

Cook Inlet Mesozoic Subcrop

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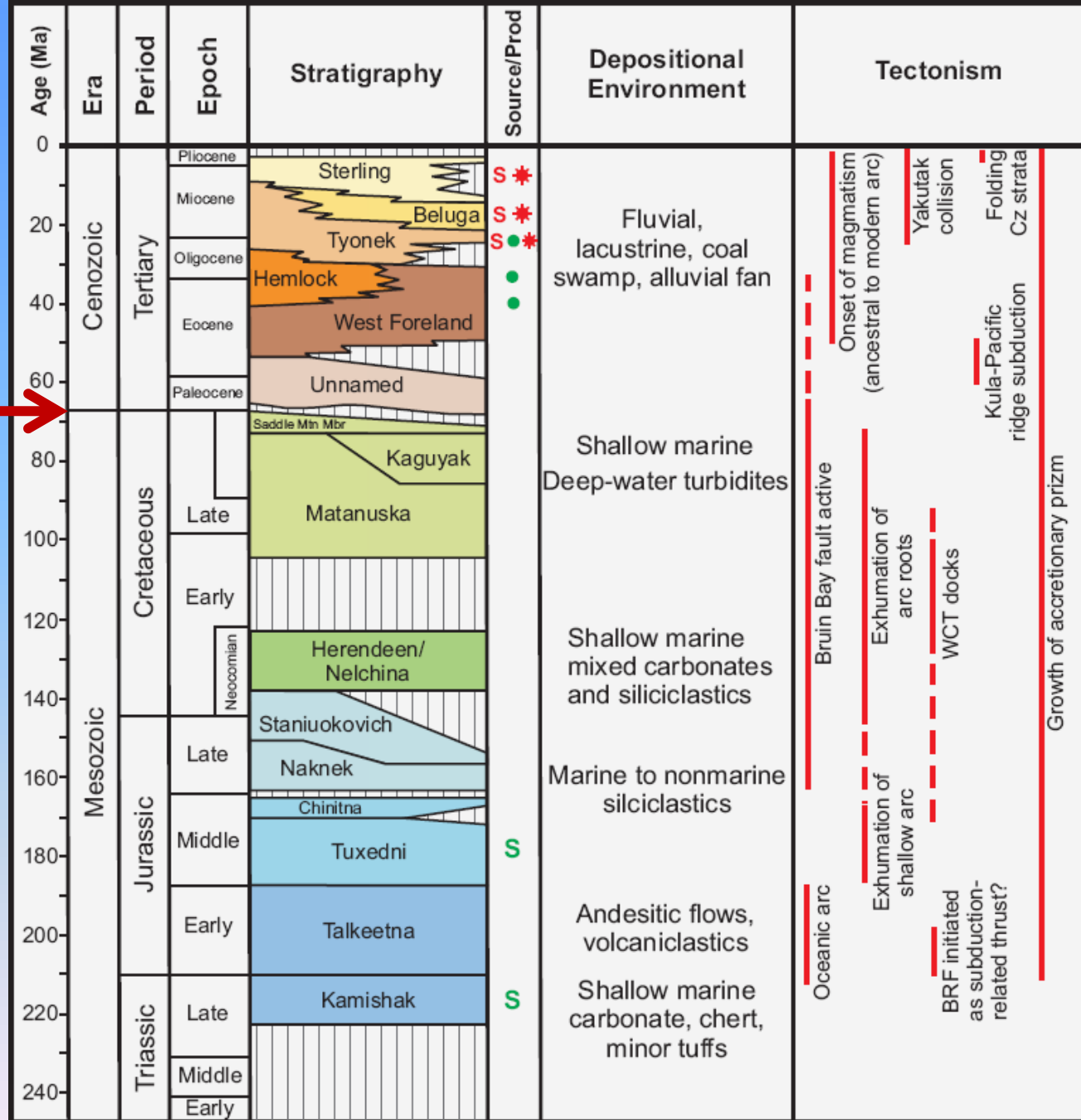
This presentation is primarily an outgrowth of internally funded, office-based studies in conjunction with the Cook Inlet Basin Reconstruction project, a joint effort of the Alaska Division of Geological & Geophysical Surveys and the Alaska Division of Oil and Gas. We thank CGG Veritas for permission to share interpretations based in large measure on their CI-88 and CI-89 marine seismic surveys.

Cook Inlet Mesozoic Subcrop

- Create Base Tertiary Depth Map
- Pick Mesozoic tops – (logs, Amstrat, AGS, PI sources, licensed seismic, Zippi paly study, outcrop)
- Review Core
- Interpret Subcrop
- Final Products: Subcrop Map and Cross
Sections

Cook Inlet Strat Column

Base Tertiary /
Top Mesozoic
Unconformity



Redrawn from Curry and others (1993) and Swenson (2003); additional information from Plafker and others (1989) and Nokleberg and others (2004)

CI-88, CI-89 Veritas Marine Spec



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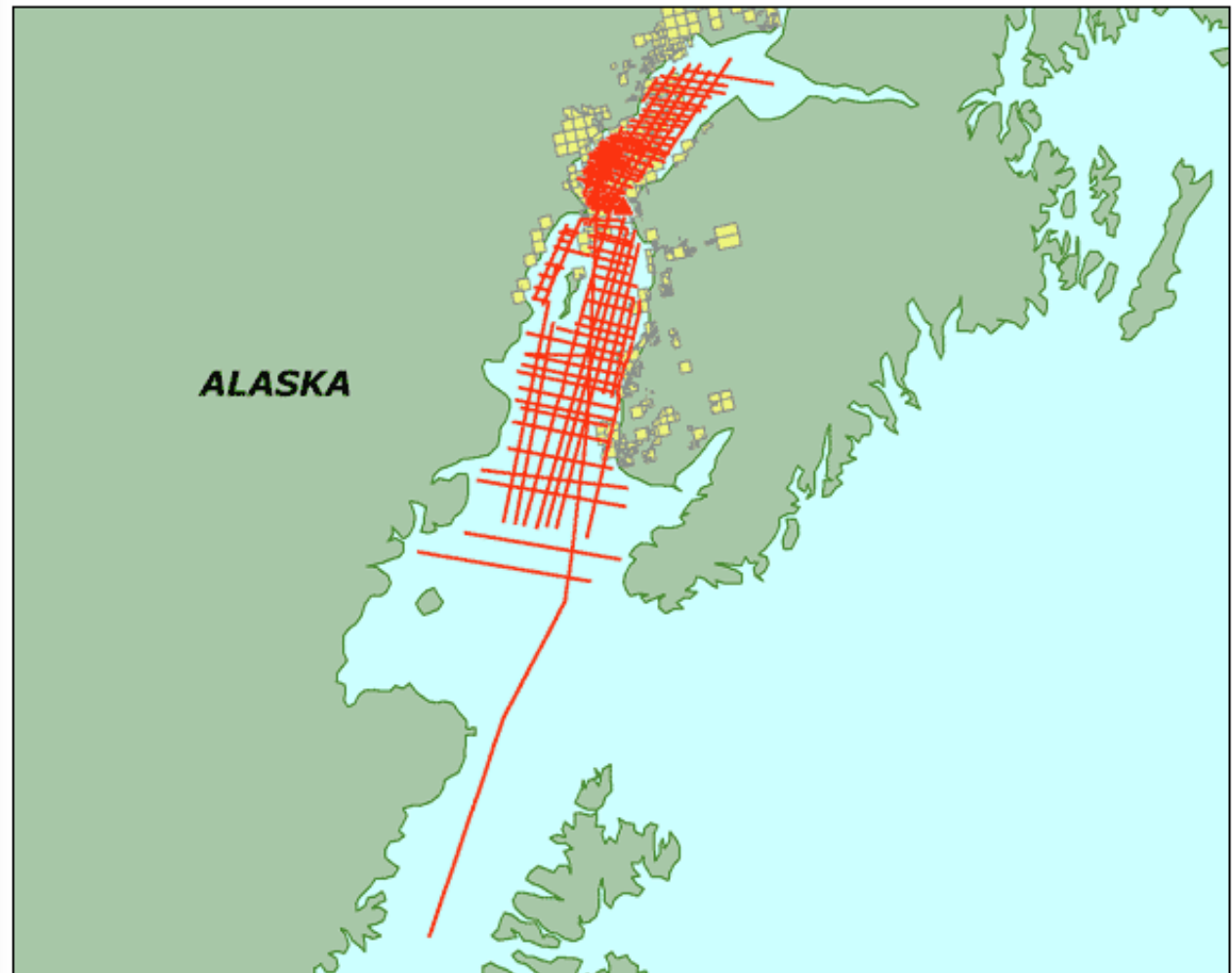
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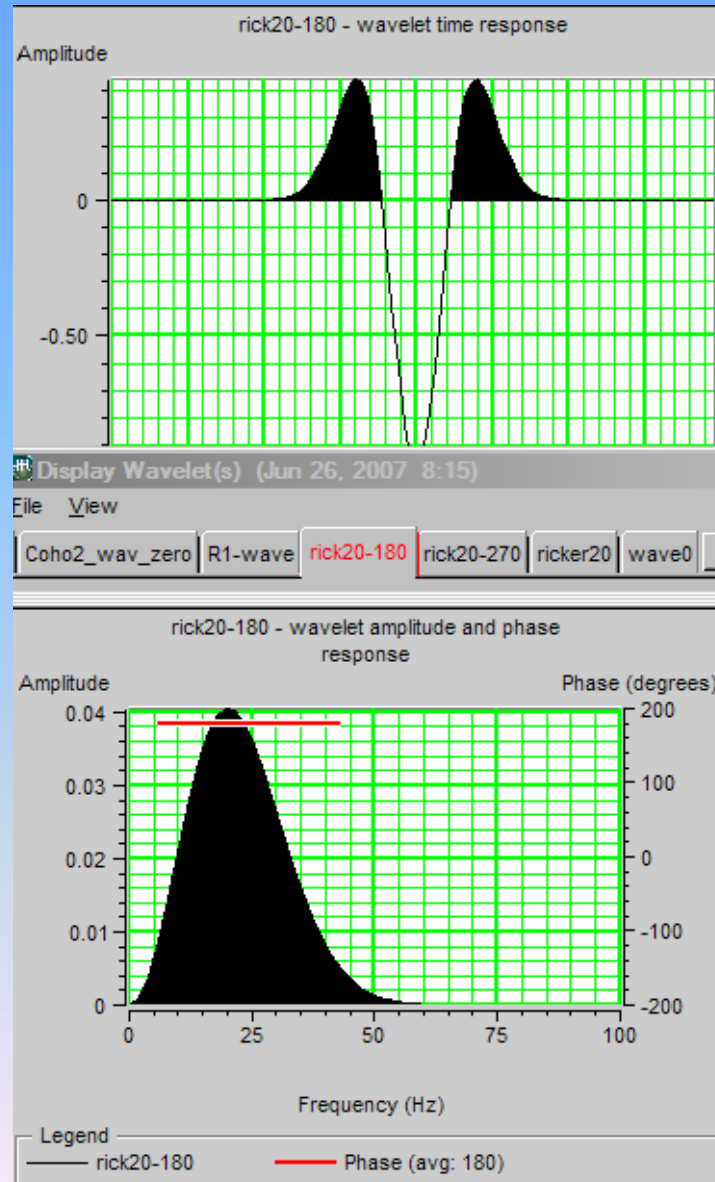
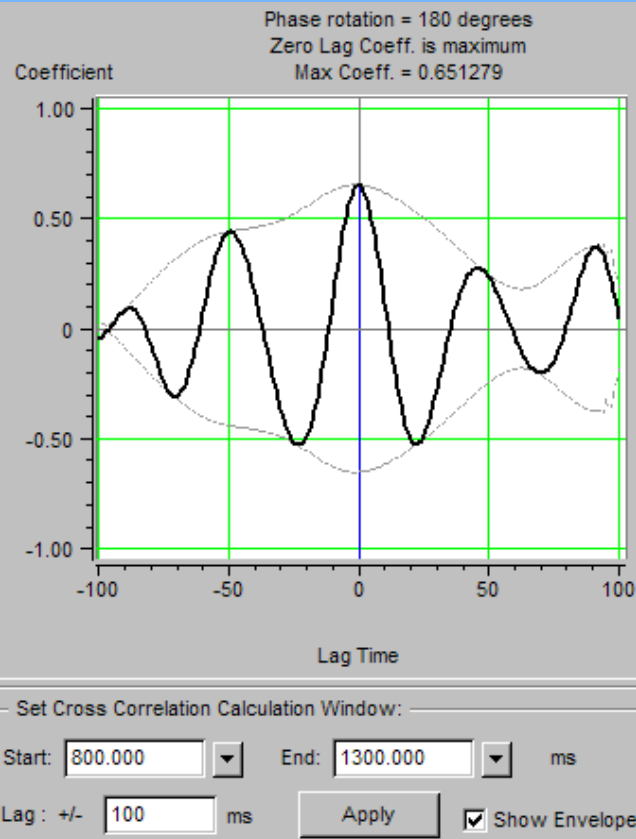
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Cook Inlet: 2,204.9 miles



