

Planning a Drilling Campaign in a Petroleum Province Using High Resolution 3D Seismic Data – IODP Proposal 909

David R. Cox, Andrew M. W. Newton, Paul. C. Knutz, Mads Huuse

- IODP Proposal 909 aims to drill 7 sites across the NW Greenland continental shelf to study the evolution of the Greenland Ice Sheet.
- A geohazard assessment workflow was conducted to identify numerous drilling hazards associated with a frontier petroleum province and glaciated margin.
- The assessment was used to fine-tune sites that were originally selected on regional 2D seismic data to superior and safer locations.

“The workflow provides a blueprint for future geohazard assessments that will maintain high safety standards, and promote a modernised and comprehensive safety assessment that fully exploits the benefits of 3D seismic data. This will ultimately enhance future success of scientific drilling campaigns”

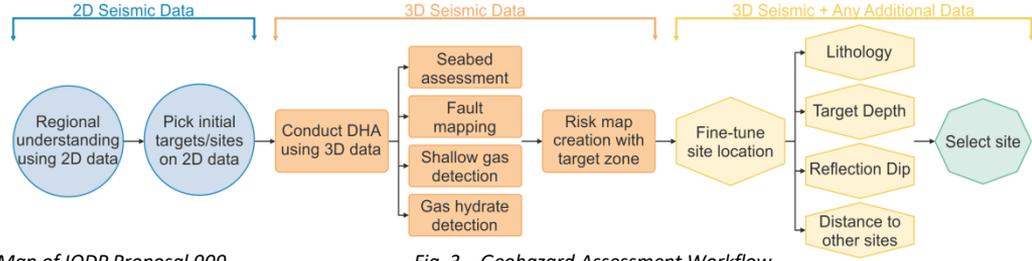


Fig. 1 – Location Map of IODP Proposal 909

Fig. 3 – Geohazard Assessment Workflow

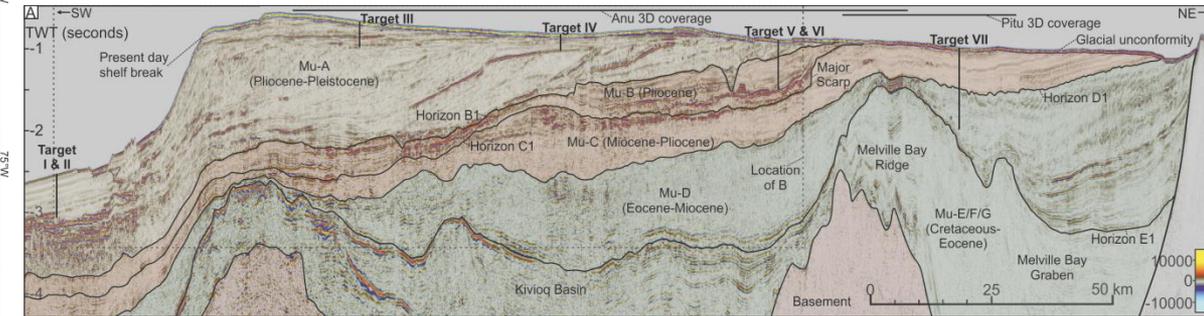
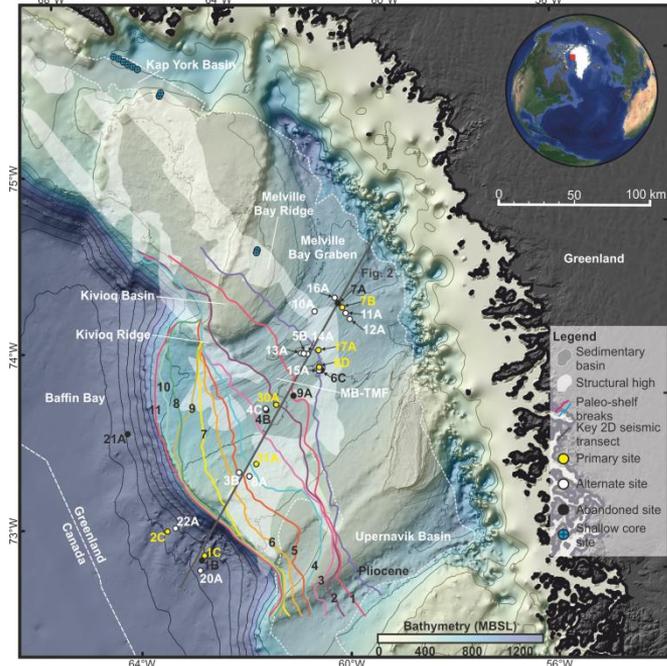
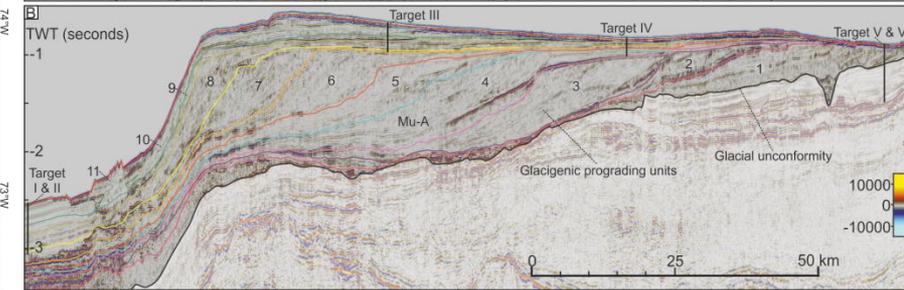


