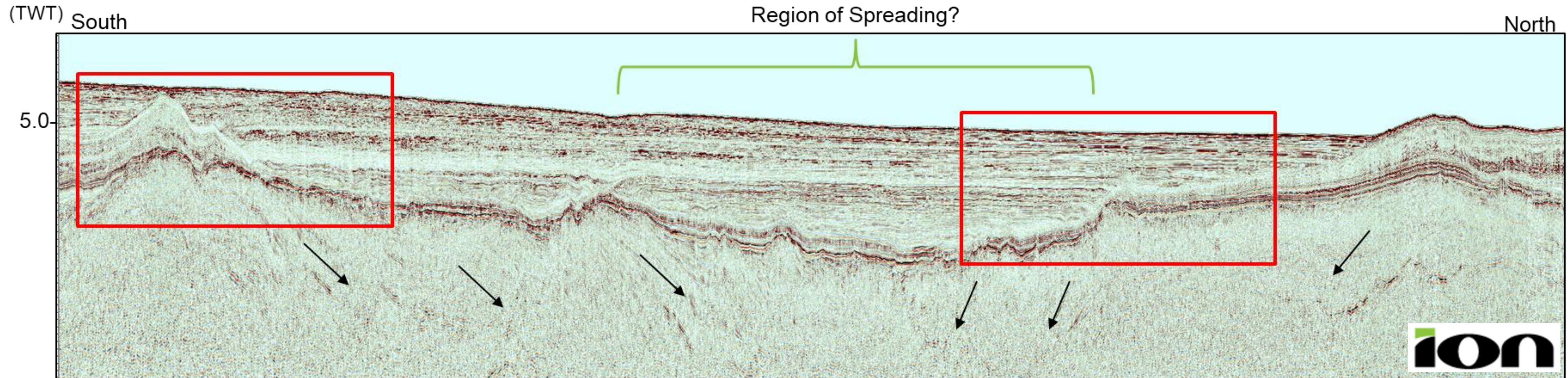


The timing of the folding appears to be coeval with the docking of Panama in the west (Lt Miocene)



# Deepwater Colombia

## COR1-0433





# Deepwater Colombia

## COR1-0433

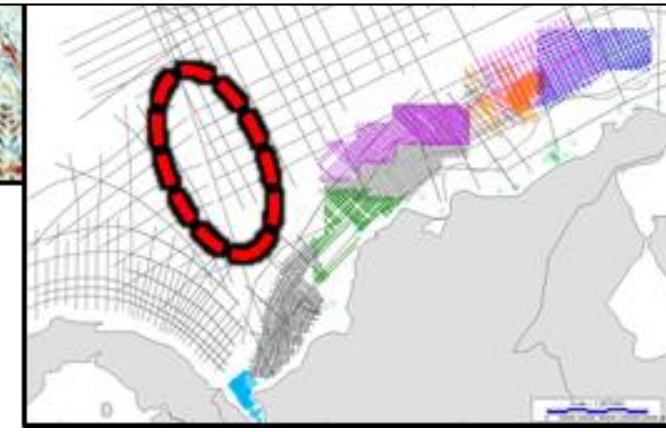
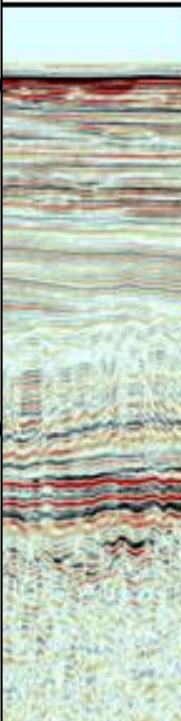
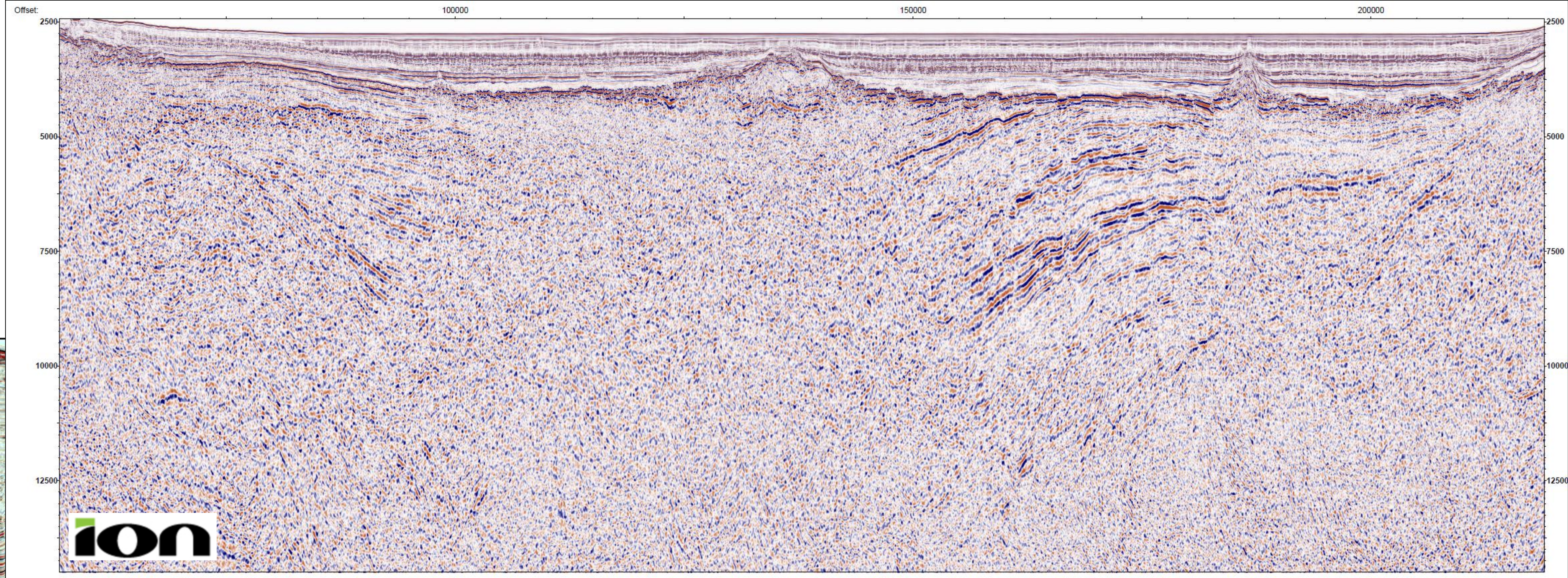


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(TWT) South Region of Spreading? North





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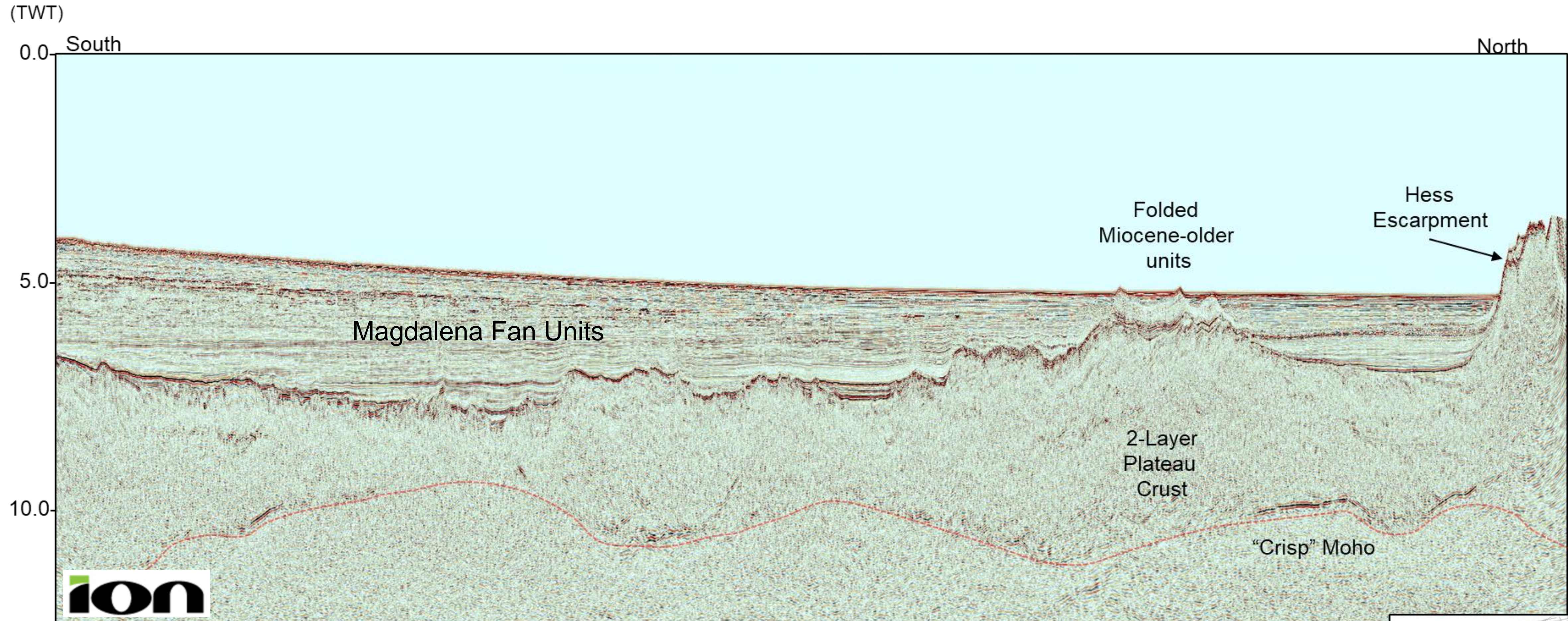
## COR1-0404



