HiRes P-Cable Data from Shallow Reservoir Mapping and Geohazard Predictions Case Examples from the Barents Sea

FIRST APPLIED SHALLOW MARINE GEOPHYSICS CONFERENCE

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P-Cable 3D Seismic AS and [1]VBPR AS

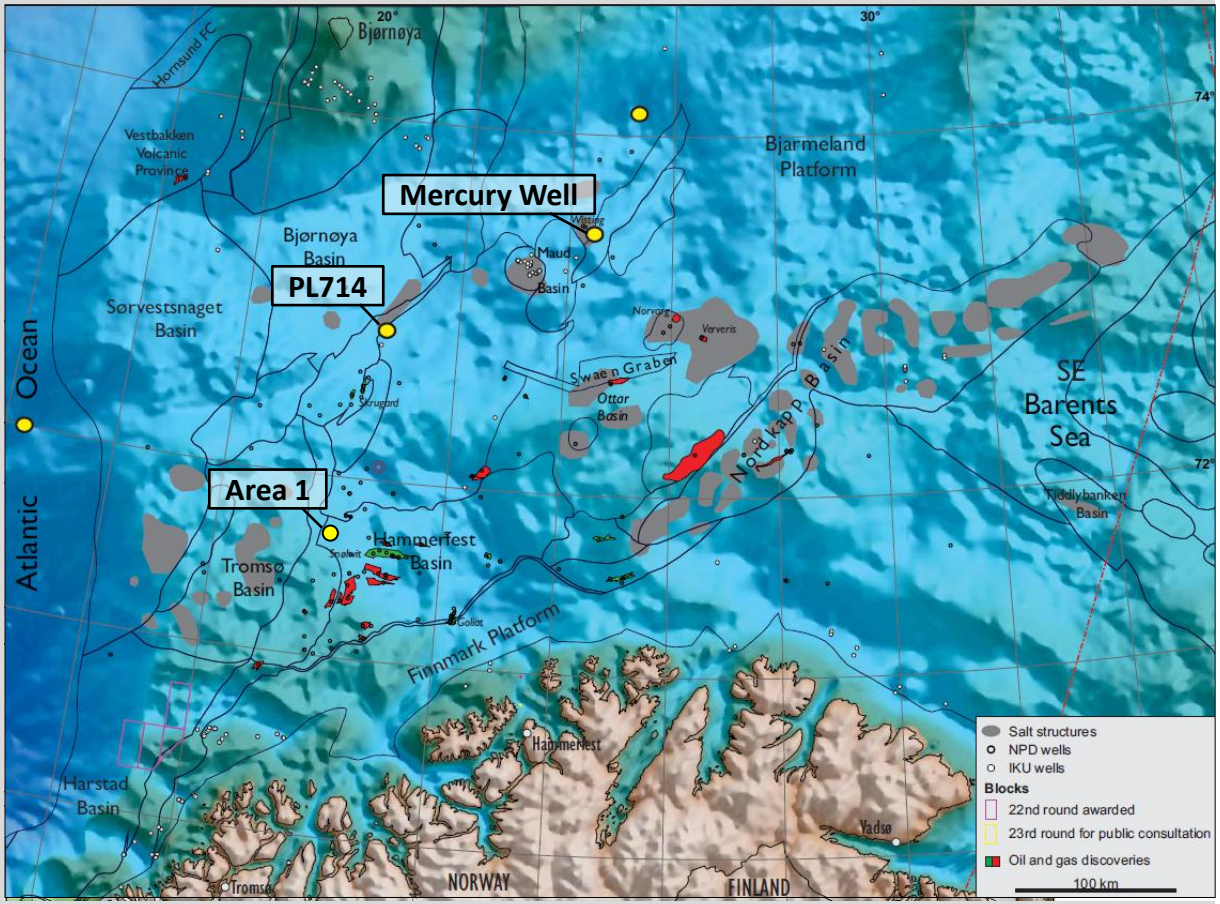
Oslo Science Park, Norway

Athens, 15.09.14

Outline

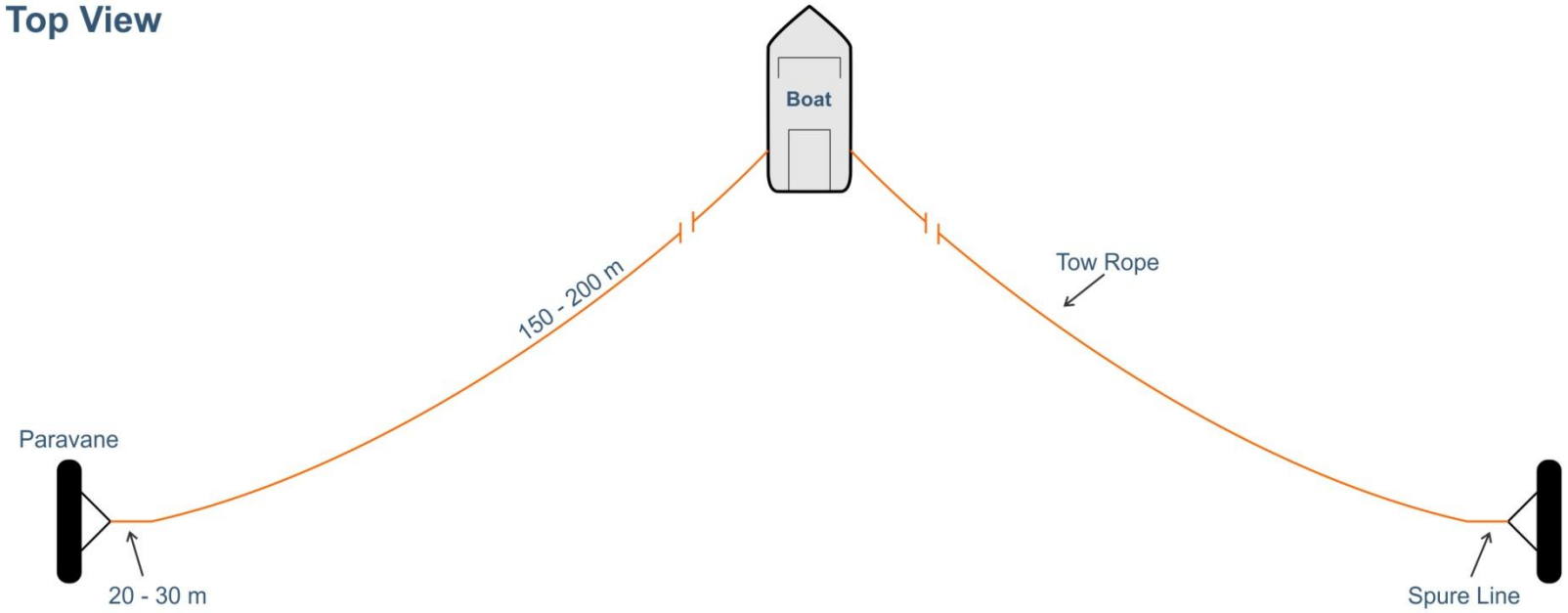
- *Technology*
- *Data comparison*
- *Shallow reservoirs*
- *Geohazard*
  Shallow gas
  Seepage anomalies
- *Conclusions*

