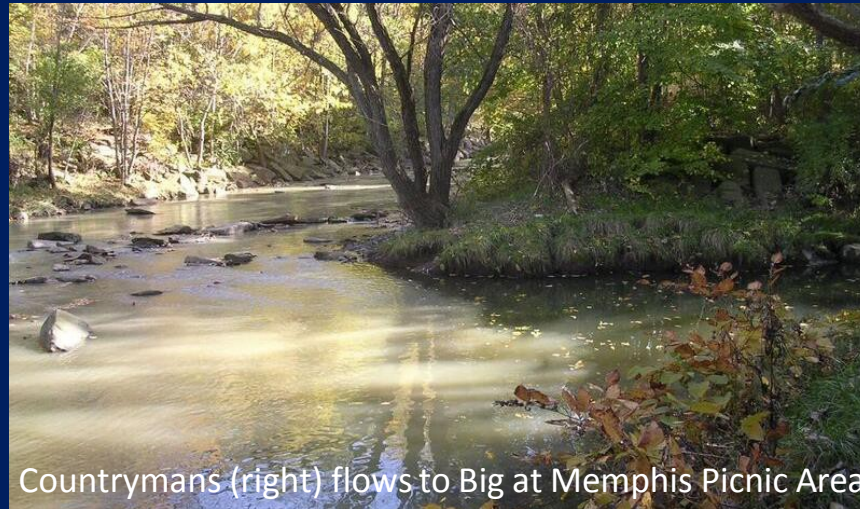




# Birth of Big Creek



Countrymans (right) flows to Big at Memphis Picnic Area

**Roy Larick, PhD**

for a

**Metroparks Watershed Volunteers Monday Meetup**

sponsored by

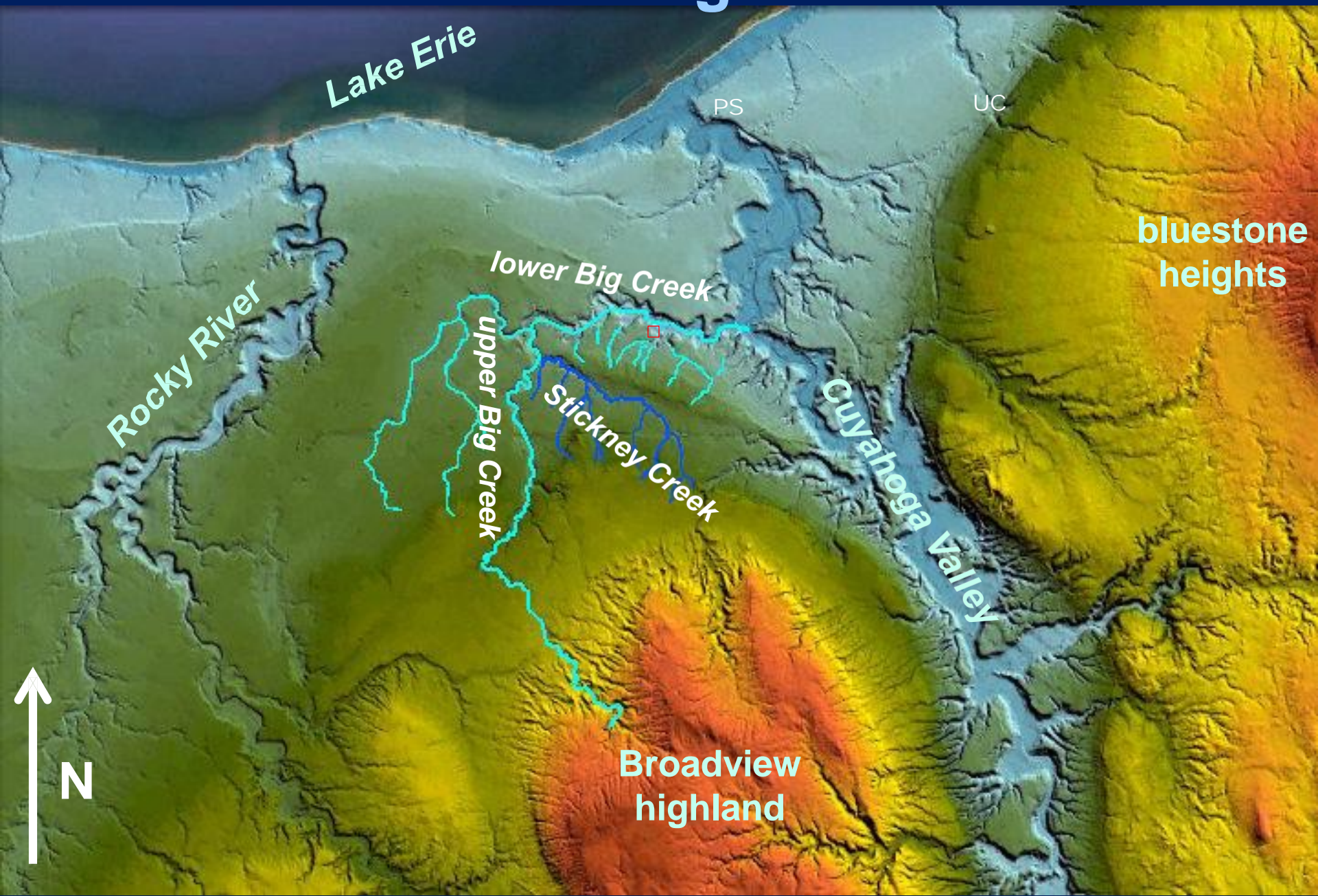
**Big Creek Connects**

at the

**Cleveland Metroparks Zoo**

**November 5, 2018**

# Birth of Big Creek



# Big Creek on the Portage Escarpment

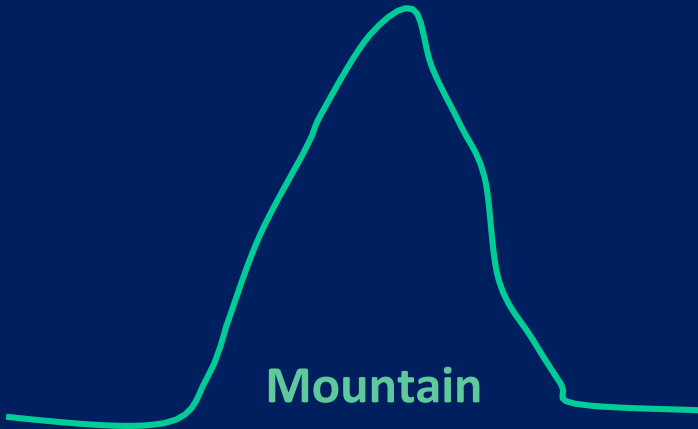