Coho 2 Synthetic - Best Seismic Tie

180 degrees, 20 hz ricker



Resolution ~ 110 ft

= $\frac{1}{4}$ dominant wavelength

wavelength = V/f

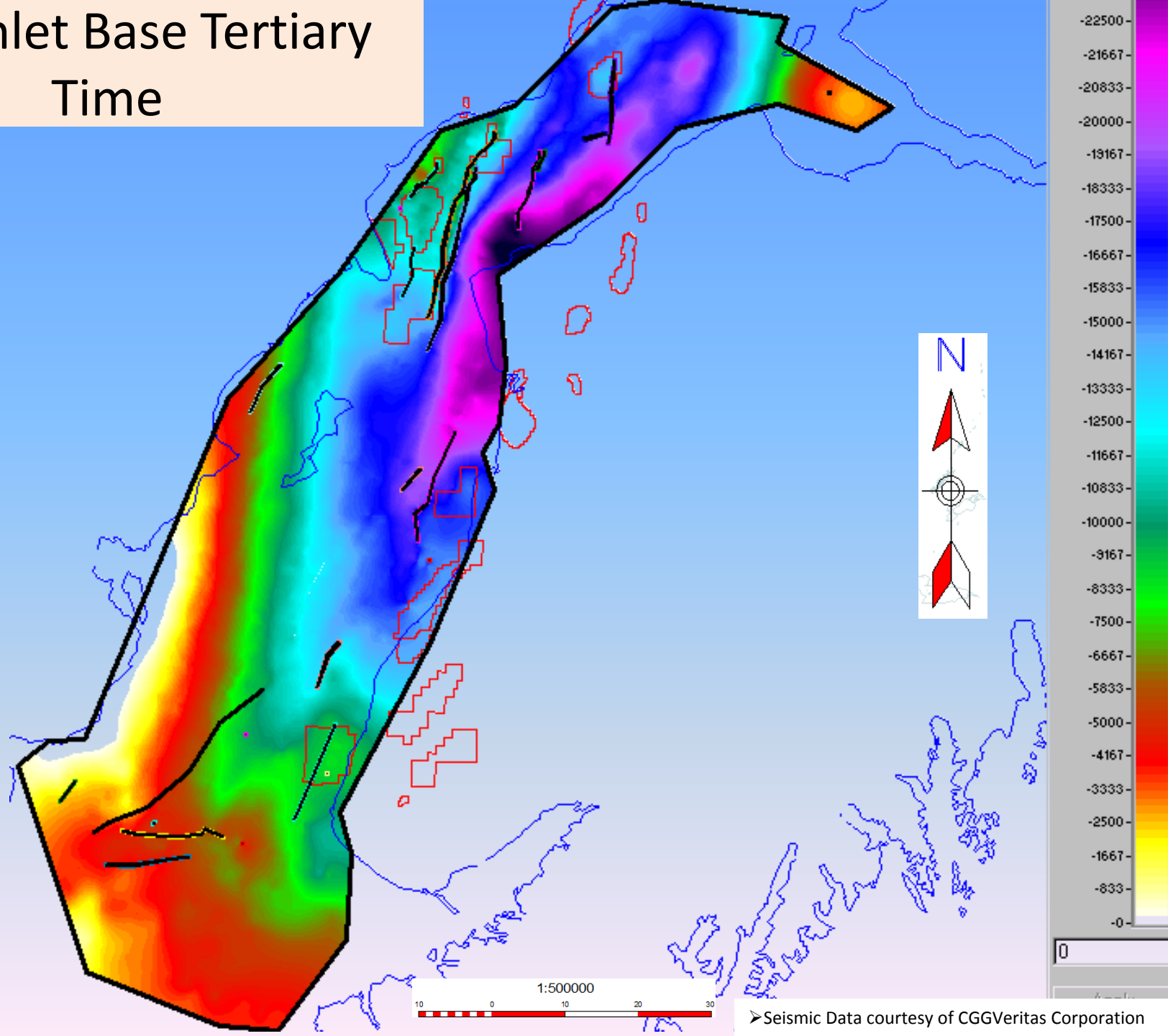
= $(8800 \text{ ft/sec} / 20 \text{ cycles/sec}) = 440 \text{ ft}$

= $\frac{1}{4}$ (440 ft)

