

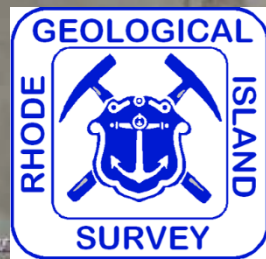
LATE WISCONSINAN GLACIATION OF SOUTHERN NEW ENGLAND: TIMING AND DEPOSITS

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Timing - Terminology

QUATERNARY PERIOD - Last **2.54 million years** of geologic time

PLEISTOCENE EPOCH – All of Quaternary Period except last **11,500 years**

WISCONSINAN STAGE – Last glacial age of the Pleistocene (**70,000 yBP to 11,500 yBP**).

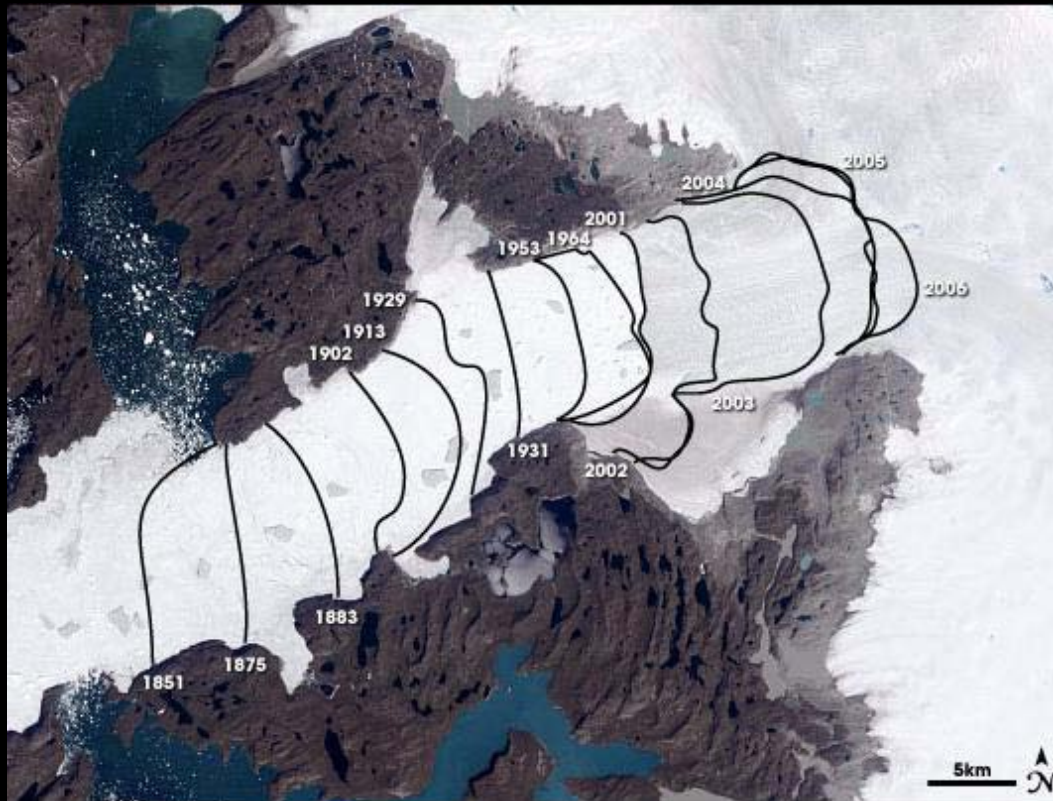
HOLOCENE STAGE – Last **11,500 years**

The Laurentide Ice Sheet



WHY DO WE CARE ABOUT A 20,000 YEAR OLD ICE SHEET ANYWAYS?

Jakobshavn Glacier (Greenland)



http://ice.nasa.gov/images/Jakobshavn_retreat-1851-2006-590.jpg



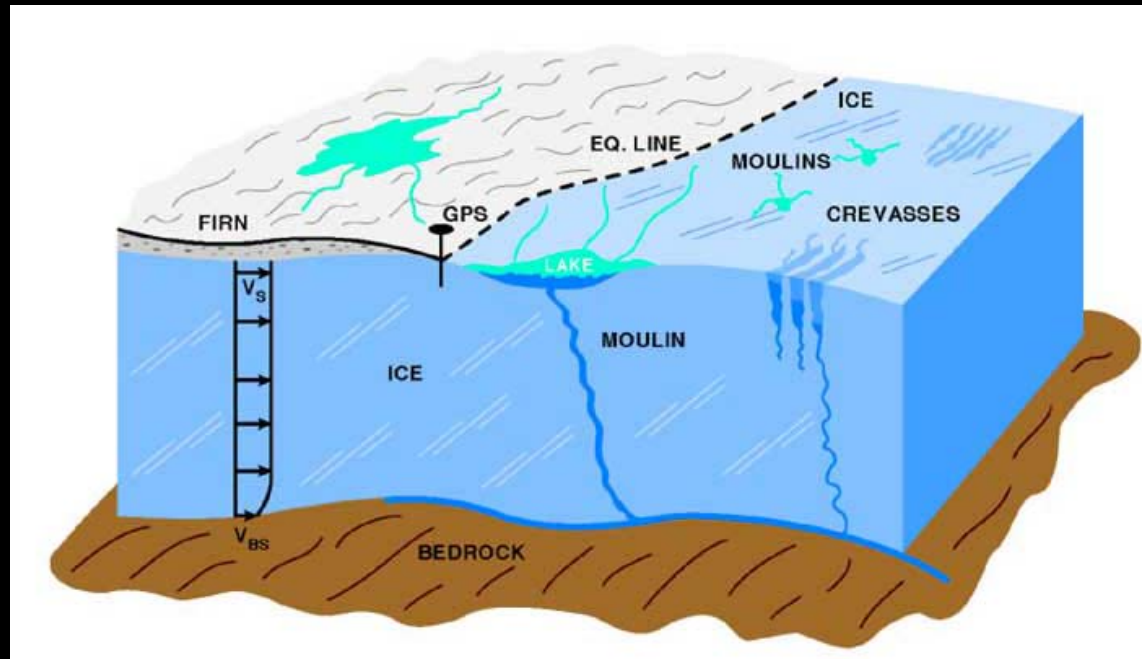
www.sflorg.com/

Greenland Outlet Glaciers:

A key to understanding
future sea level rise

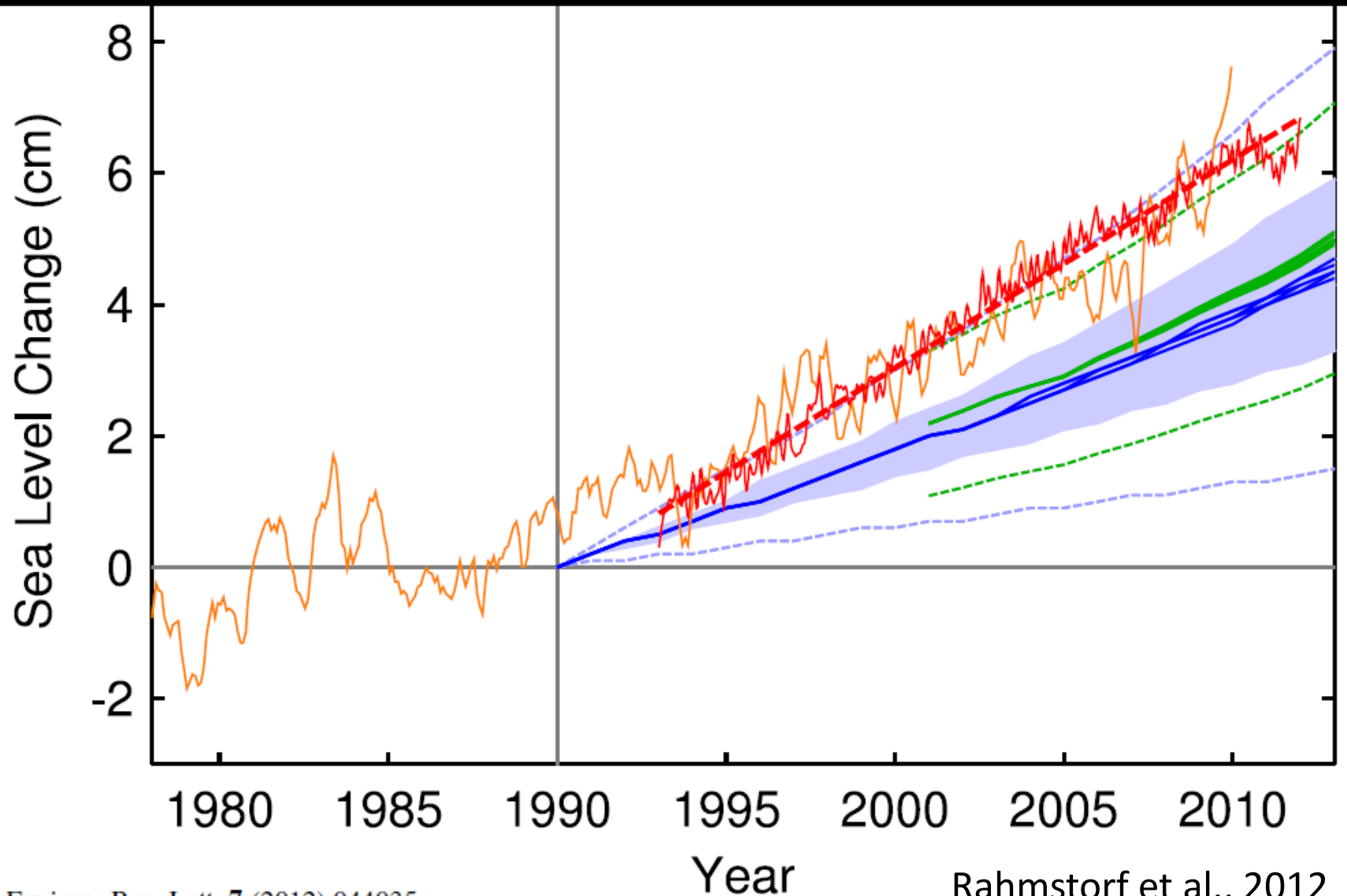


Braithwaite, 2002

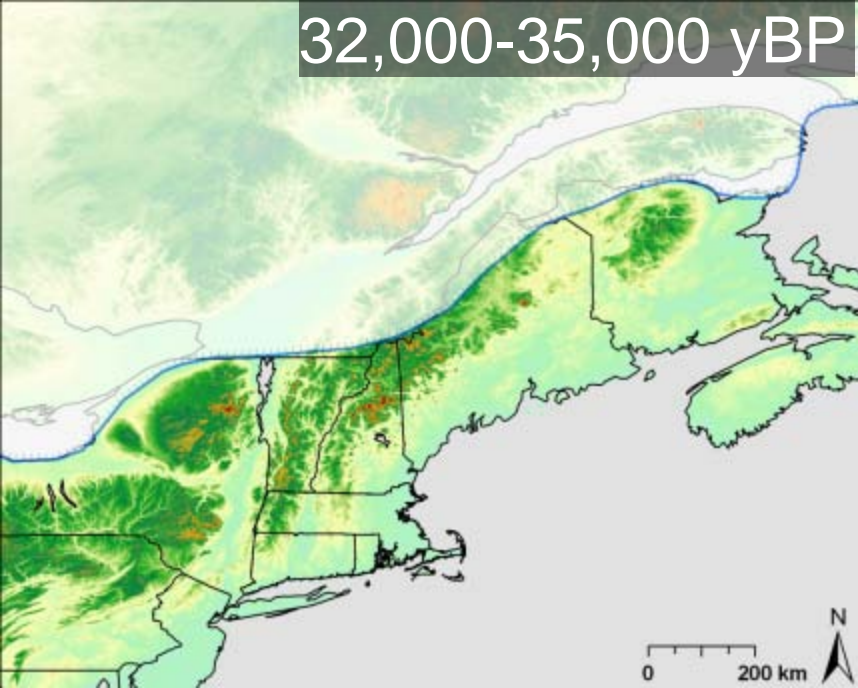


Zwally et al., 2002

Sea level rise 1975 - 2012: About half from Greenland



32,000-35,000 yBP