25 P-Cable 3D cubes acquired in the Barents Sea 2004 by academia (UiT) and industry (2012/2014)



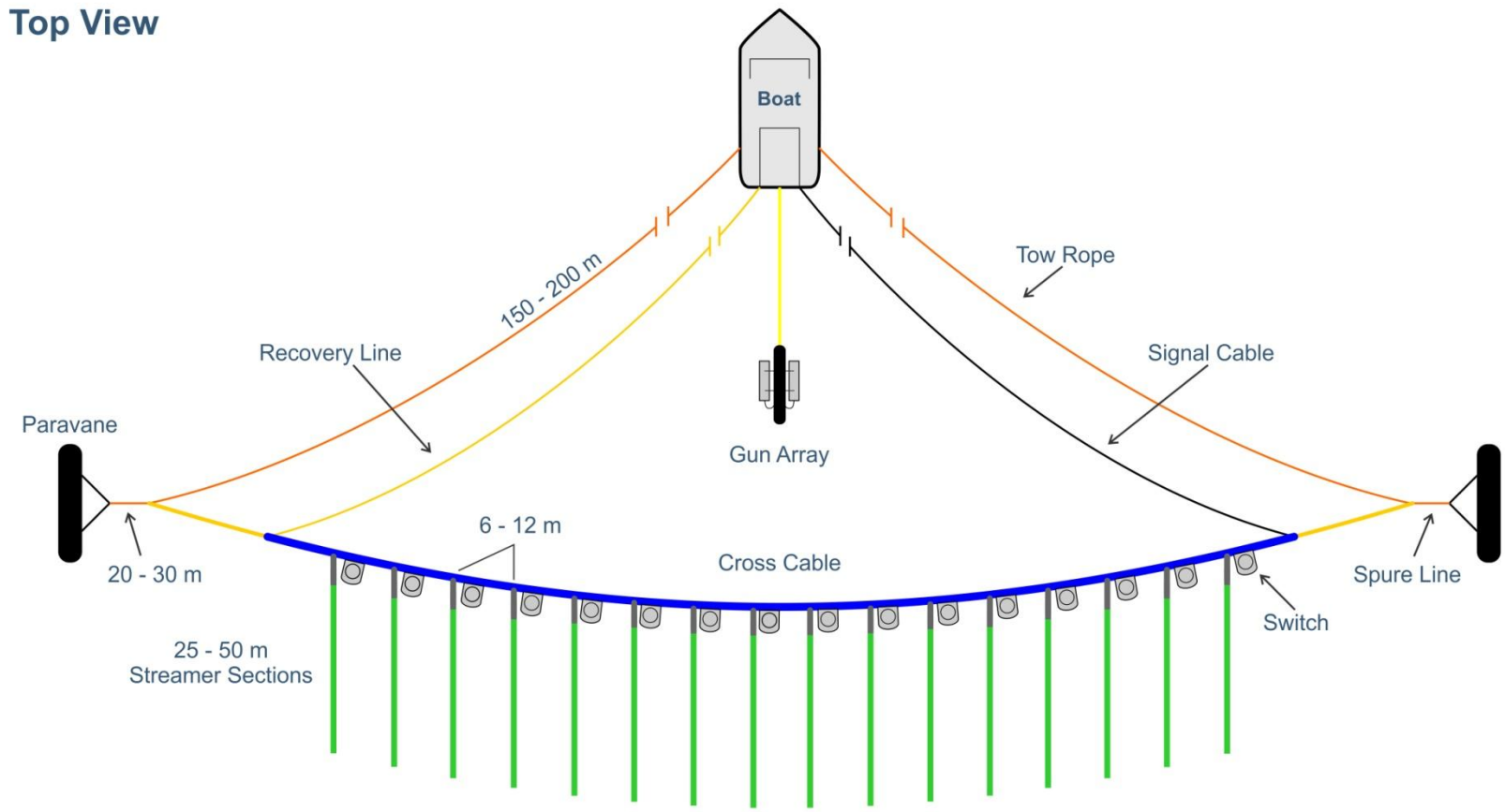
Goals: Gas seepage, oil and gas reservoirs, geomorphology, slides and mud volcanoes

What is P-Cable?



Simplified sketch of a 16 streamer P-Cable 3D system

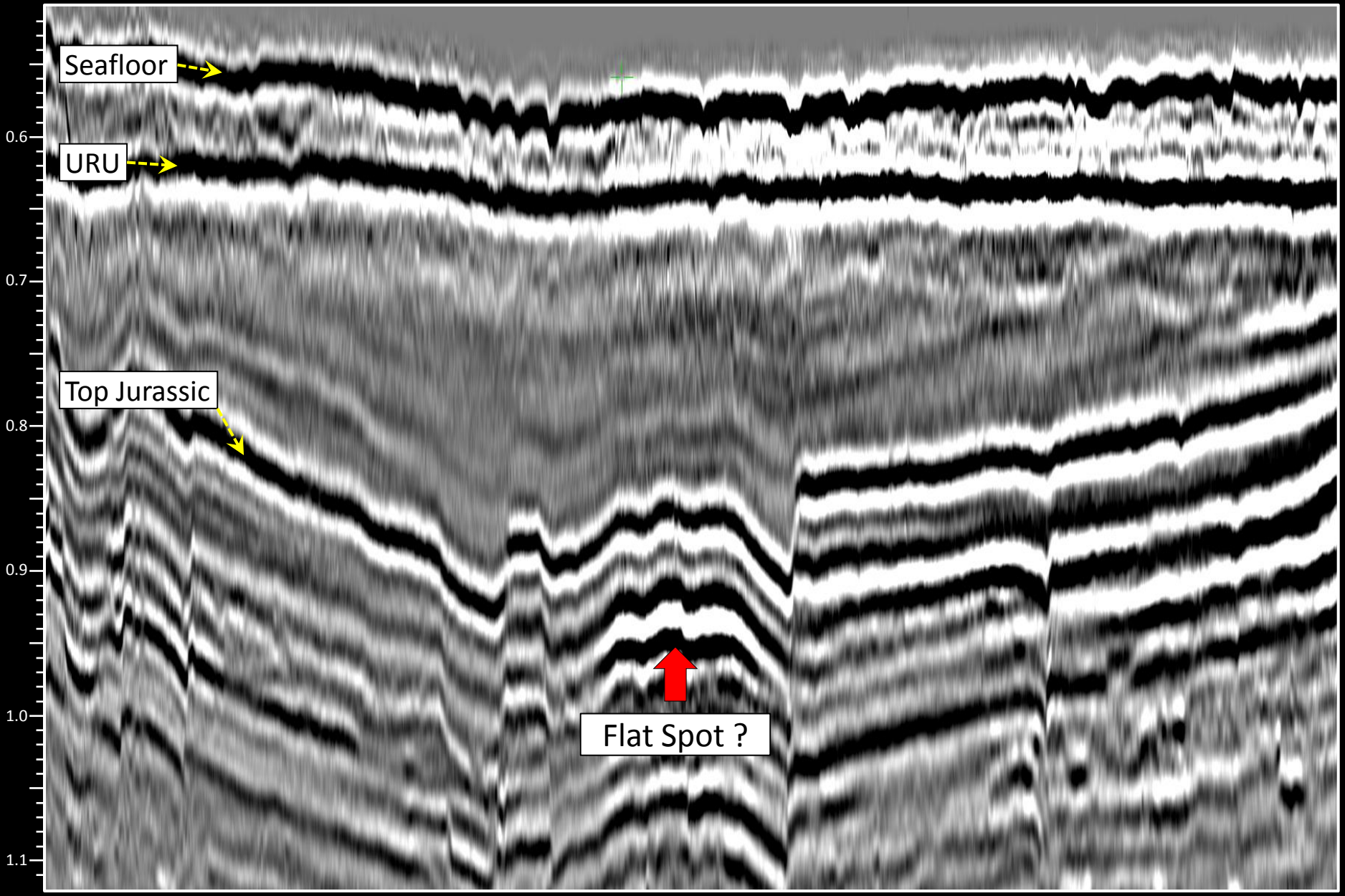
What is P-Cable?