= 110 ft

Detection ~ 20 ft

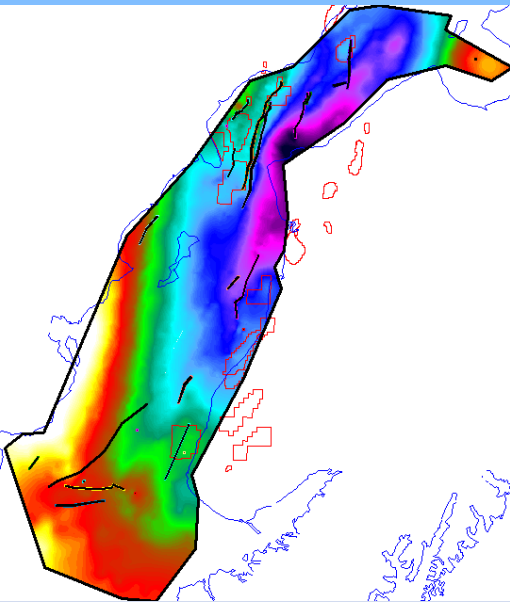
Cook Inlet Base Tertiary Time



Time to Depth process

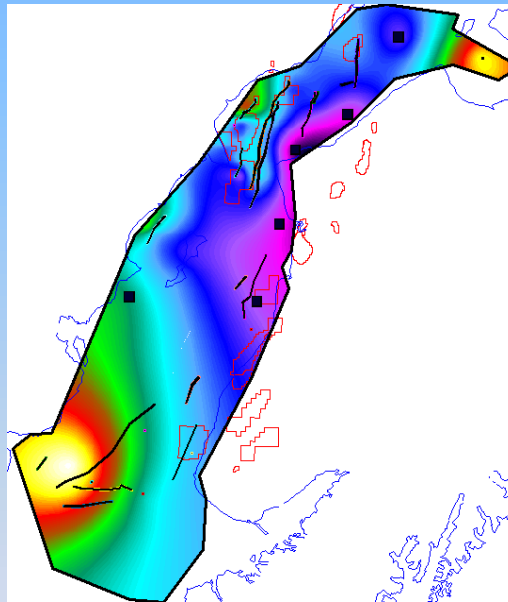
Seismic one-way time (sec) x Velocity (feet/second) = Depth (feet)