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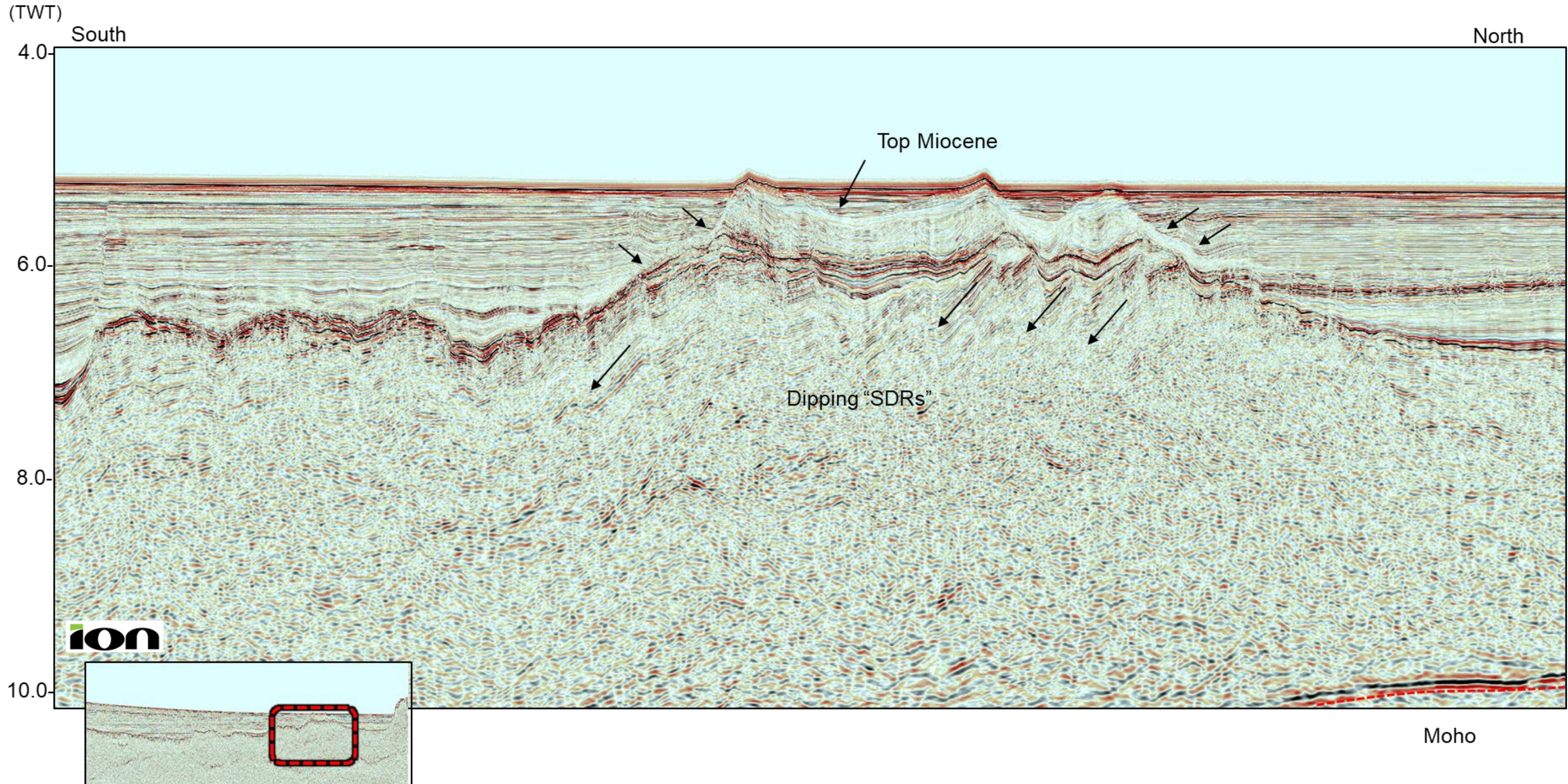
## COR1-0404



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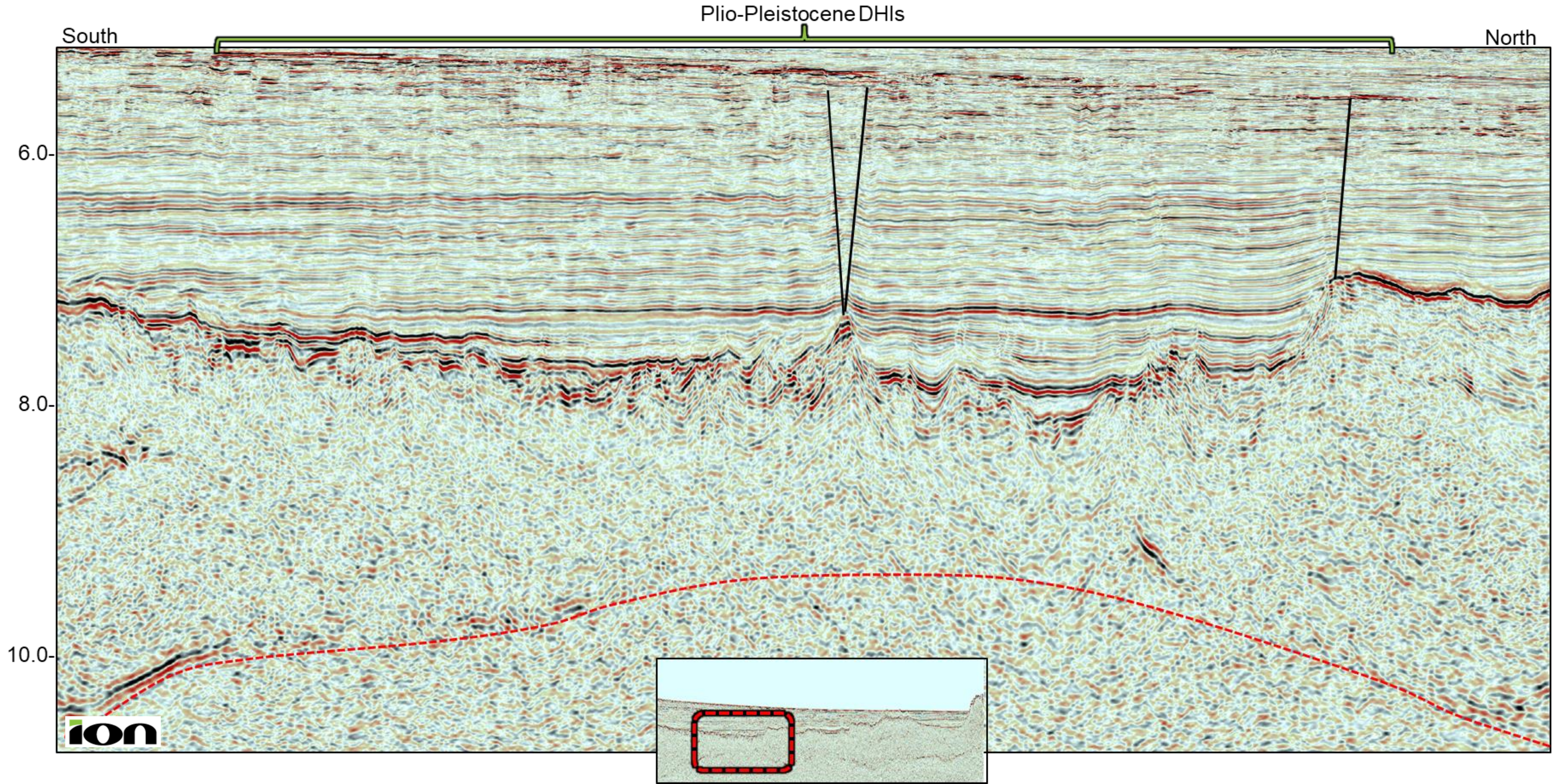
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# Deepwater Colombia

## COR1-0404





# Deepwater Colombia

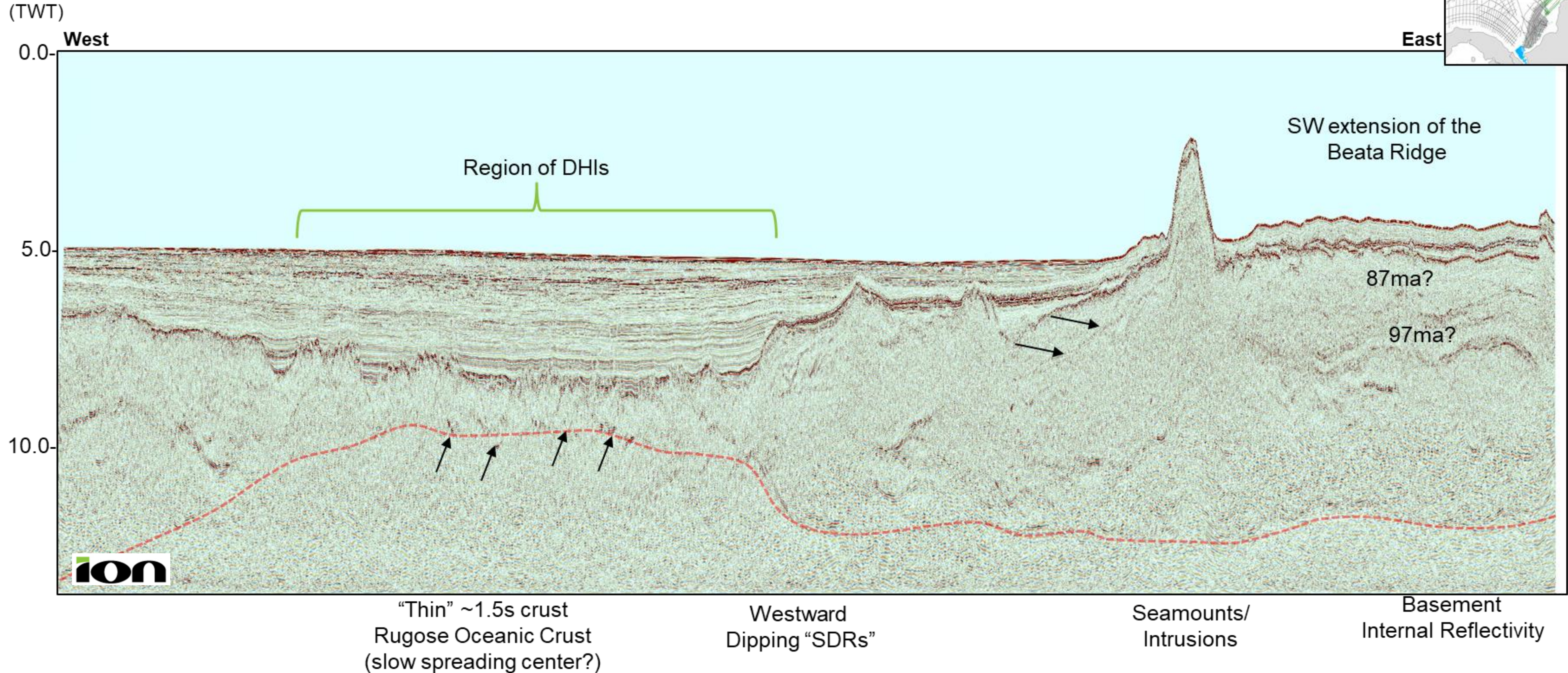
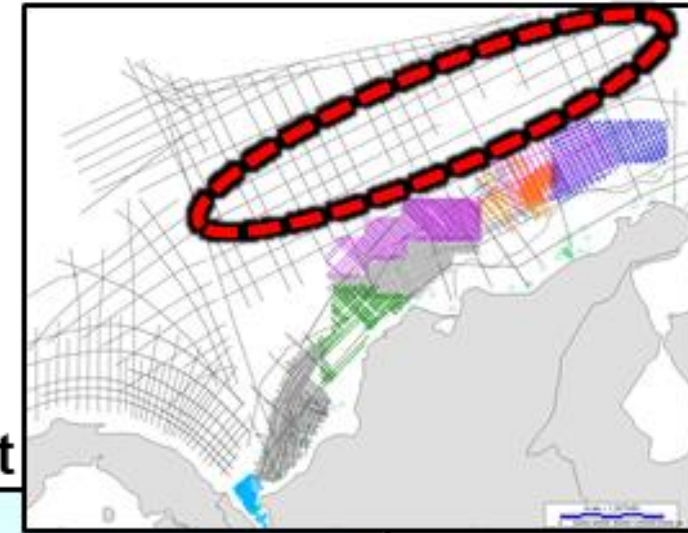
## COR1-0426



