
Welcome to
Connecticut River Conservancy's
LiveStream

Geological Time Travel Through the Connecticut River Basin

LiveStream Season 5, Episode 1

Jerry Monkman/EcoPhotography

Connecticut River Conservancy

Featured Presenter

Alfred (Fred) J. Venne

Museum Educator

Beneski Museum of Natural History at Amherst College

CRC Presenter

Kathy Urffer

Vermont River Steward
Connecticut River Conservancy

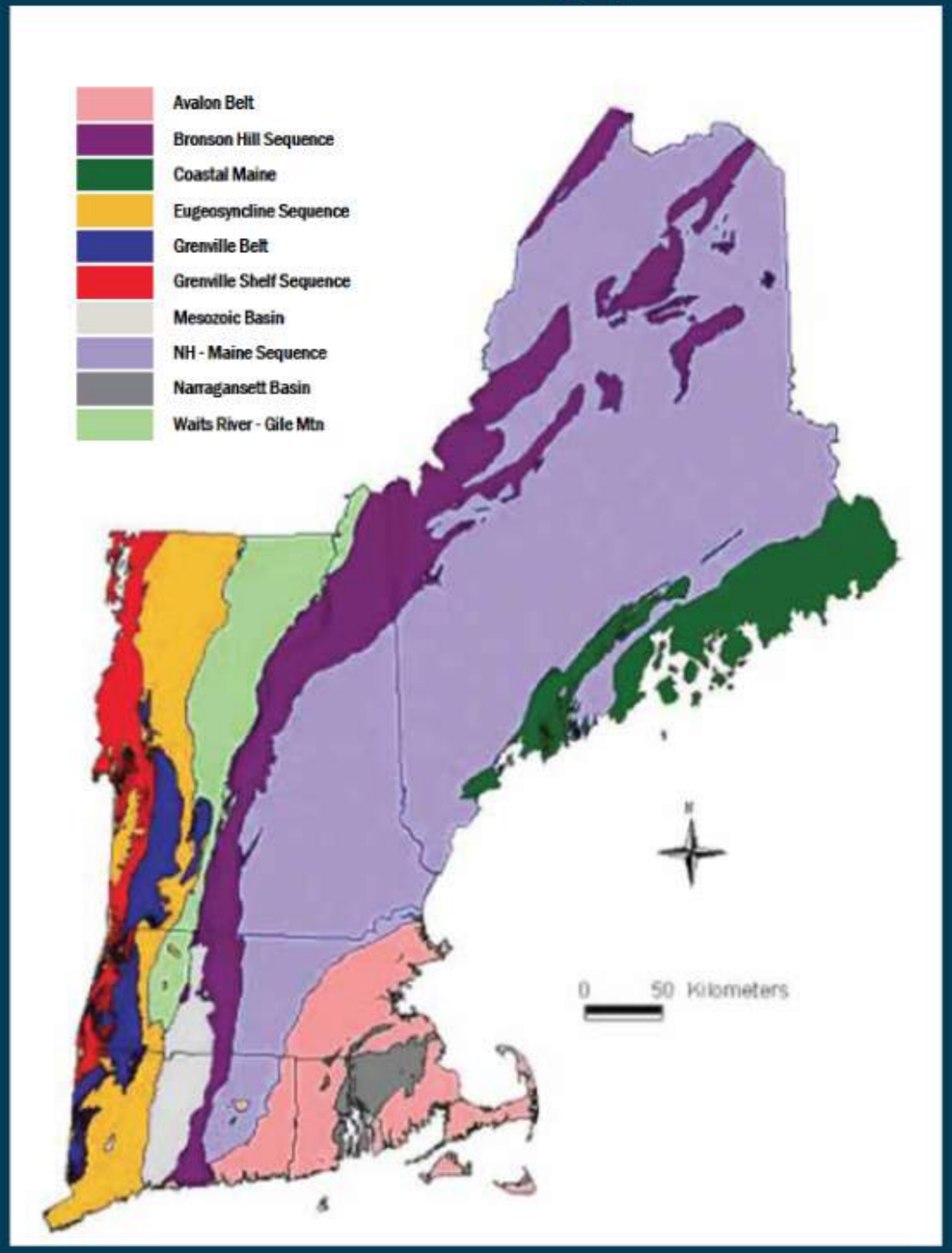
Geologic Time Travel Through the Connecticut River Basin

Overview of the geologic history of the east coast US and impact on CT River valley development