Time



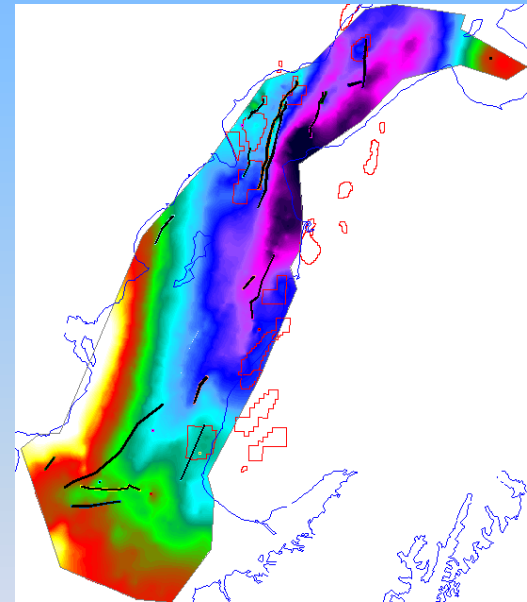
X

Pseudo Velocity



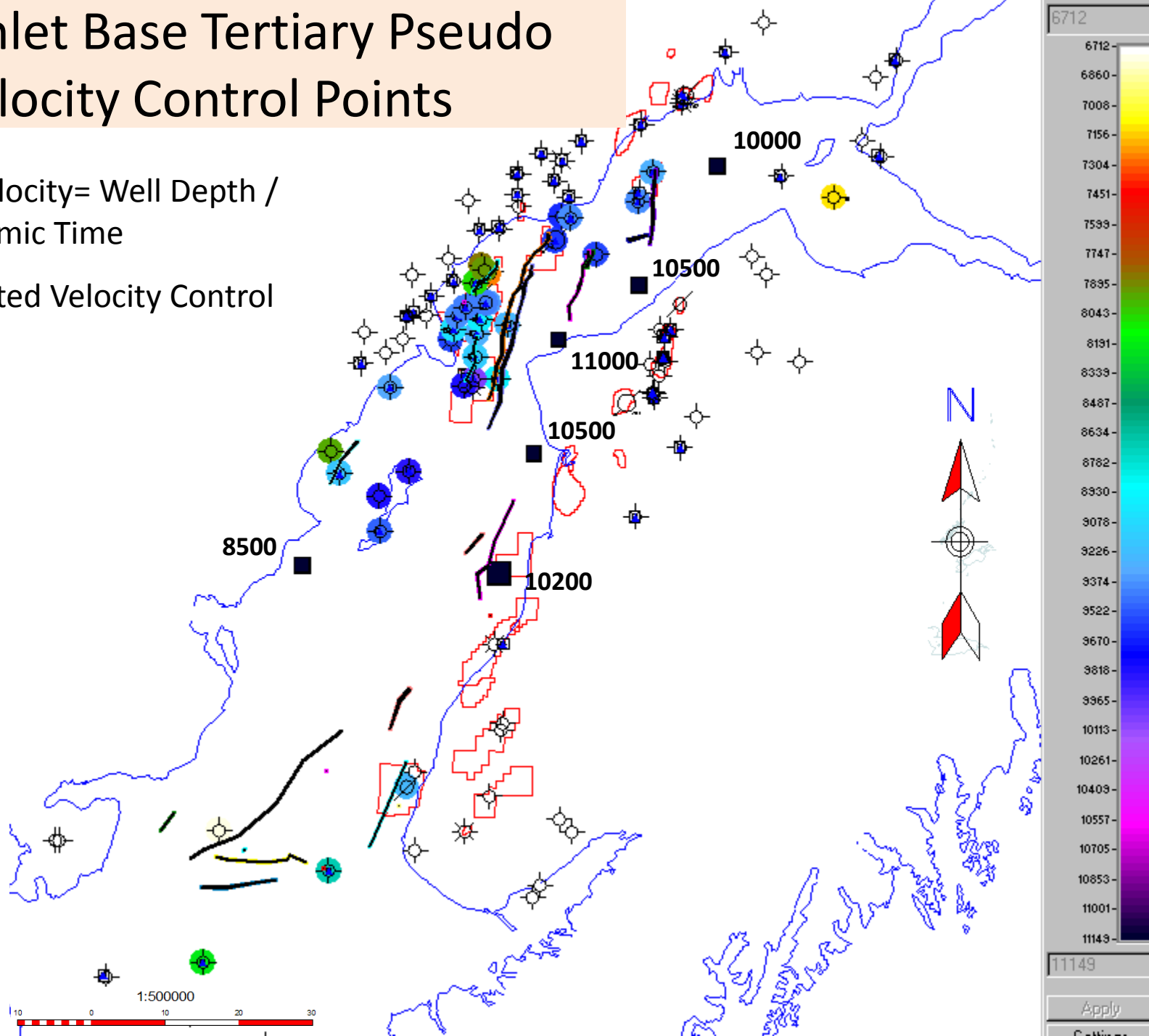
=

Depth

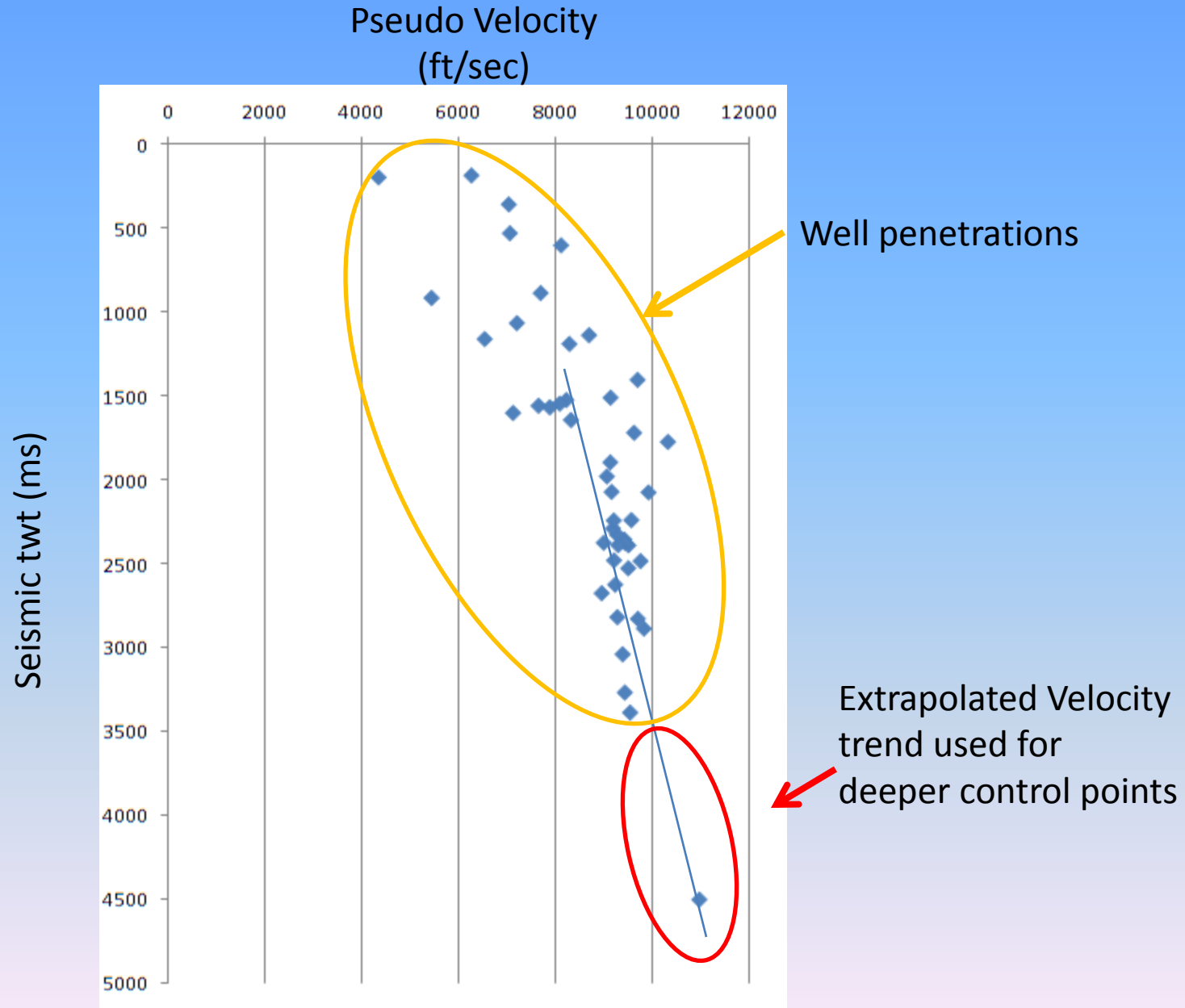


Cook Inlet Base Tertiary Pseudo Velocity Control Points

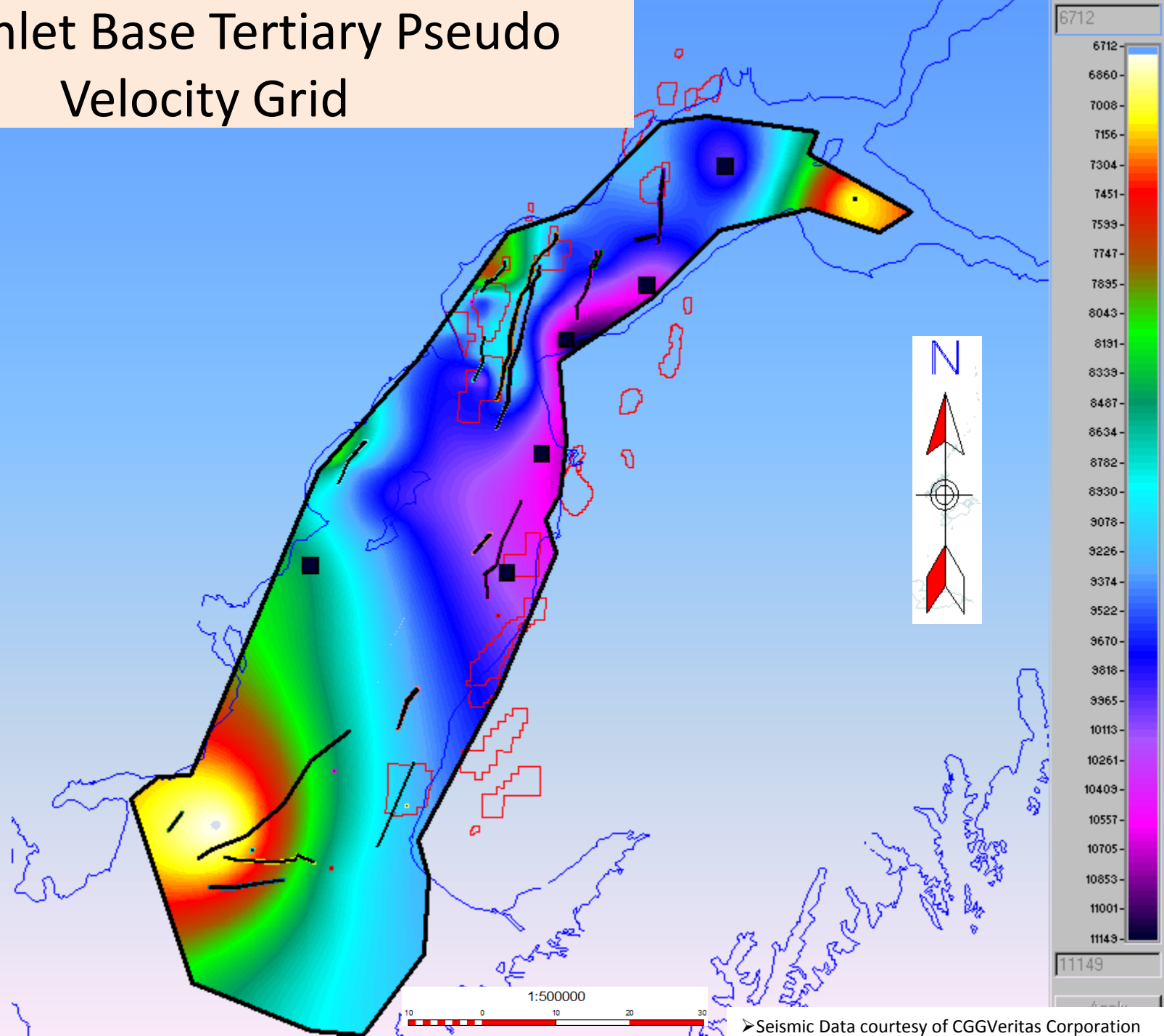
- Pseudo Velocity= Well Depth / 1 way Seismic Time
- Extrapolated Velocity Control