# Escarpment

highpoint



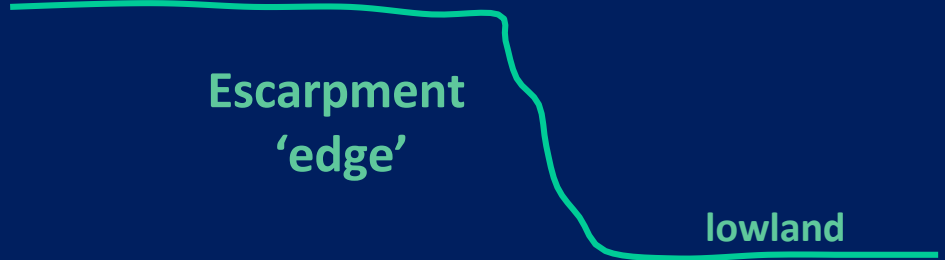
highpoint



Valley



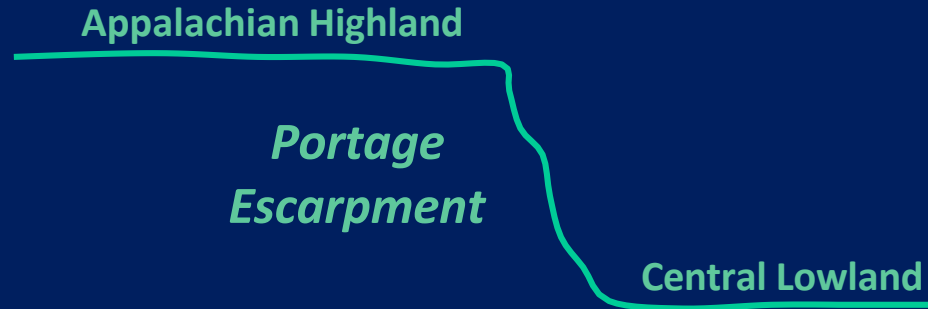
highland



Appalachian Highland



# Big Creek on the Portage Escarpment



Not so old

Streams 14 ka

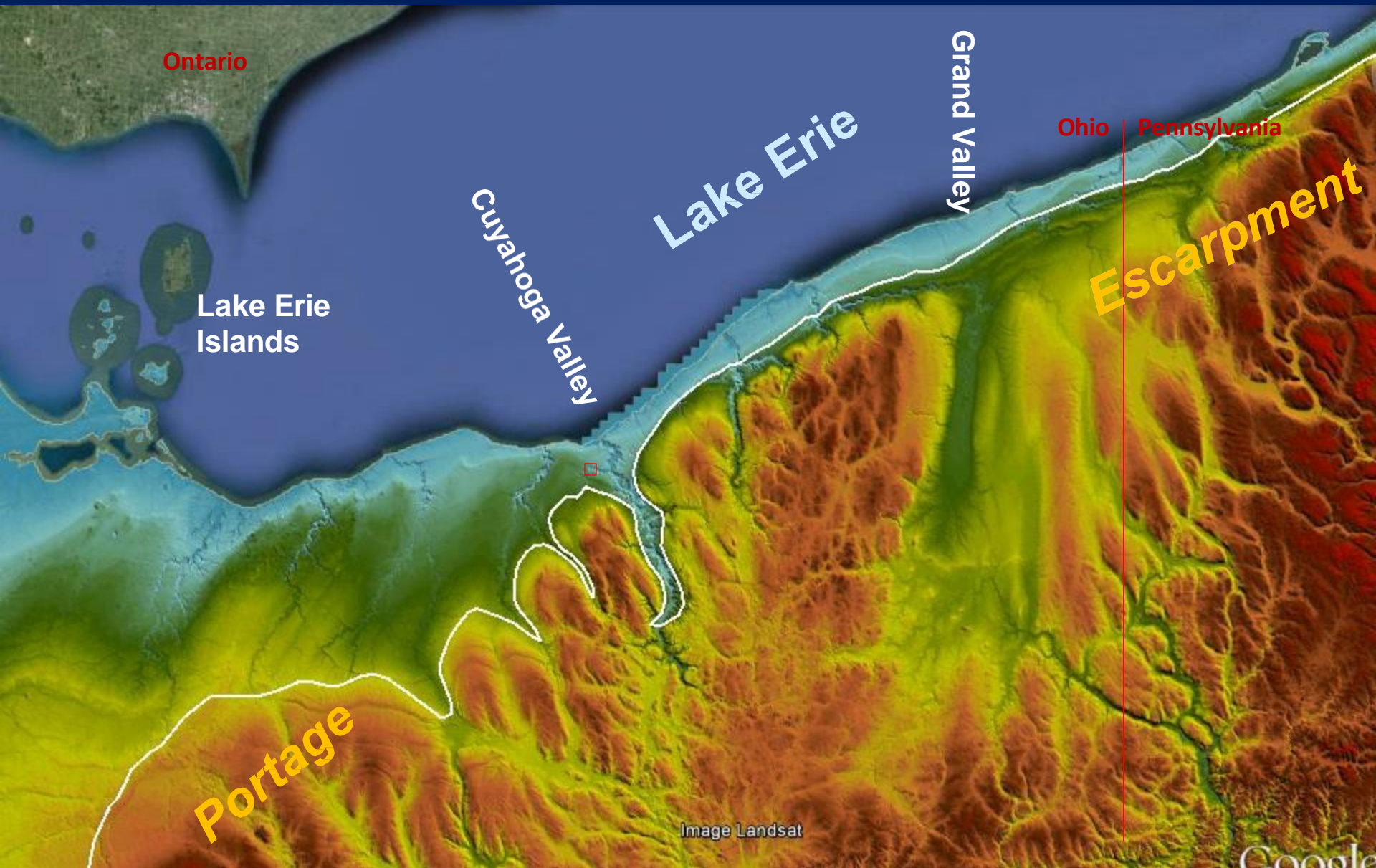
Glacier 23 ka

Very old

Uplift 200 Ma

Bedrock 360 Ma