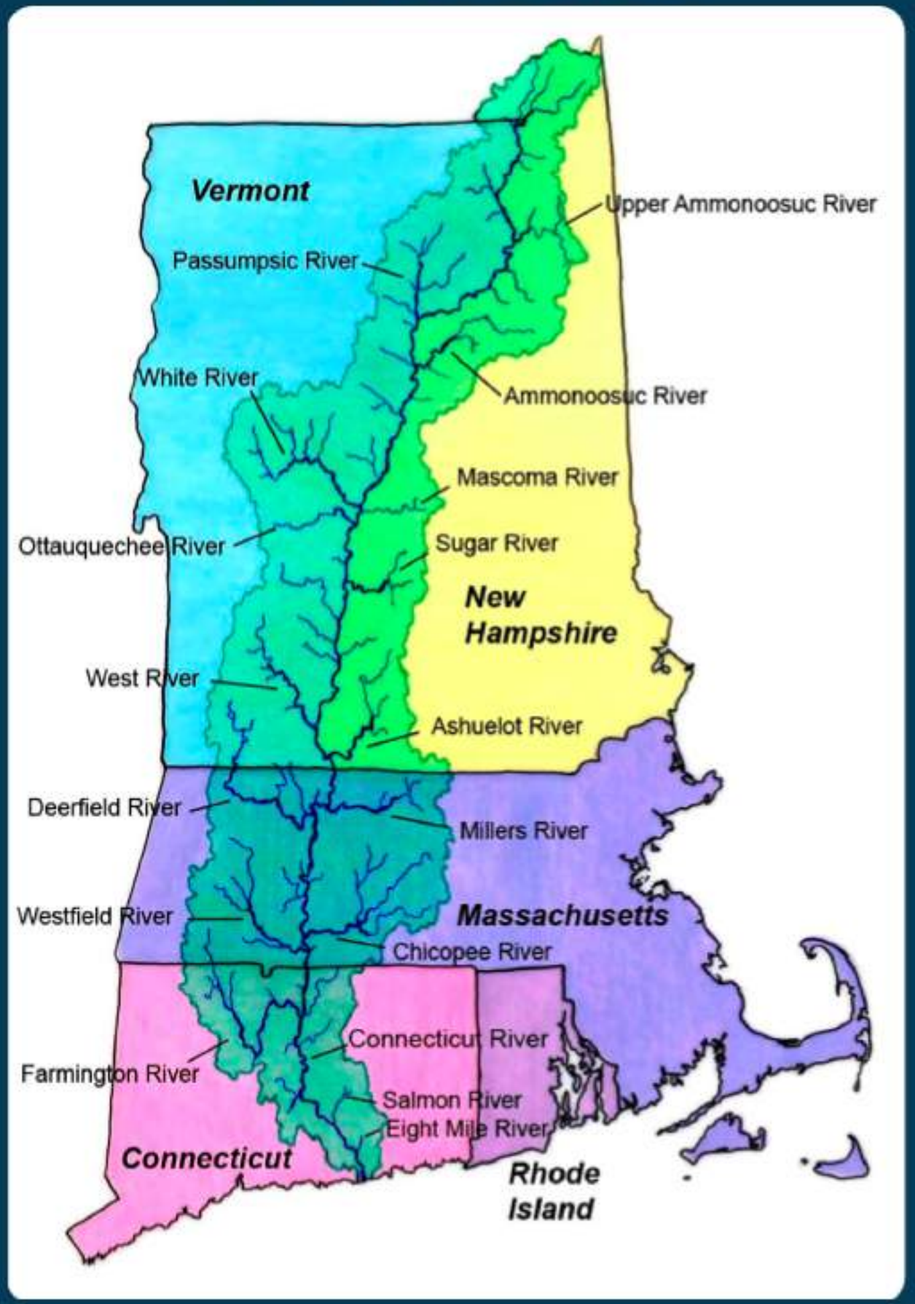
Evolution of the landscape

Alfred (Fred) J. Venne
Amherst College
Beneski Museum of Natural History

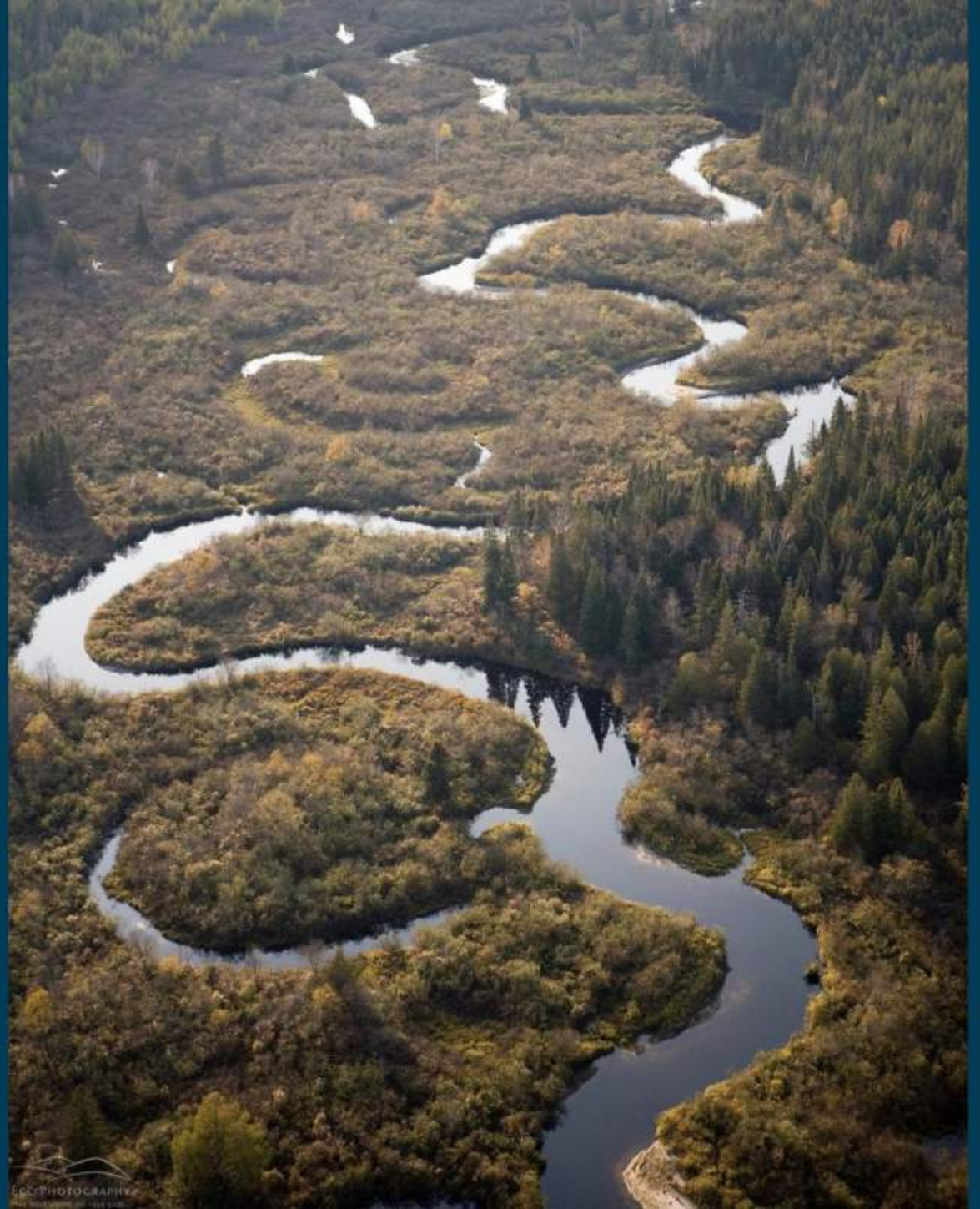
Geology



Watershed

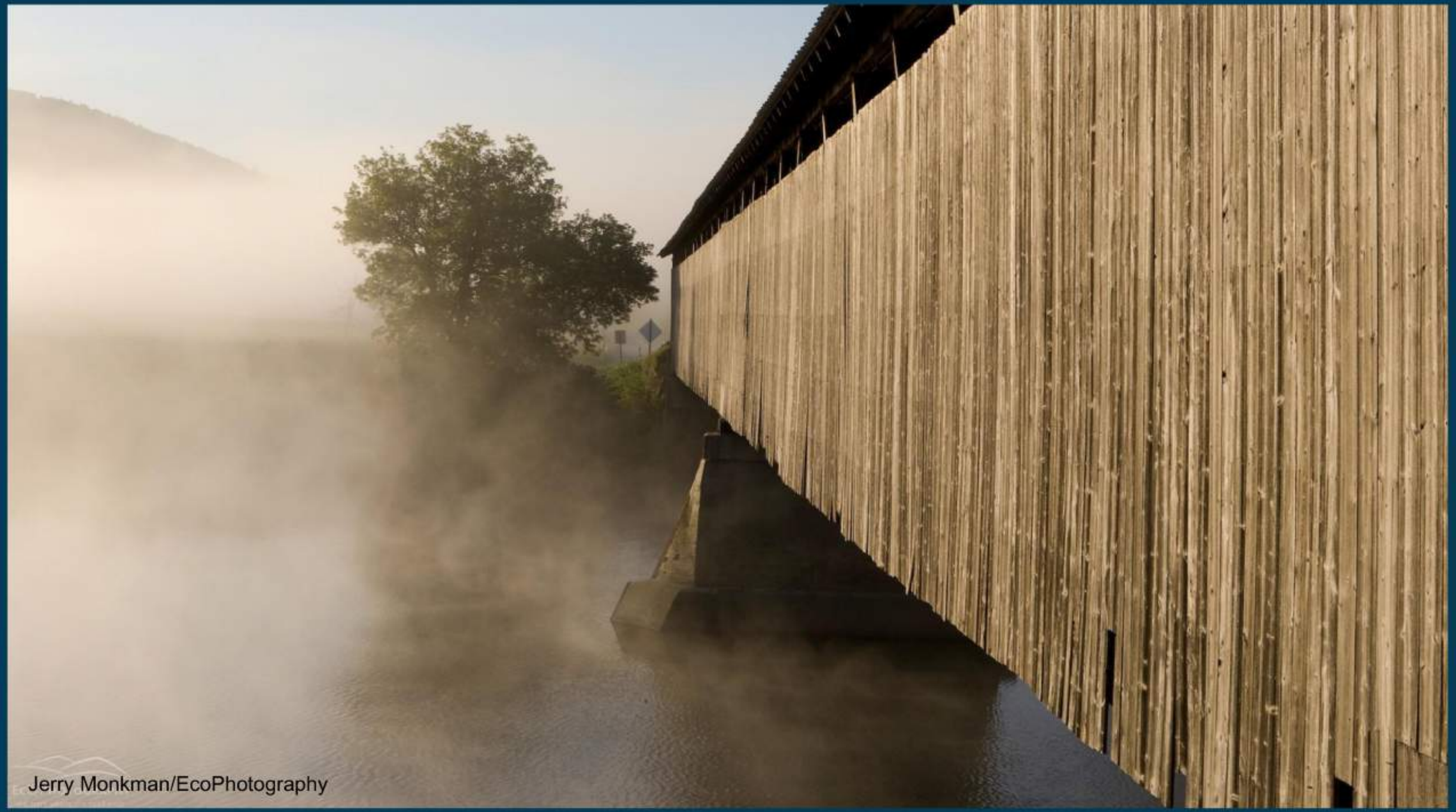


Aerial view of the Nulhegan River, Ferdinand, VT



Jerry Monkman/EcoPhotography

THE MOUNT ORNE COVERED BRIDGE SPANS THE CONNECTICUT RIVER BETWEEN LUNENBURG, VERMONT AND LANCASTER, NEW HAMPSHIRE.



THE CONNECTICUT RIVER FLOWS THROUGH FARMLAND IN NEWBURY, VERMONT AND HAVERHILL, NEW HAMPSHIRE.

THE WHITE RIVER AT SUNSET IN HARTFORD, VERMONT. CONNECTICUT RIVER TRIBUTARY.

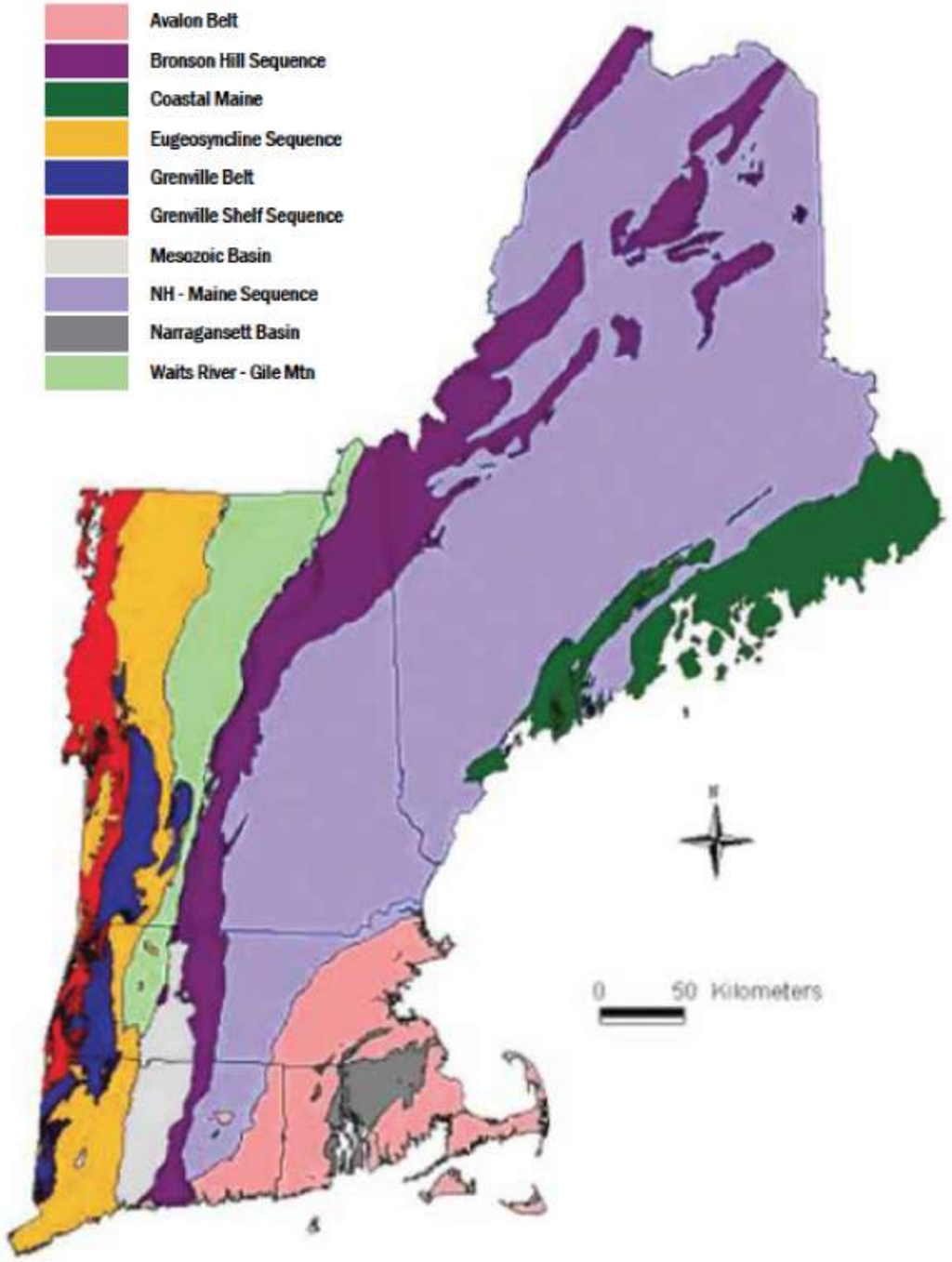
THE CONNECTICUT RIVER IN HARTLAND, VERMONT.

Jerry Monkman/EcoPhotography

THE WINDSOR–CORNISH COVERED BRIDGE SPANS THE CONNECTICUT RIVER BETWEEN WINDSOR, VERMONT AND CORNISH, NEW HAMPSHIRE.

