

A satellite-style map of the Great Lakes region in North America. The lakes are shown in dark blue and green, contrasting with the surrounding brown and tan land. The map is oriented vertically, with the top of the image showing the northern part of the region and the bottom showing the southern part. The text 'NMN Great Lakes EMAP' is overlaid in the top right corner.

NMN
Great Lakes
EMAP

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ORD/NHEERL/Mid-Continent Ecology Division

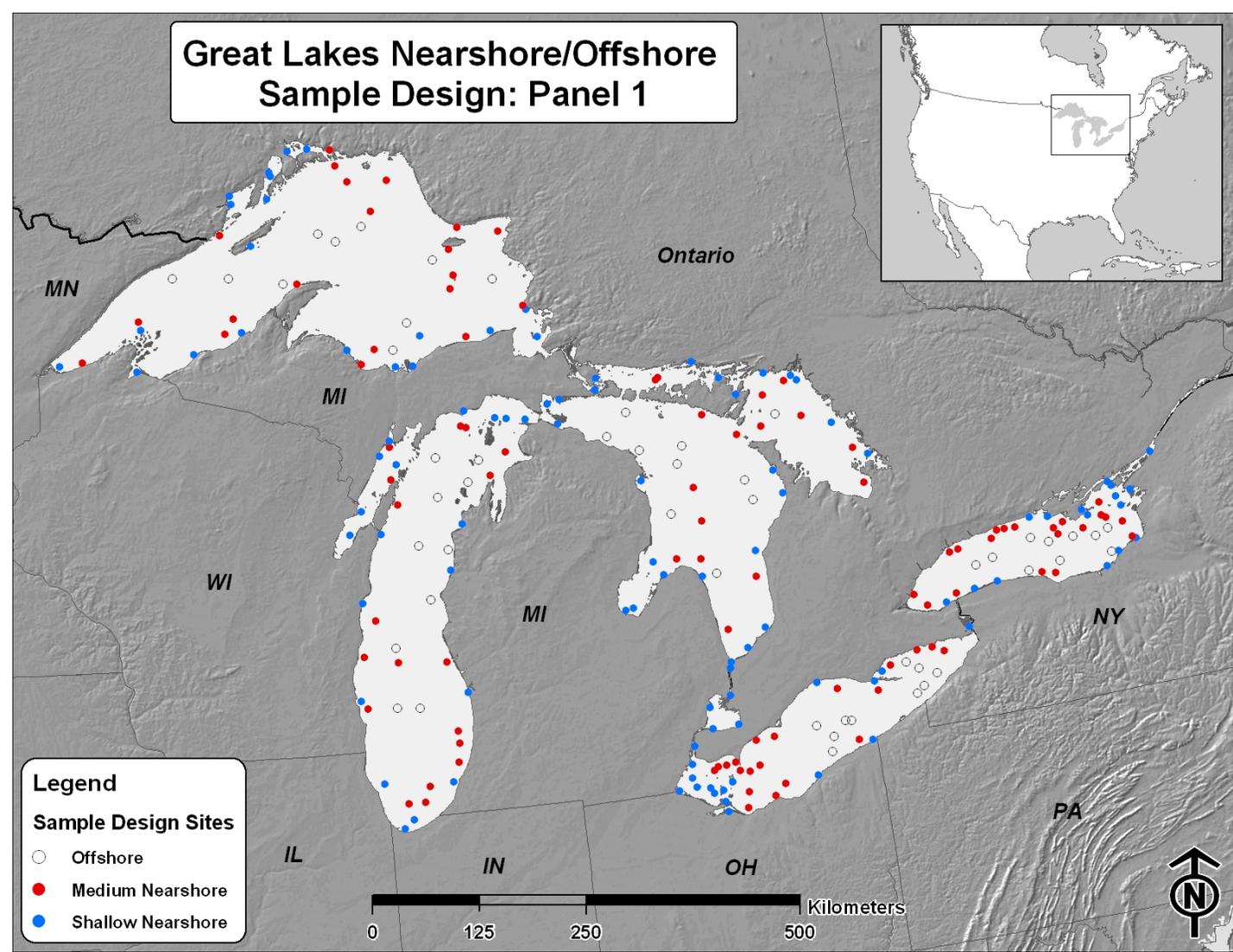
Duluth MN

NMN - National Monitoring Network Great Lakes

What is the condition of each of the Great Lakes and the Great Lakes as an IOOS region?