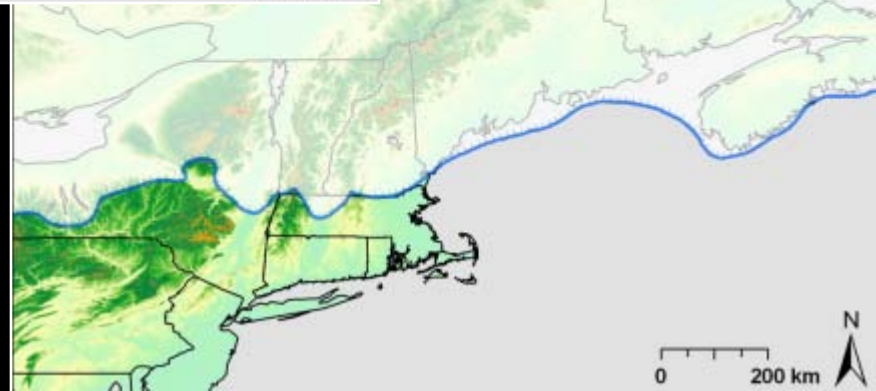


Duration and extent of the Laurentide Ice Sheet: S. New England

26,000 yBP

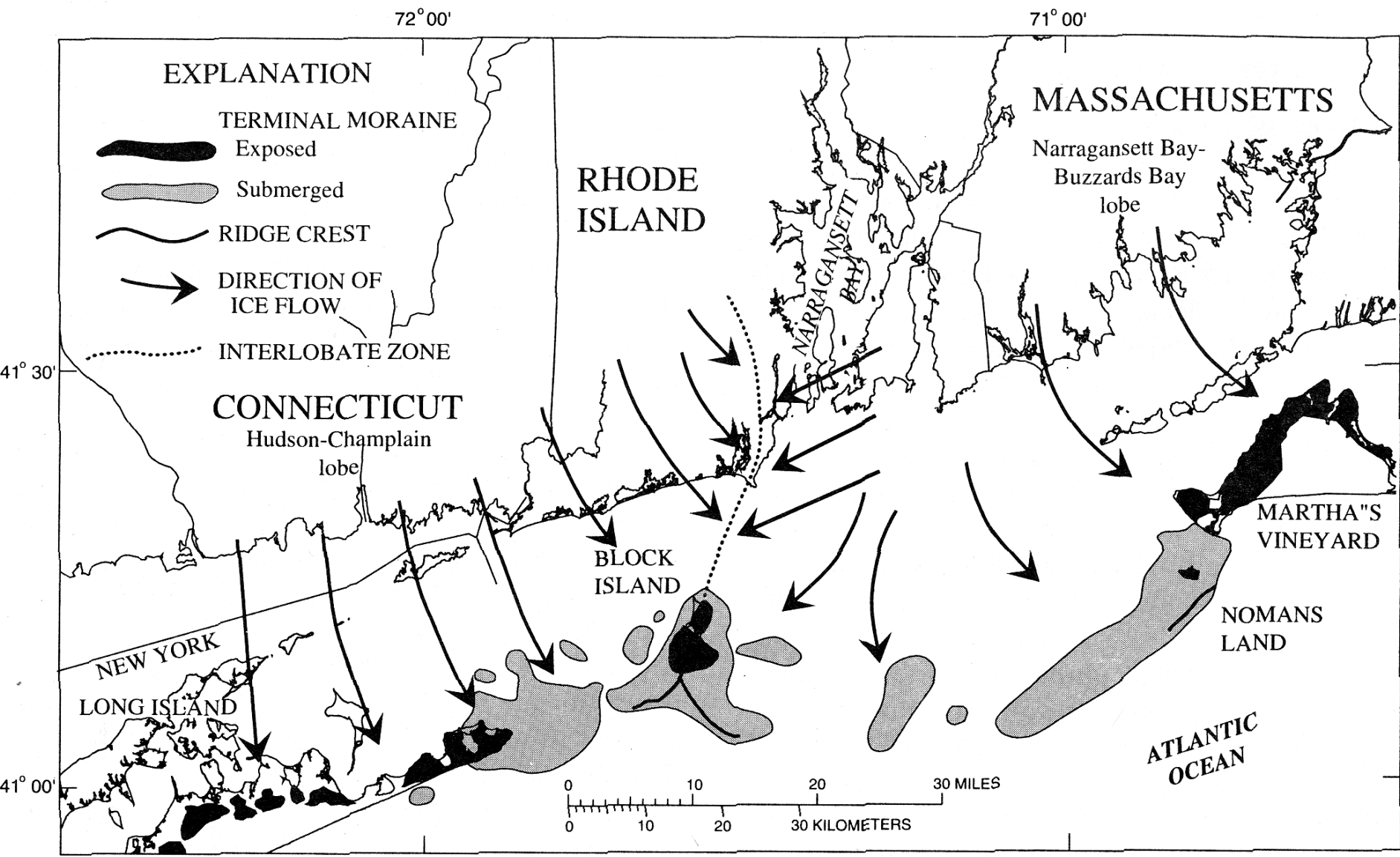


16,000 yBP

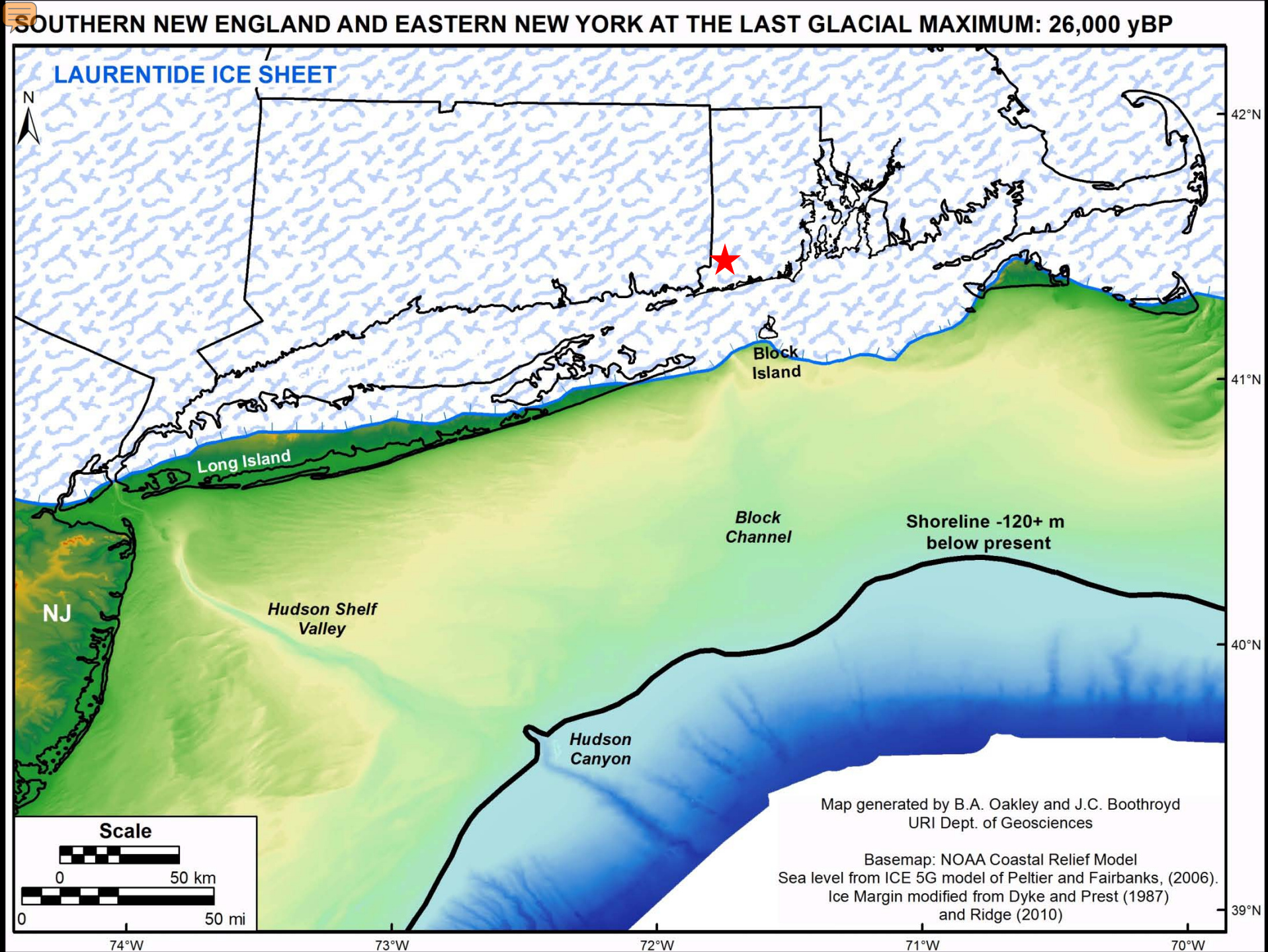


After Dyke and Prest, 1987