Jerry Monkman/EcoPhotography

Let’s go back in time



Geology

One Billion Years Ago: Proto North America

Grenville mountain building event

450 Million Years Ago: Iapetus (Japan Like – Bronson Hill)

Taconic Mountain building Event

375 Million Years Ago: Avalonia

Acadian mountain building event

300 Million Years Ago (South Appalachians)

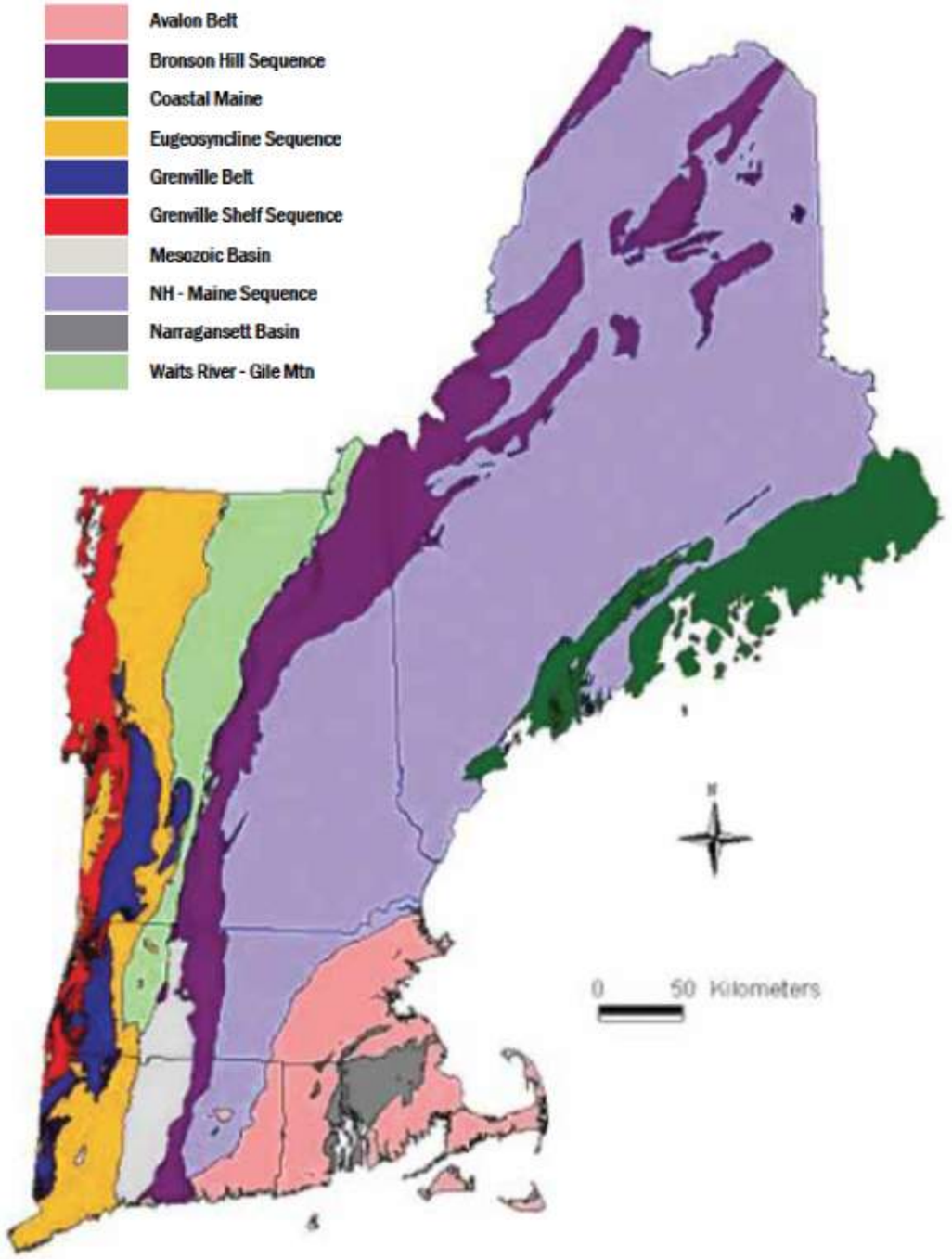
Alleghenian Mountain Building Event

250 Million Years Ago: Newark

Pangea “all Lands” hung together 50 Million Years

5 Major events that shaped the valley & watershed

1. 540 –400 MYA Shallow Inland Seas
2. 450 –280 MYA Mountain Building
3. 220 – 170 MYA Rifting
4. 170 MYA – 21,000 YA Erosion
5. 13,000 – Present – The Valley today



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540 –400 MYA Shallow Inland Seas