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# Deepwater Colombia

## COR1-0426



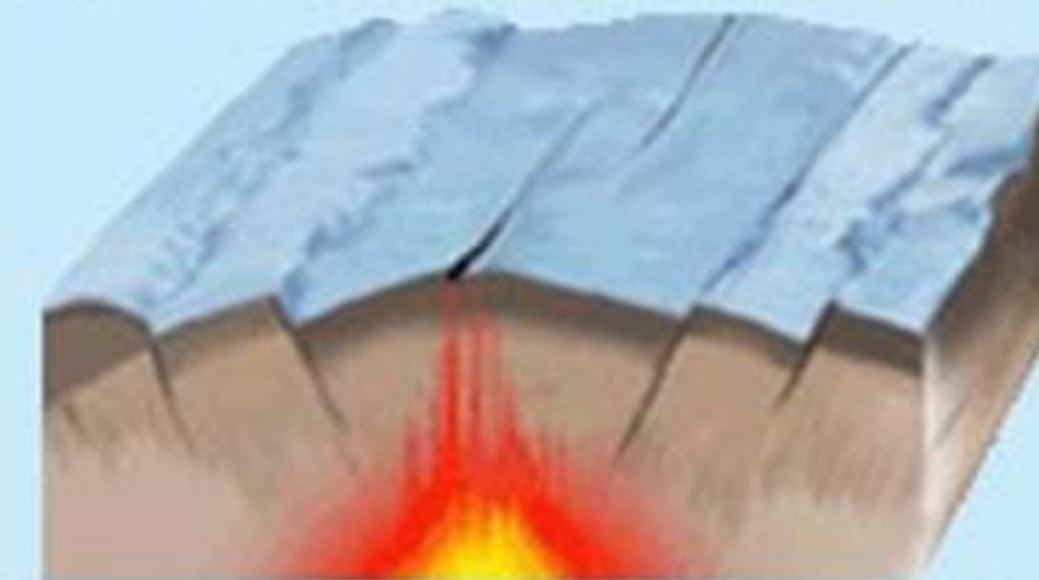
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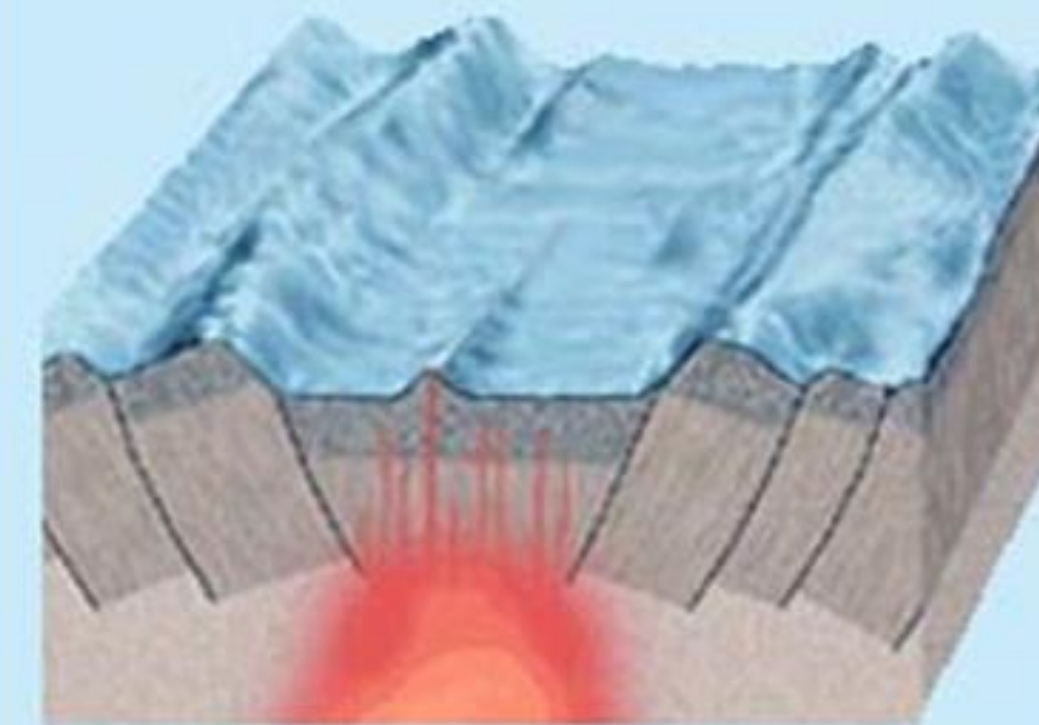
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## Classes of Ridges

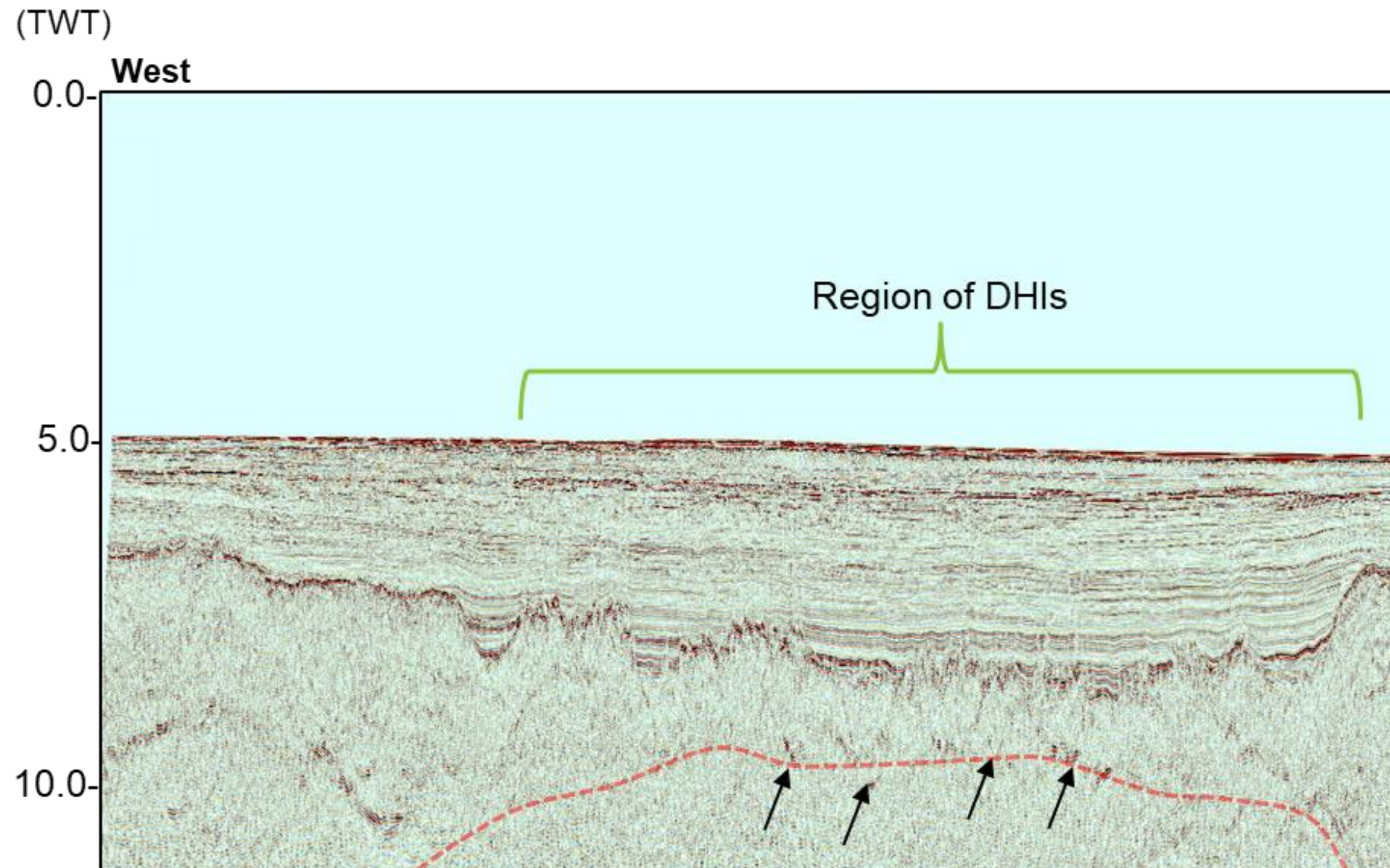
Fast-Spreading Mid-Ocean Ridge



Slow-Spreading Mid-Ocean Ridge



- **Fast-spreading ridges**, like the East Pacific Rise, the spreading rate is 100 to 200 millimeters per year.
- **Slow-spreading ridges**, like the Mid Atlantic Ridge, the spreading rate is 20 to 40 millimeters per year.
- **Ultraslow-spreading ridges**, like the Southwest Indian Ridge, the spreading rate is less than 20 millimeters per year.