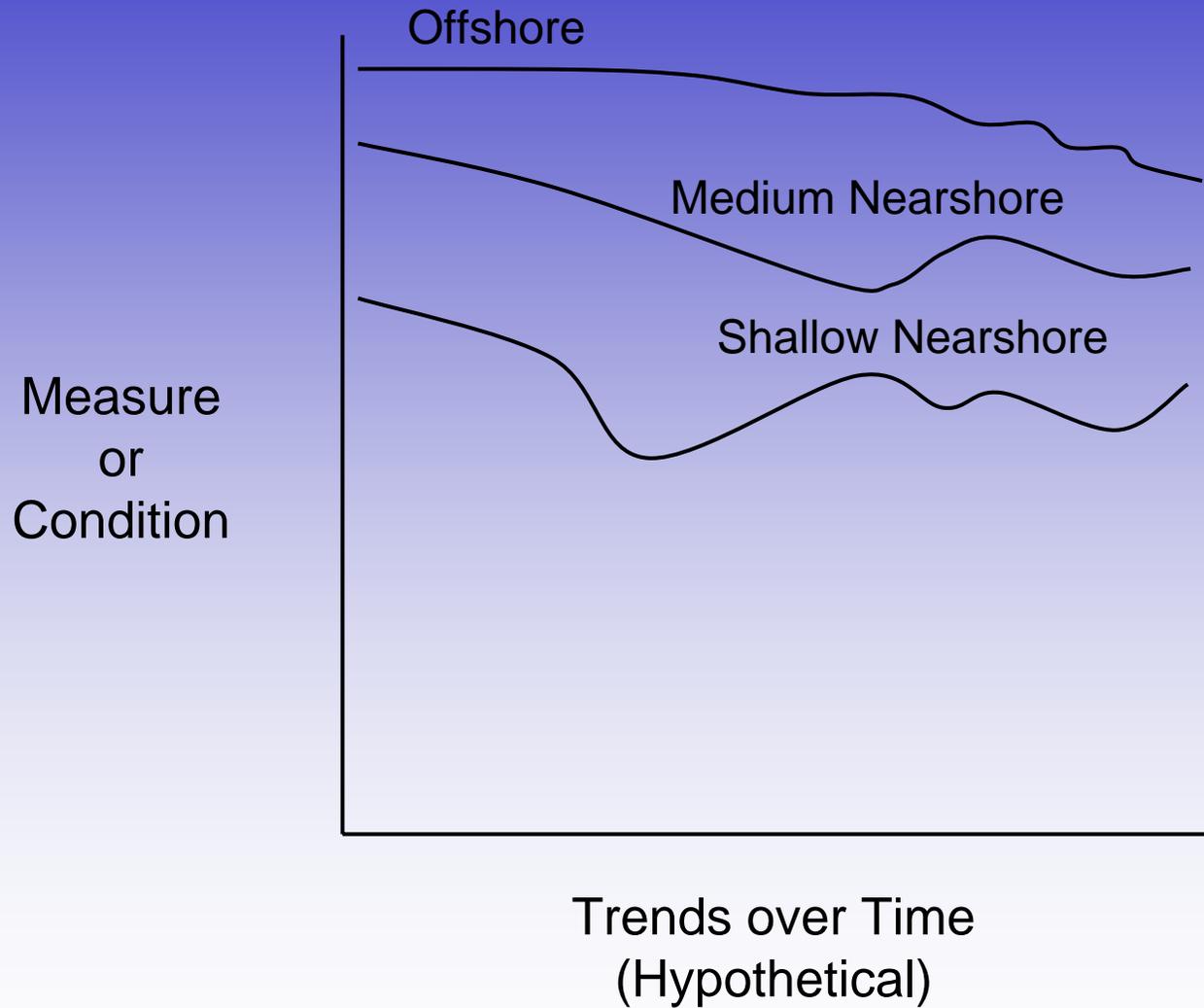
Are conditions changing over time? How do conditions differ spatially within the lakes?