Shallow sea life today and evidence from the fossil past

Sea Stars

Sponges

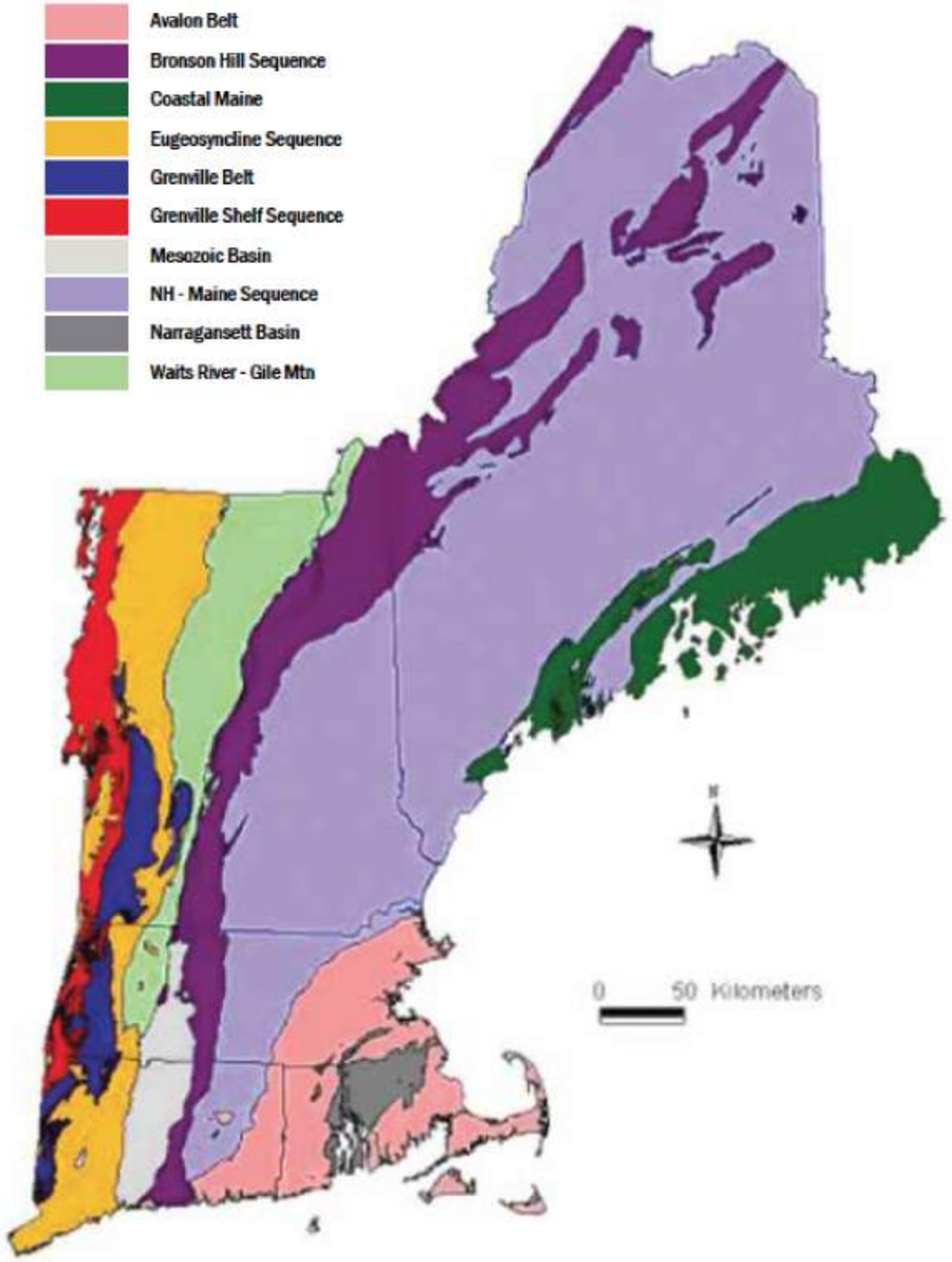
Shelled Creatures

Close up of our Shallow Sea

540 -400 MYA Picture from the past

Crinoids

Coral



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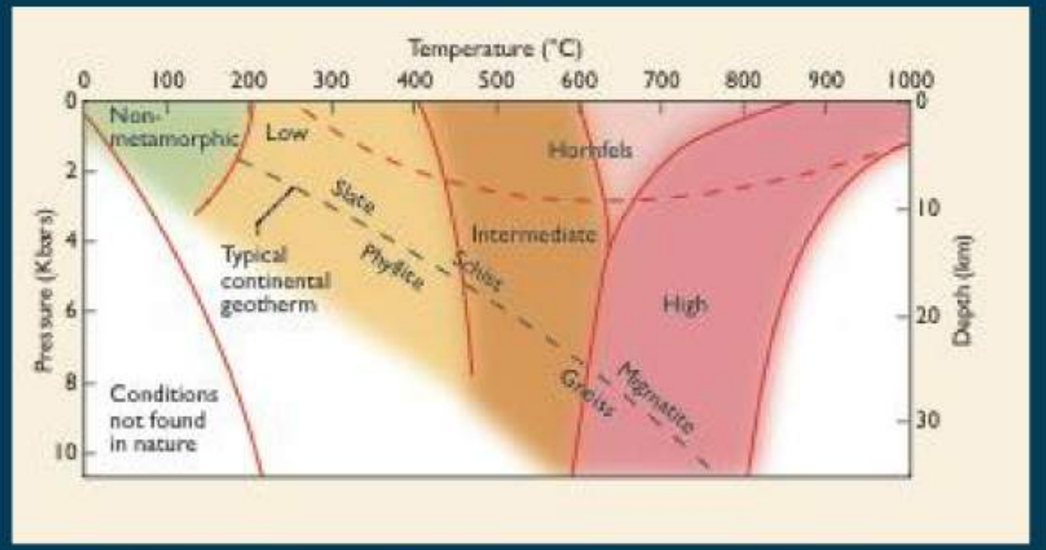
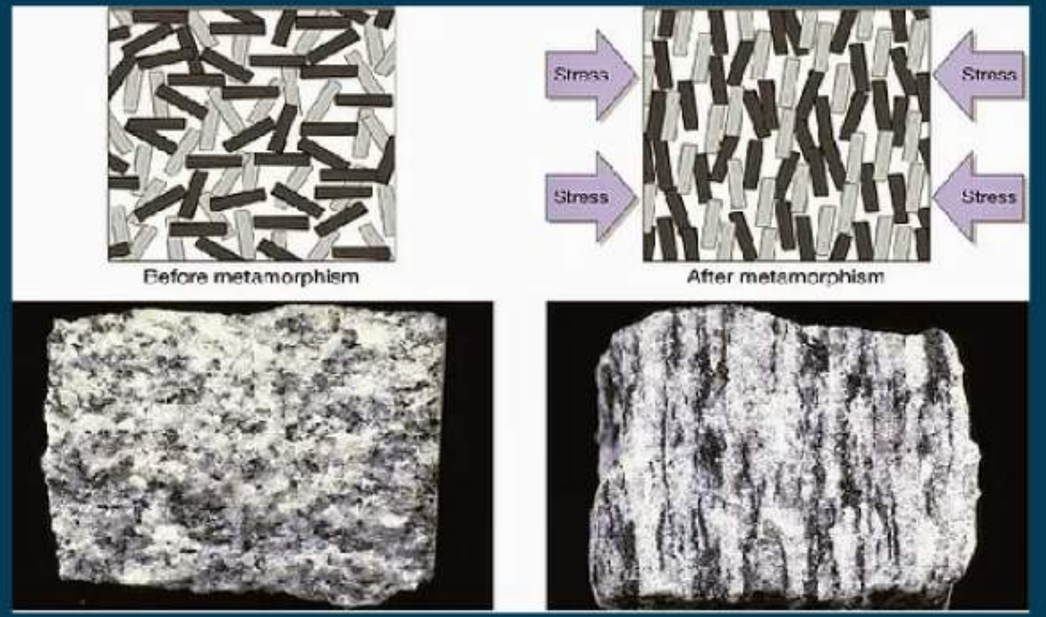
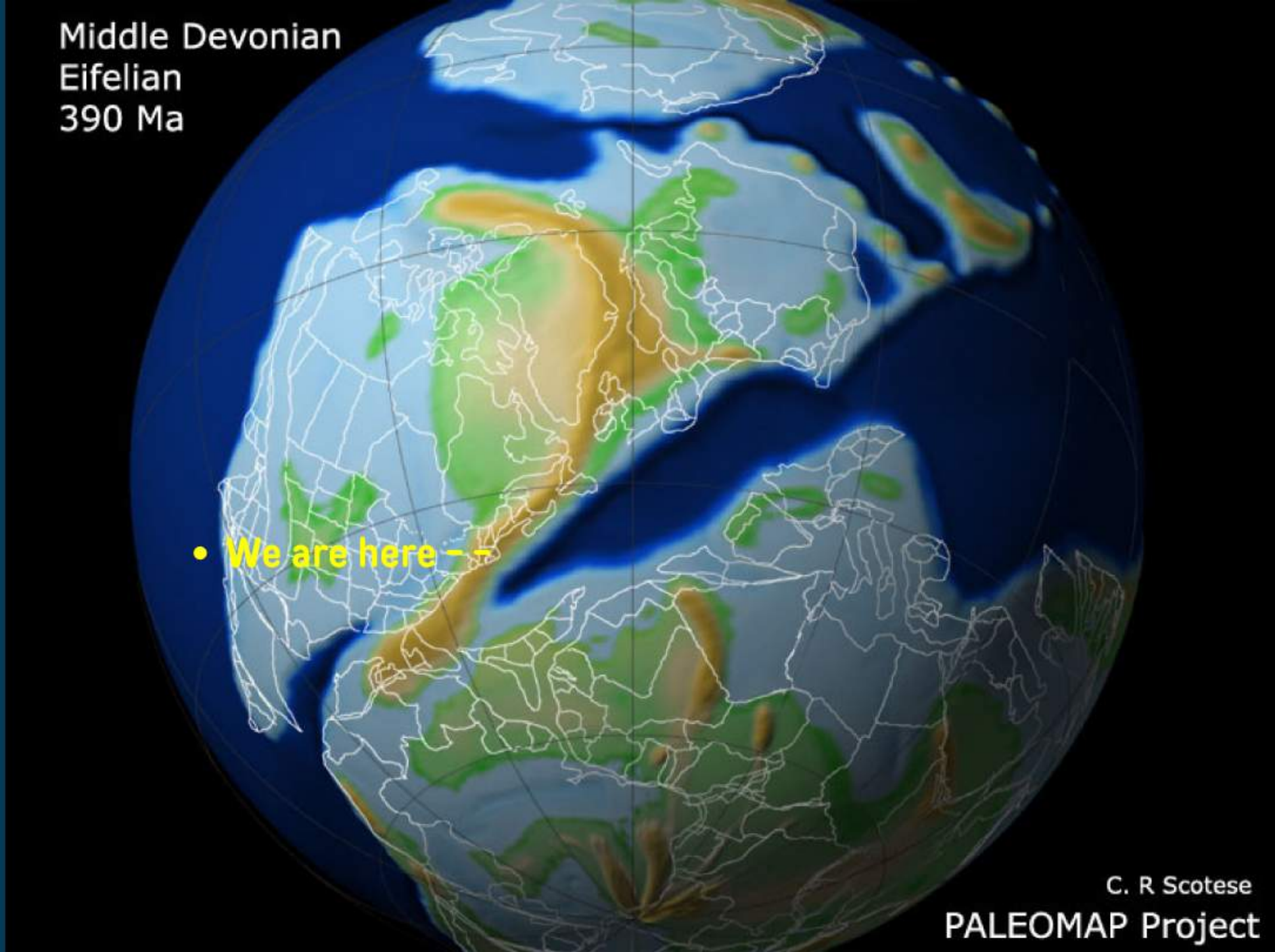
450 – 280 MYA Mountain Building





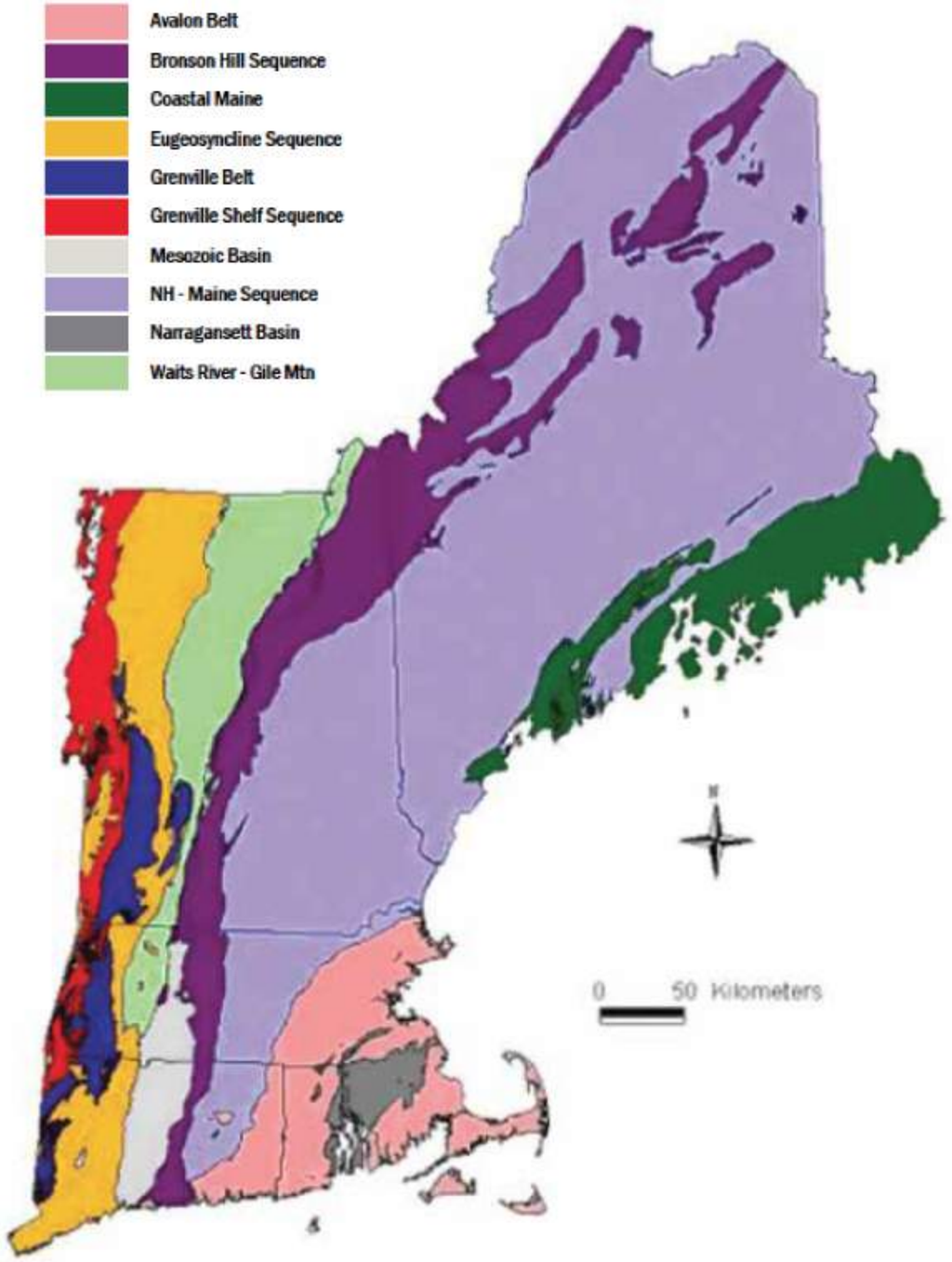
Formation of Pangea

(Pangaea)



Appalachians including

- Green Mountains
- Catskills
- White Mountains
- Berkshires
- Poconos
- Mahoocucs
- Taconics
- Hudson Highlands