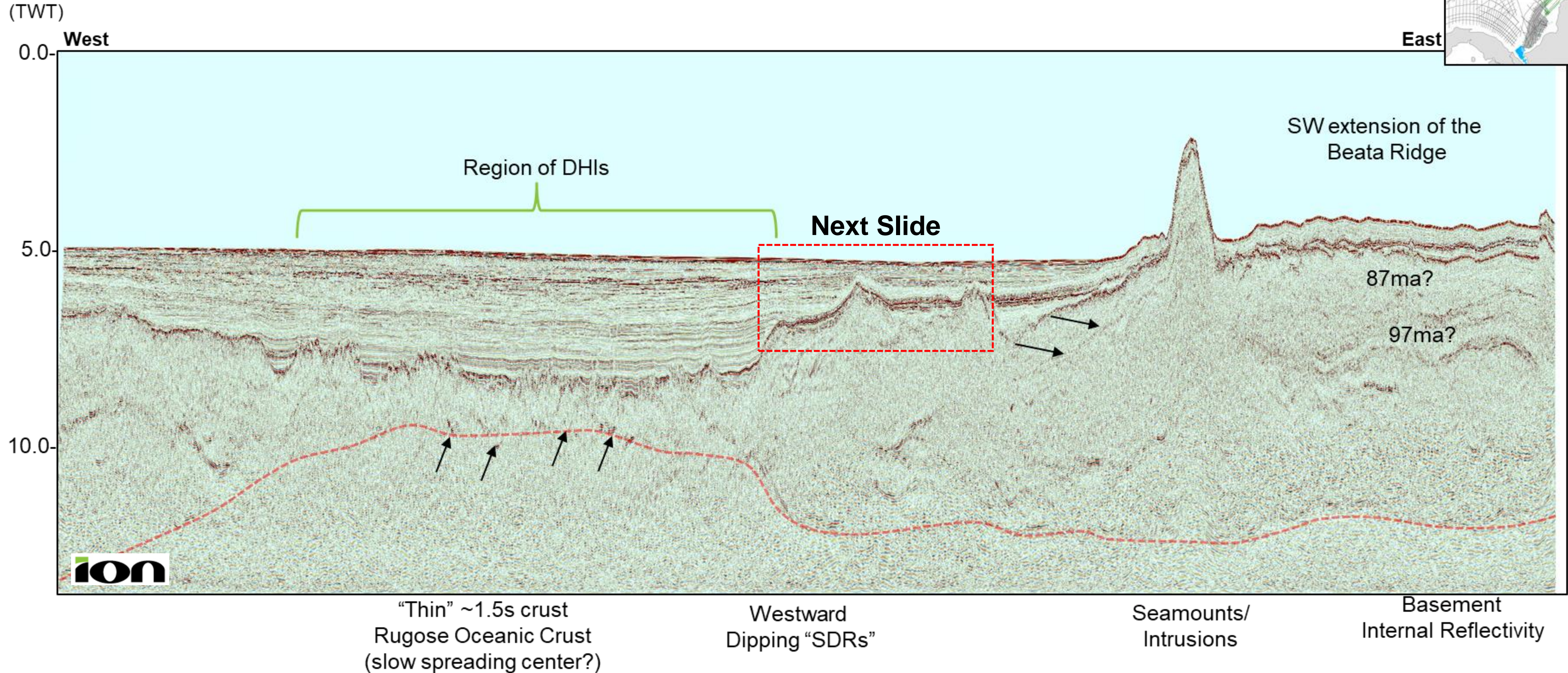
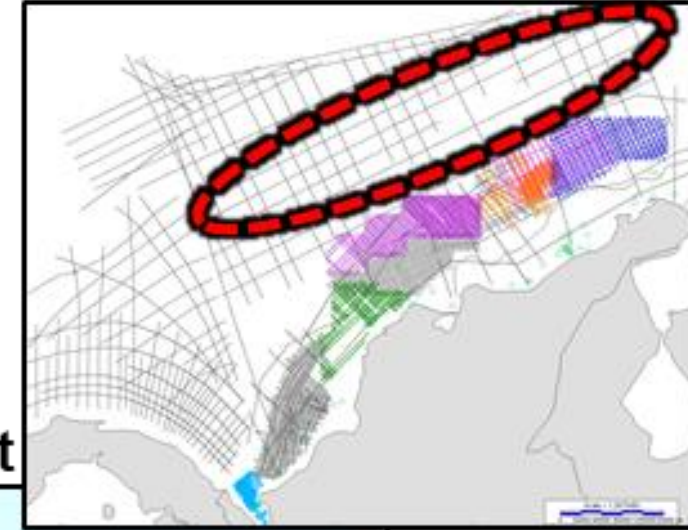
The Caribbean plate moves at 20 mm/year east-northeastwards with respect to the North American plate (DeMets et al., 2010)

Butler et al.



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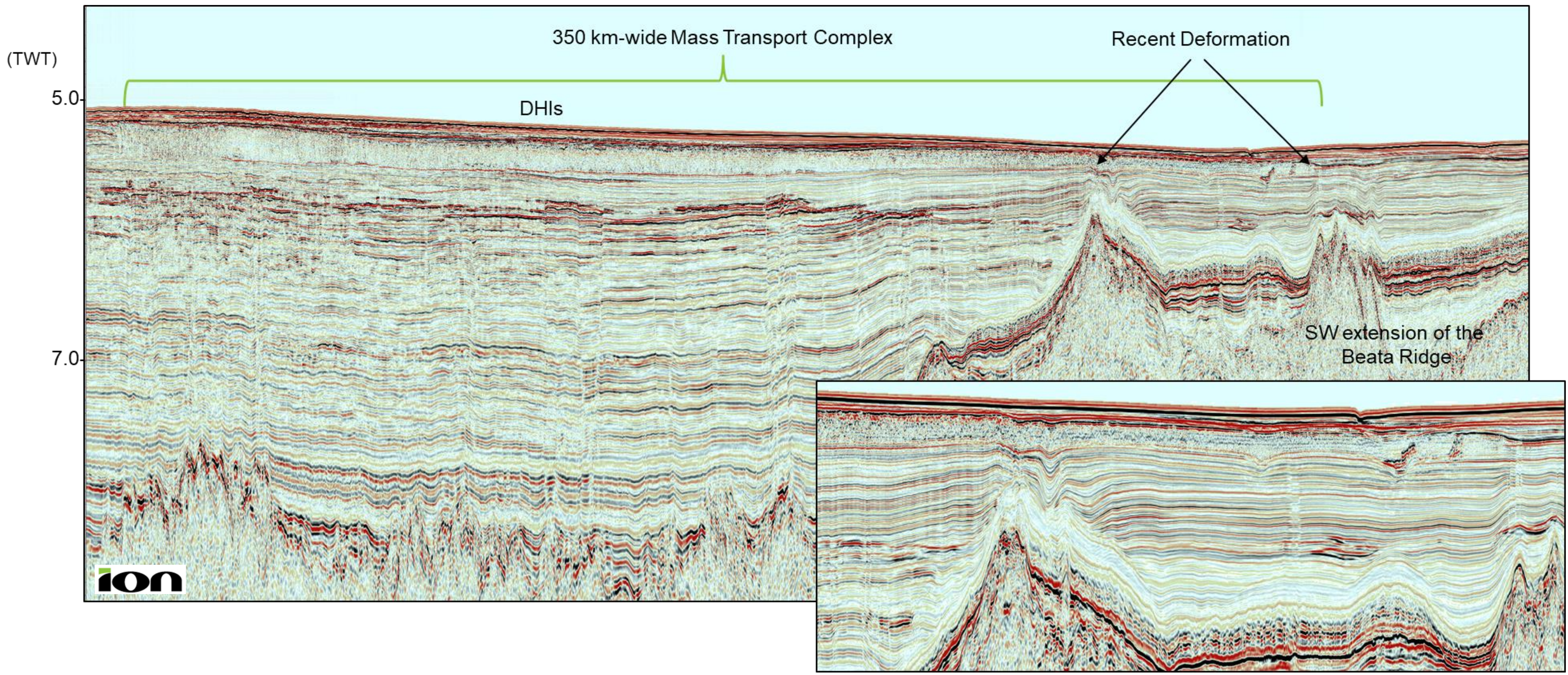
## COR1-0426