and Dyke et al., 2002

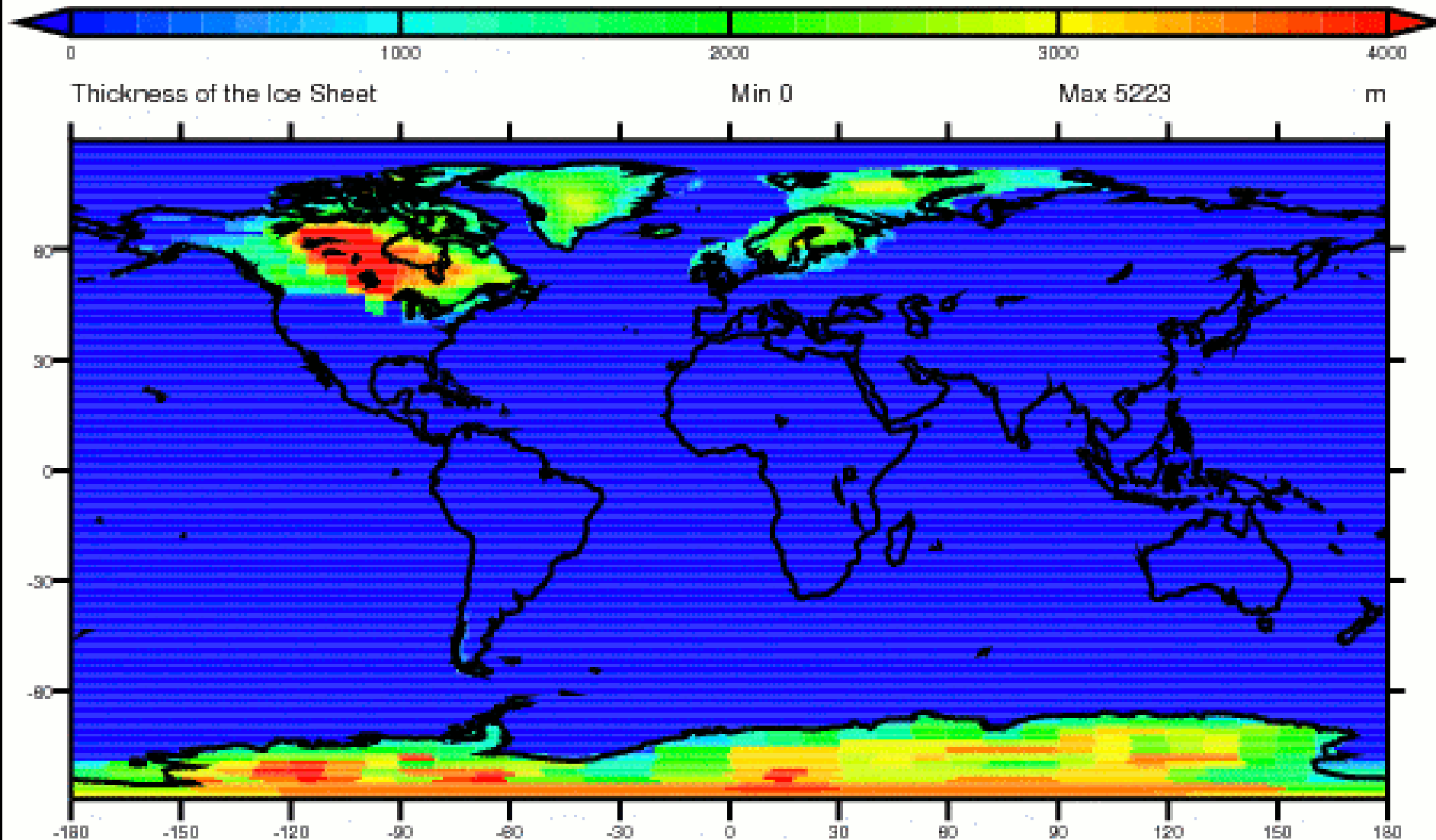
ICE FLOW DIRECTIONS



Base from U.S. Geological Survey, Digital Line Graphs, 1:100,000, 1983



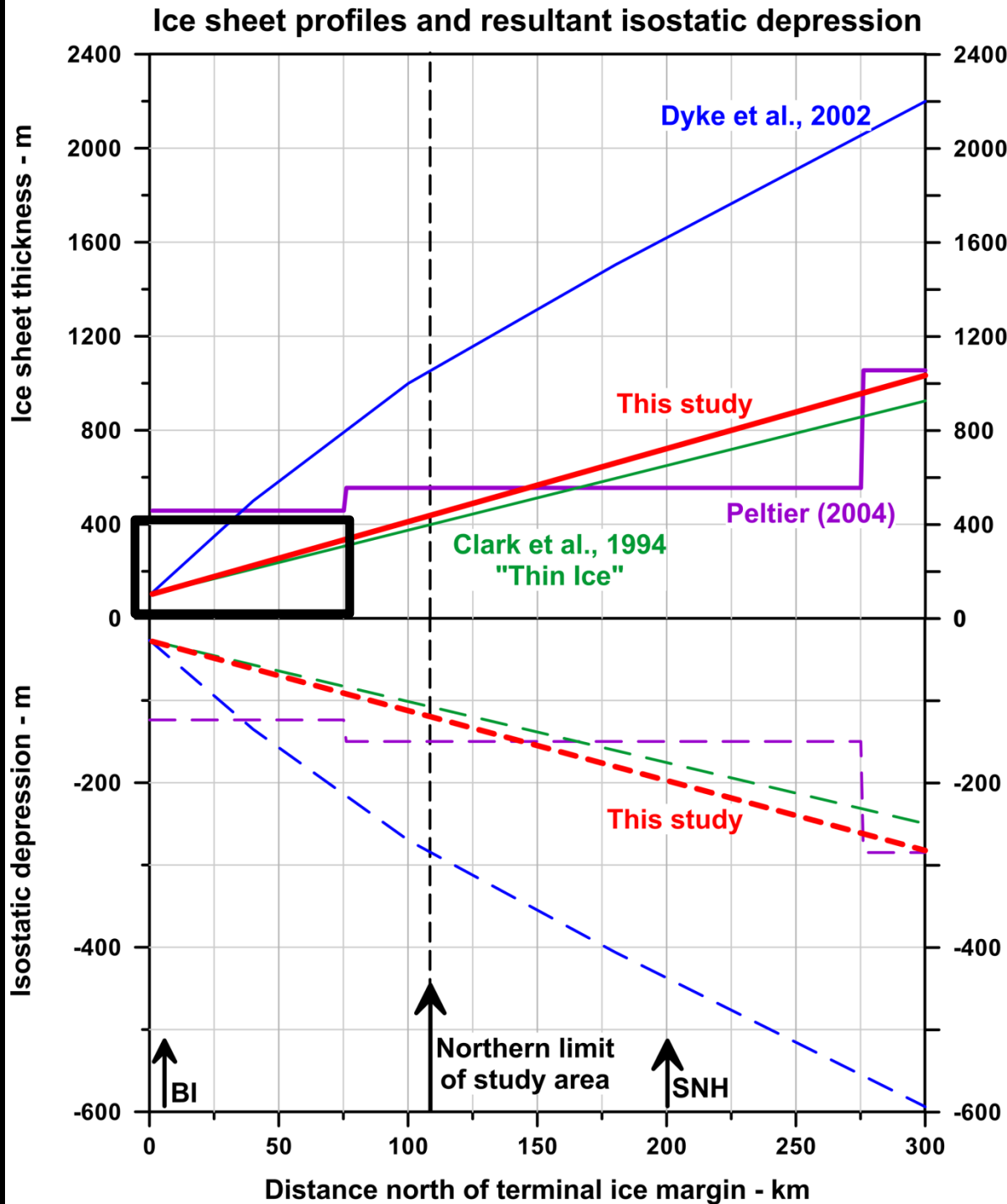
Laurentide Thickness: ICE-5G



What do I think...?