Typical System Specifications			
No of Streamers	12 - 24	Streamer Length	25 - 50 m
Streamer Spacing	6 - 12 m	Source-Receiver Distance	25-150 m
Bin Size	**3 × 3 m or 6 × 6 m**	**Frequency Content**	**5 - 350 Hz**
Horizontal Resolution	**3 - 6 m**	Deployment/Recovery	1 - 1.5 hr
Vertical Resolution	**1 - 1.5 m**	Acquisition Efficiency	8-16 km^2/day

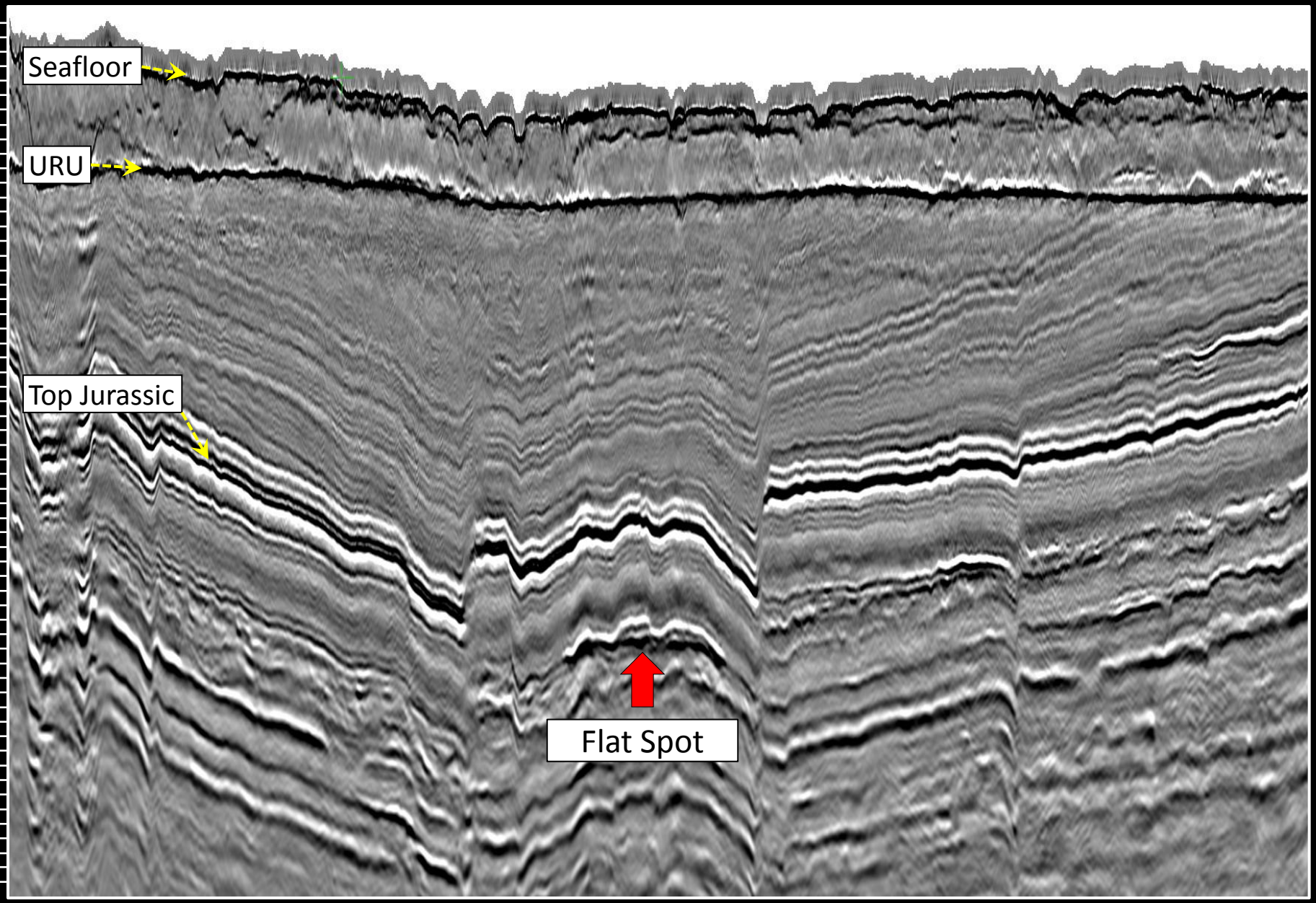
Simplified sketch of a 16 streamer P-Cable 3D system (Norway Pat. No. 317652, UK Pat. No. GB 2401684, US Pat. No.7.221 .620 B2.)