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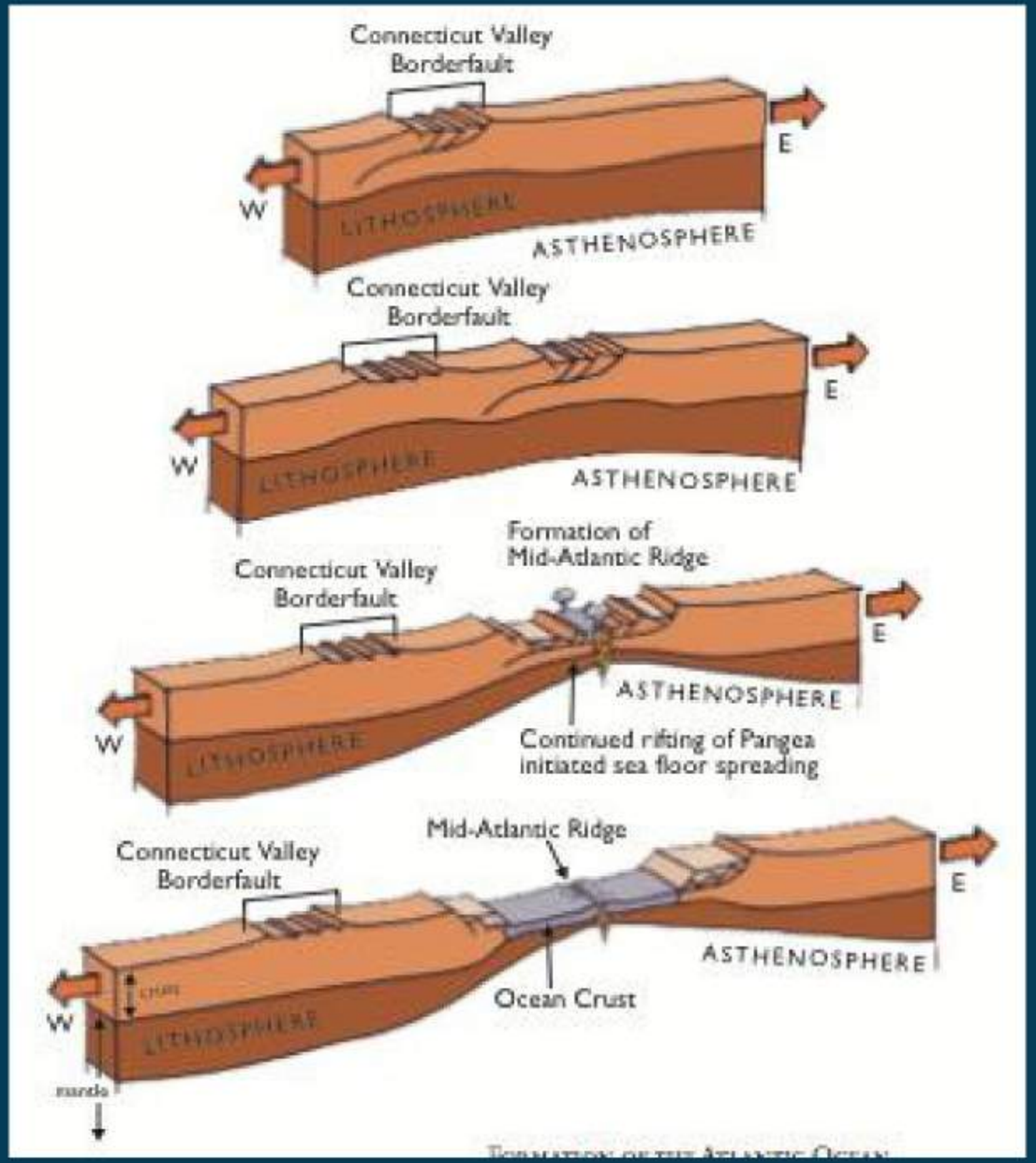
220 – 170 MYA
Rifting

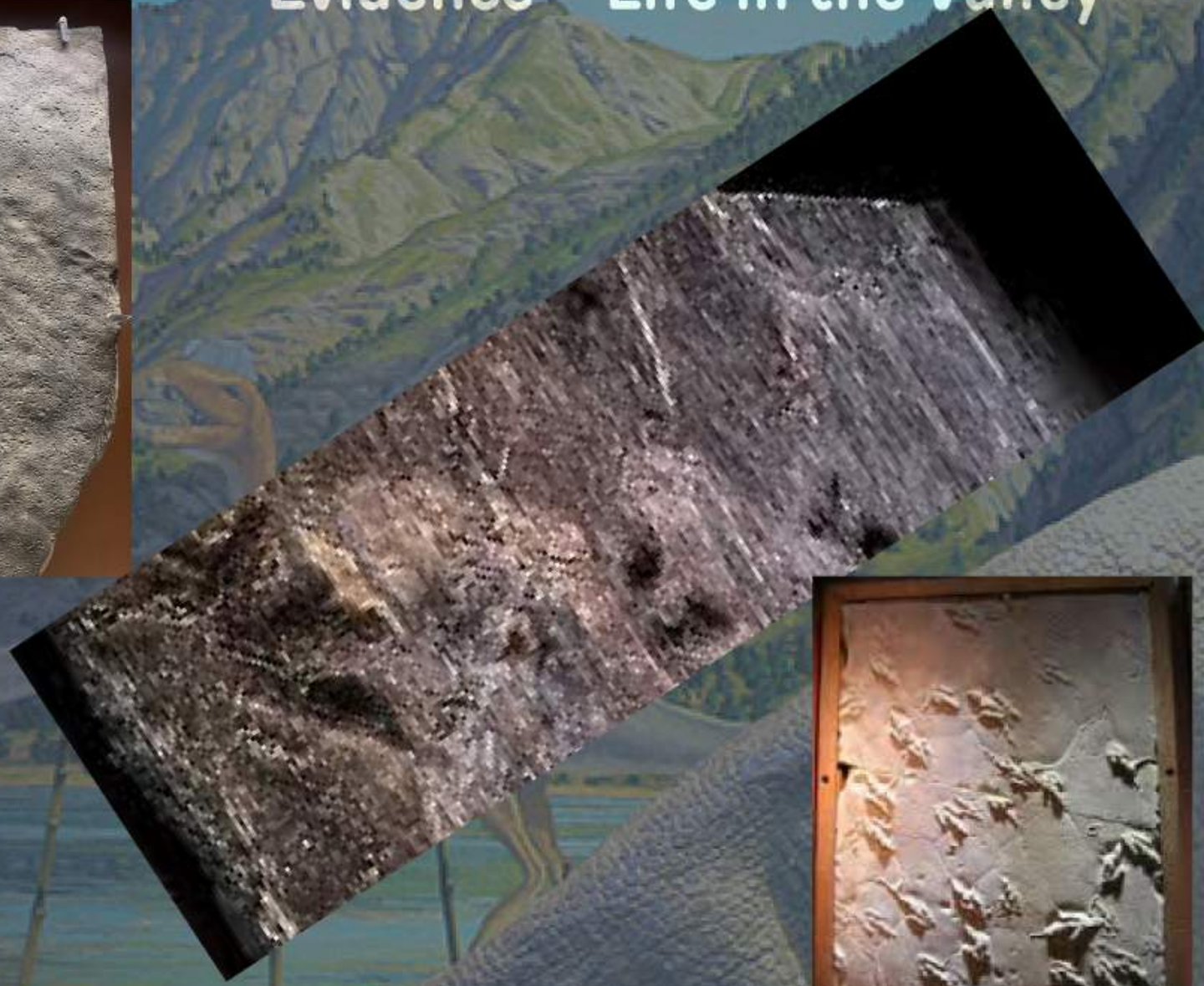
Rifting: Creation of the Connecticut River Valley



Above – the valley during a volcanic fissure event.
Below – the valley as things settle down a bit & life takes hold