# Portage Escarpment: plan view





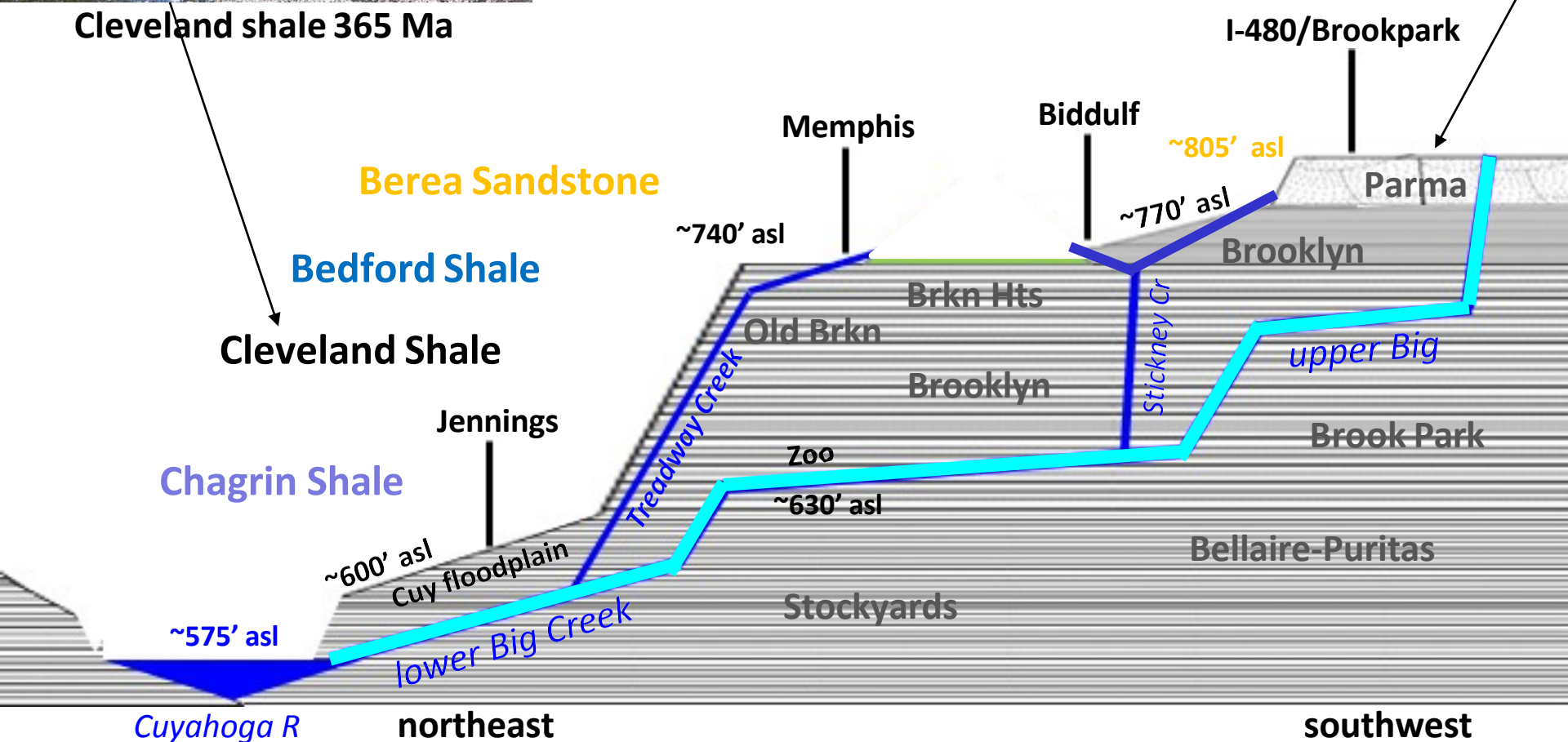
Cleveland shale 365 Ma

# Big Creek major bedrock units

*vertical scale exaggerated*

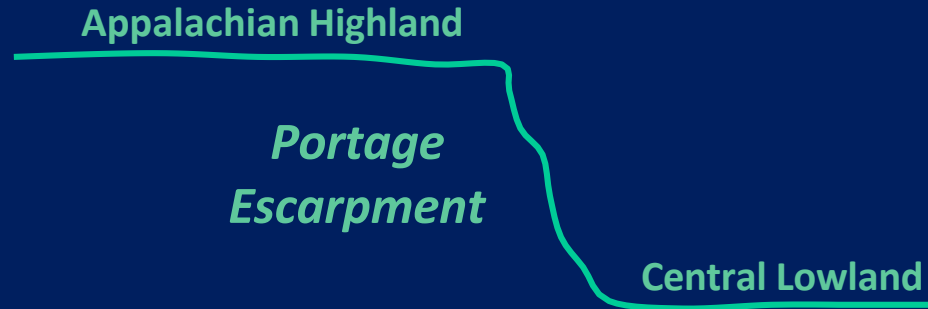


Berea Sandstone 350 Ma



**Big Creek on the Portage Escarpment**

# Big Creek on the Portage Escarpment



## Not so old

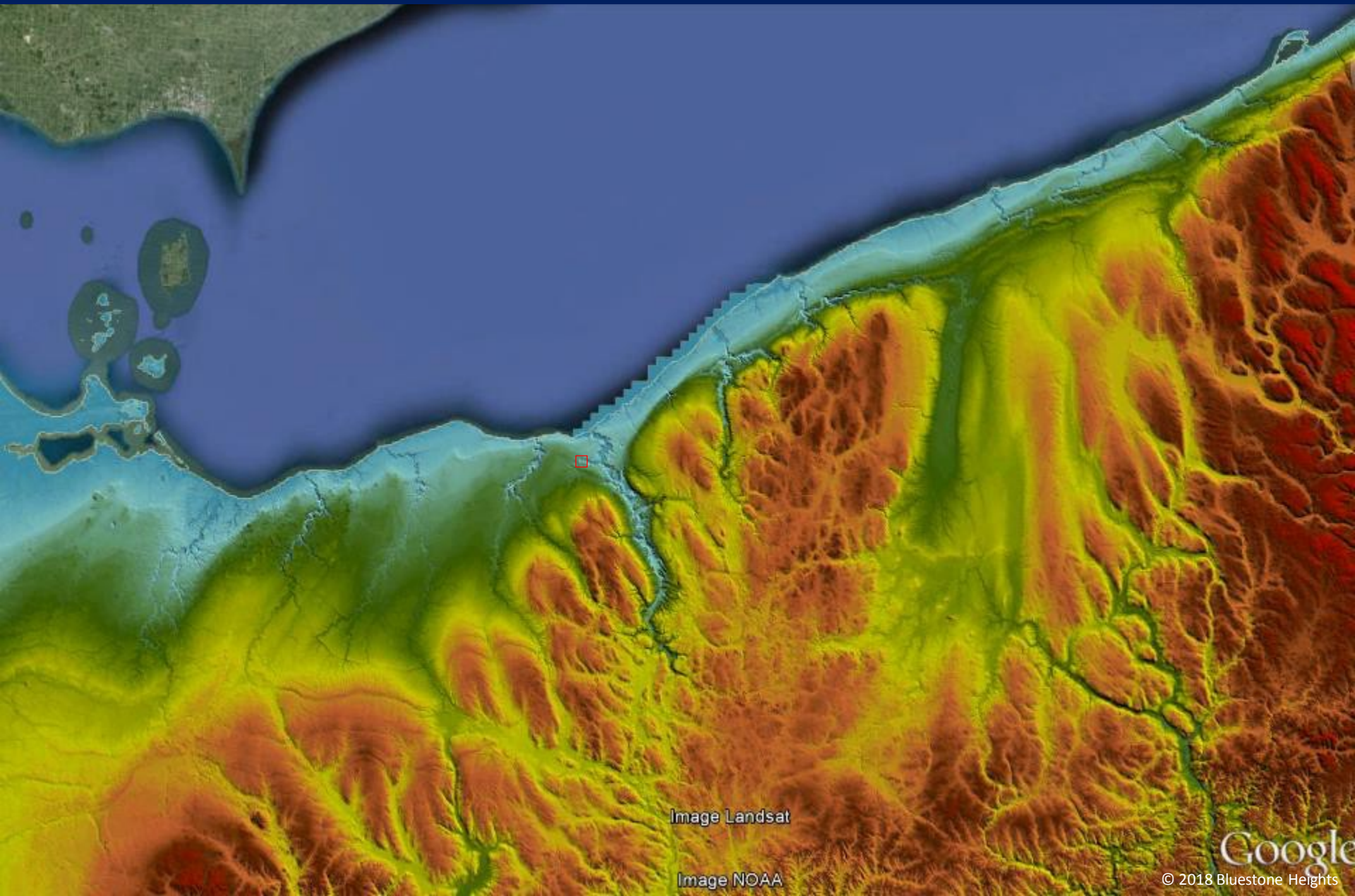
Streams	14 ka
Glacier	23 ka

## Very old

Uplift	200 Ma
Bedrock	360 Ma