Conventional 3D



Data from TGS and WGP Survey

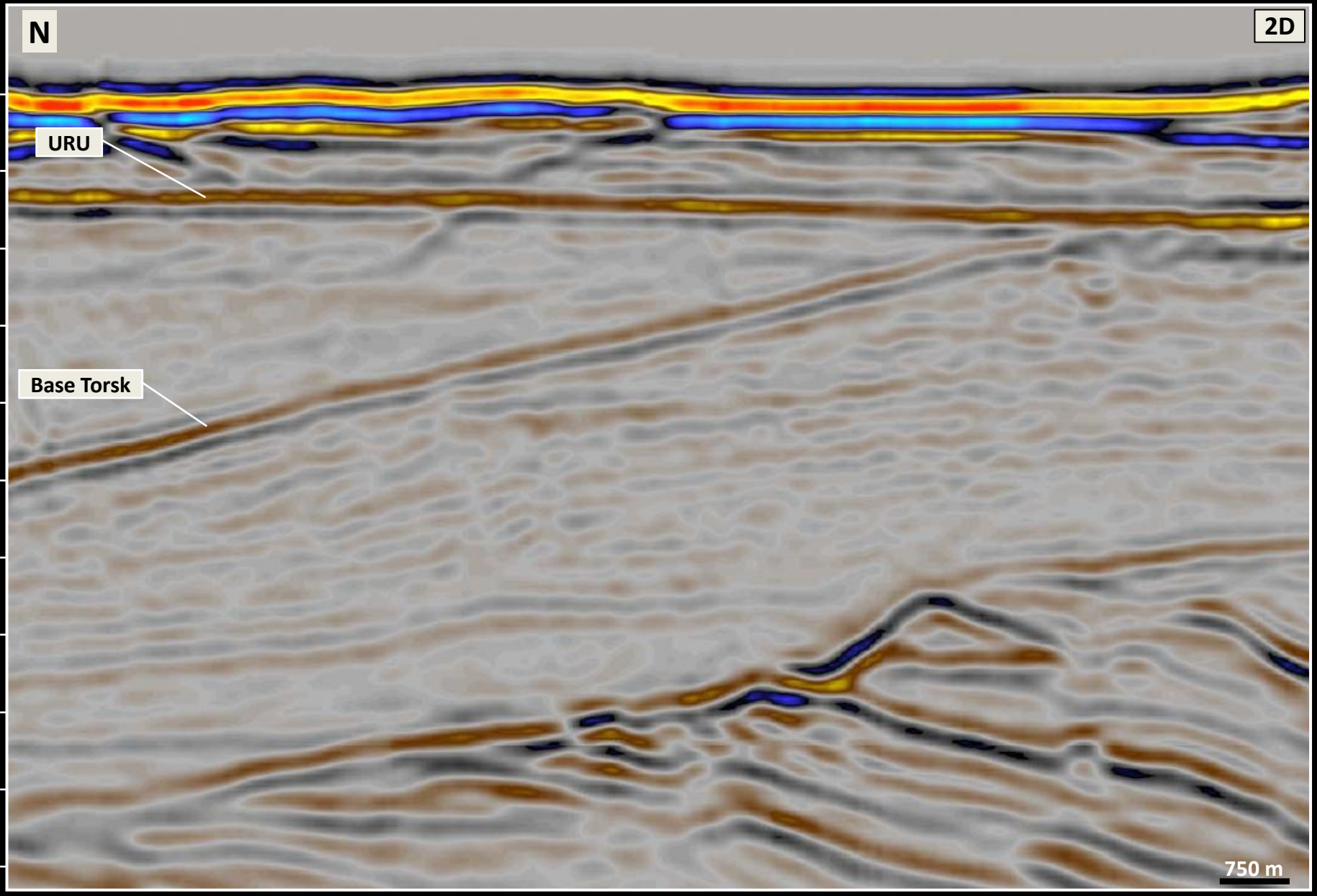
P-Cable 3D



Broadband Clarifi processing by TGS

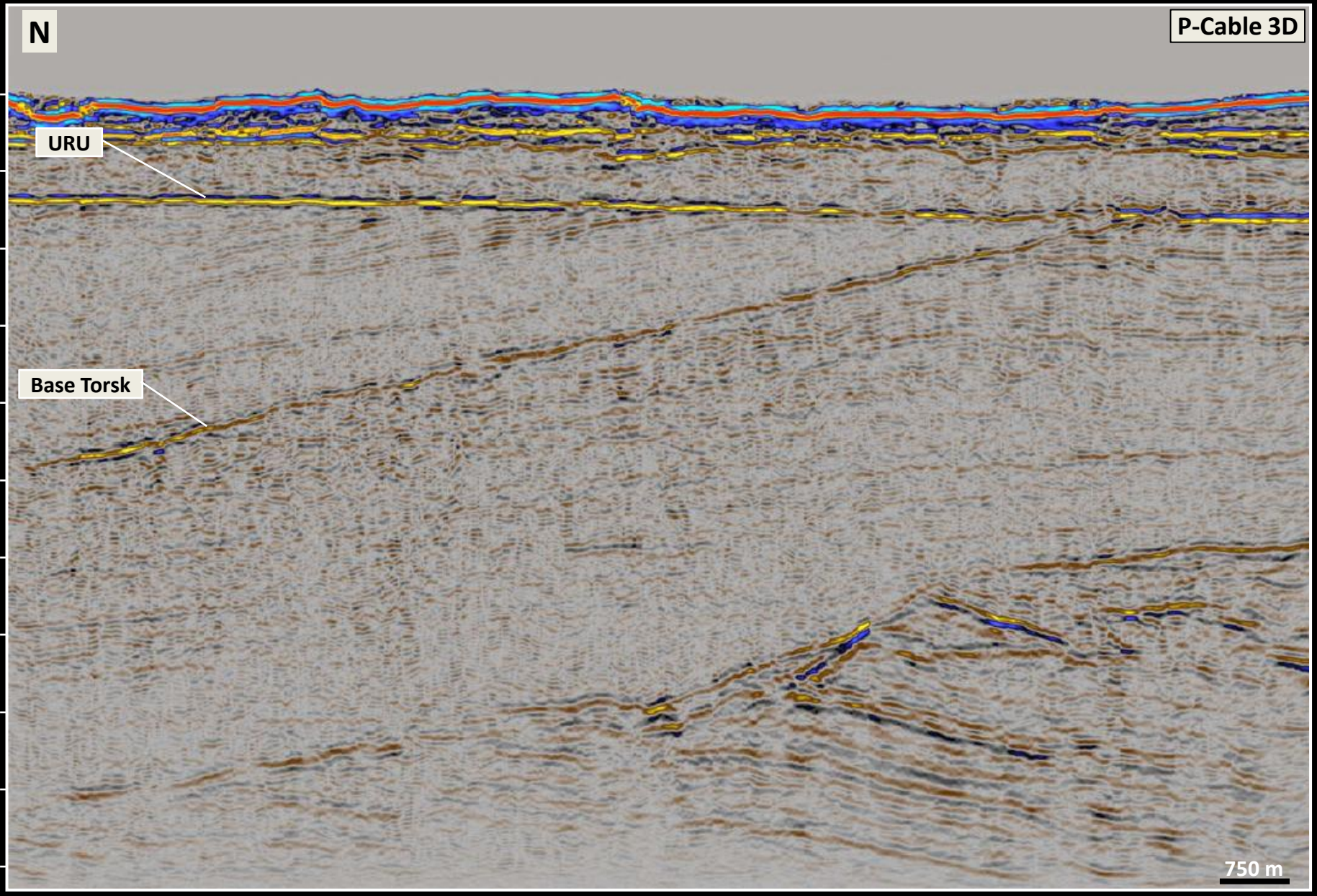
www.pcable.com

P-Cable 3D vs 2D



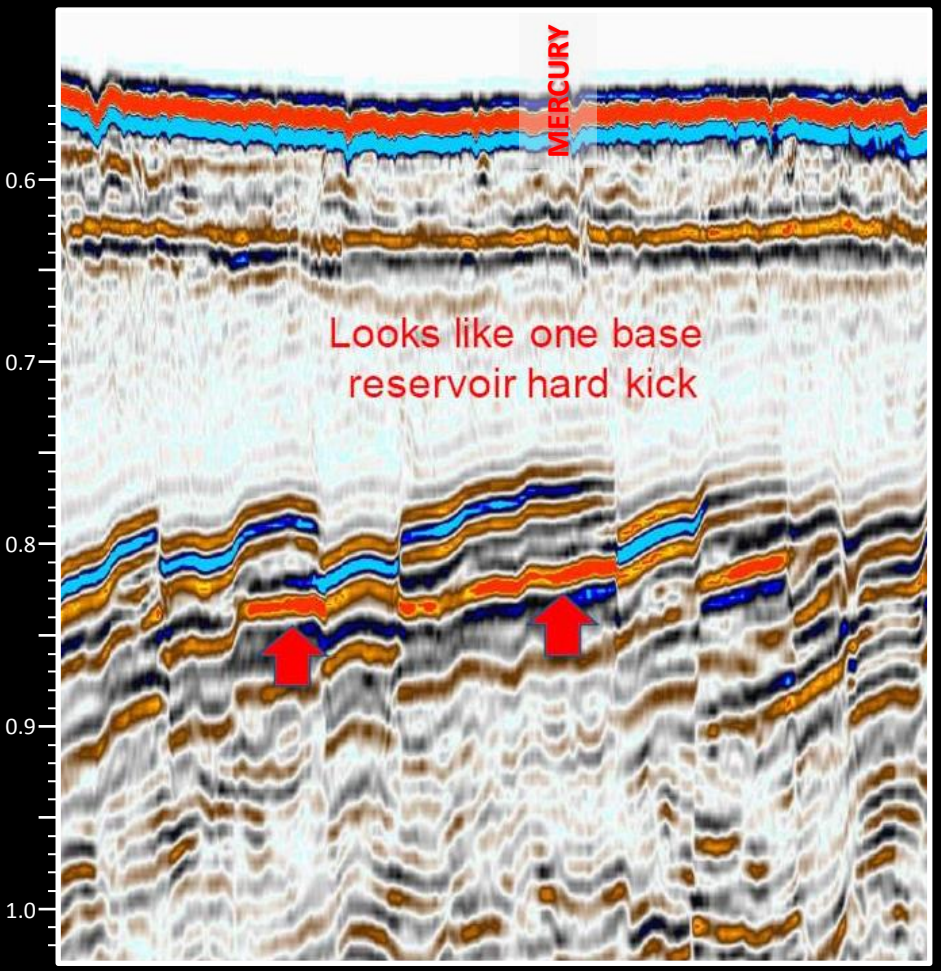
Area A, Barents Sea: 2D line

P-Cable 3D vs 2D