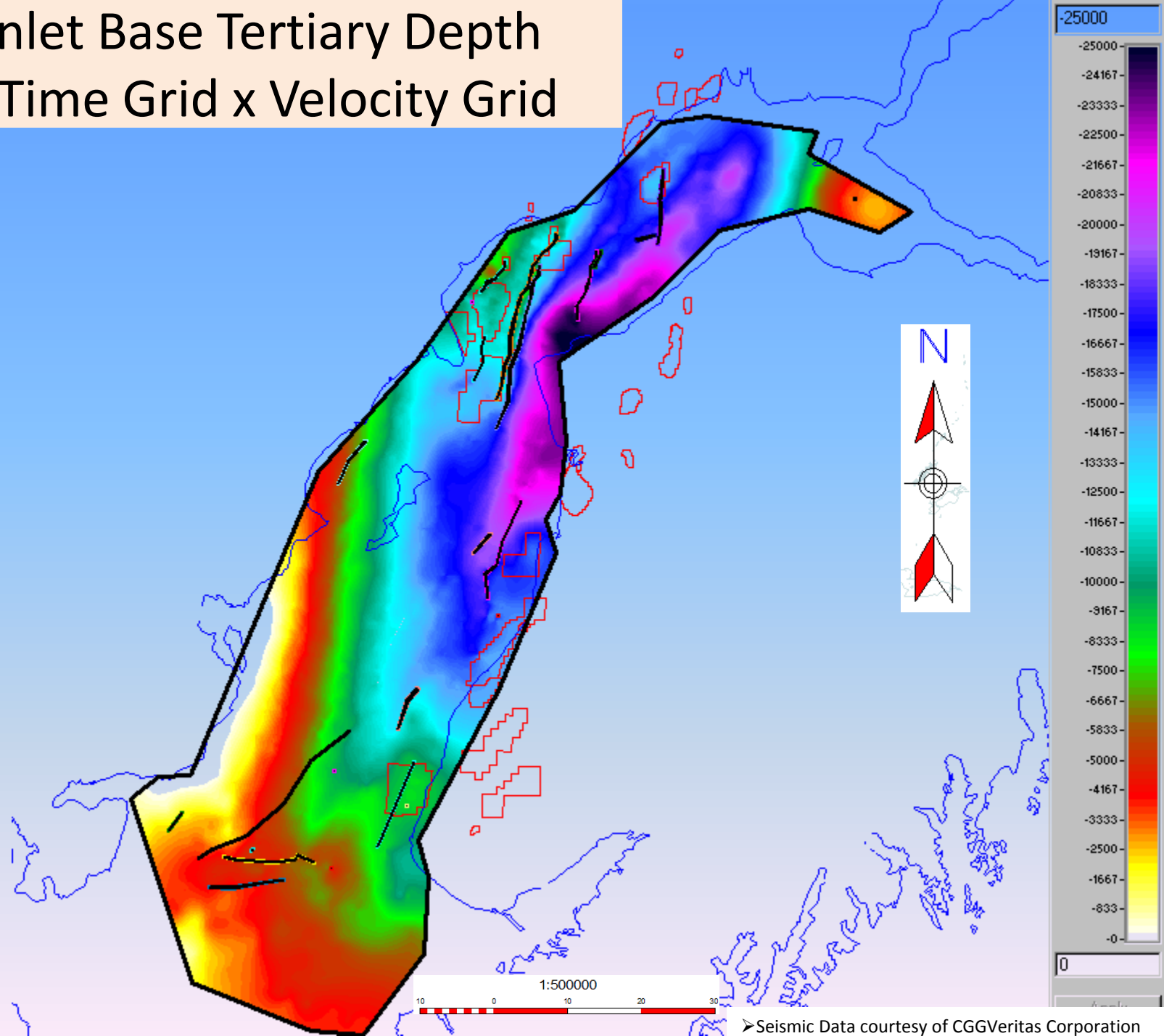
Velocity Control Point Methodology



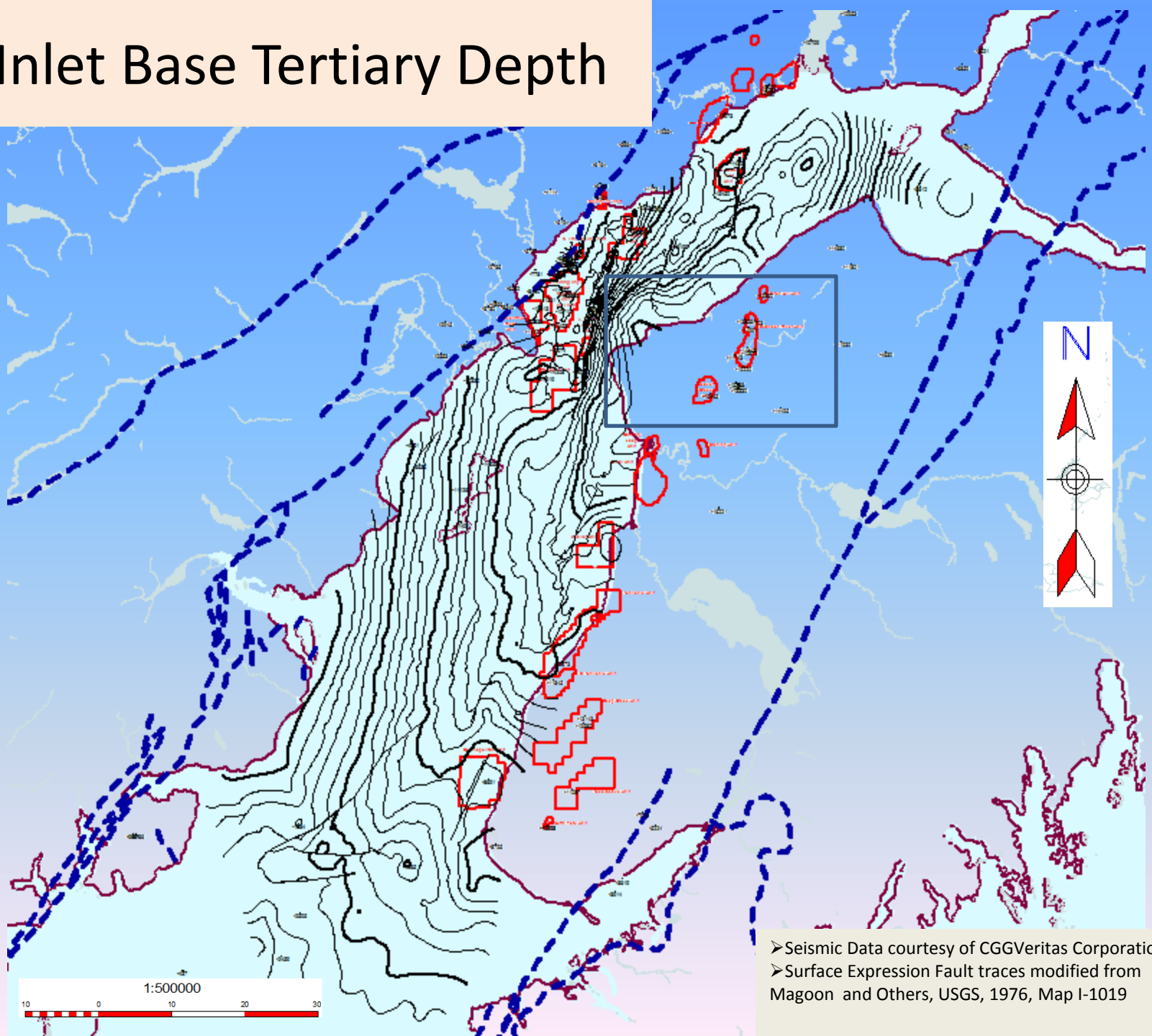
Cook Inlet Base Tertiary Pseudo Velocity Grid



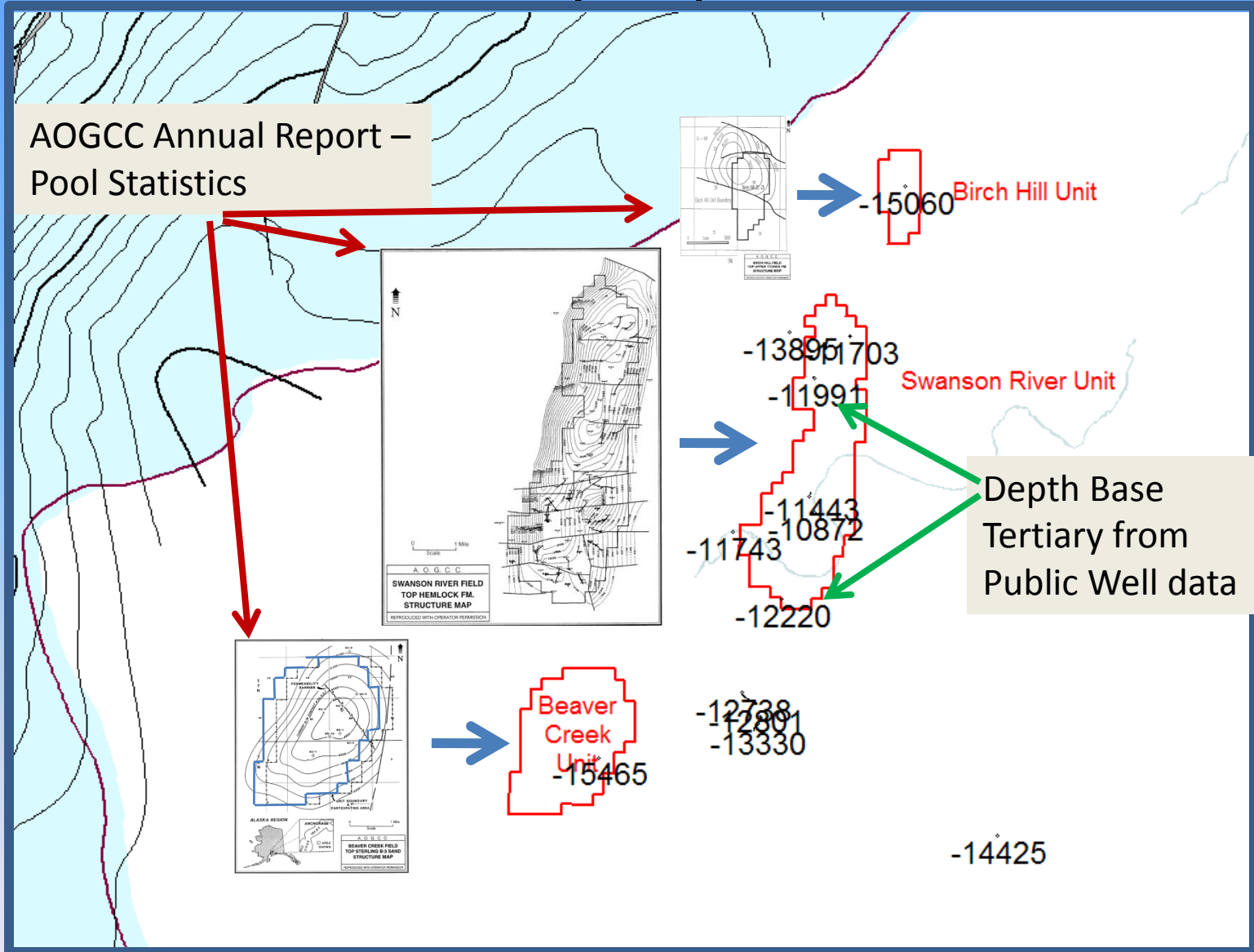
Cook Inlet Base Tertiary Depth
= 1WT Time Grid x Velocity Grid