# Portage Escarpment: glacial advance and retreat



# Portage Escarpment: final glacial advance

24 ka

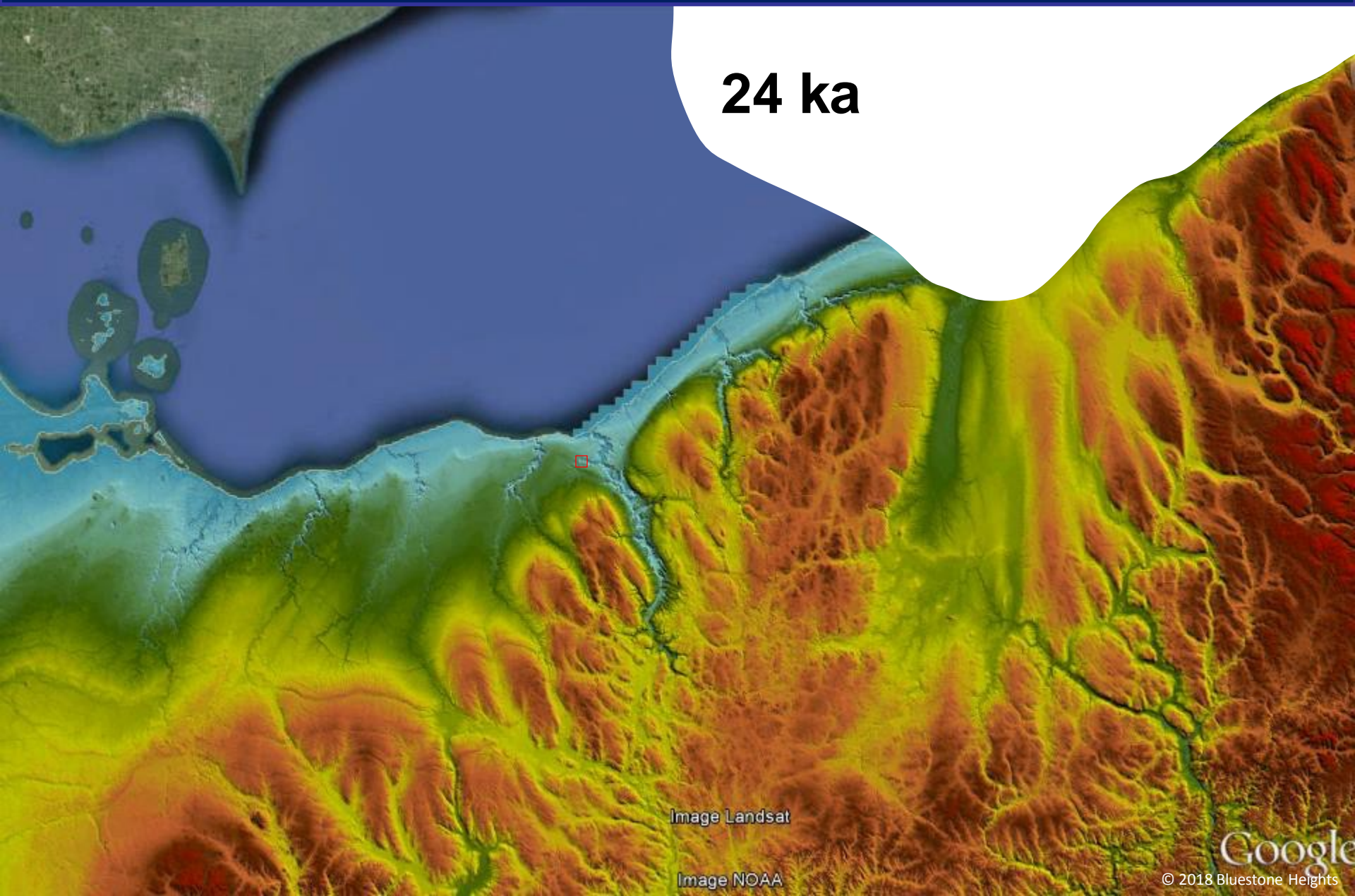


Image Landsat

Image NOAA

Google

© 2018 Bluestone Heights

# Portage Escarpment: final glacial advance

23 ka

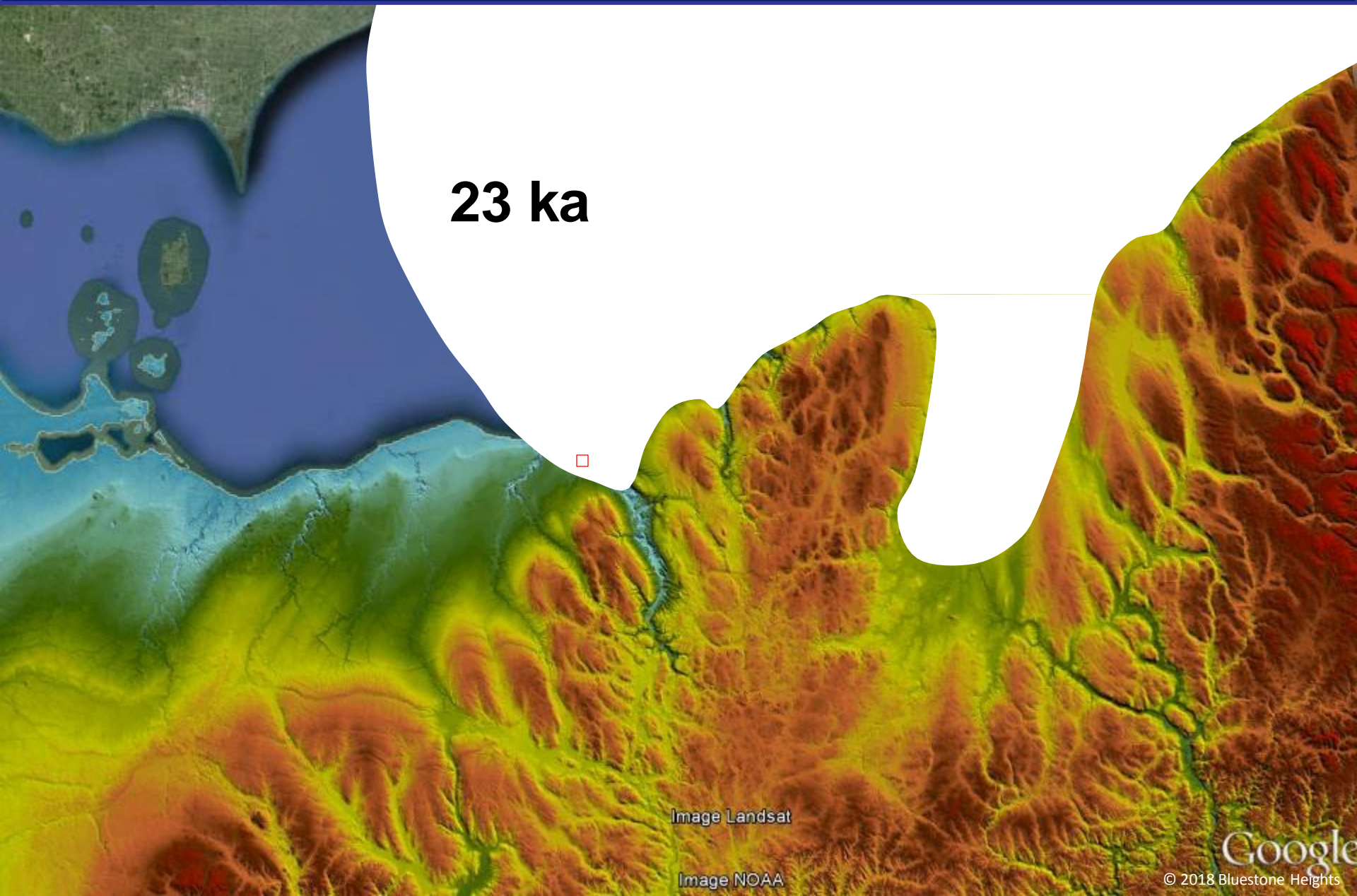


Image Landsat

Image NOAA

Google

© 2018 Bluestone Heights

# Portage Escarpment: final glacial advance

22 ka