Barents Sea - Mercury Well Tie

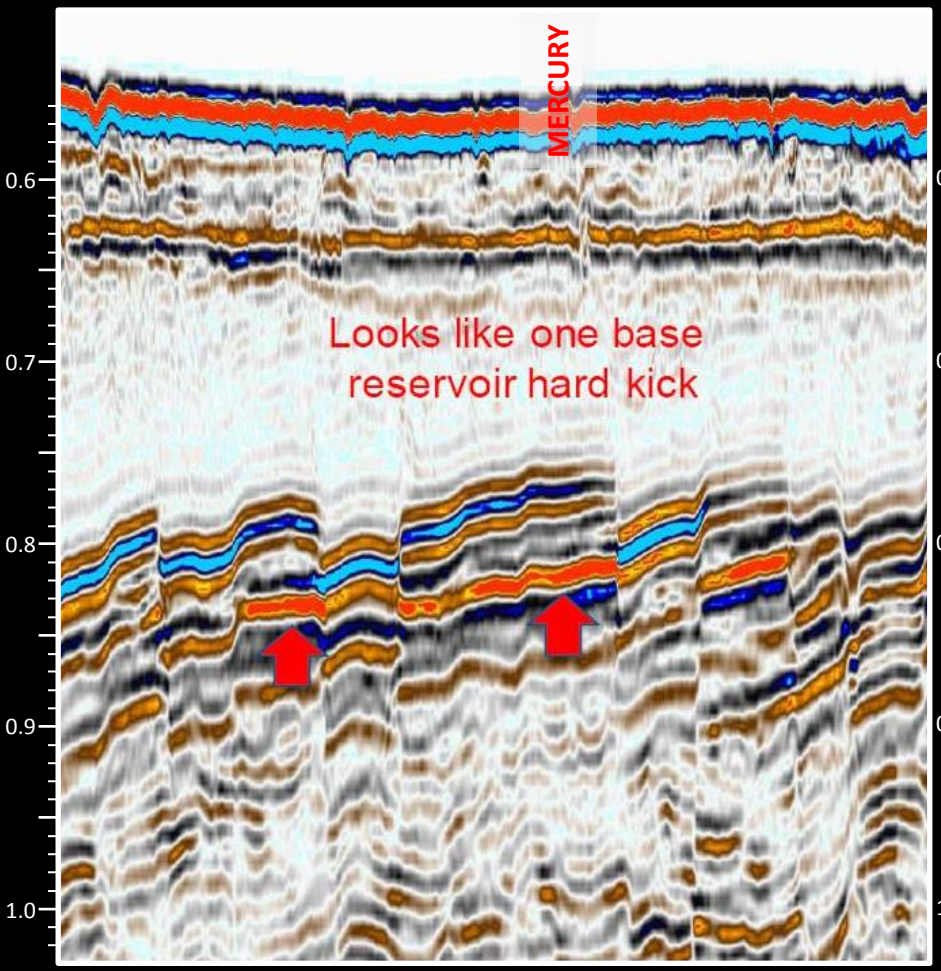
Conventional seismic



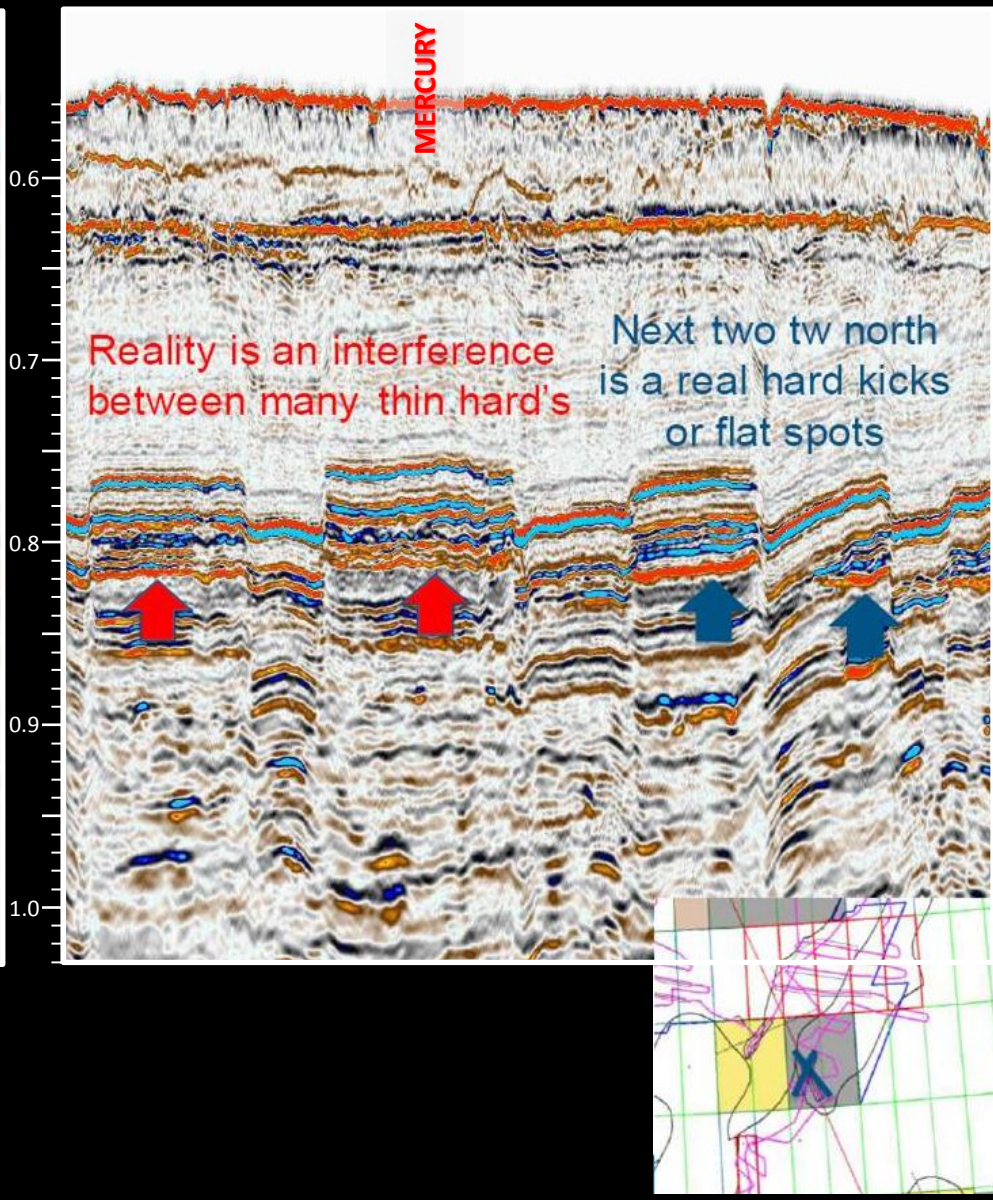
- Mercury well PL614
- Drilled summer 2014
- 10 m gas-filled reservoir
- Stø Fm. Realgrunn sub-group
- Gas find not commercial
- Well plugged and abandoned