# Deepwater Colombia

## COR1-0426





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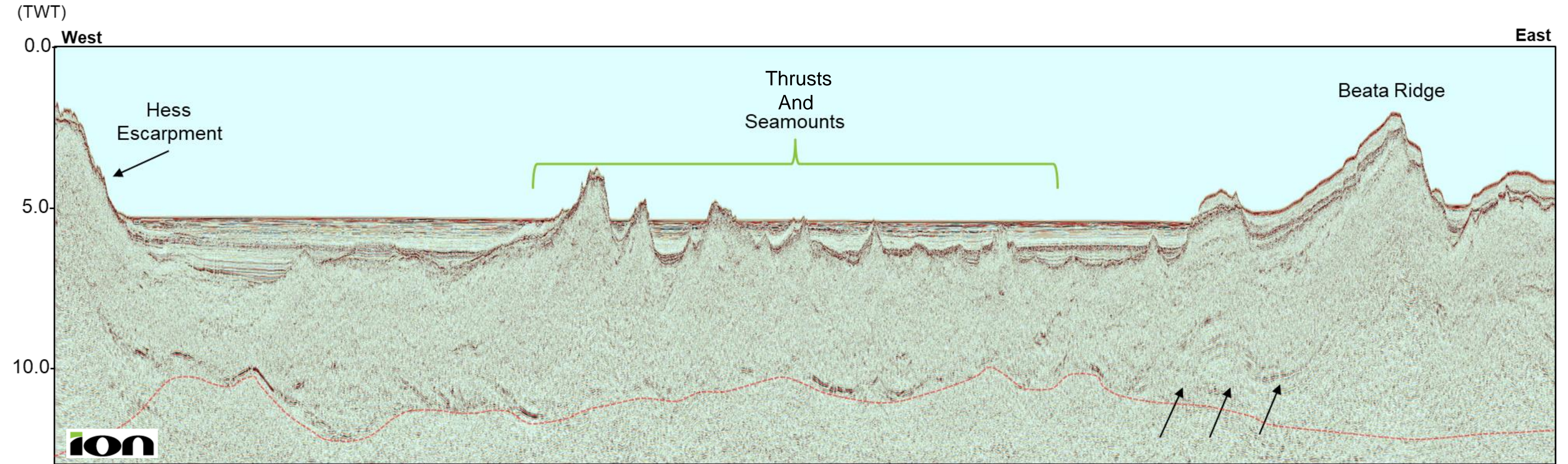
## COR1-0415



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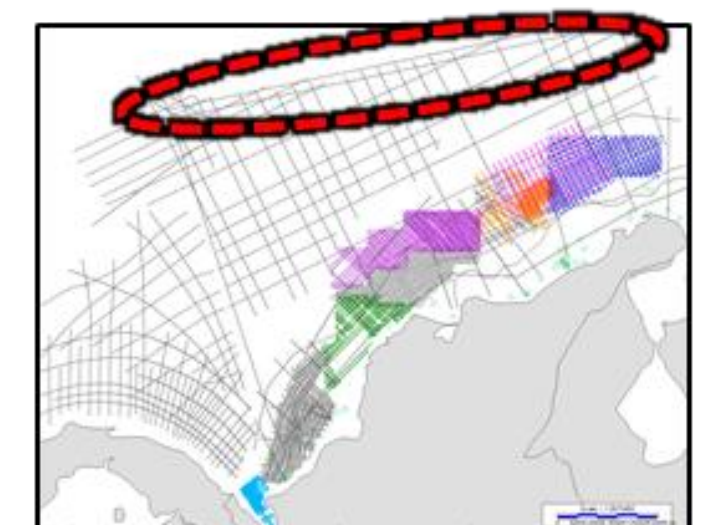
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Well-imaged, semi-continuous Moho

Intra-basement deformation





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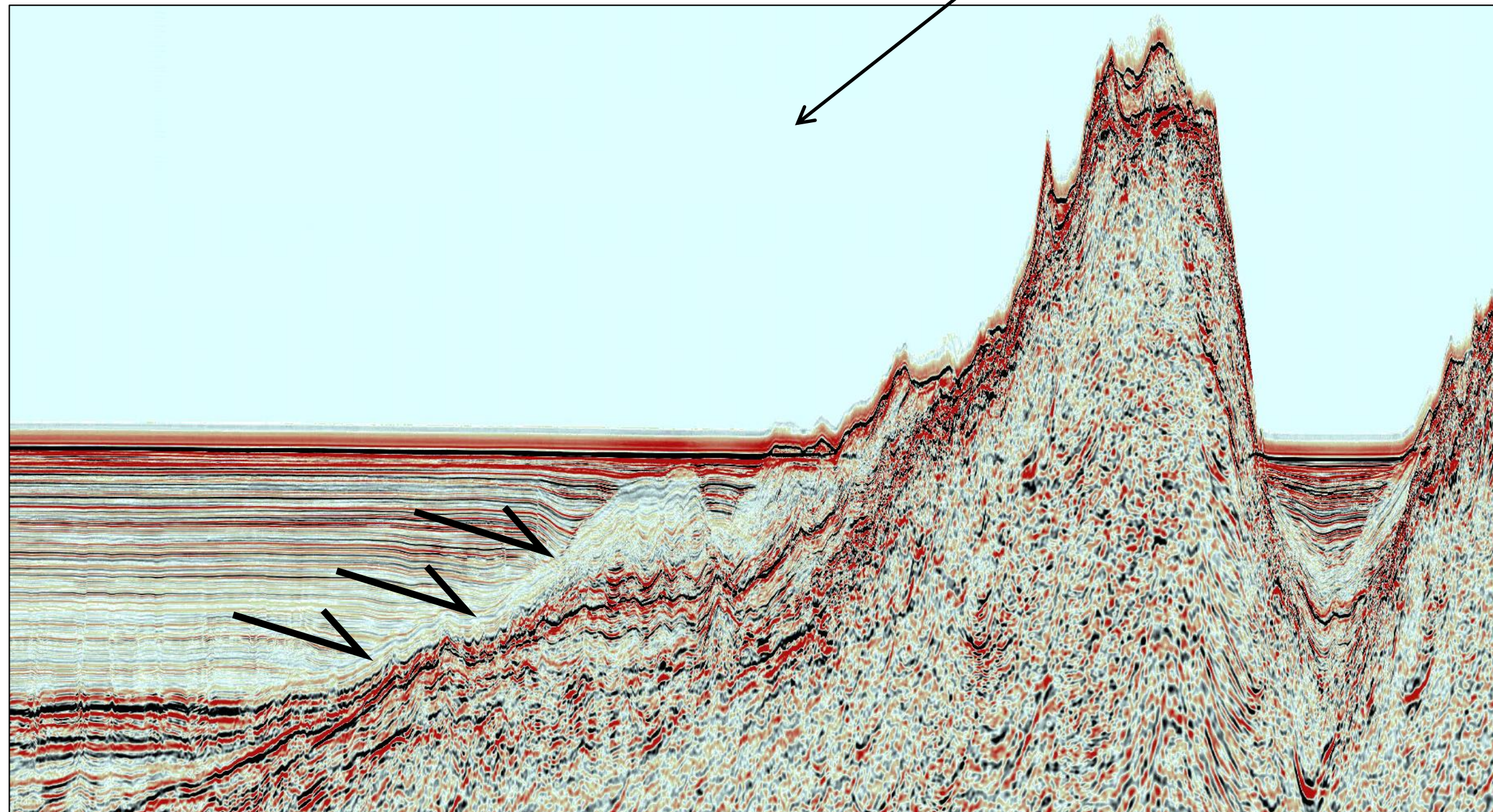
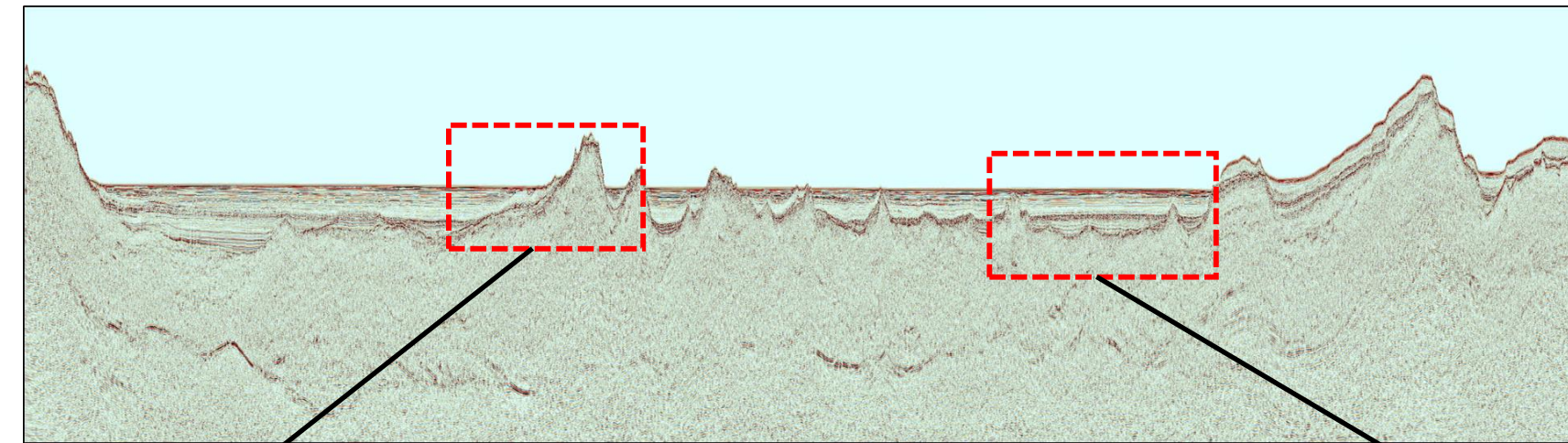
## COR1-0415