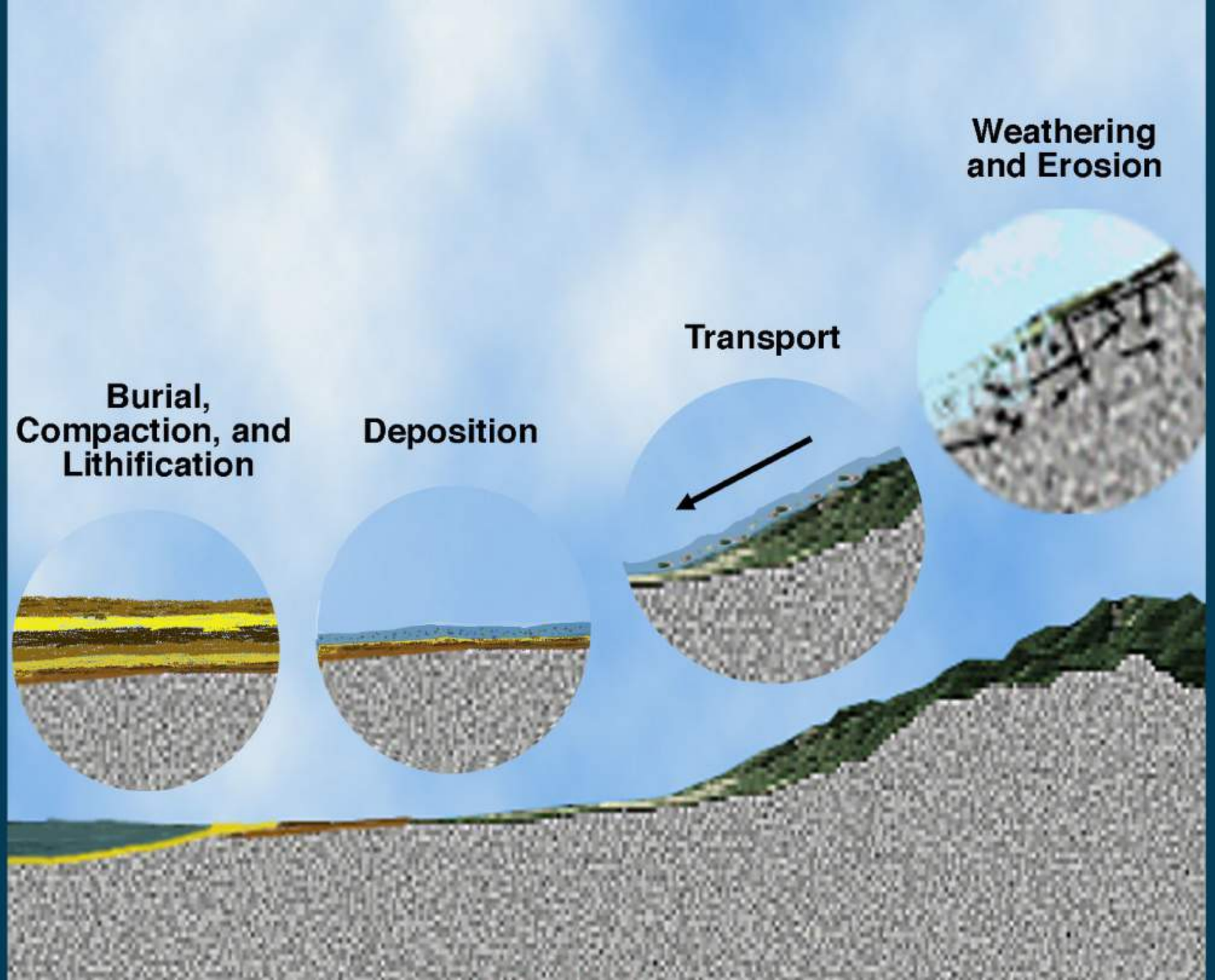
Evidence – Ancient Life in the Valley

Evidence – Life in the Valley

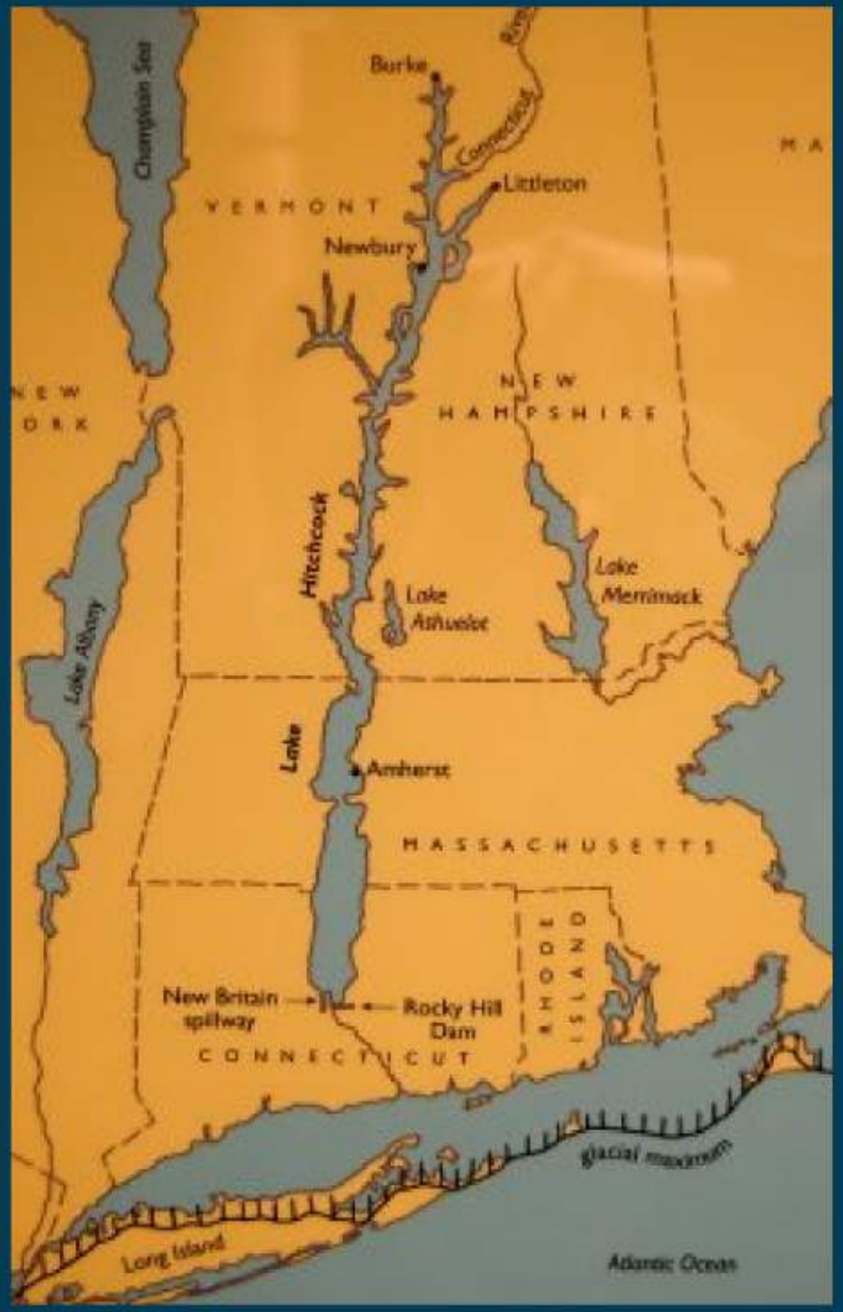


170MYA – 21,000 YA Erosion

Process of Weathering and Erosion

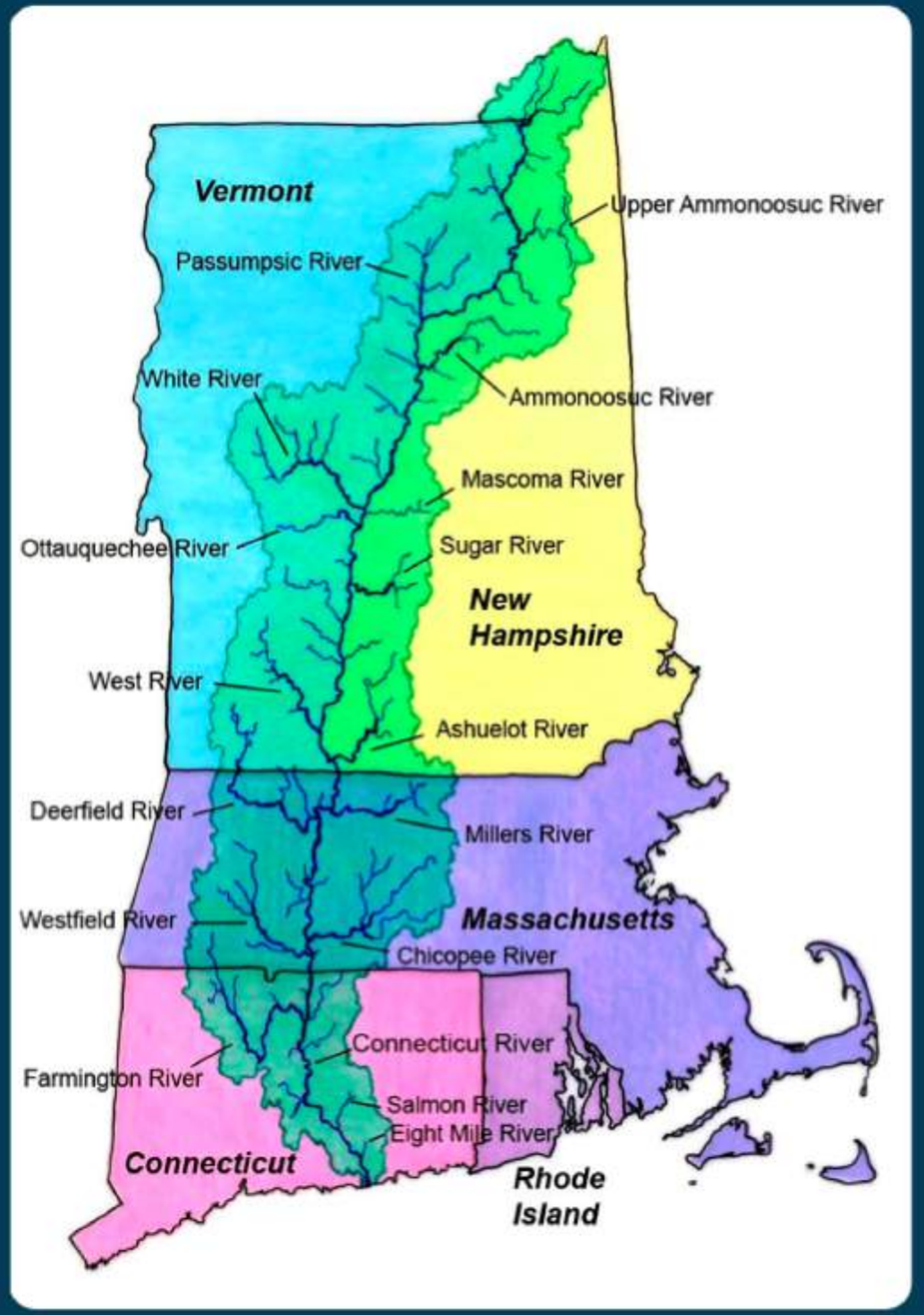


Glacial Lake Hitchcock ~15,000 years ago

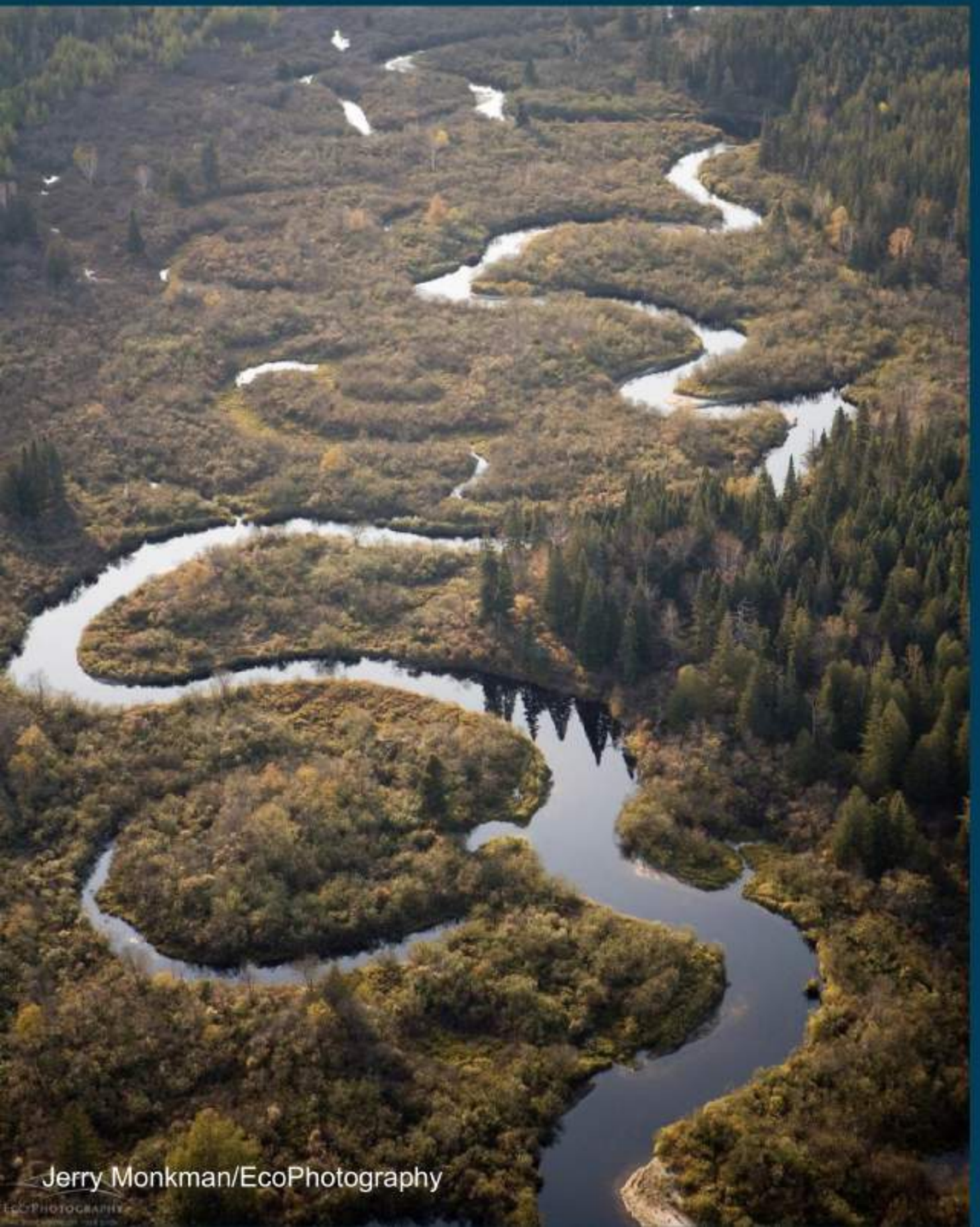


The Oxbow of the Connecticut River

Connecticut River Valley Watershed TODAY



Connecticut River near Stewartstown



AERIAL VIEW OF THE NULHEGAN RIVER IN FERDINAND, VERMONT. Tributary to the CT River about 20 miles south of Stewardstown

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THE WINDSOR-CORNISH COVERED BRIDGE SPANS THE CONNECTICUT RIVER BETWEEN WINDSOR, VERMONT AND CORNISH, NEW HAMPSHIRE.