Barents Sea - Mercury Well Tie

Conventional seismic

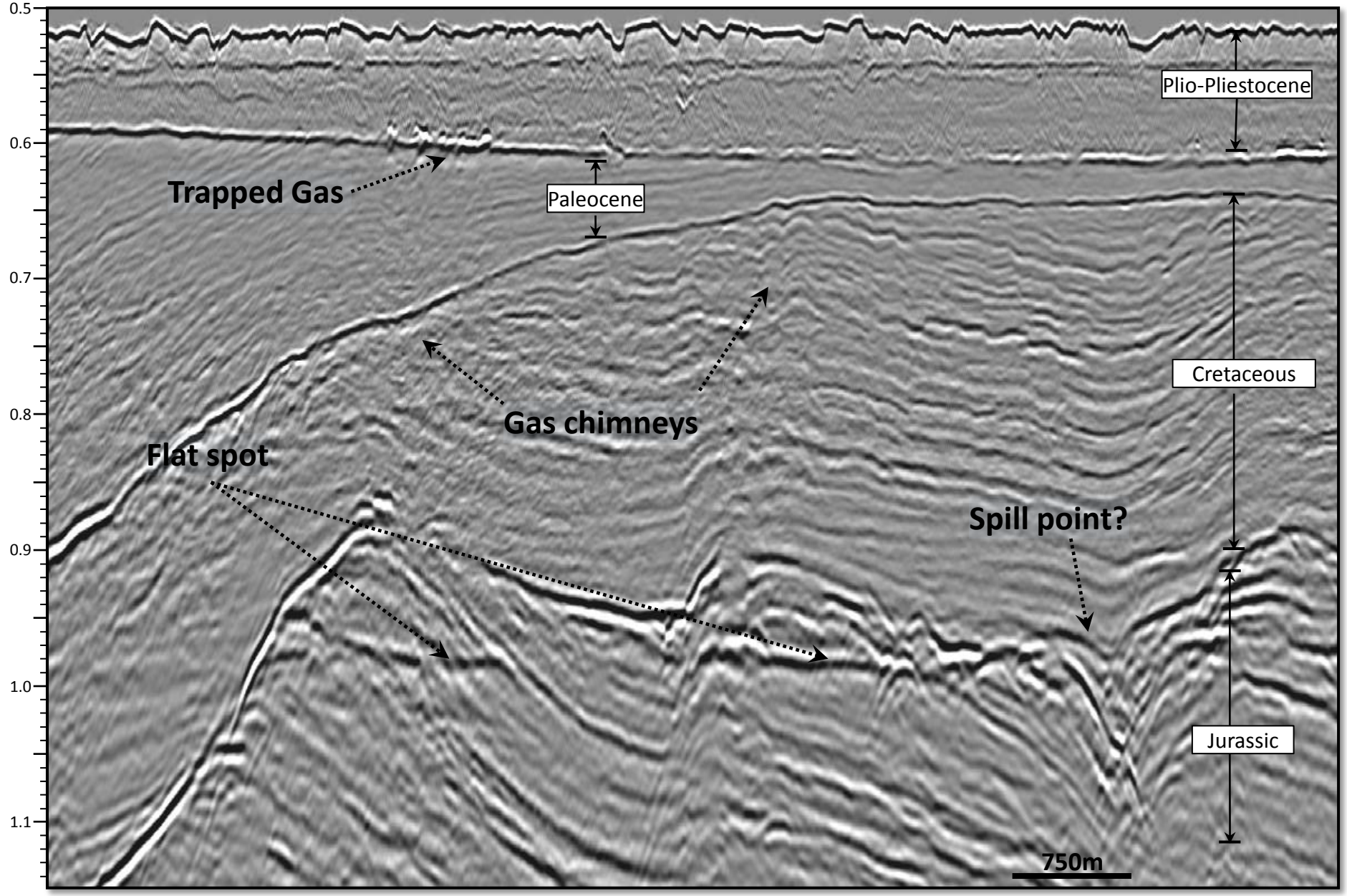


P-Cable seismic



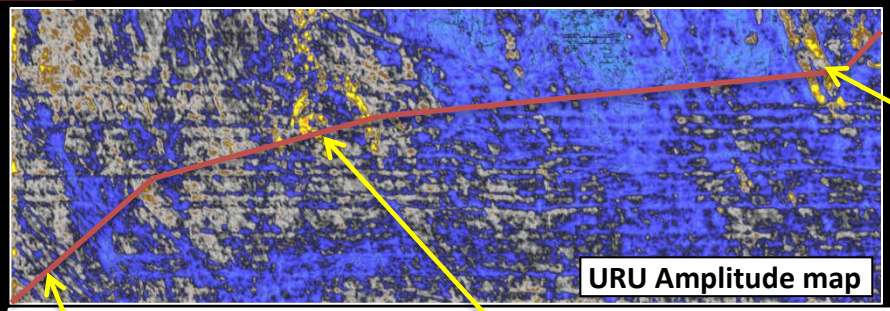
The crossing P-Cable data line show

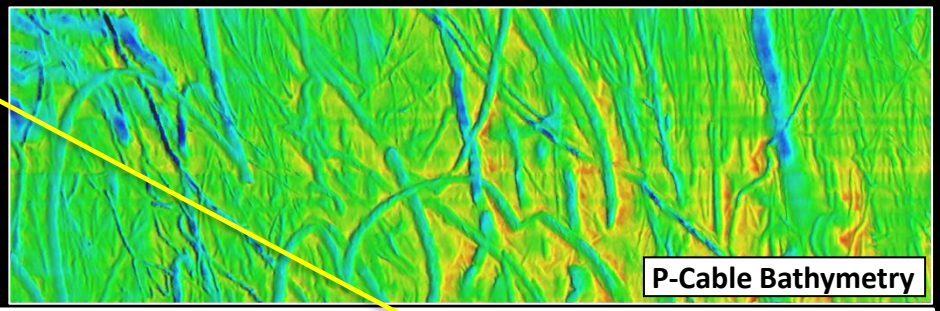
Shallow Reservoir

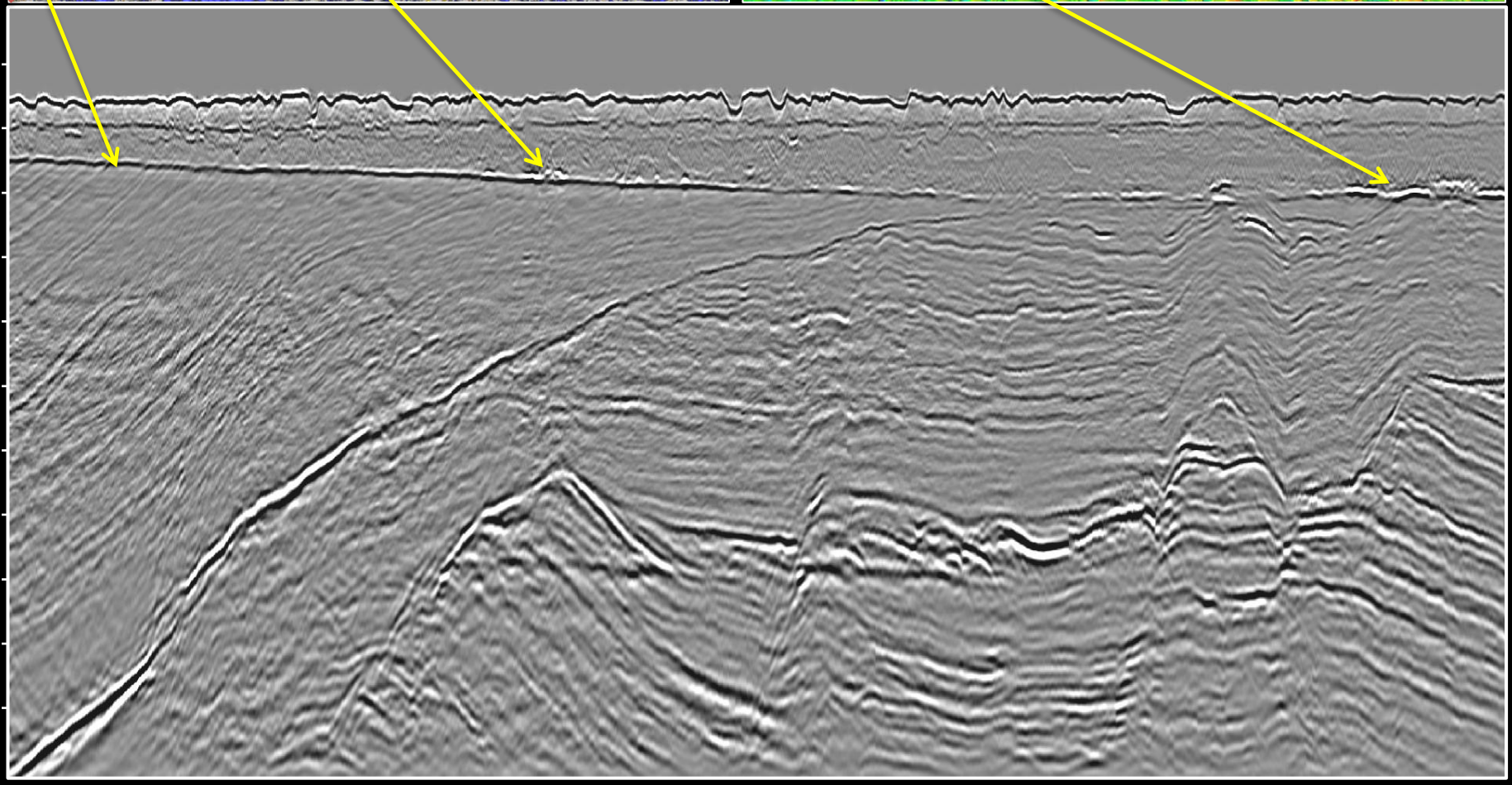


Data from WGP Survey

Shallow Gas (URU)