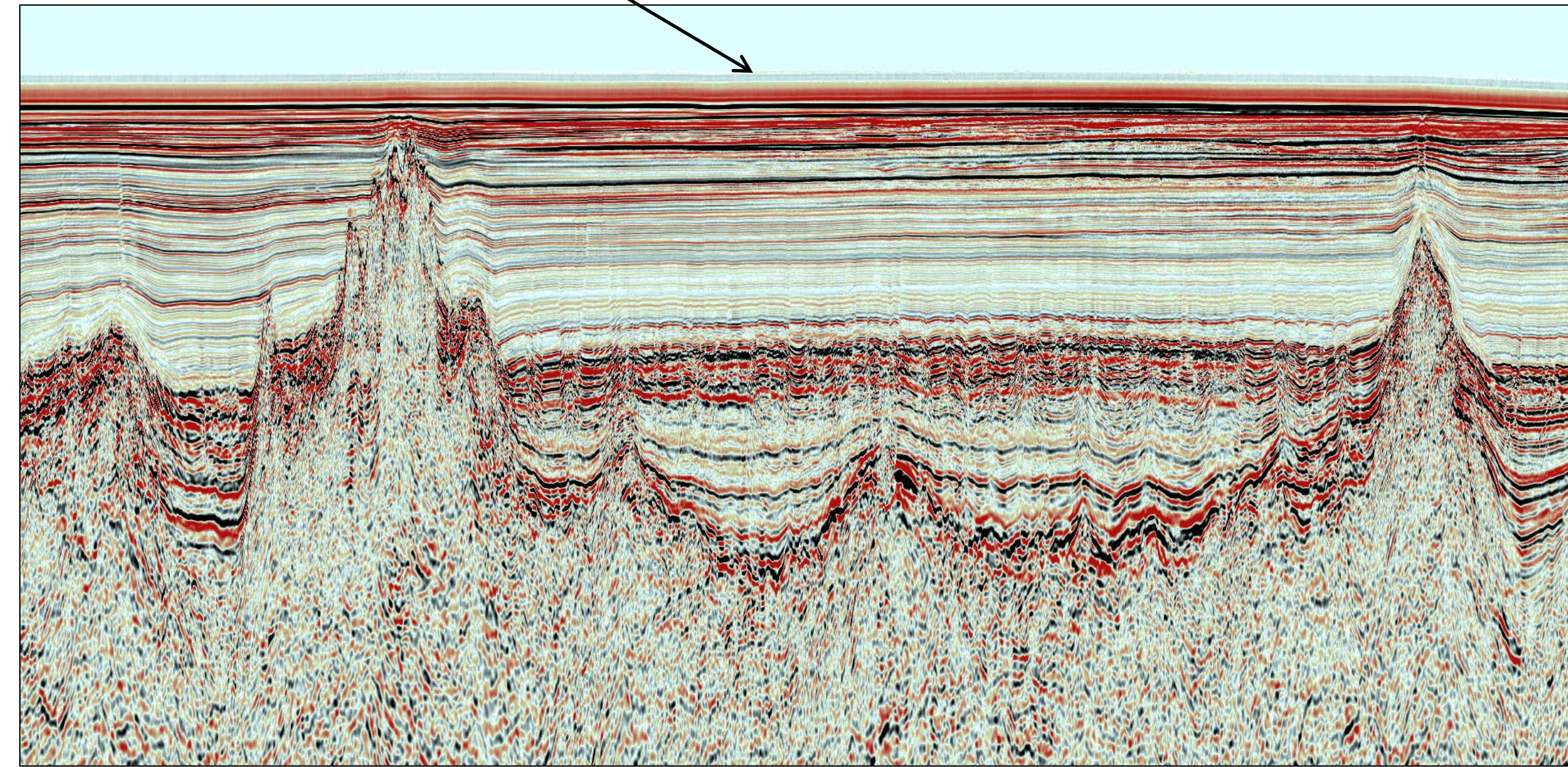
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Uplifted Miocene units on back of high angle thrust along the Hess Escarpment



Magmatic intrusions/ Seamounts



# Deepwater Colombia

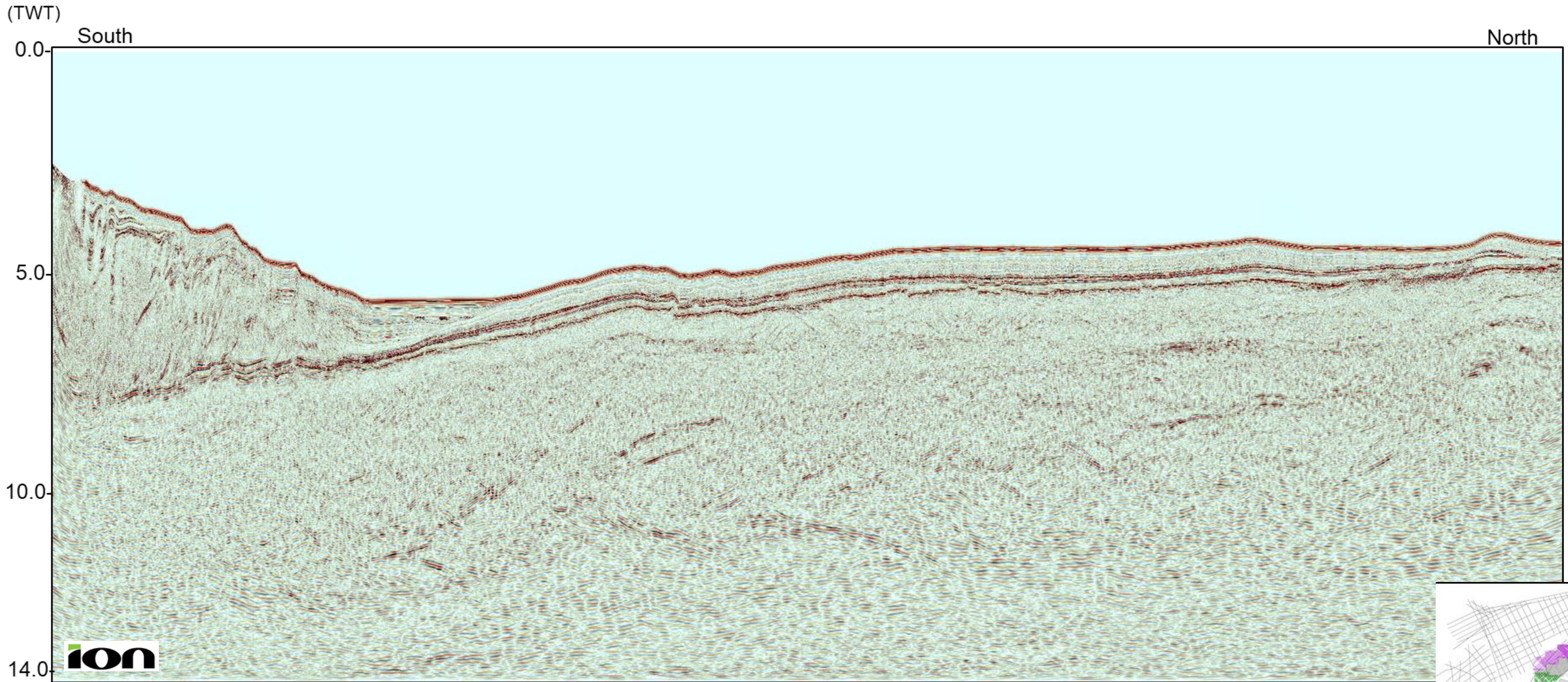
## COR-0424



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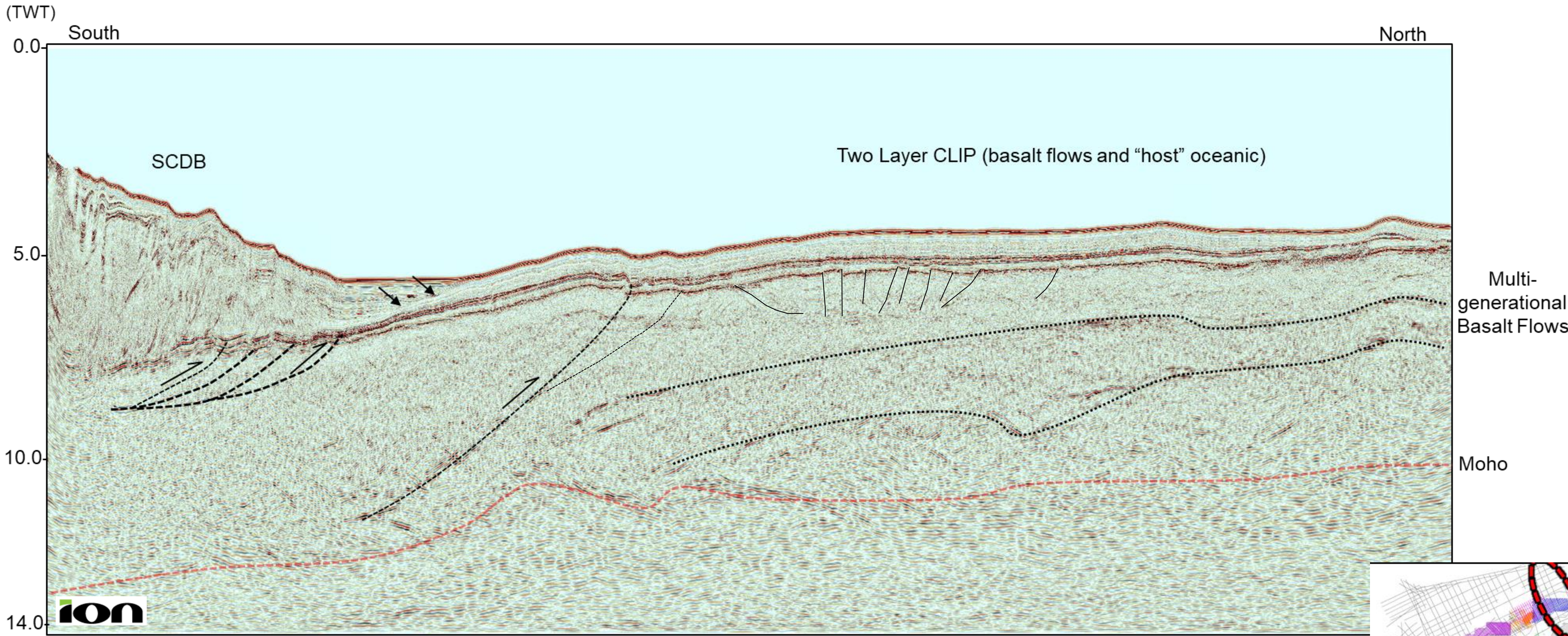
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# Deepwater Colombia