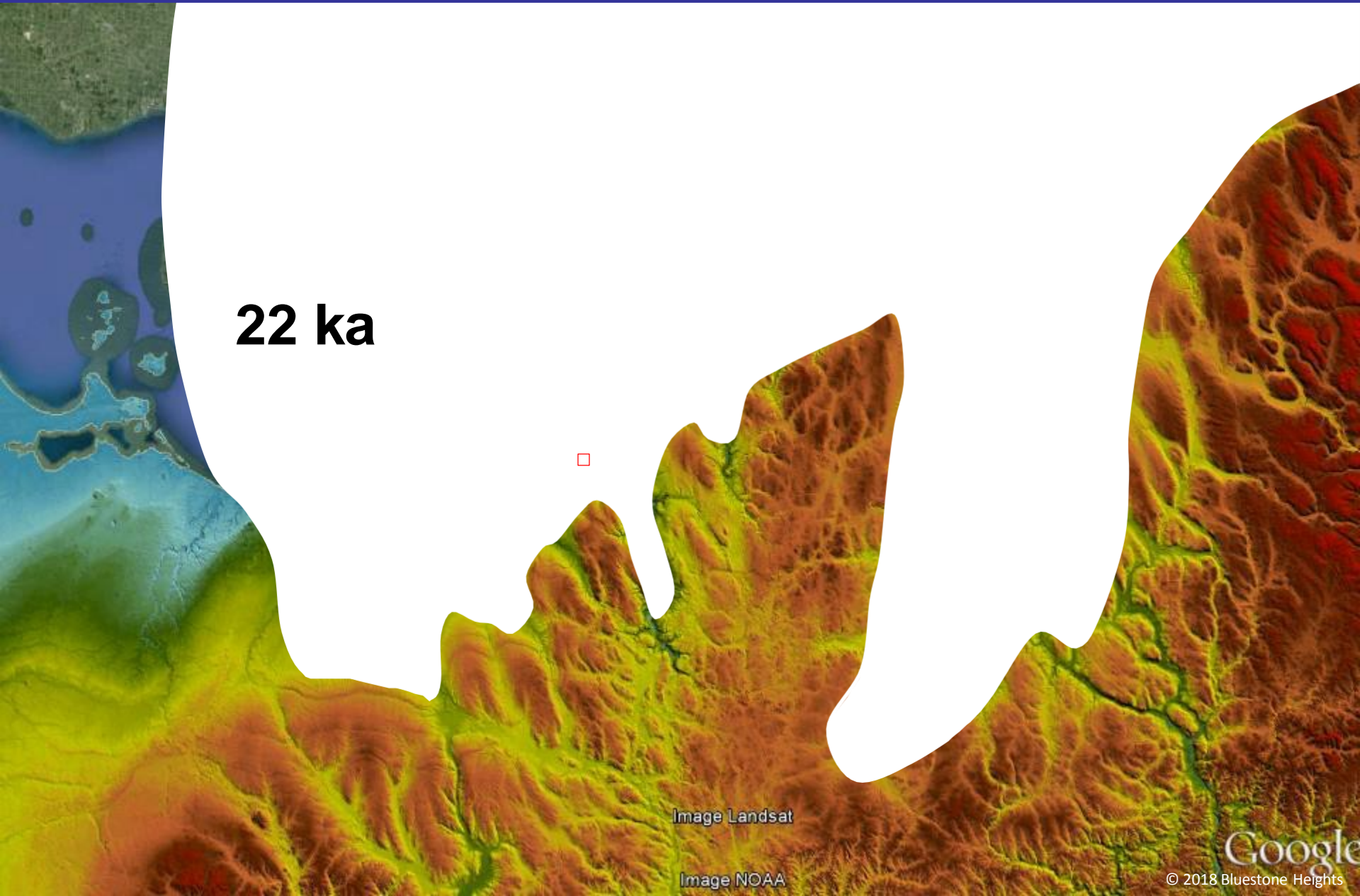


Image Landsat

Image NOAA

Google

© 2018 Bluestone Heights

# Portage Escarpment: final glacial advance

21 ka



Portage Landsat

Image NOAA

Google

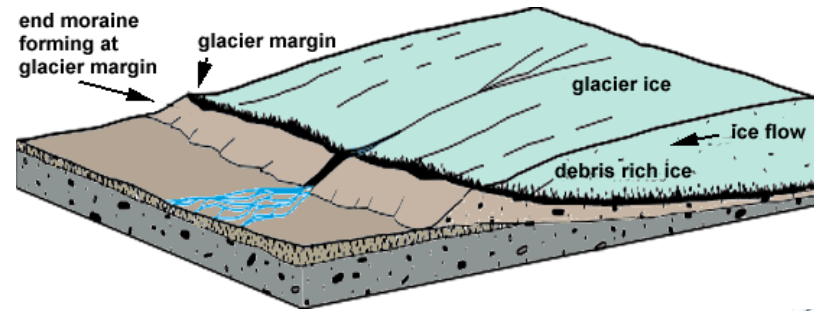
© 2018 Bluestone Heights

# Portage Escarpment: final glacial advance

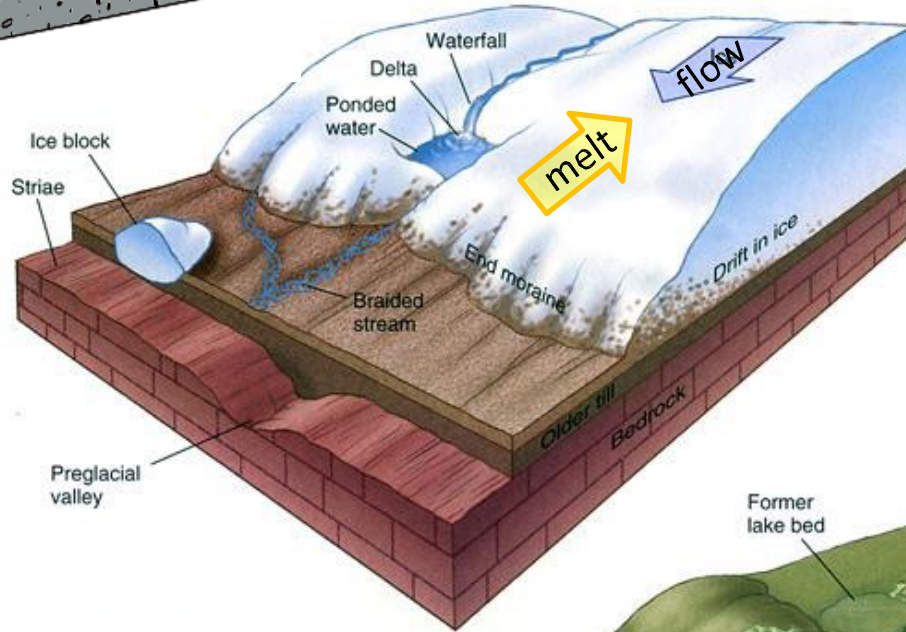


**20 ka**

# Glacial Moraines

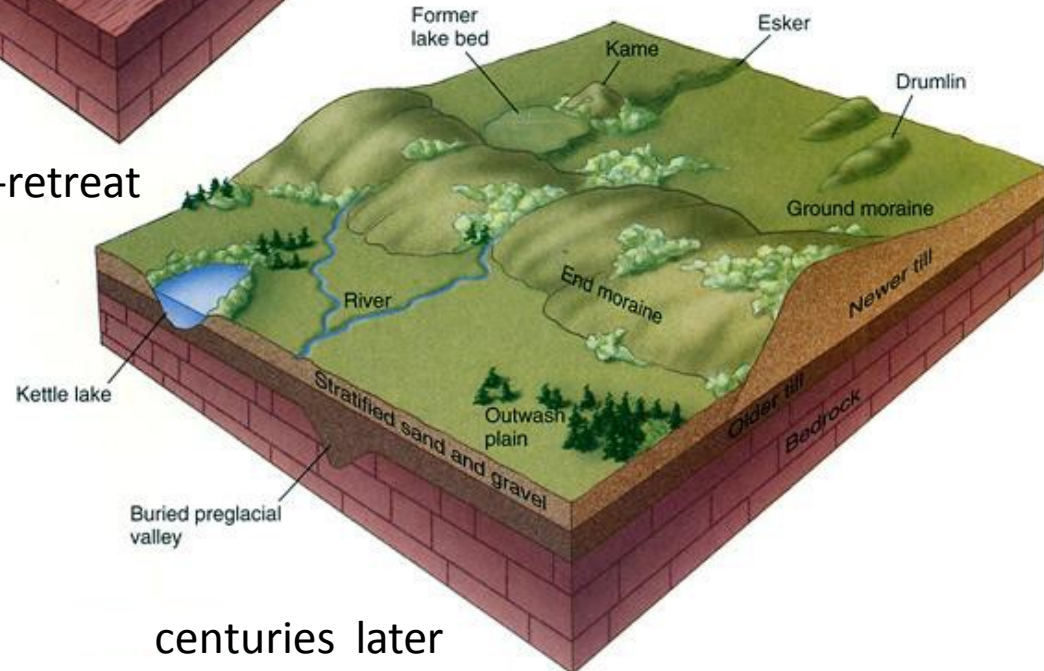