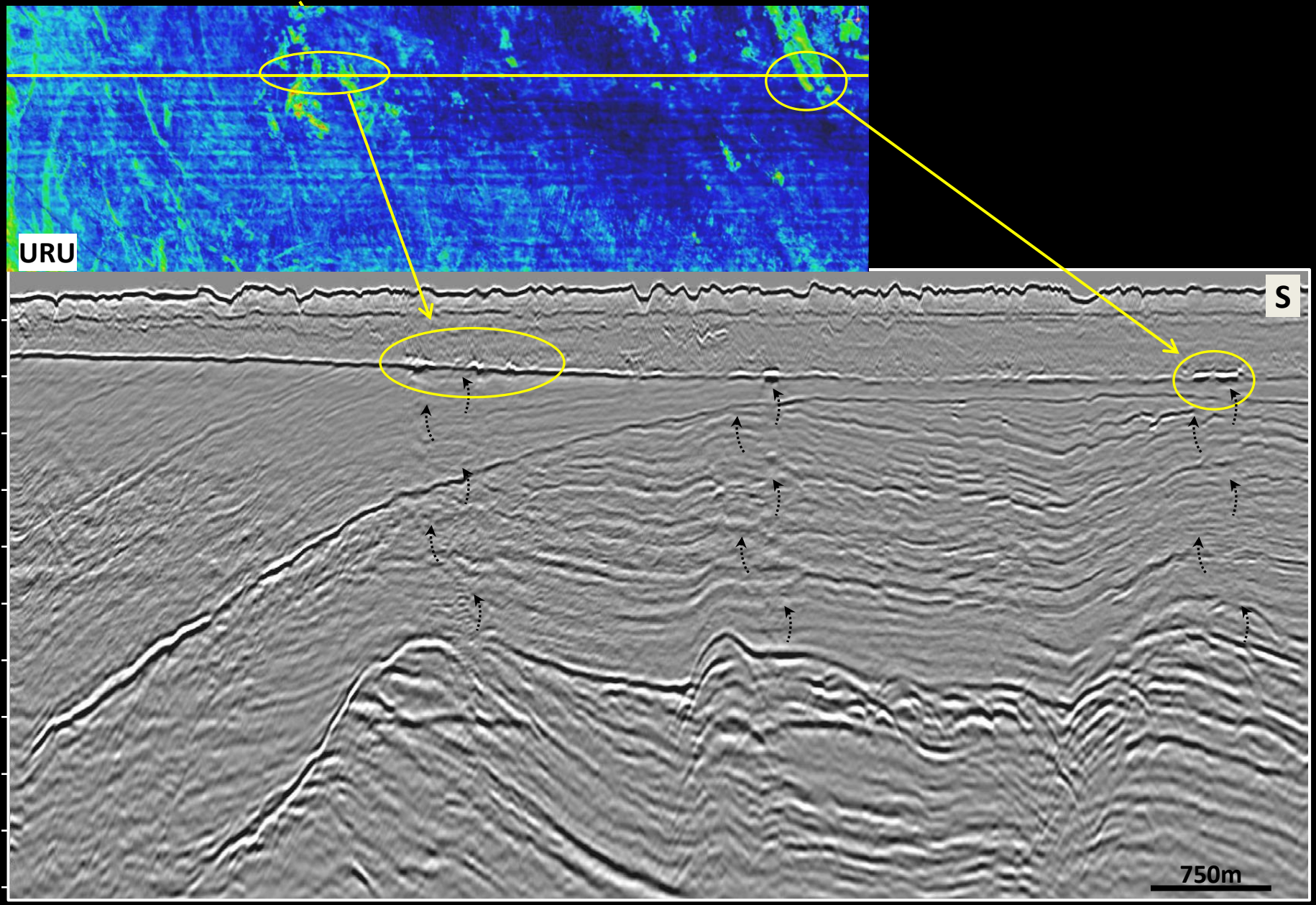






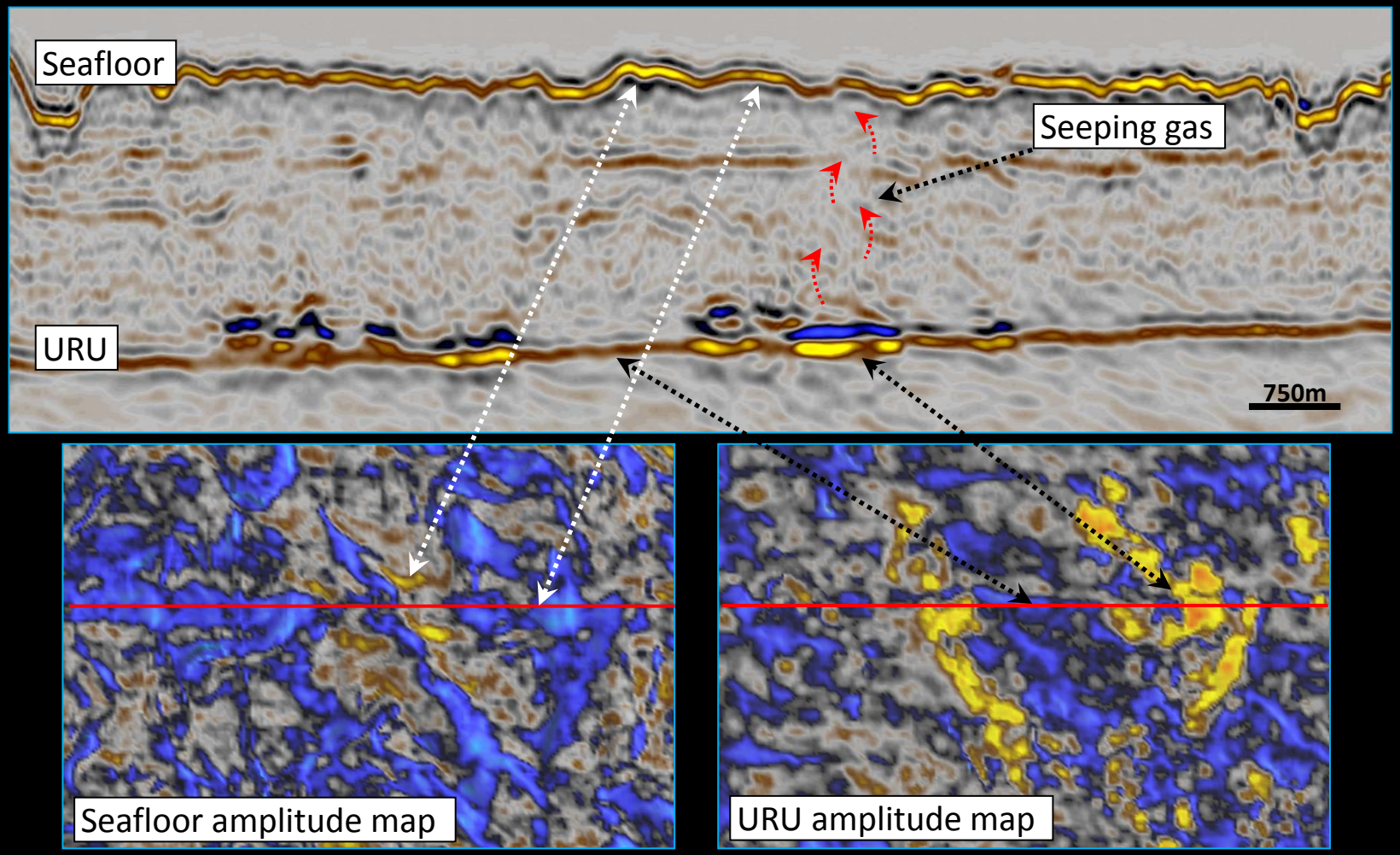
Data from WGP Survey, URU = Upper Regional Unconformity