“Thin Ice” in S. NE

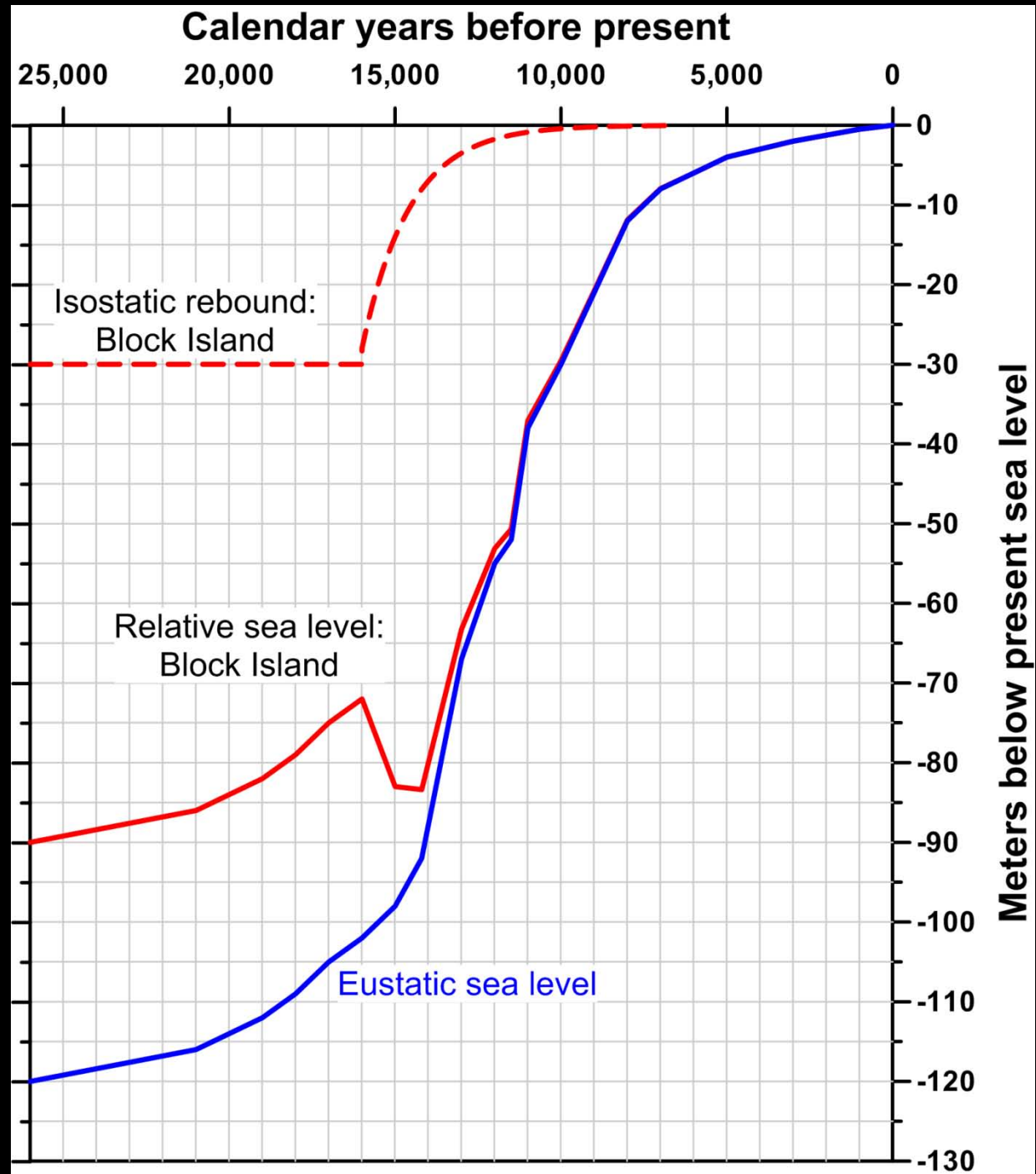
~ 1,000 ft thick or
so in W-P
watershed





RELATIVE
SEA LEVEL
Block Island

Eustatic Curve: Peltier and Fairbanks (2008)



END MORAINES OF SOUTHEASTERN NEW ENGLAND

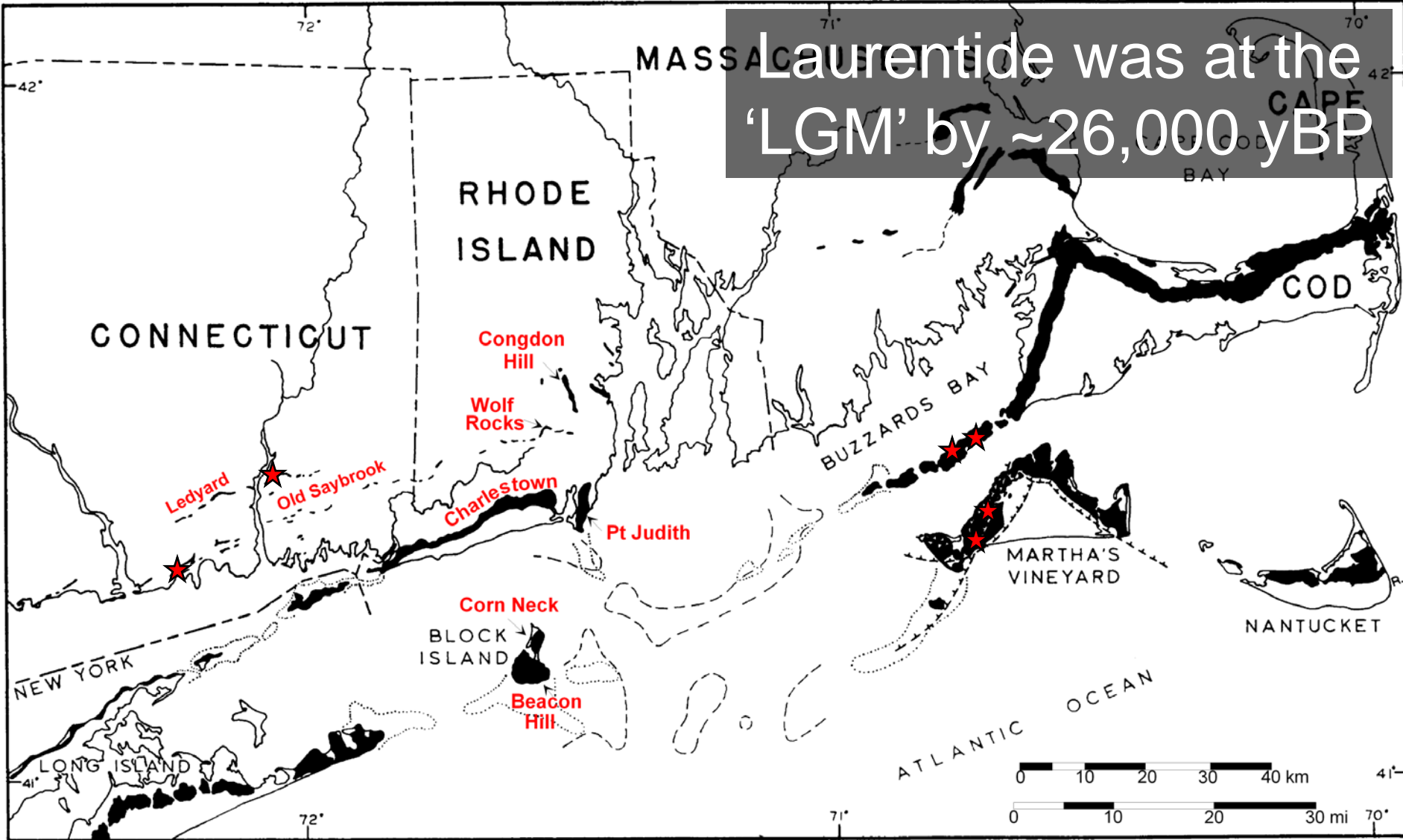
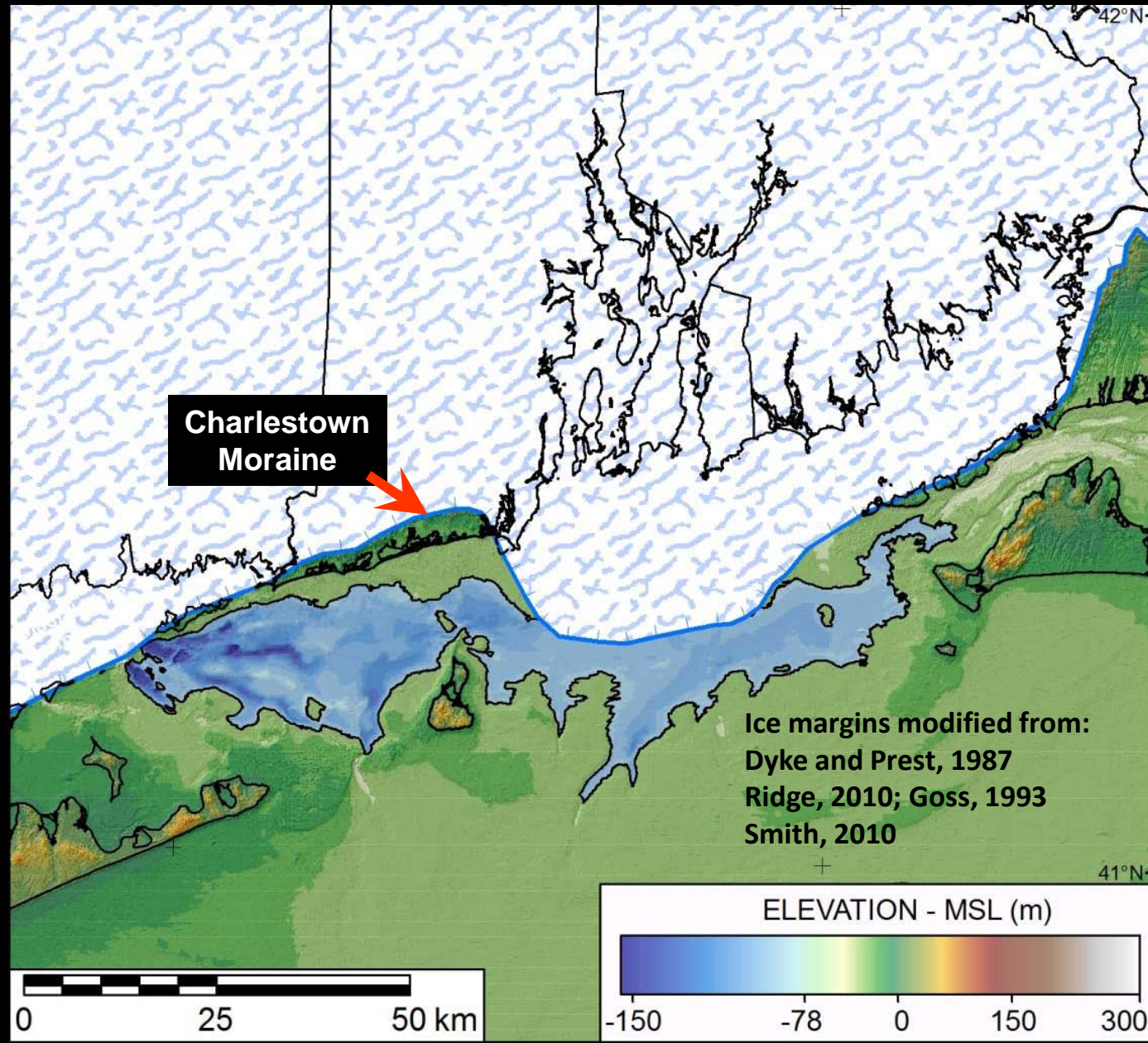
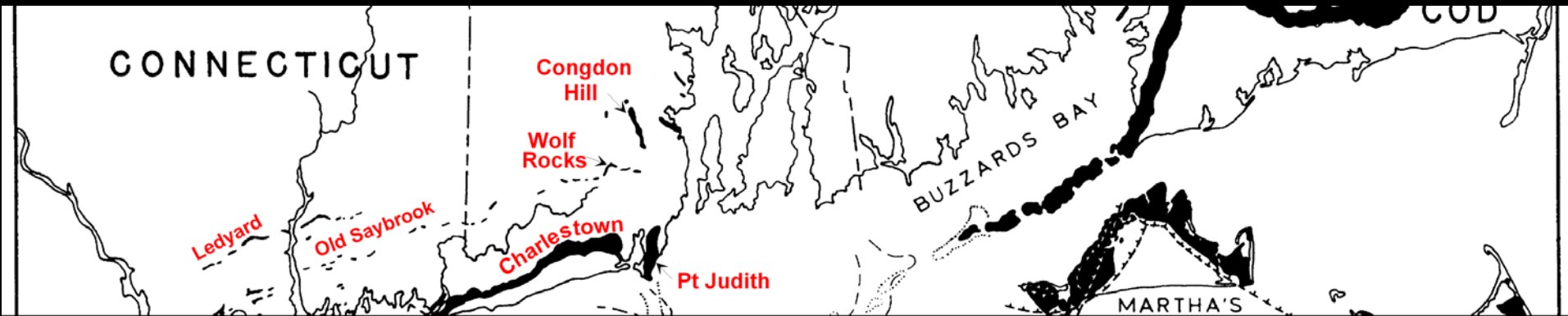