advance moraine



retreat moraine

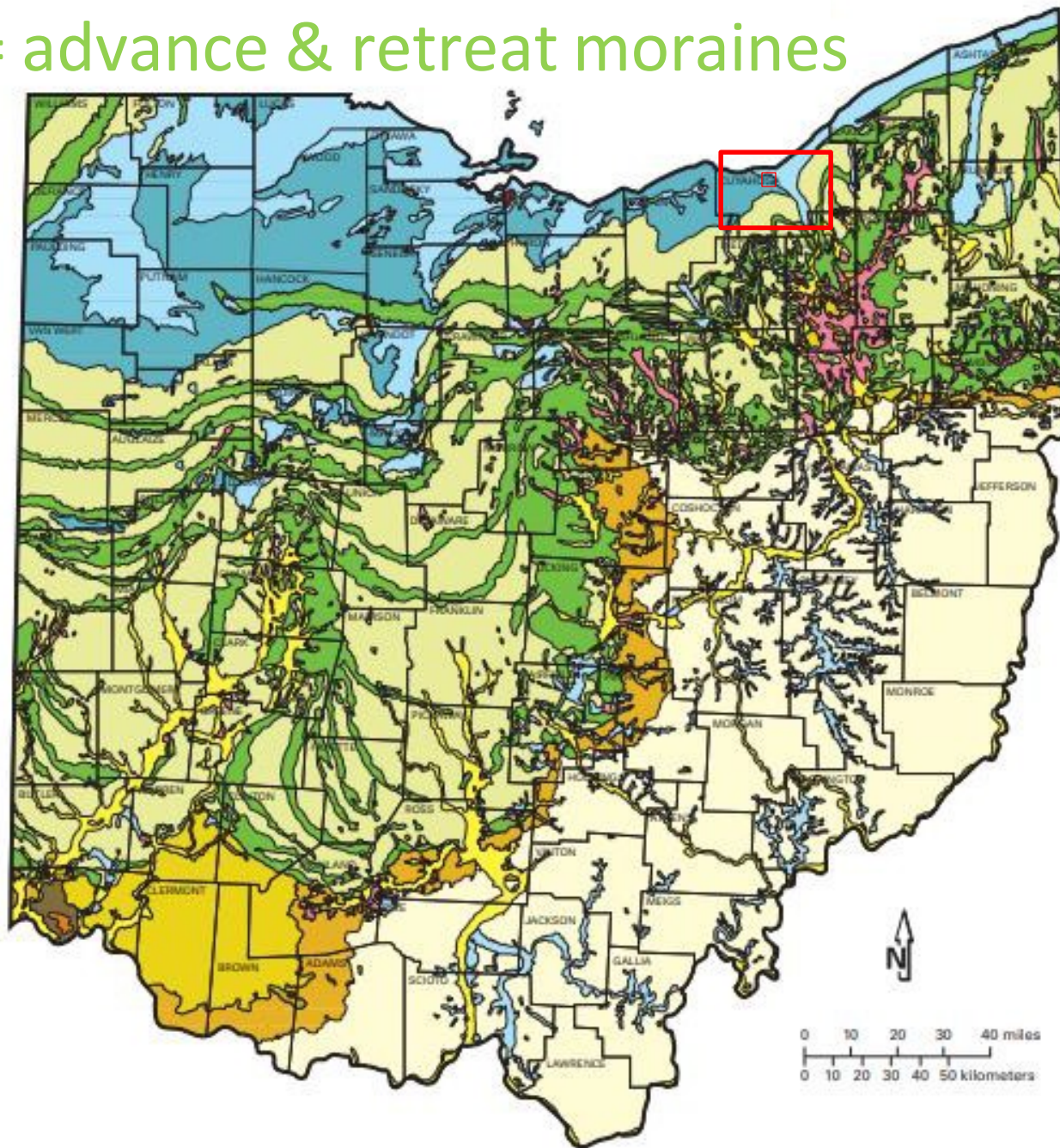
retreat-stasis-retreat



centuries later

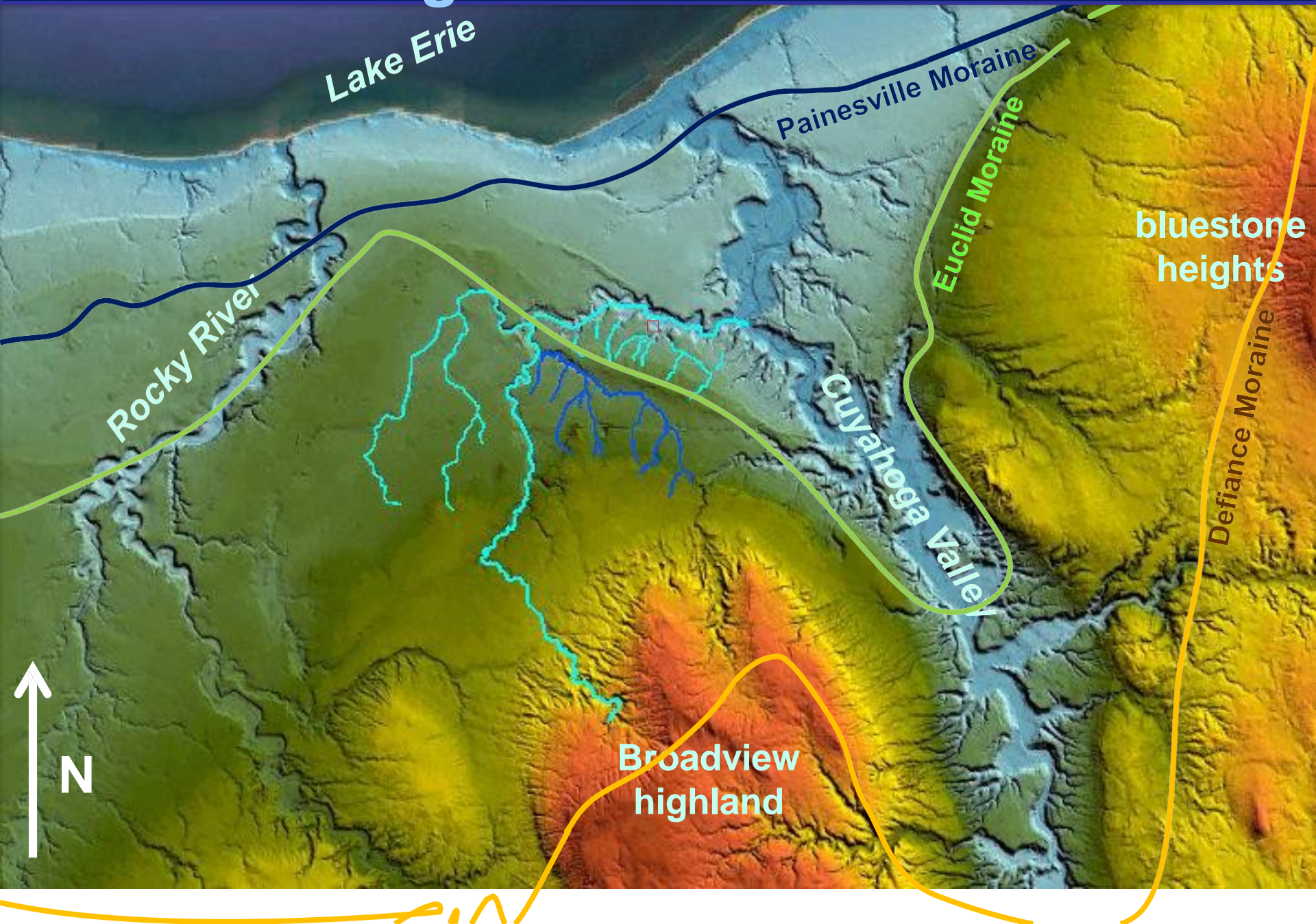


Green = advance & retreat moraines



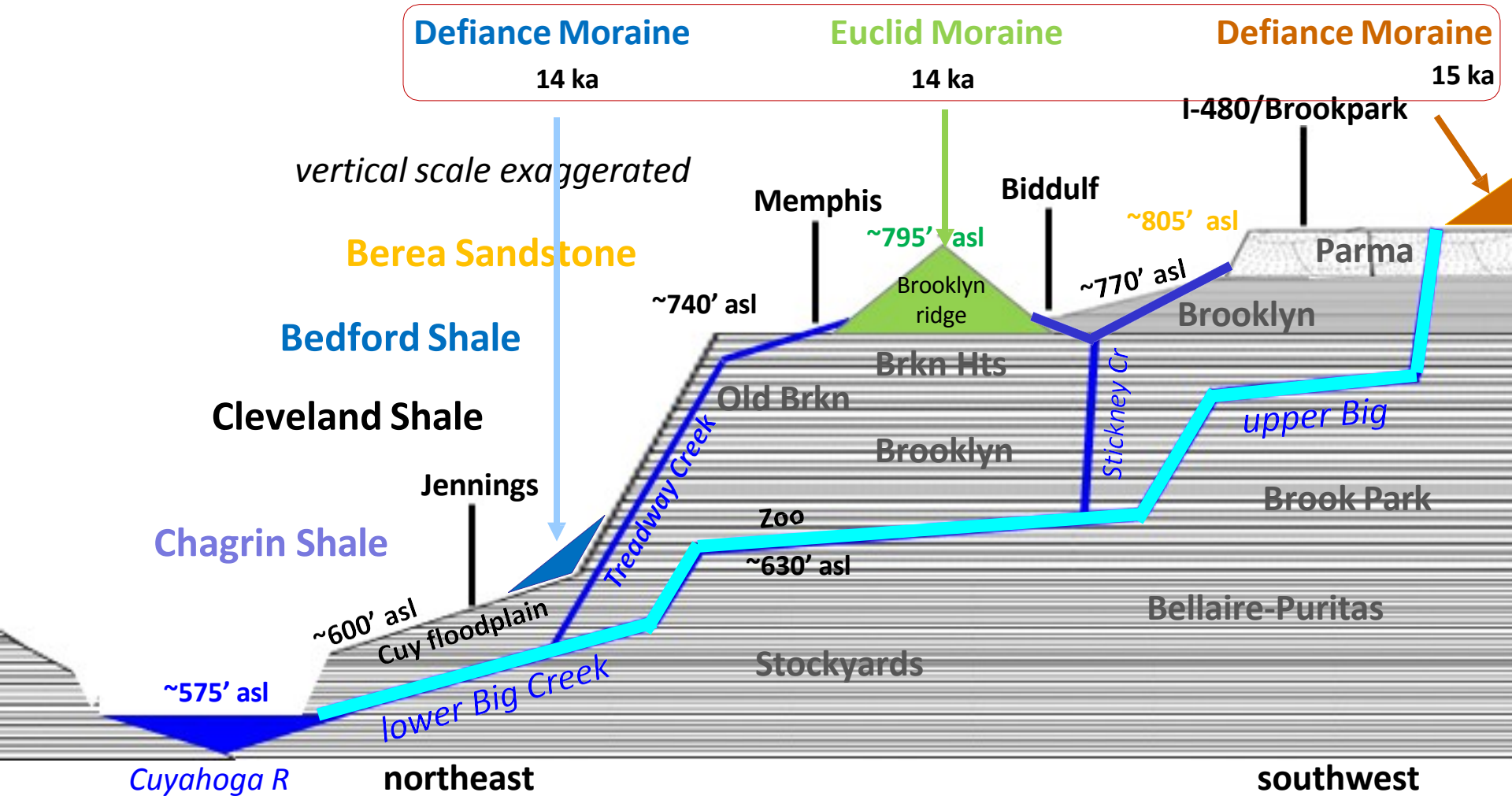


# Birth of Big Creek: retreat moraines



# Big Creek retreat moraines

*vertical scale exaggerated*



**Big Creek on the Portage Escarpment**

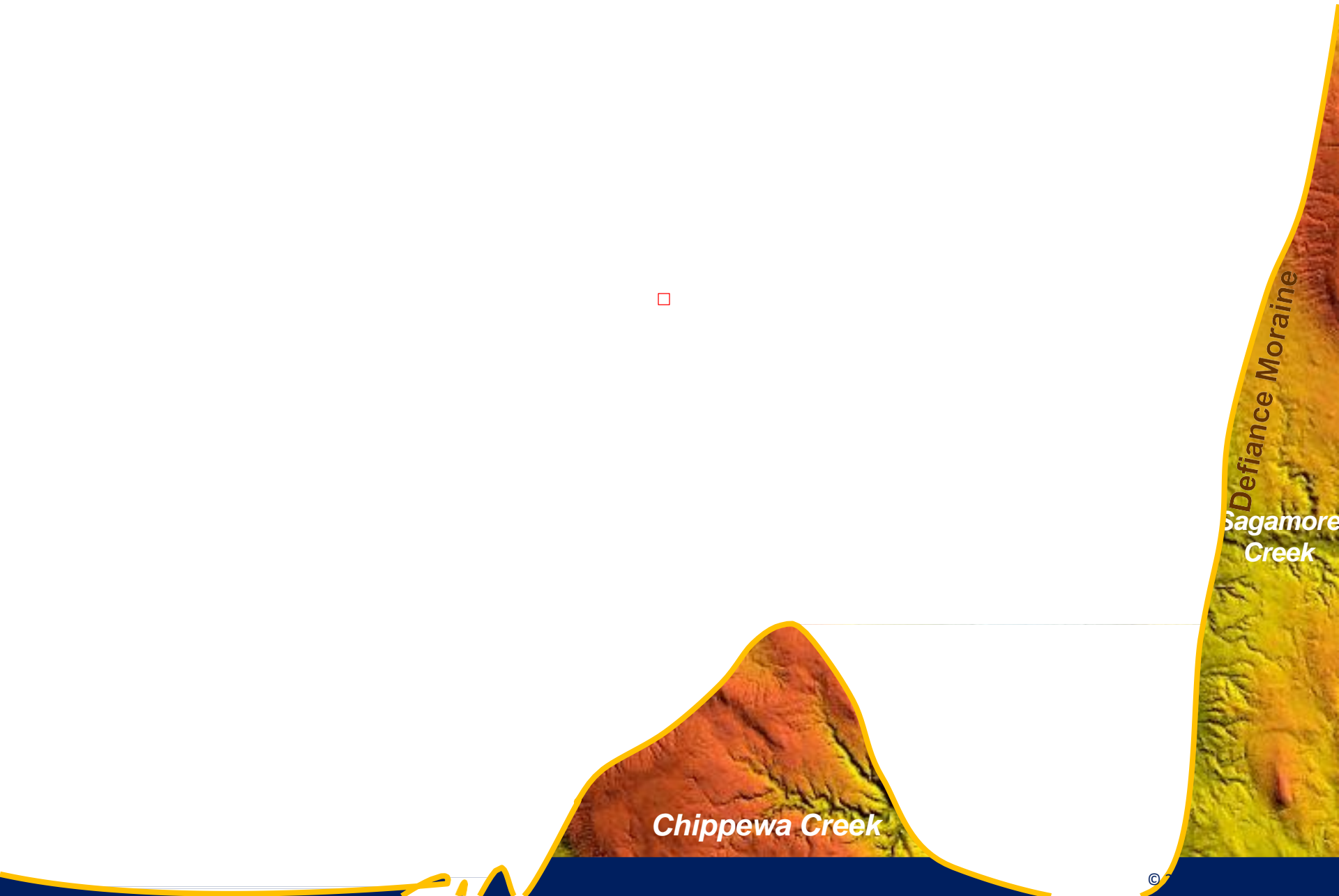