Shallow Gas | Bright Spots



Data from WGP Survey

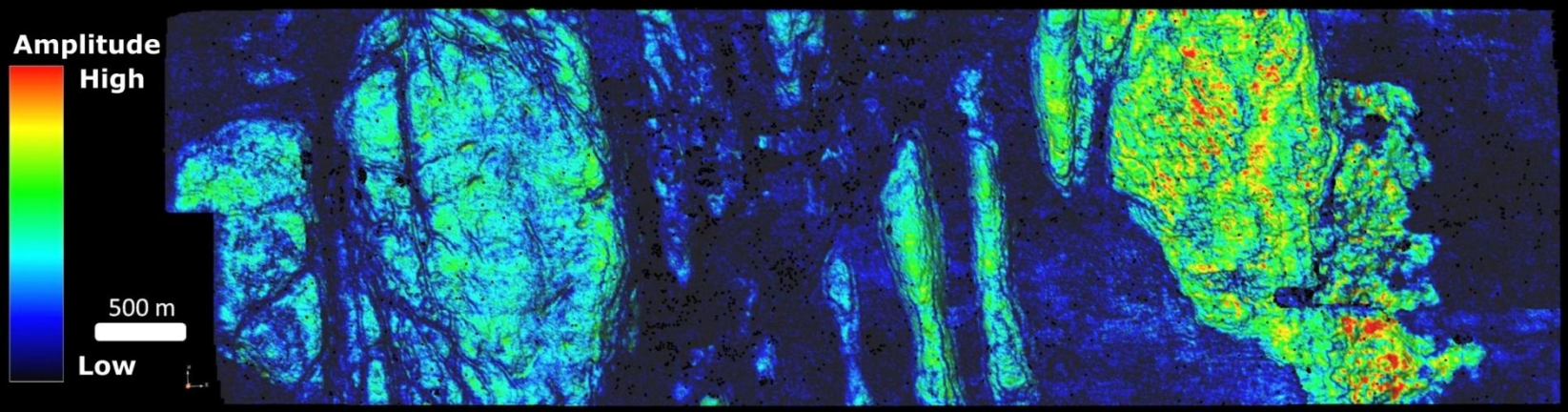
Geohazard | Gas Seepage



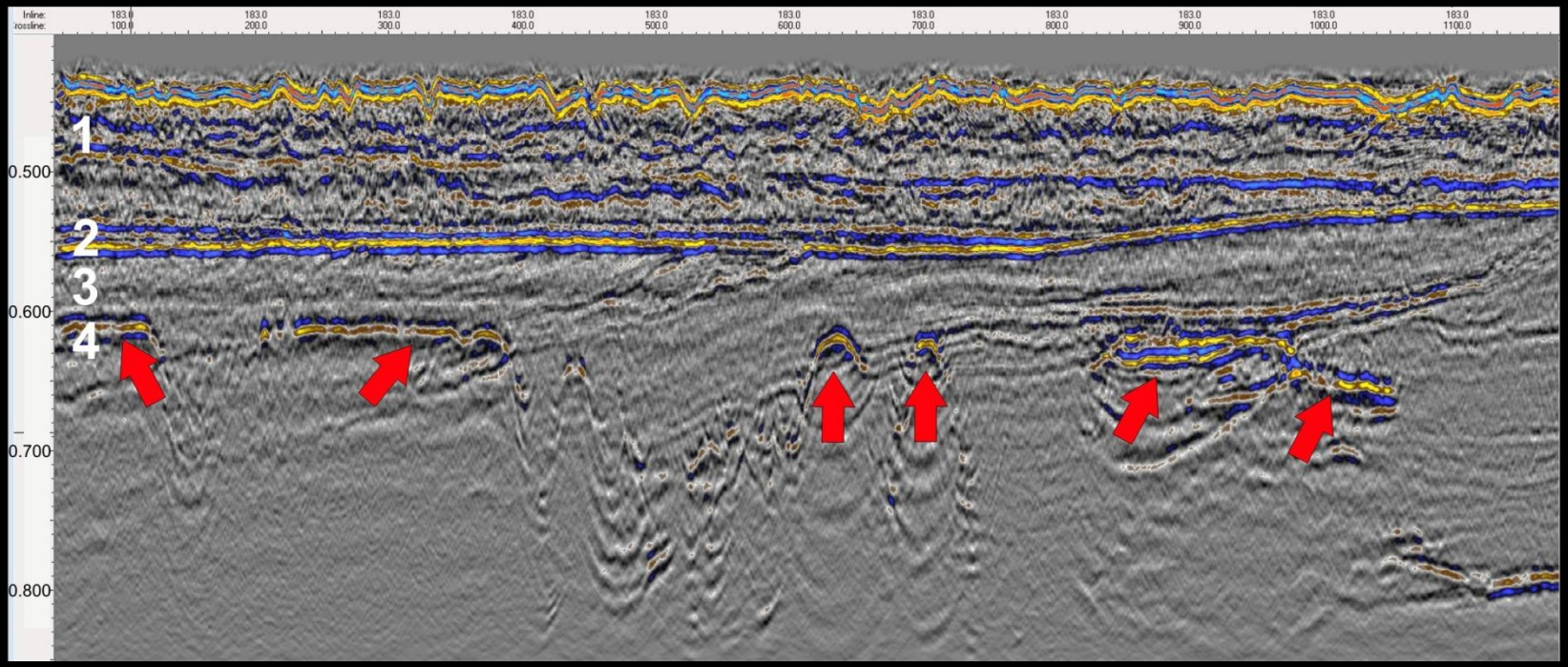
Gas seepage from URU to seafloor suggested from P-Cable data

Data from WGP Survey

Geohazard | Shallow Gas

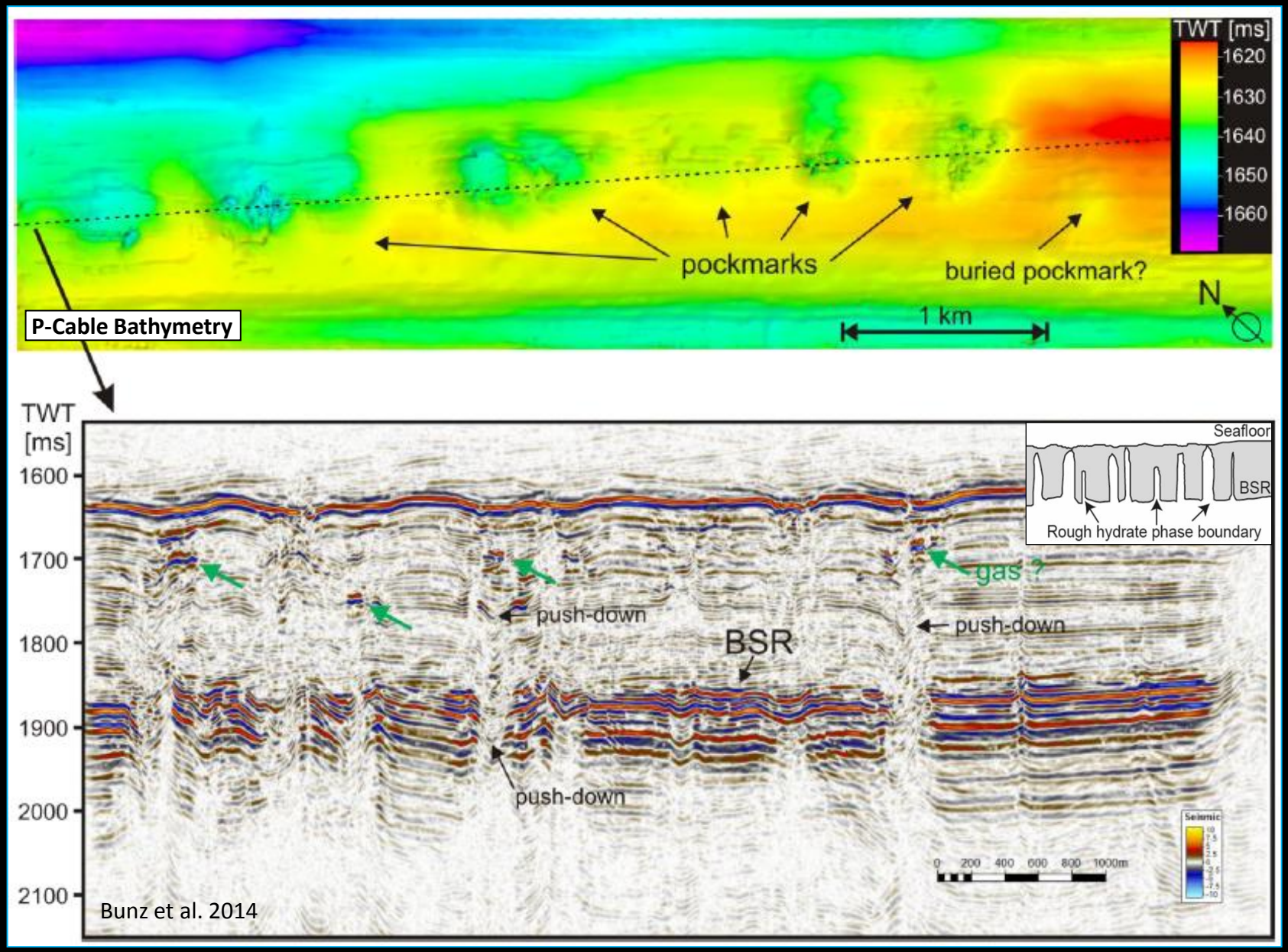


Inline from the Barents Sea;
glacial deposits (1), URU (2), westward dipping Paleogene sediments (3) and shallow gas (4)



Data from UiT with support from Lundin, area 1

Geohazard Active Fluid Flow



Data from UiT, active fluid leakage on the Vestnesa Ridge, Svalbard Barents Sea.

Conclusions

P-Cable has been successfully used in the Barents Sea for 10 years by academia and industry

This HiRes 3D technology is useful for Shallow Reservoir Mapping and Geohazard Predictions by the industry and Academia in the Barents Sea

- Seafloor and shallow geomorphology
- Shallow reservoir and source rocks
- Hydrocarbon seep anomalies
- Site surveys and geohazards
- New insights into shallow geology

With support from

Thank You!