Cook Inlet Base Tertiary Depth



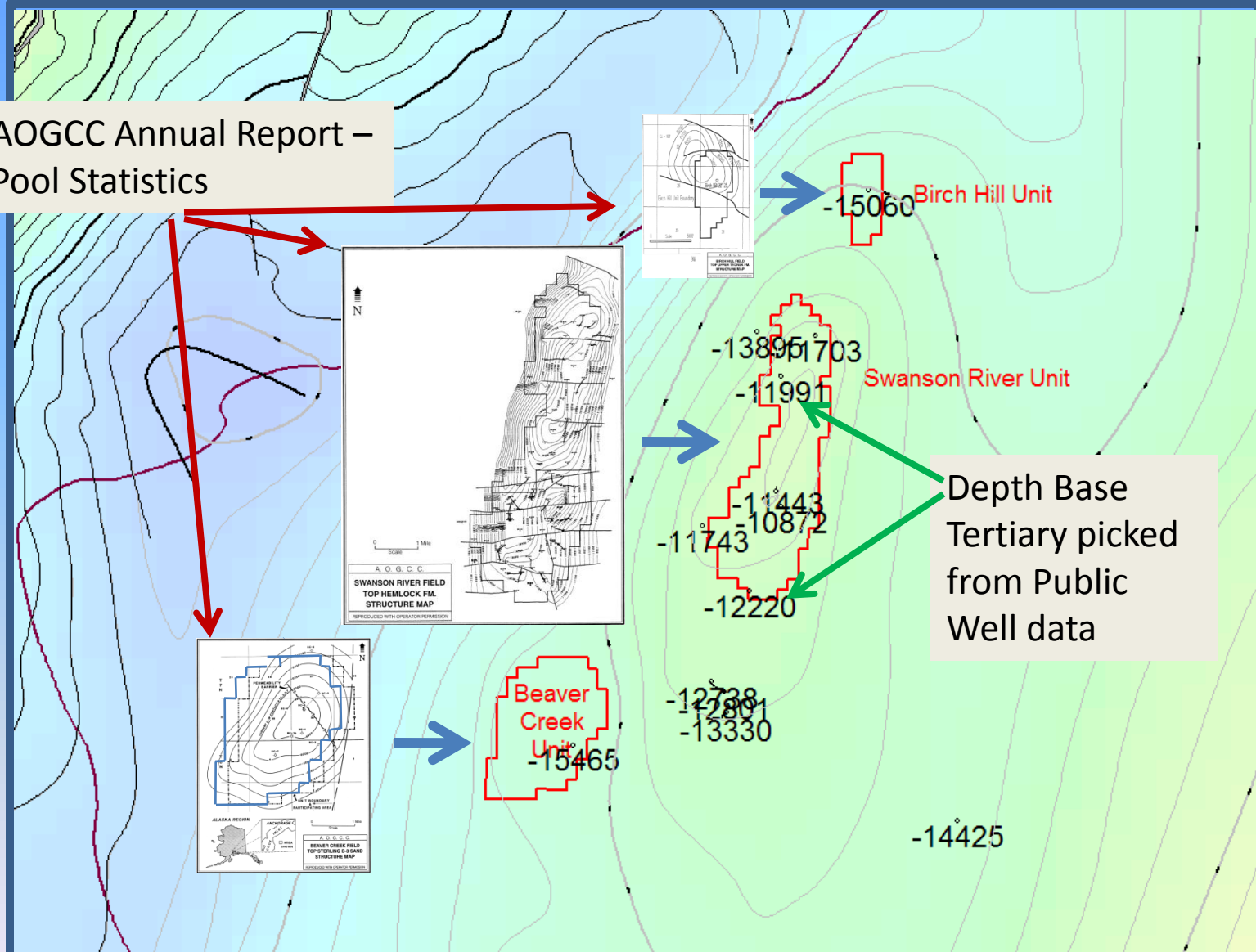
Cook Inlet Base Tertiary Depth



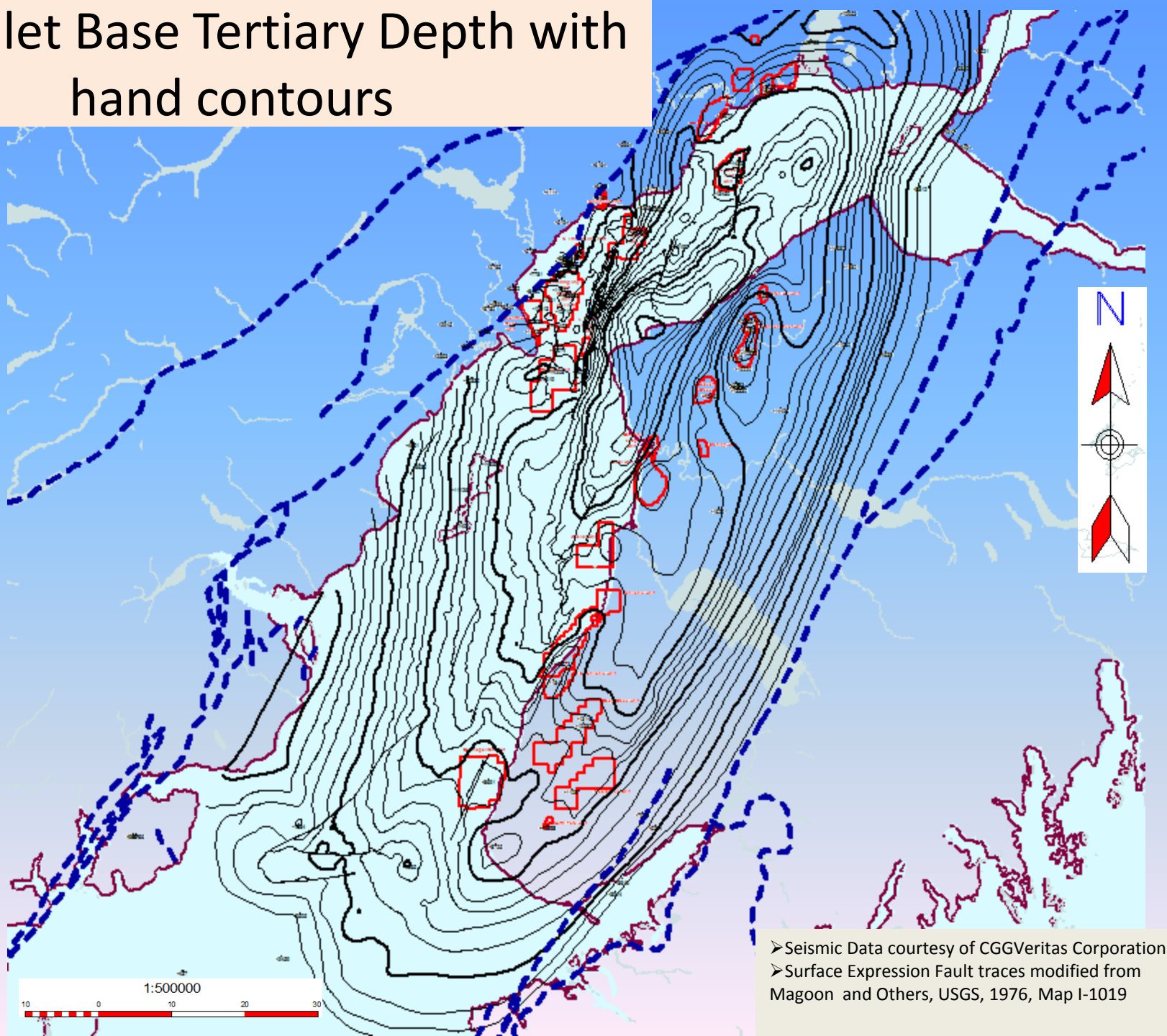
-14425

Cook Inlet Base Tertiary Depth

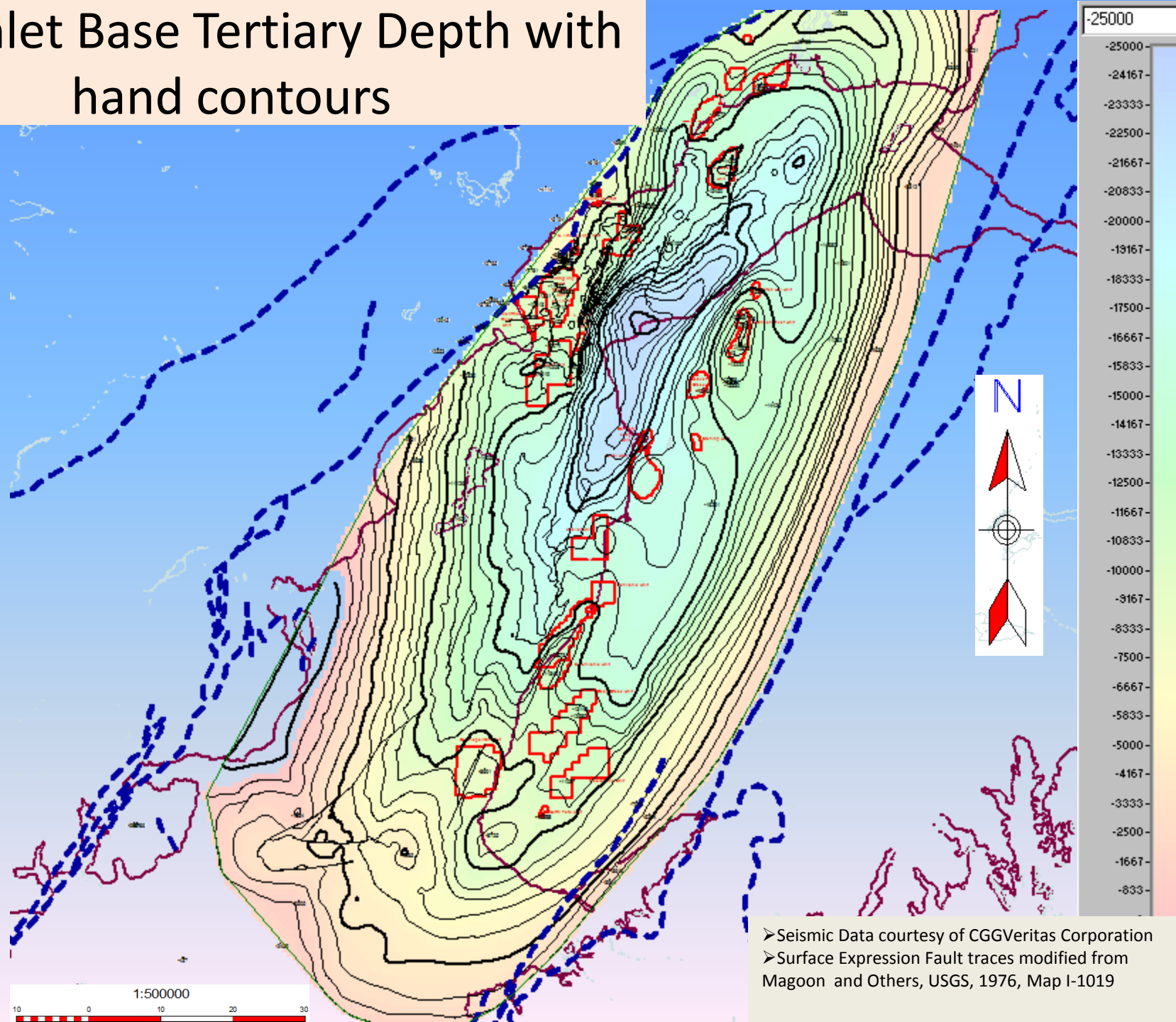
AOGCC Annual Report –
Pool Statistics



Cook Inlet Base Tertiary Depth with hand contours



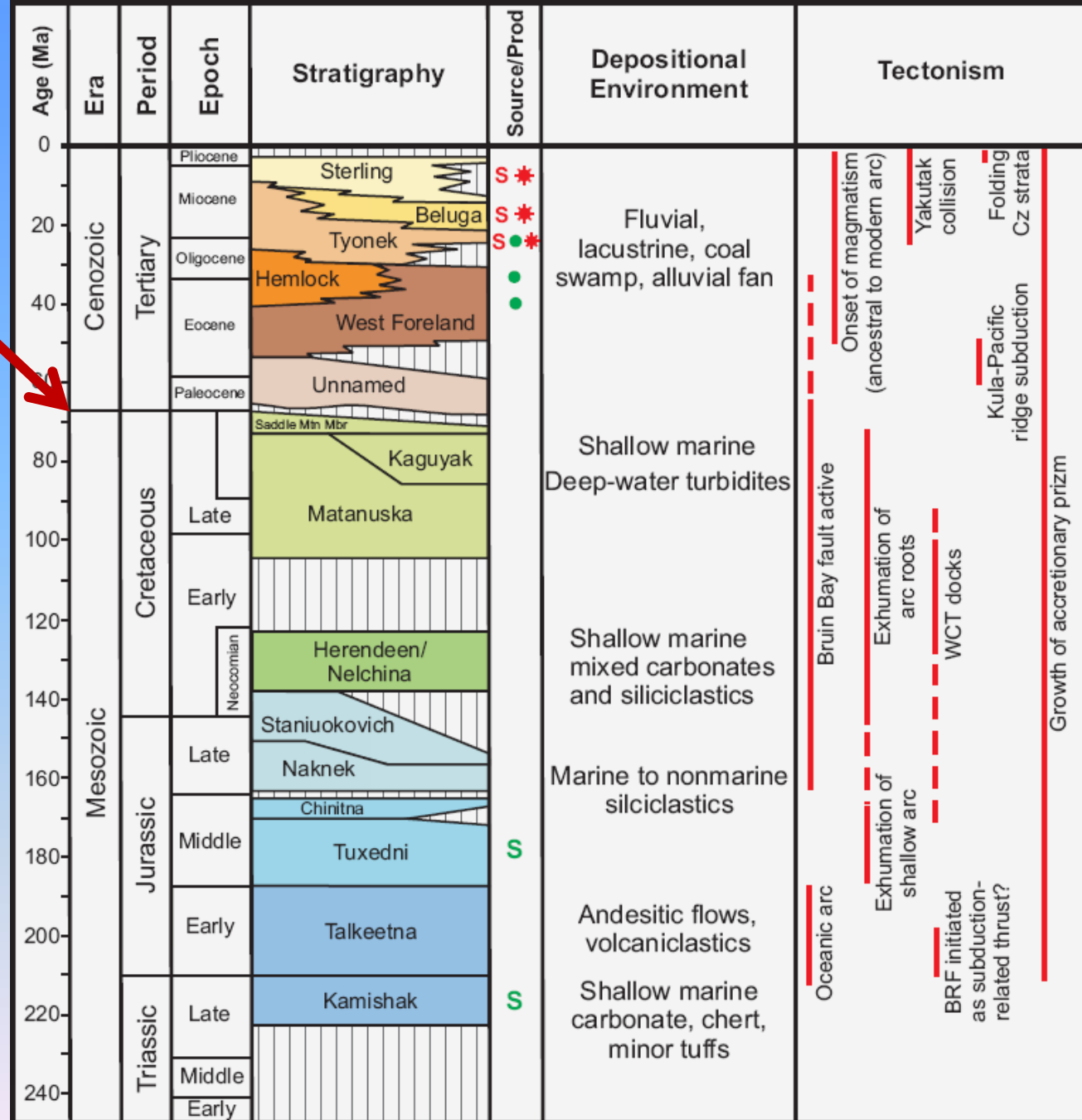
Cook Inlet Base Tertiary Depth with hand contours



Cook Inlet Mesozoic Subcrop

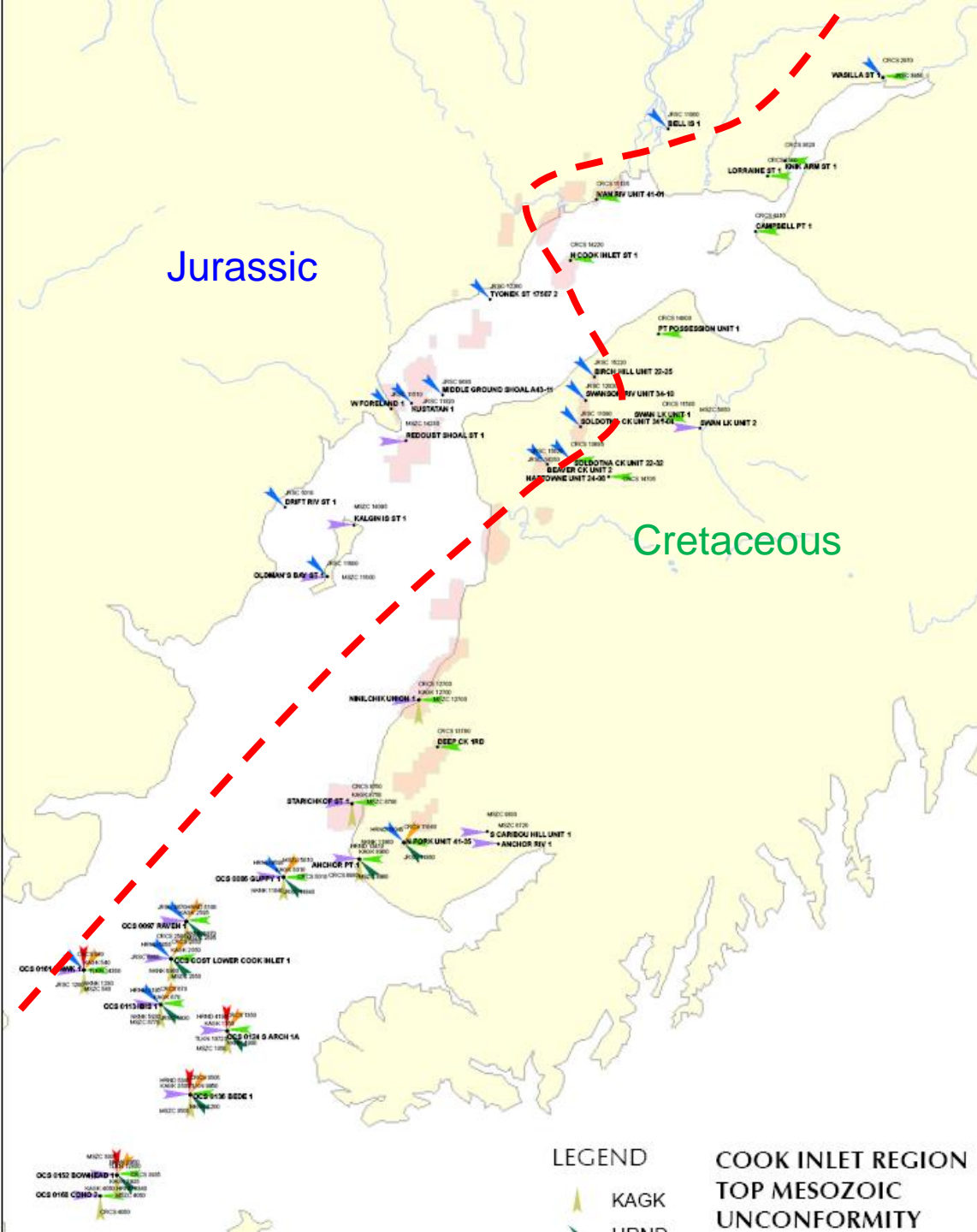
- Create Base Tertiary Depth Map
- Pick Mesozoic tops – (logs, Amstrat, AGS, PI sources, licensed seismic, Zippi paly study, outcrop)
- Review Core
- Interpret Subcrop
- Create Subcrop Map and Cross Sections

Base Tertiary Unconformity



Redrawn from Curry and others (1993) and Swenson (2003); additional information from Plafker and others (1989) and Nokleberg and others (2004)

AGS Tops



Mesozoic		
Cretaceous	Late	Saddle Mtn Mbr
		Kaguyak
	Early	Matanuska
	Neocomian	Herendeen/ Nelchina
Jurassic	Late	Staniukovich
		Naknek
	Middle	Chinitna
		Tuxedni
	Early	Talkeetna
Triassic	Late	Kamishak
	Middle	
	Early	