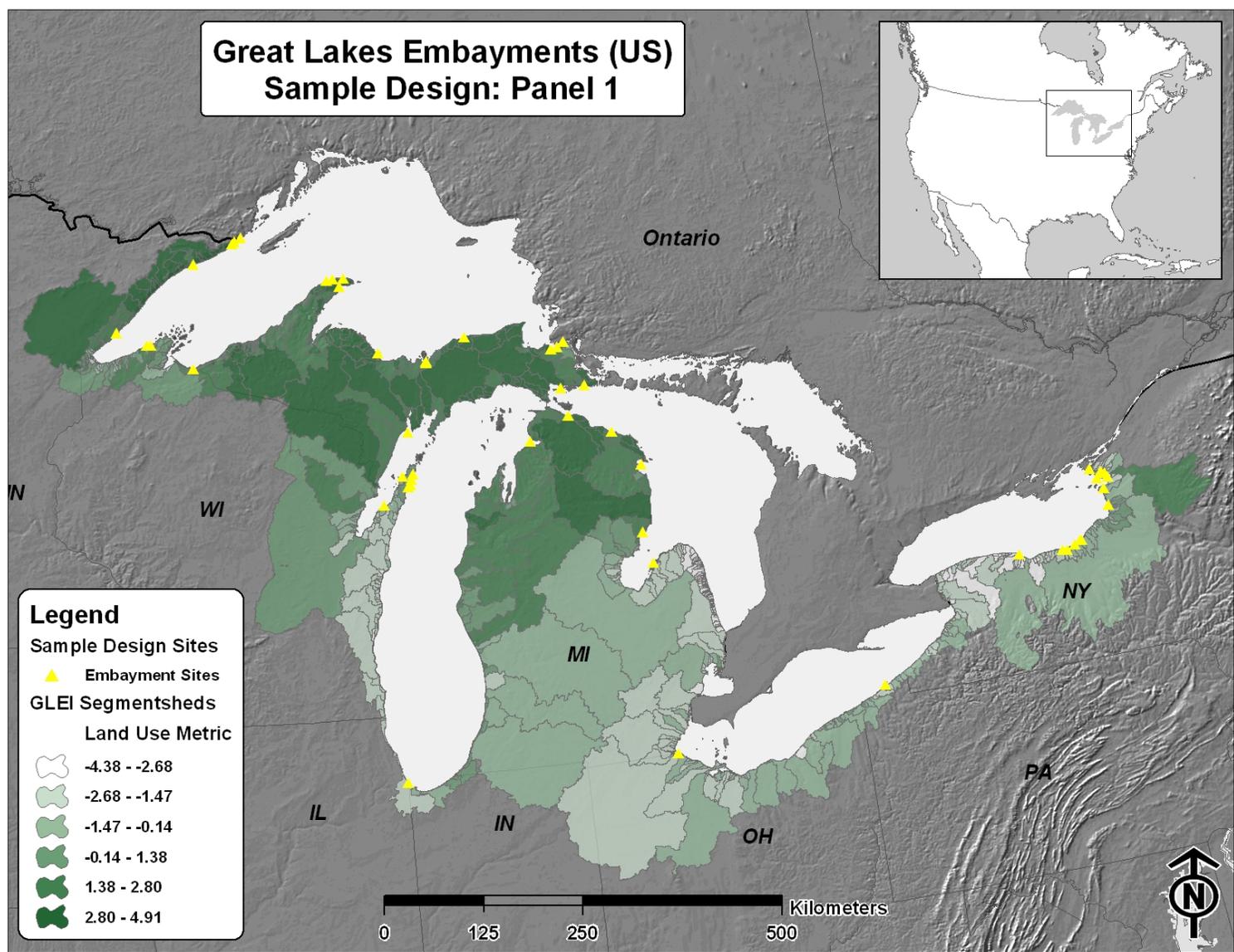
What is the condition of nearshore waters and embayments — coastal systems that are vulnerable to landscape stressors?