## COR-0424



Thick-skinned thrust into CLIP at South Caribbean Deformed Belt (SCDB)





# Deepwater Colombia

## COR1-0425



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(TWT)

South

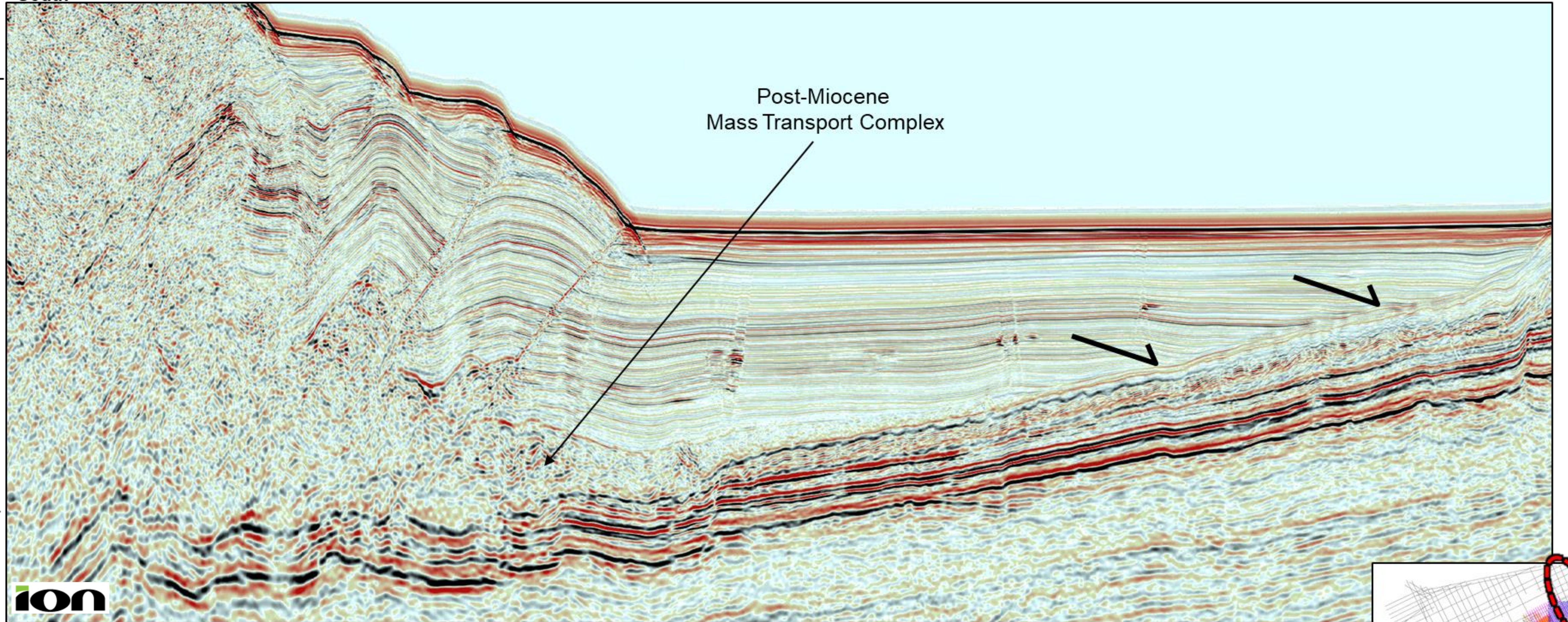
North

5.0-

Post-Miocene  
Mass Transport Complex

7.0-

ion





# Deepwater Panama/Colombia Regional Context



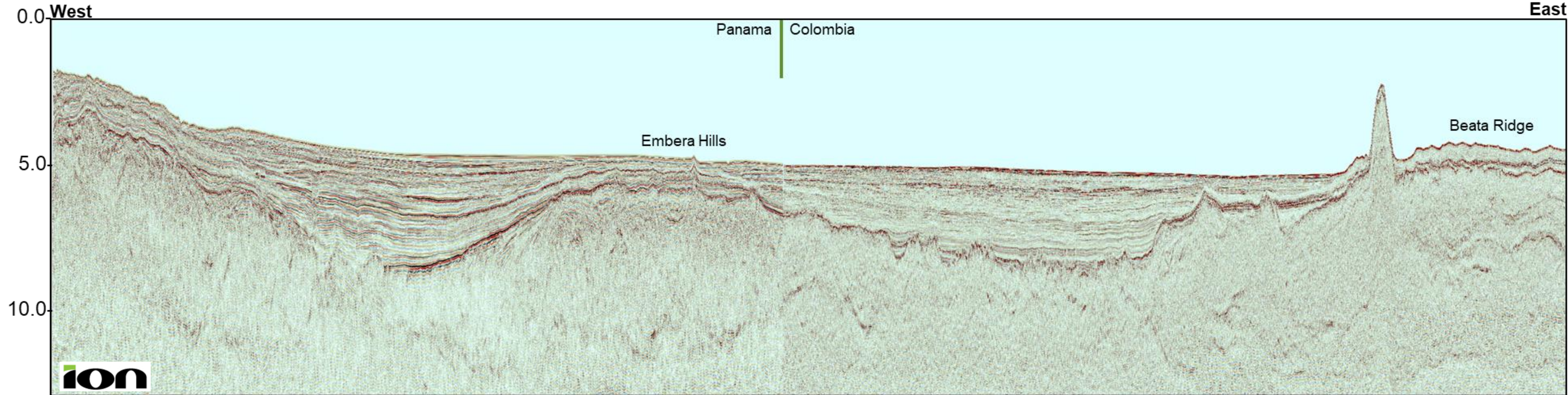
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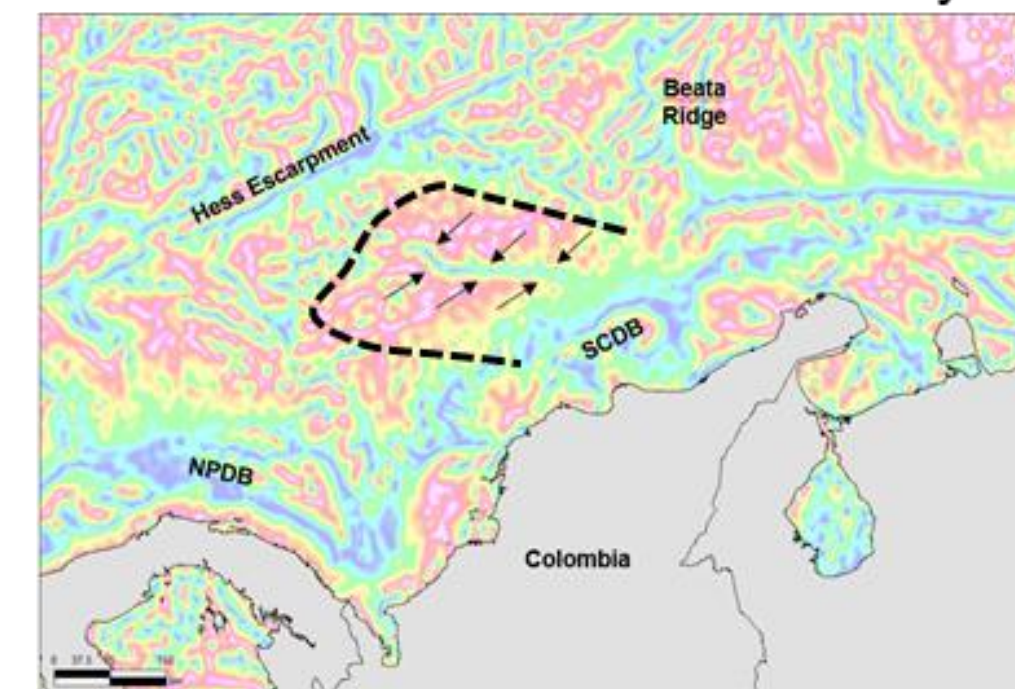
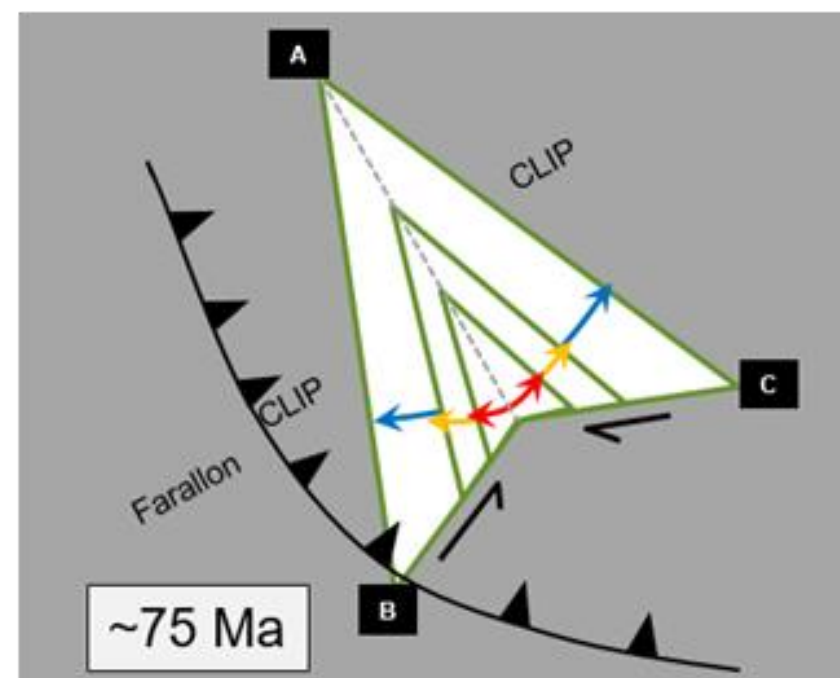
(TWT)

Two regions that suggest “at least” two separate spreading events in the western Caribbean