LEGEND

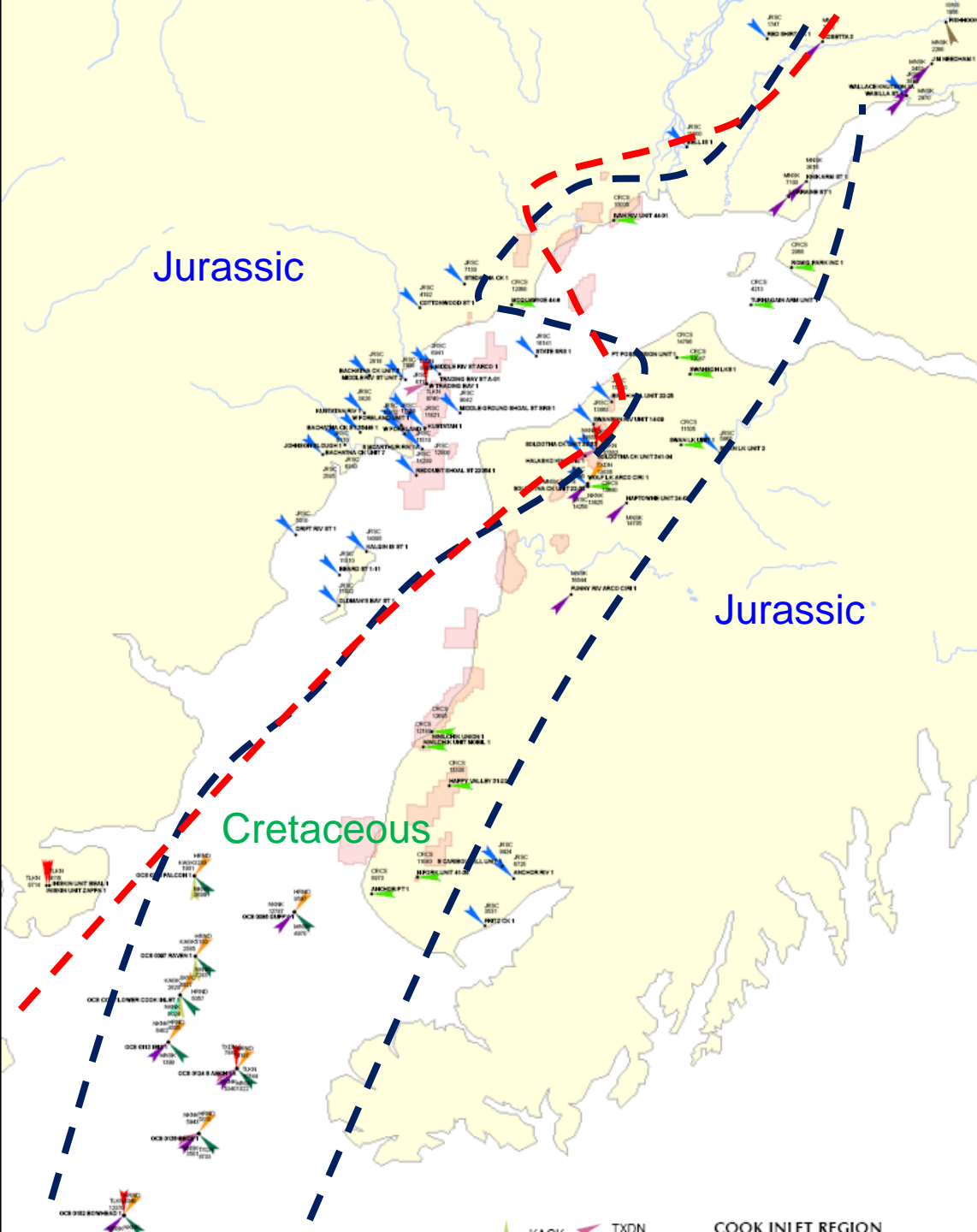
-  KAGK
-  HRND
-  CRCS
-  NKKN
-  TLKN
-  JRSC
-  MSZC

COOK INLET REGION TOP MESOZOIC UNCONFORMITY subcrop picks

AGS sources only
DRAFT 03/06/08



Amstrat Tops



Mesozoic	Cretaceous	Late	Saddle Mtn Mbr
			Kaguyak
Mesozoic	Cretaceous	Early	Matanuska
	Neocomian		Herenden/Nelchina
	Jurassic	Late	Staniukovich
			Naknek
		Middle	Chinitna
			Tuxedni
	Triassic	Early	Talkeetna
			Kamishak
		Late	
		Middle	
		Early	

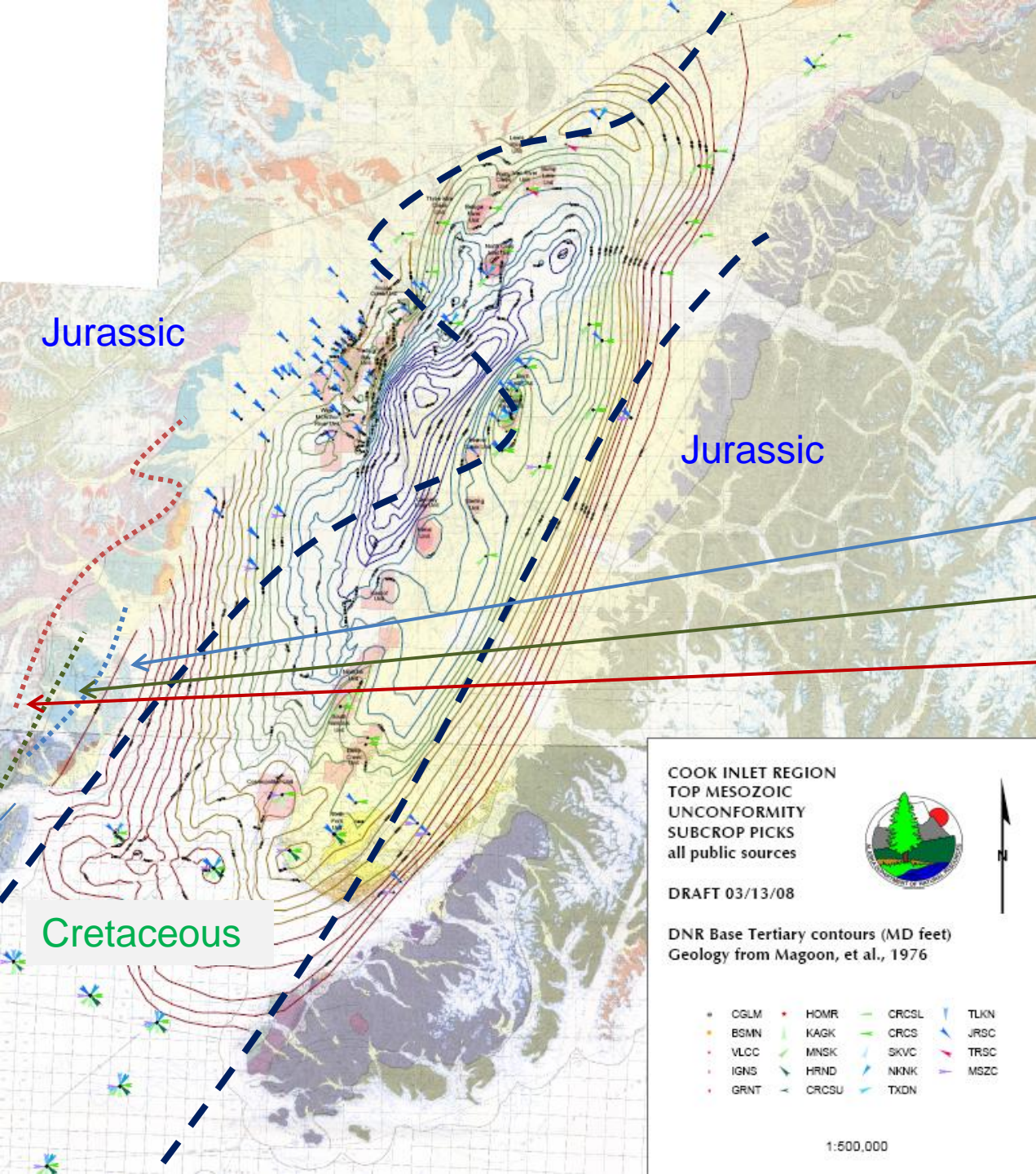
- TXDN
- TLKN
- JRSC
- IGNS
- MSZC

**COOK INLET REGION
TOP MESOZOIC
UNCONFORMITY
subcrop picks (MD)**

**AMSTRAT sources only
DRAFT 03/07/08**



All Public Tops



Mesozoic	Cretaceous		Saddle Mtn Mbr
		Late	Kaguyak
			Matanuska
		Early	
	Neocomian		Herendeen/ Nelchina
			Staniukovich
	Jurassic	Late	Naknek
			Chinitna
		Middle	Tuxedni
	Triassic	Early	Talkeetna
			Kamishak
		Late	
		Middle	
		Early	

➤ Geologic Map -Magoon and Others, USGS, 1976, Map I-1019

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- Create Base Tertiary Depth Map
- Pick Mesozoic tops – (logs, Amstrat, AGS, PI sources, licensed seismic, Zippi paly study, outcrop)
- Call for more seismic, data, ideas
- Review Core
- Interpret Subcrop
- Final Products: Subcrop Map and Cross
Sections

CO₂ Sequestration

Estimate CO₂ storage capacity for:

- Depleted oil and gas fields
- Saline reservoirs
- Coal seams

Working with DOE Westcarb, annual meeting this fall in Alaska