16 ka

# Birth of Big Creek: glacial retreat



15 ka

# Birth of Big Creek: glacial retreat

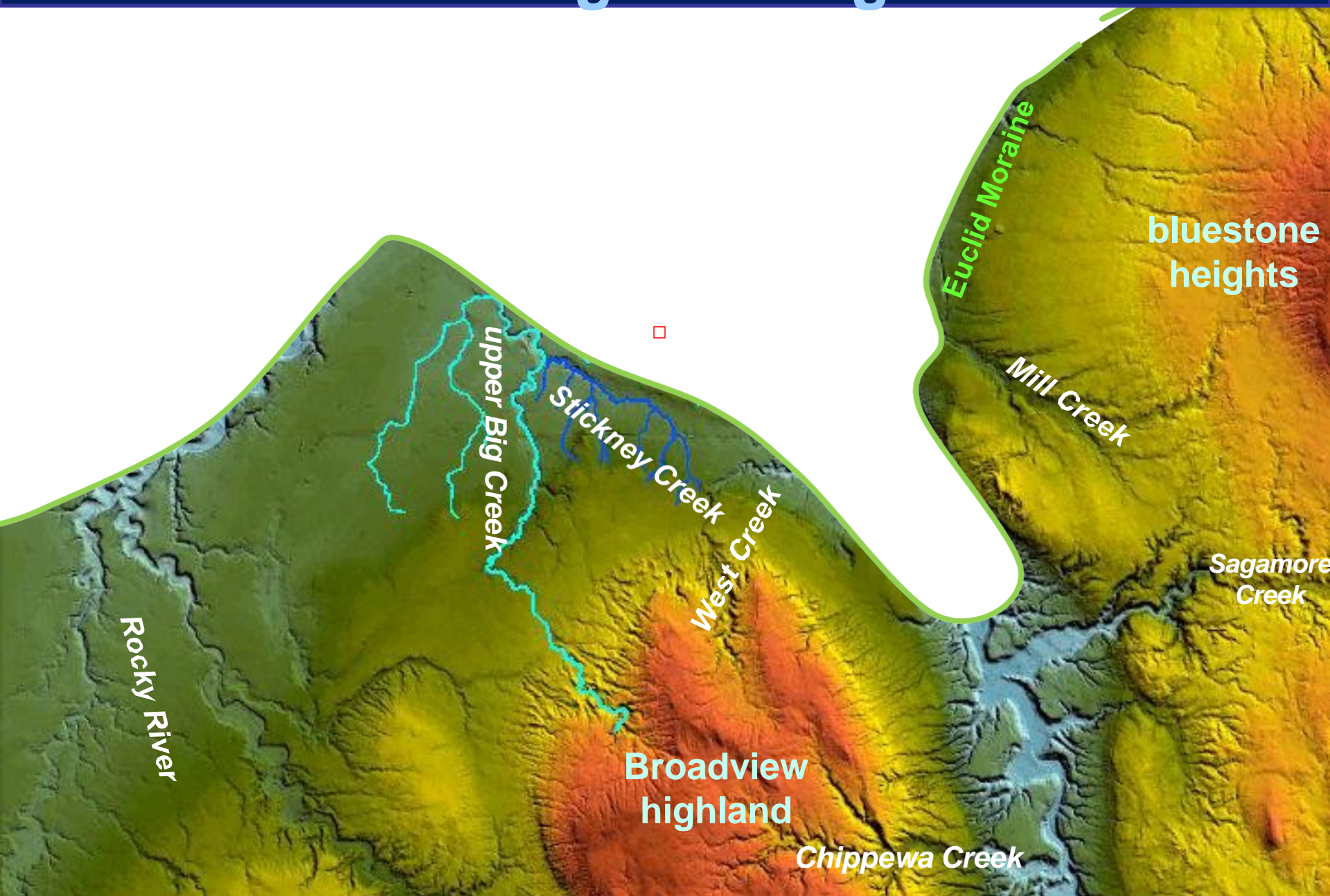


Chippewa Creek

Defiance Moraine  
Sagamore  
Creek

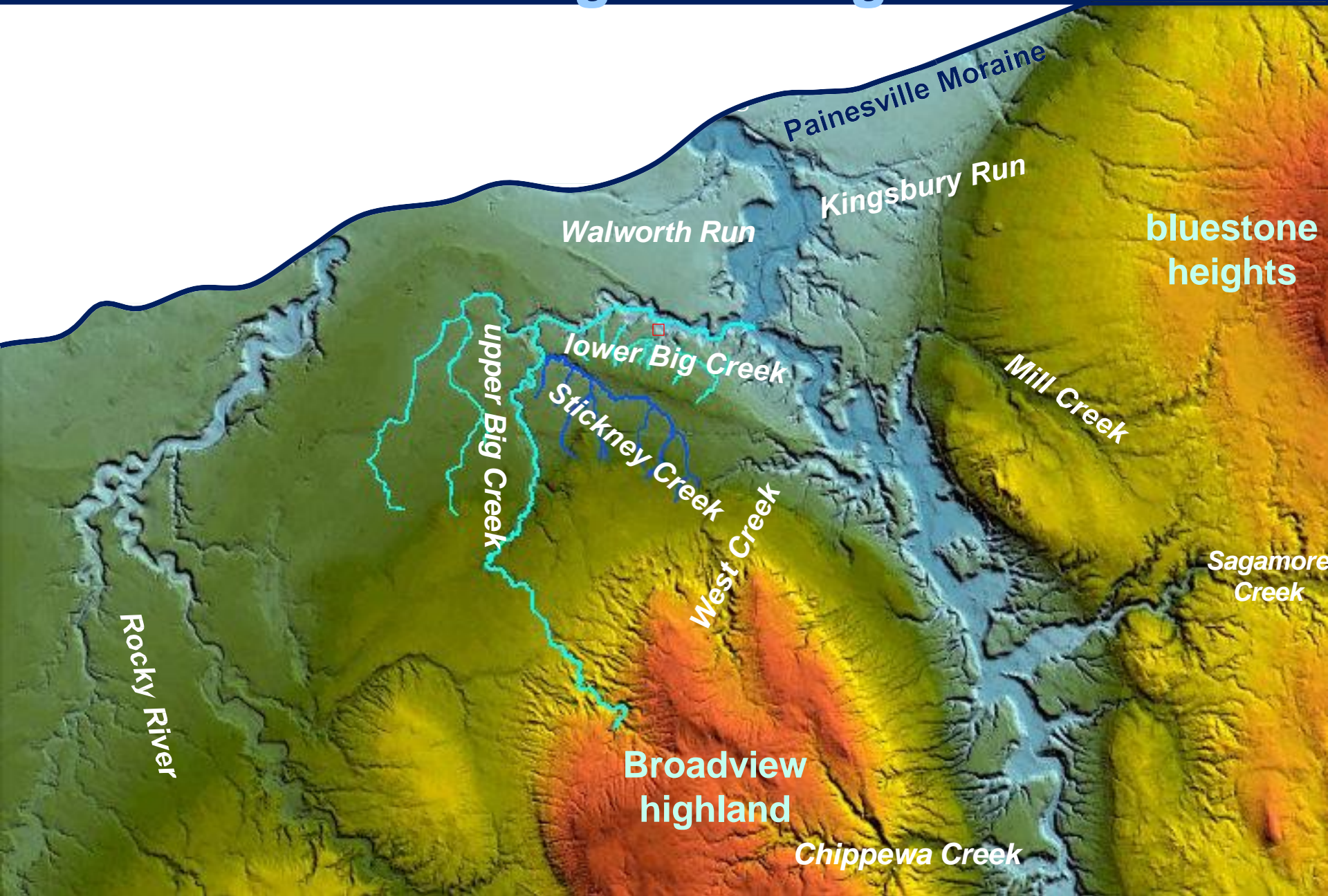
14 ka

# Birth of Big Creek: glacial retreat



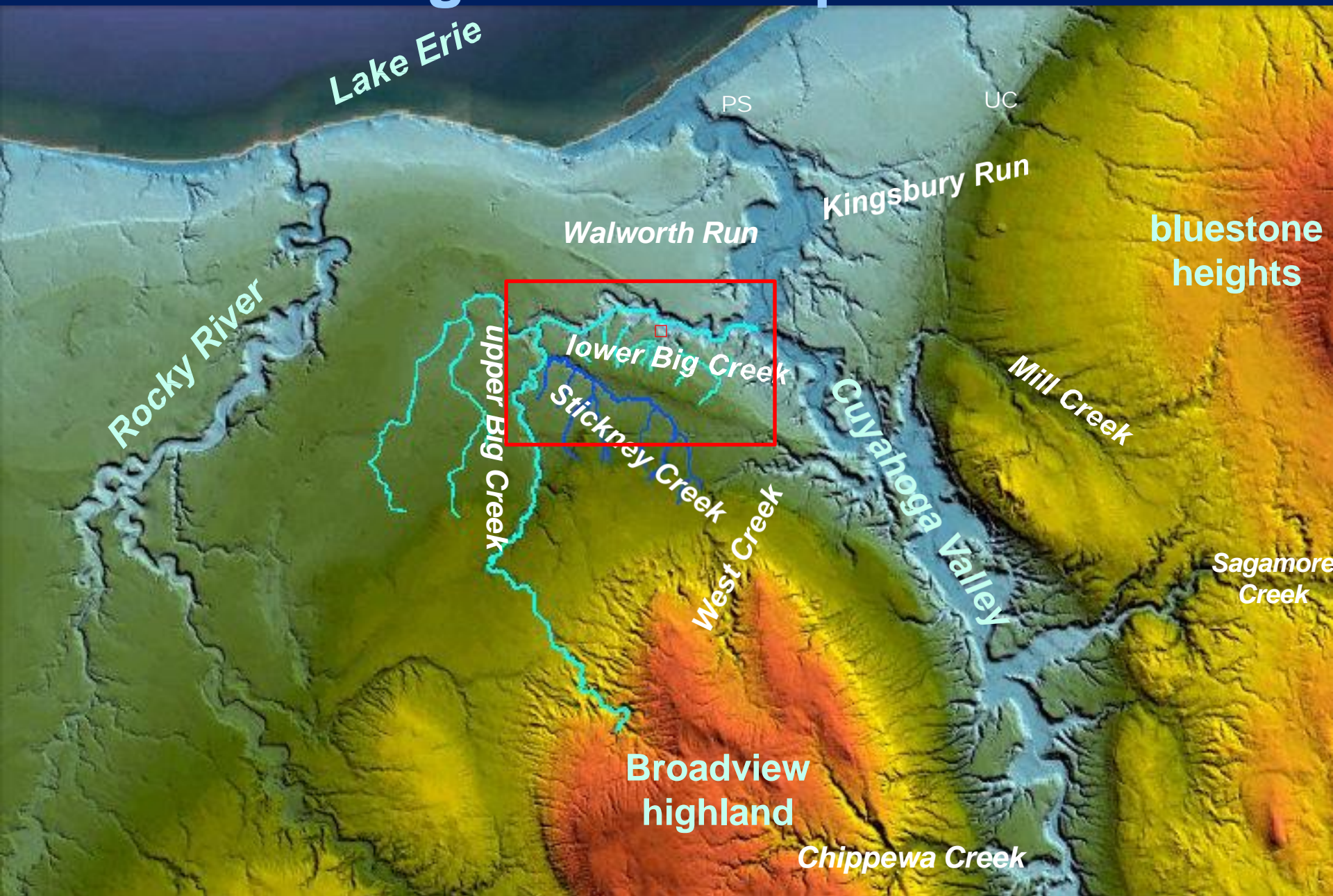
13 ka

# Birth of Big Creek: glacial retreat

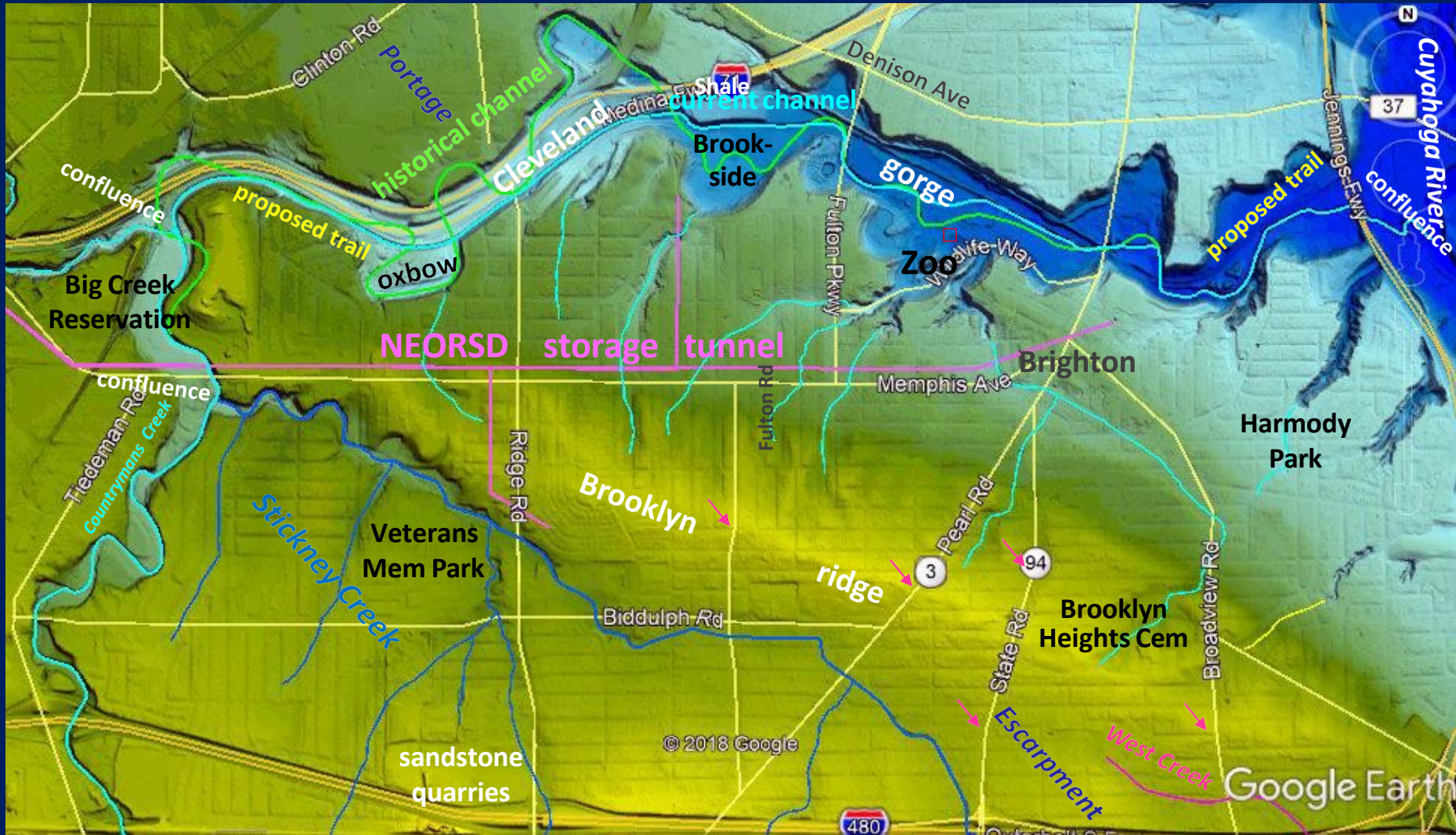