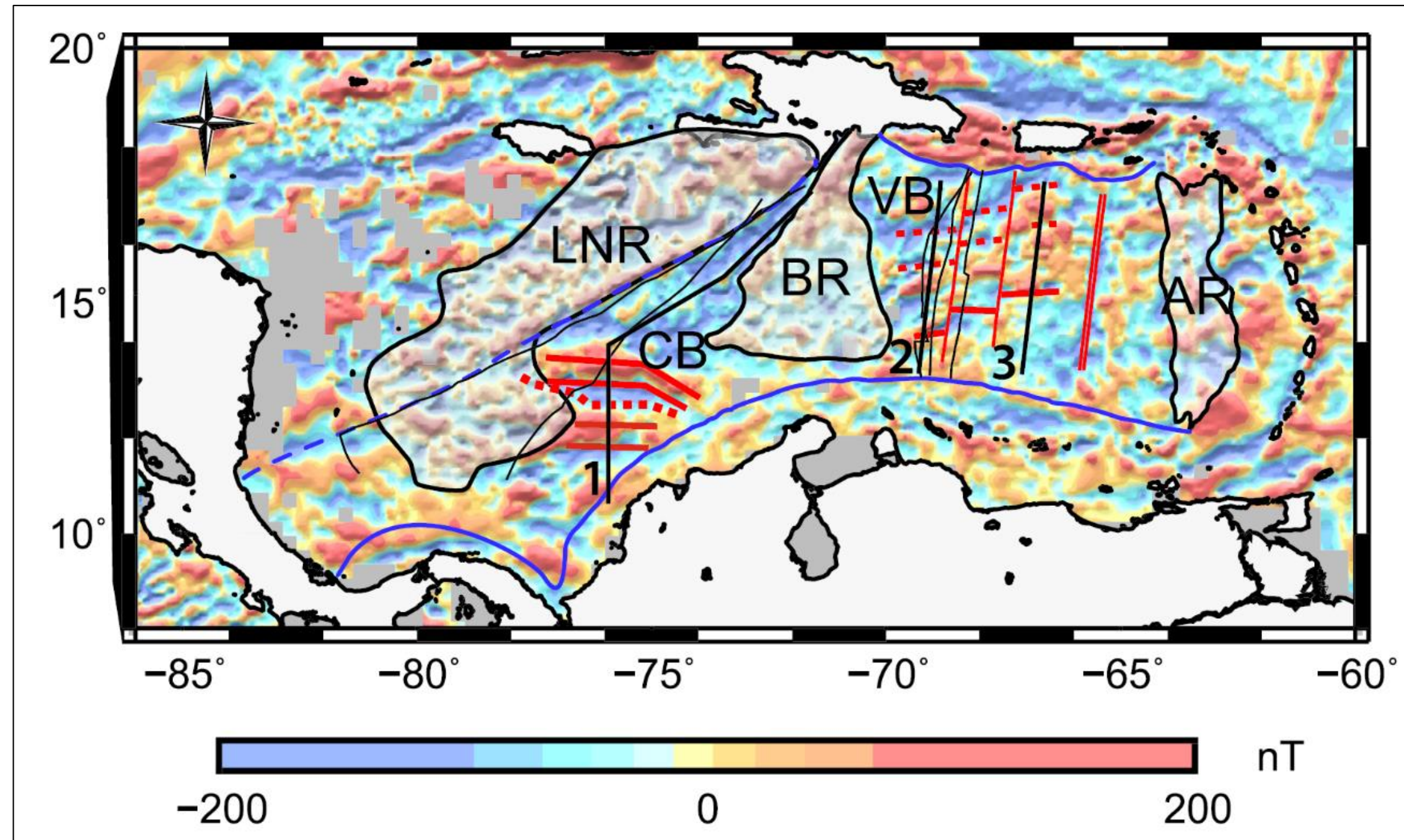
Predominantly a Magma-Rich episode of spreading. As evidenced by the emplacement of SDRs in a radial spreading pattern

Predominantly an A-magmatic episode of spreading. “SDR” on the flanks of the younger crust indicate early magmatism that waned once spreading was underway

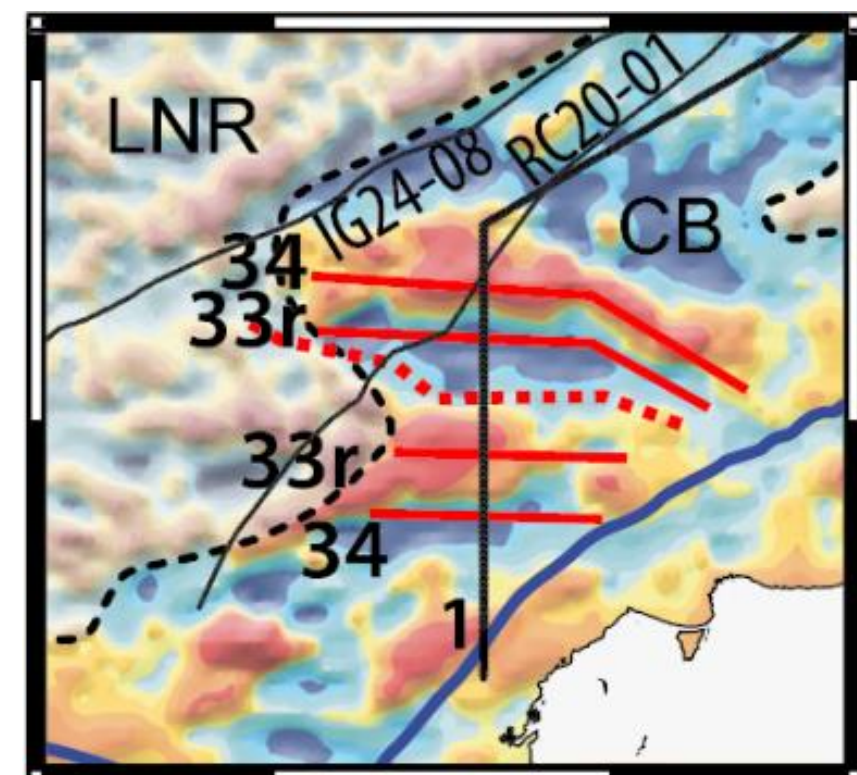




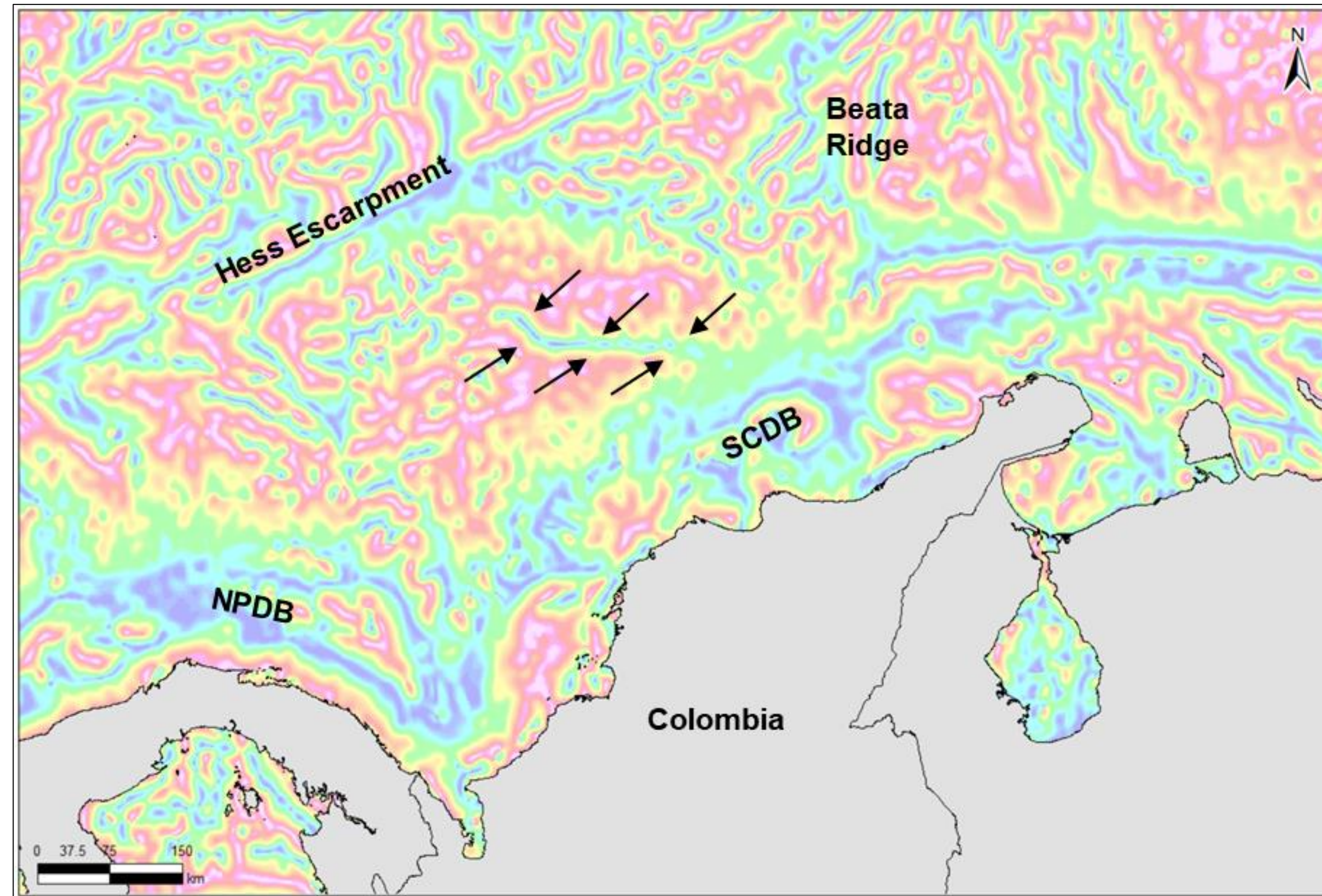
# Observations from Deepwater



García-Reyes & Dymant 2021



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THANKS  
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