Figure 1. End moraines of southeastern New England. Black polygons are end moraines. Adapted from Schafer and Hartshorn (1965) with additions from Sirkin (1982).

Glacial Lakes in Rhode Island and Block Island Sounds, 21,000 yBP



- Charlestown Moraine
 - Tectonic *recessional* end moraine representing a significant still-stand/readvance of the LIS
 - 21,000-ish yBP
- Wolf Rocks/Congdon Hill 20,300/20,200-uish yBP



Wood-Pawcatuck Watershed
was “Ice Free” by ~20,000 yBP

QUATERNARY DEPOSITS OF RHODE ISLAND

Granitic Till Upland

Thick Stratified Deposits

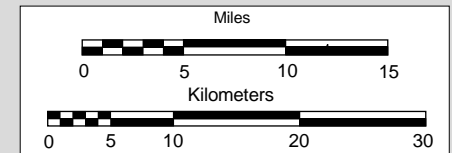
Narragansett structural basin

Compact Till Upland

Block Island
Complex

EXPLANATION

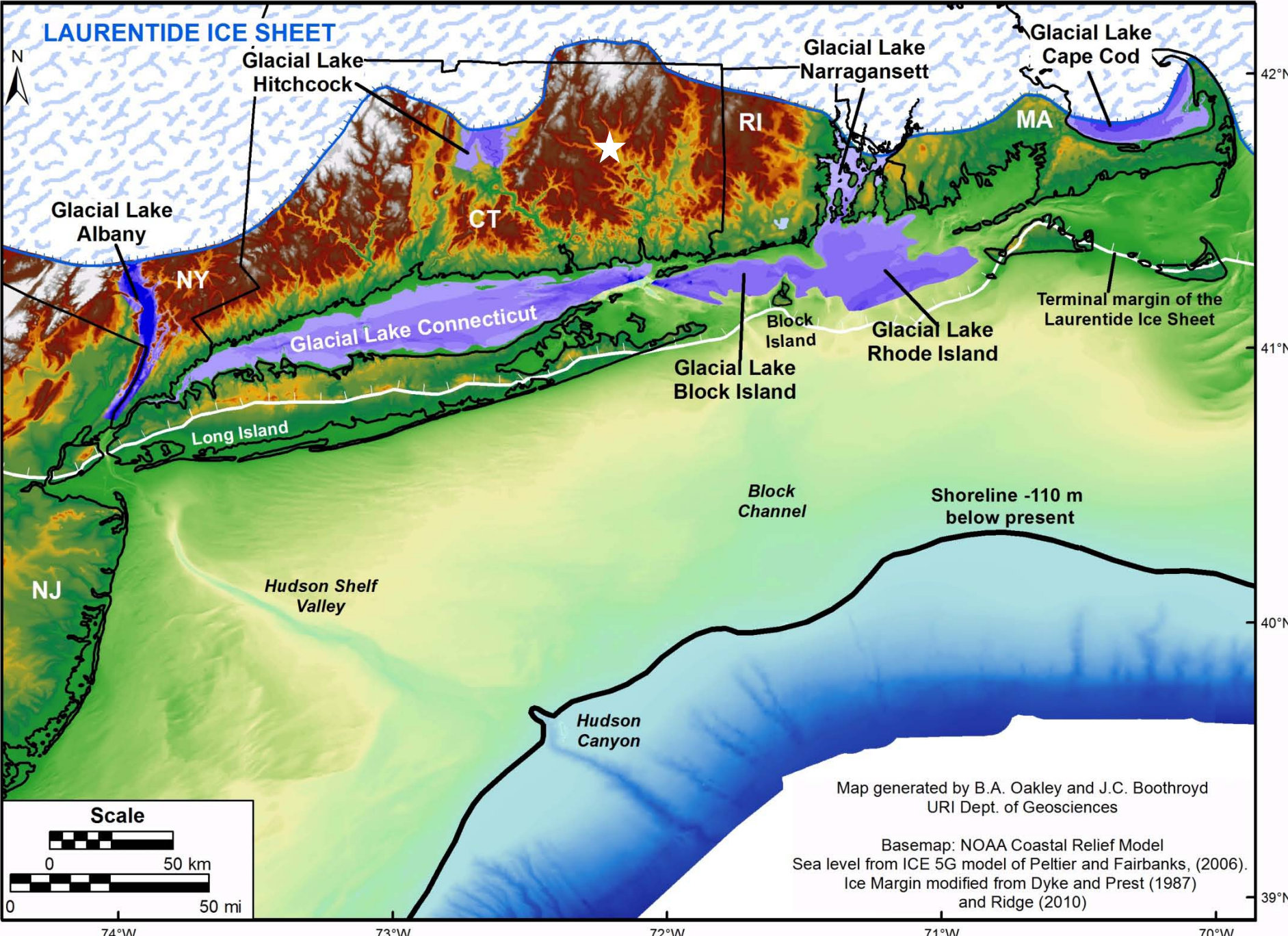
- Stratified Material
- Till
- End Moraine - Till and Stratified Material



Stratified deposits....