12 ka

# Big Creek complete



# Birth of Big Creek



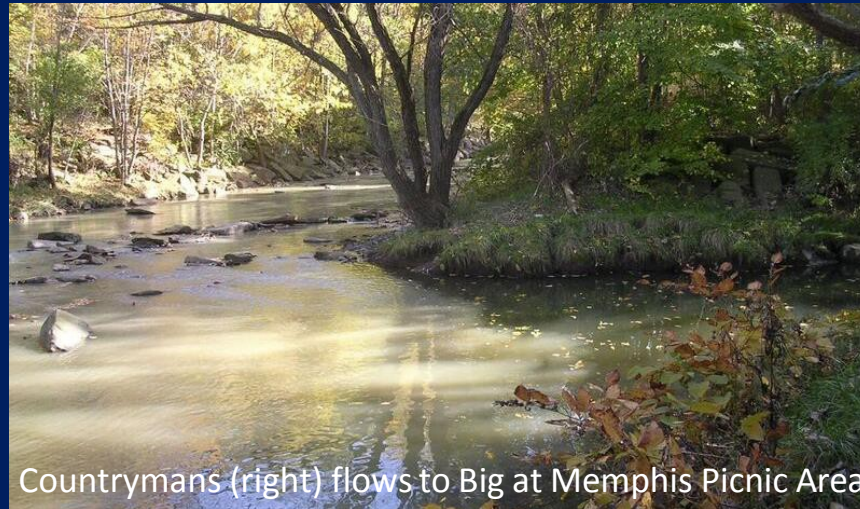
Stickney Creek to Lower Big Creek  
Brooklyn ridge to Cuyahoga River





[bluestoneheights.org](http://bluestoneheights.org)  
[roylarick@gmail.com](mailto:roylarick@gmail.com)

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# Birth of Big Creek: glacial retreat moraines