Fig. 2 – Regional stratigraphy
Seismic data courtesy of TGS.



*This work will soon be submitted for publication. Please do not reproduce images from this display.
© Authors, All rights reserved.*

Planning a Drilling Campaign in a Petroleum Province Using High Resolution 3D Seismic Data – IODP Proposal 909

David R. Cox, Andrew M. W. Newton, Paul. C. Knutz, Mads Huuse

“The workflow provides a blueprint for future geohazard assessments that will maintain high safety standards, and promote a modernised and comprehensive safety assessment that fully exploits the benefits of 3D seismic data. This will ultimately enhance future success of scientific drilling campaigns”

Target	Stratigraphy		Priority	Depth Target	Seismic Data Coverage			Result of Geo-	Notes	
	Targeted	Site Name (MB-)		(m)	2D	3D	UHR	hazard Assessment		
I	Mu-A	23A	Primary	422			✓	-	Primary due to high reflection continuity	
	(su. 9, 10 & 11)	1C	Alternate	473	✓		✓	-		
		20A	Alternate	450	✓		✓	-		
		1B	Abandoned	-	✓		✓	-		Ab. to avoid amplitude anomaly at TD
II	Mu-A	2C	Primary	522	✓		✓	-	Ab. considered due to lithology concerns	
	(su. 8)	22A	Alternate	611	✓		✓	-		
		21A	Abandoned	-	✓			-		Ab. due to location on lower fan wedge
III	Mu-A	31A	Primary	282	✓	✓	✓	Confirm		
	(su. 6, 7 & 8)	8A	Alternate	370	✓	✓	✓	Confirm		
		3B	Alternate	375	✓	✓	✓	Confirm		
IV	Mu-A	30A	Primary	303	✓	✓	✓	Confirm		
	(su. 4, 5 & 6)	4C	Alternate	305		✓	✓	Confirm		
		4B	Abandoned	-	✓	✓	✓	Abandon		Ab. due to amendment to MB-30A
		9A	Abandoned	-	✓	✓	✓	Abandon		
V	Mu-A (su. 1)	17A (Op 1)	Primary	224	✓	✓	✓	Select	Superior site to original primary	
	and -B	5B	Alternate	520	✓	✓	✓	Confirm	Old primary	
		13A	Alternate	540		✓		Select		
		14A	Alternate	510		✓		Select		
VI	Mu-B and -C	6D	Primary	561	✓	✓	✓	Amend	Plan to drill before Target V	
		17A (Op 2)	Alternate	411	✓	✓	✓	Select	Additional depth to Target V primary	
		15A	Alternate	648		✓		Select		
		6C	Abandoned	-		✓	✓	Abandon	Ab. due to potential gas anomalies	
VII	Mu-C and -D	7B	Primary	978	✓	✓	✓	Amend		
		16A	Alternate	1089		✓		Select		
		11A	Alternate	1200		✓		Select		
		12A	Alternate	1186		✓		Select		
		10A	Alternate	1288	✓	✓		Confirm		
		7A	Abandoned	-	✓	✓	✓	Abandon		Ab. due to several reasons

Table 1 – Site information table for IODP Proposal 909, highlighting the results of the geohazard assessment workflow. The ticks indicate the seismic data coverage at each site while the red coloured ticks denote which data was used primarily for initial site selection.



The University of Manchester



Centre for Doctoral Training (CDT) in Oil and Gas

This work will soon be submitted for publication. Please do not reproduce images from this display.

© Authors, All rights reserved.