At 460 feet is the longest remaining historic covered bridge in the United States.

Jerry Monkman/EcoPhotography

View from Bellows Falls kayak, canoe, and fish access on Connecticut River

Large archeological sites occur throughout the valley on upper and lower terraces as well as near tributaries' confluences with the Connecticut. One site of particular interest which is listed on the National Register of Historic Places, are rock engravings of numerous faces at Bellows Falls, VT, settled by Native Americans around 800 A.D.

CONNECTICUT RIVER AT NORTHFIELD, MA

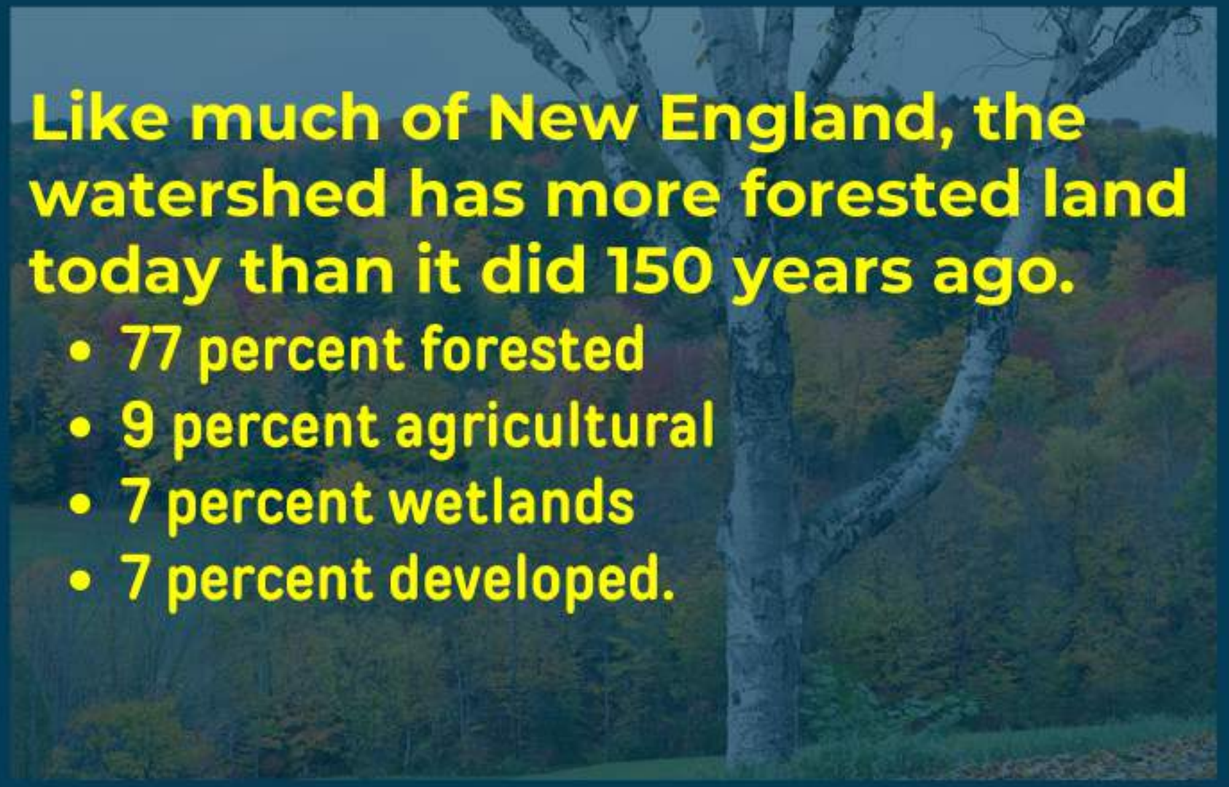
CONNECTICUT RIVER AT SPRINGFIELD, MA

CONNECTICUT RIVER AT CROMWELL CT

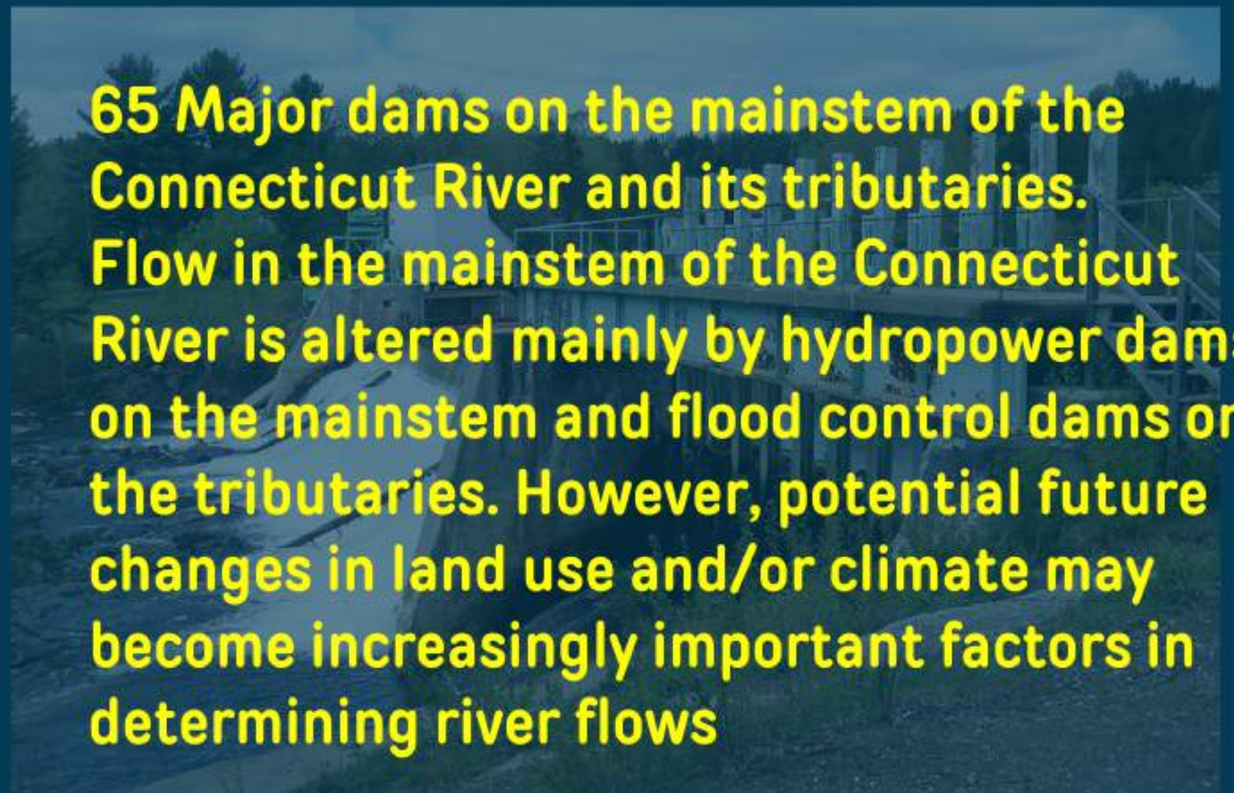

LOWER CONNECTICUT RIVER ESTUARY

Present day fluvial and riparian environments

Stream channels and fluvial landforms are influenced by the complex interplay among regional geology, climate, topographic gradient, river history, drainage basin hydrology, and sediment load.

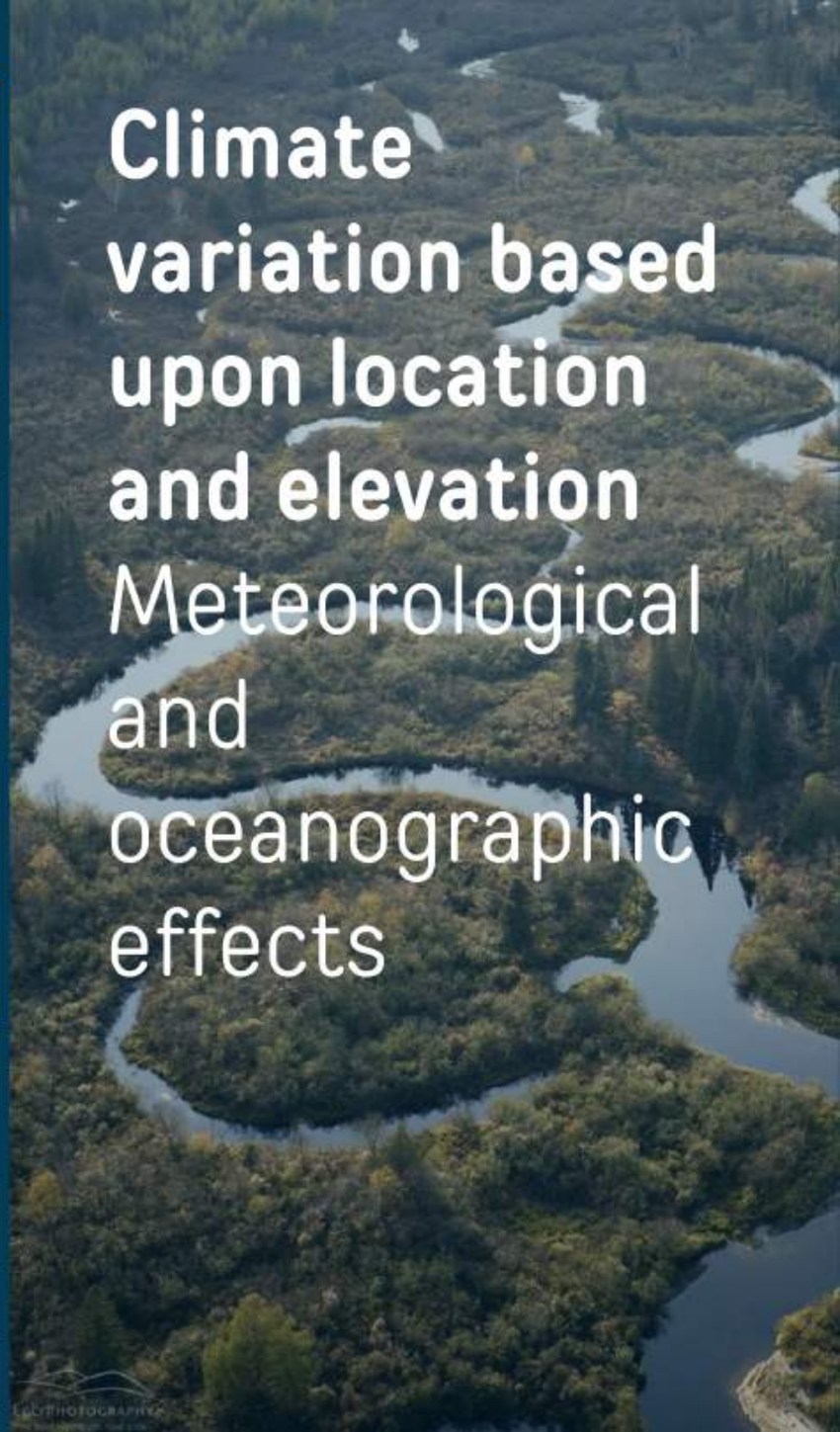


Connecticut River near Canaan, Vt. and Stewartson, N.H *Alexius Horatius*



Mean Temp ºF	Vermont/New Hampshire and Berkshire Hills Area of Massachusetts	State of Connecticut and Connecticut Valley area of Massachusetts	Difference
Winter	19	28	9
Spring	41	44	3
Summer	65	68	3
Fall	47	52	5
Annual	43	48	5