- Sediment deposited by meltwater
- Glacial lakes dominated the landscape...

GLACIAL LAKES OF SOUTHERN NEW ENGLAND AND EASTERN NEW YORK



Quaternary Geology of the Carolina – Quonochontaug Quads

Braided River on a Delta Plain



J.C. Boothroyd

“C. Pebbly Sand Fluvial Facies” – i.e. Braided River deposits



“C. Pebbly Sand Fluvial Facies” – i.e. Braided River deposits

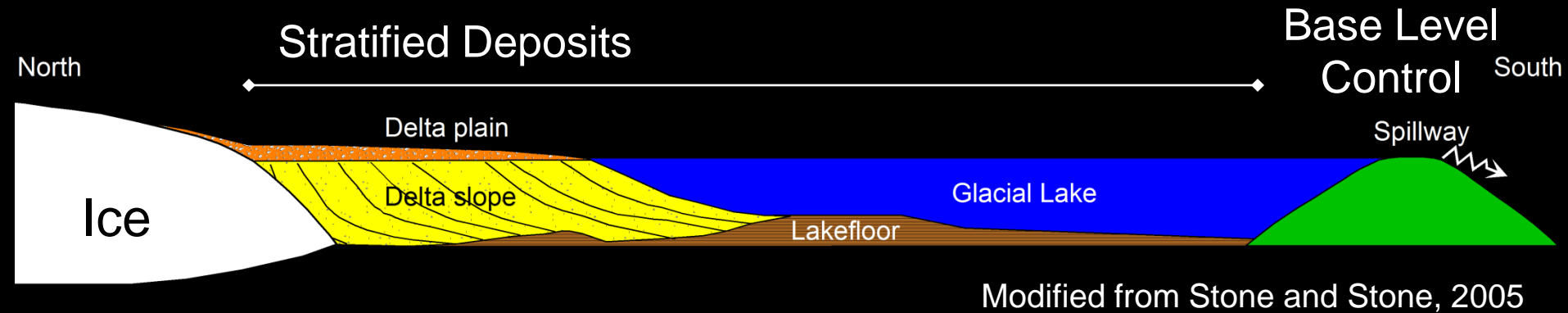


Morphosequence

- Time-equivalent group of landforms that extend from the collapsed former ice margin at the proximal end of the deposit



MORPHOSEQUENCE CHARACTERISTICS



Which is all complicated by isostatic rebound....