Mean Precipitation Inches	Vermont/New Hampshire and Berkshire Hills Area of Massachusetts	State of Connecticut and Connecticut Valley area of Massachusetts	Difference
Winter	8.9	11	2.1
Spring	9.5	11.1	1.6
Summer	10.9	11.1	0.2
Fall	10.4	11.0	0.6
Annual	39.7	44.2	4.5



Climate variation based upon location and elevation

Meteorological and oceanographic effects

Other	**Vermont/New Hampshire and Berkshire Hills Area of Massachusetts**	**State of Connecticut and Connecticut Valley area of Massachusetts**	**Difference**
Mean Annual snowfall Inches	80	45	35
Aver. Length of Spring Season Weeks	5	9	4
Aver. Length of Fall Season Weeks	6	9	3
Days per year with temps of 32º or below.	180	26	154
Days per year with temps of 0º or below	12	3	9
Average length of frost-free season days	120	185	65

Take Aways.....

Today (Deforestation 1636–1900) we have more forested land than we did 150 years ago.

How do we continue that trend?

Today we have 65 major dams along the Connecticut River.

How do we balance safety, sustainability and the ecosystem?

200 Million year ago the climate here was quite different as were the trigger events.

How do we respond to present day processes?

Beneski Museum of Natural History
at Amherst College

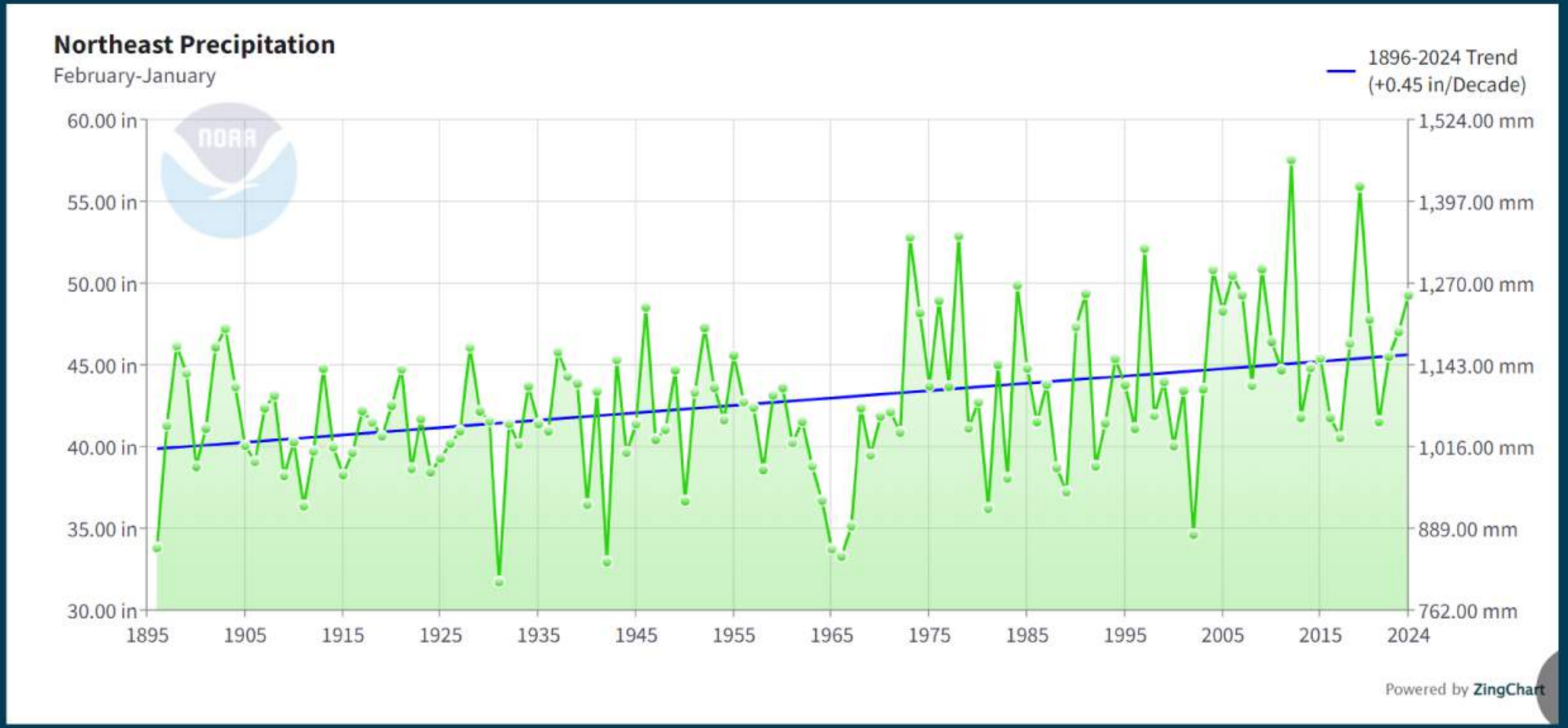
Human Impacts

"Vernon was an ambitious facility that required raising the river 30 feet, flooding all or parts of 150 farms."

Sediment deposited at mouth of West River

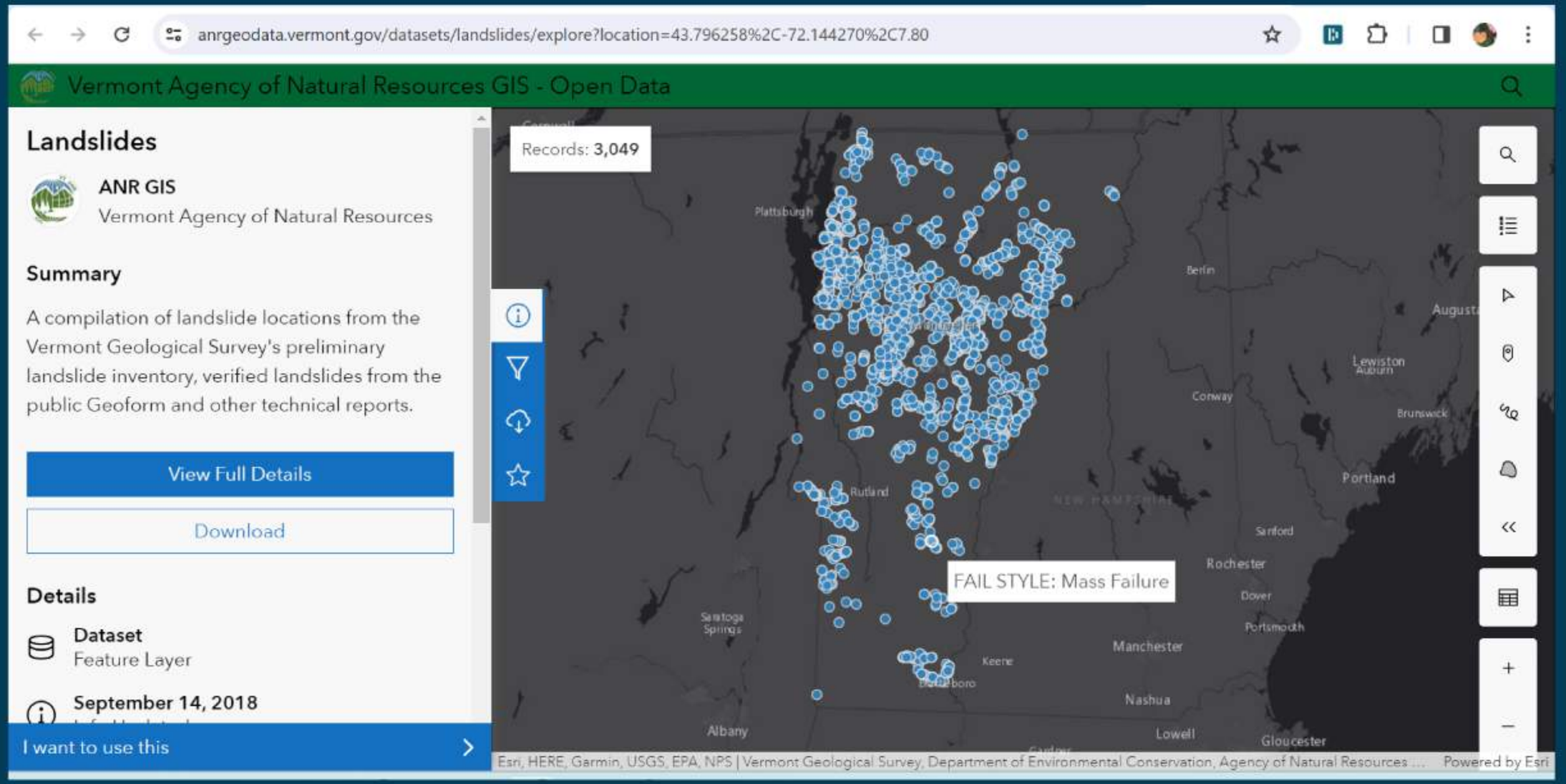

Erosion in Claremont

Precipitation is Increasing



https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/regional/time-series/

Mass Failures & Landslides



Mass Failures & Landslides

Natural Resource Projects


Before


After

Presenter Contacts

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Q & A