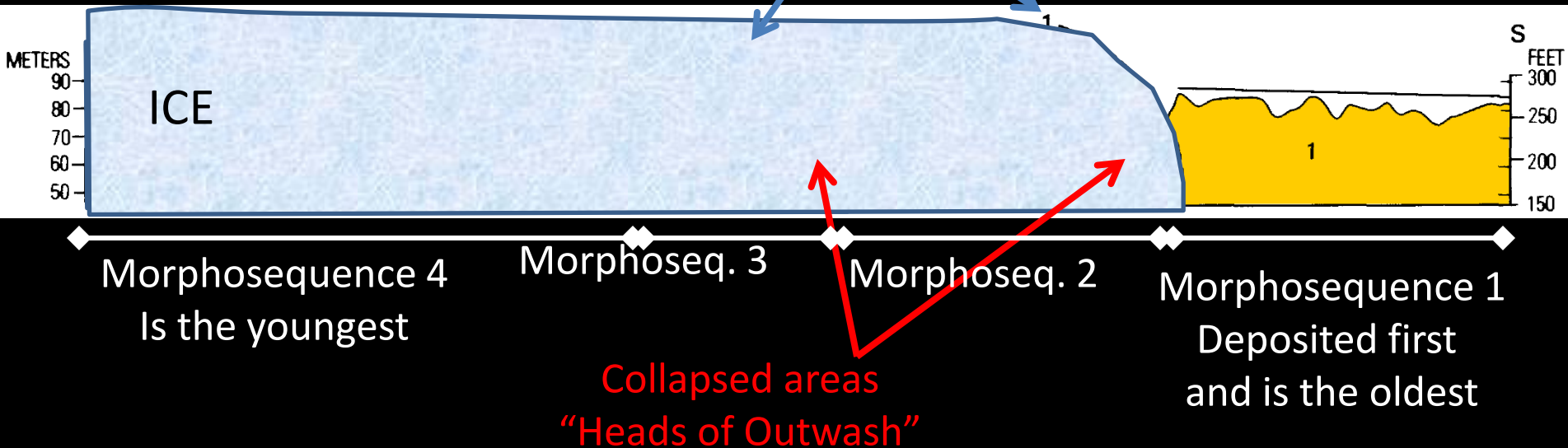
Ice Retreat



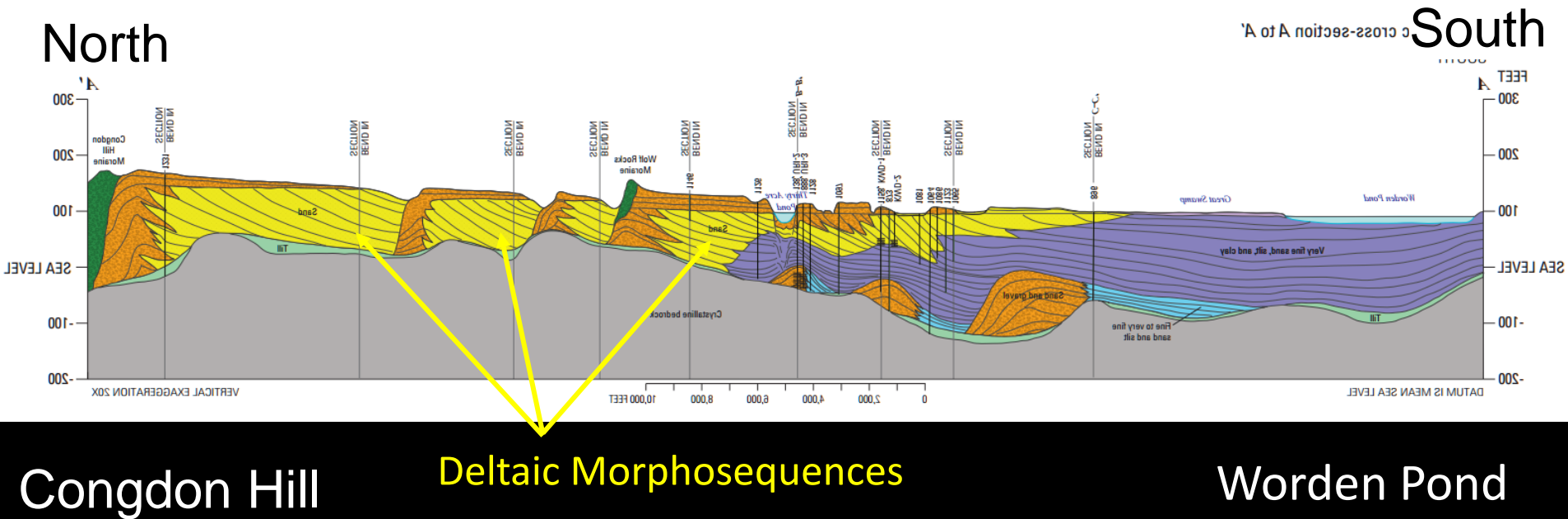
Ice Margins

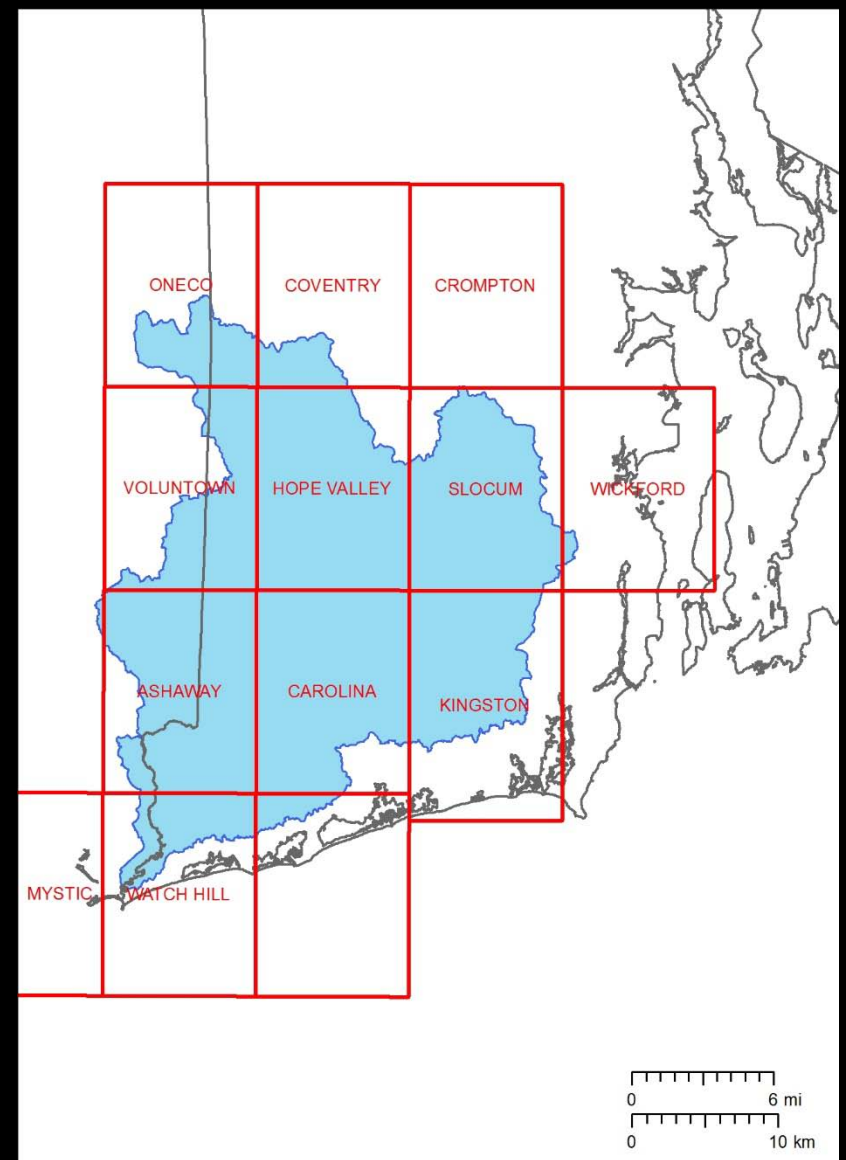
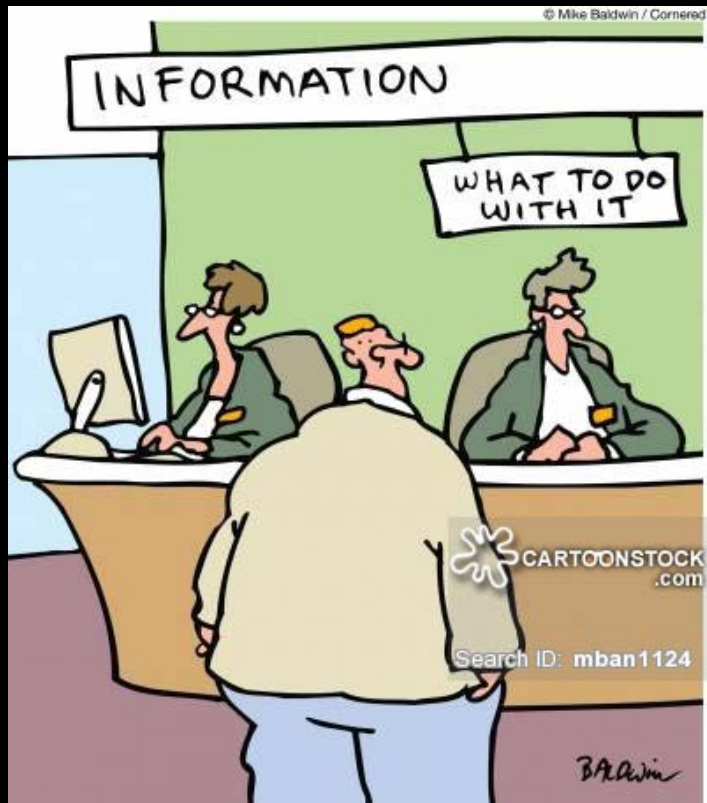
4 = Youngest

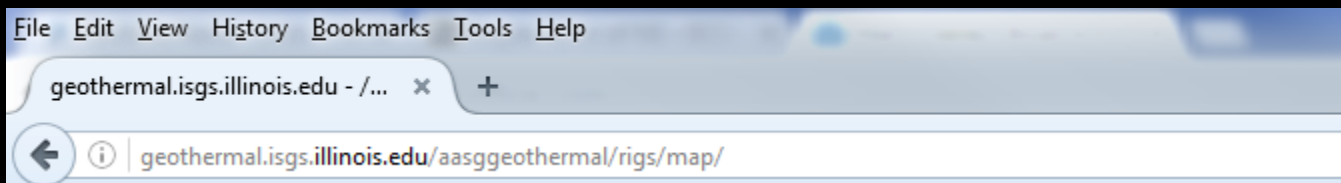
1 = Oldest



Geologic Cross-Section: Congdon Hill to Worden Pond










geothermal.isgs.illinois.edu - /aasggeothermal/rigs/map/

[\[To Parent Directory\]](#)

5/14/2012 11:18 AM	75516040	Ashaway Quad Bedrock Collared RISPF.zip
5/14/2012 11:19 AM	40400470	Ashaway Quad Bedrock RISPF.zip
5/14/2012 11:19 AM	57803864	Ashaway Quad Groundwater Collared RISPF.zip
5/14/2012 11:19 AM	33935043	Ashaway Quad Groundwater RISPF.zip
5/14/2012 11:19 AM	62939660	Ashaway Quad Surficial Map Collared RISPF.zip
5/14/2012 11:19 AM	42741986	Ashaway Quad Surficial Map RISPF.zip
5/14/2012 11:19 AM	41172765	Attleboro Quad Aeromagnetic Map Collared RISPF.zip
5/14/2012 11:20 AM	29622390	Attleboro Quad Aeromagnetic Map RISPF.zip
5/14/2012 11:20 AM	1972797	Attleboro Quad Groundwater RISPF.zip
5/14/2012 11:20 AM	40738985	Blackstone Quad Aeromagnetic Map Collared RISPF.zip
5/14/2012 11:20 AM	28887576	Blackstone Quad Aeromagnetic Map RISPF.zip

Name	Type	Compressed size	Password ...	Size
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 Ashaway_Quad_Surficial_Map_Collared_RISPF.tif	TIFF Image	61,451 KB	No	
 Rhode_Island_Scanned_Maps_Protocol.docx	Microsoft Word Document	13 KB	No	

<http://geothermal.isgs.illinois.edu/aasggeothermal/rigs/map/>