- Spatially balanced, Lakewide estimates (EMAP design)
- Recognizes ecological significance of depth
- Nearshore as explicit design component

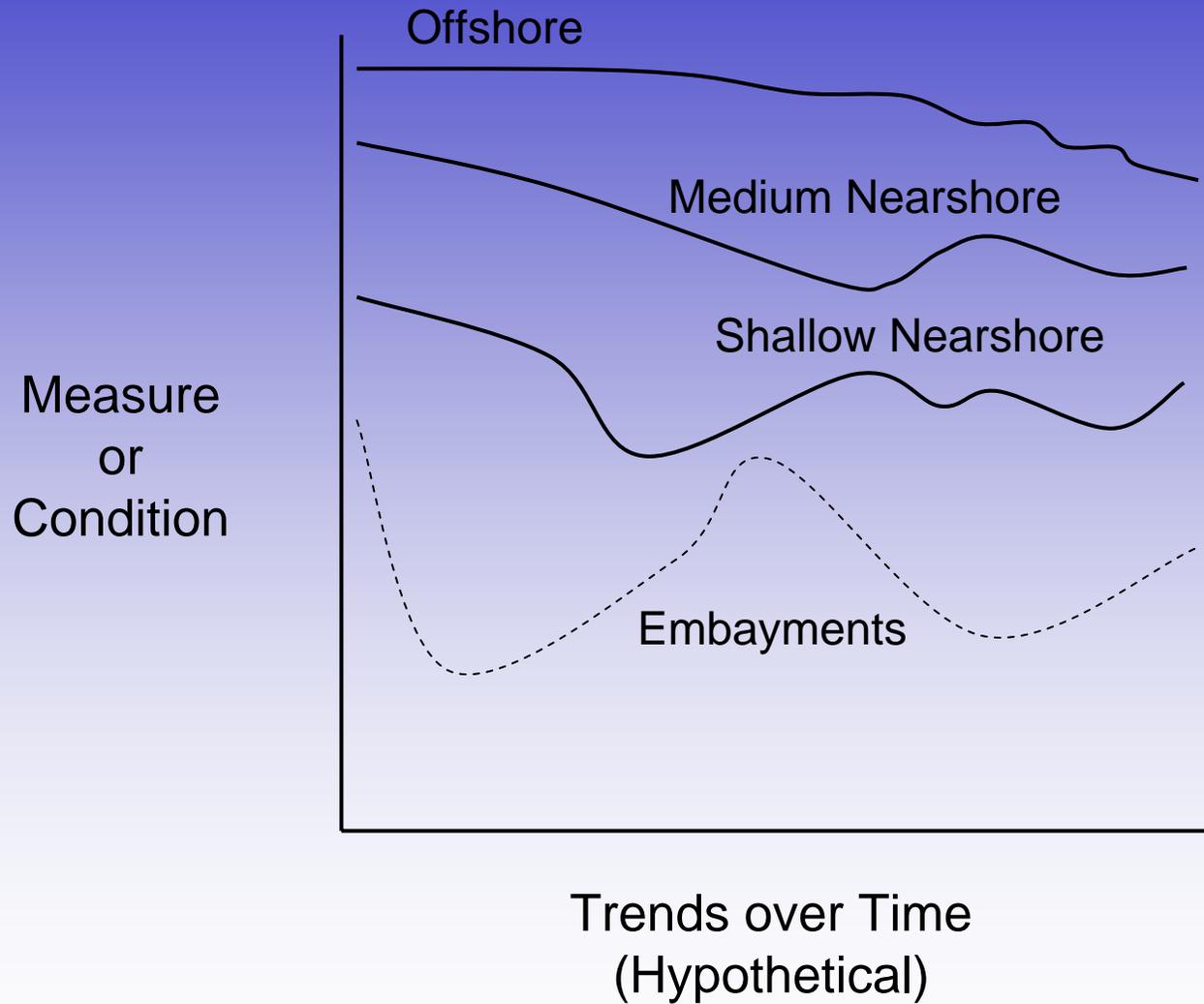
Integrated Lakewide Monitoring and Assessment





- Condition assessment - US coastline
- Landscape sentinel in the continuum to lake

Integrated Lakewide Monitoring and Assessment



Landscape Signal Across A Coastal Continuum

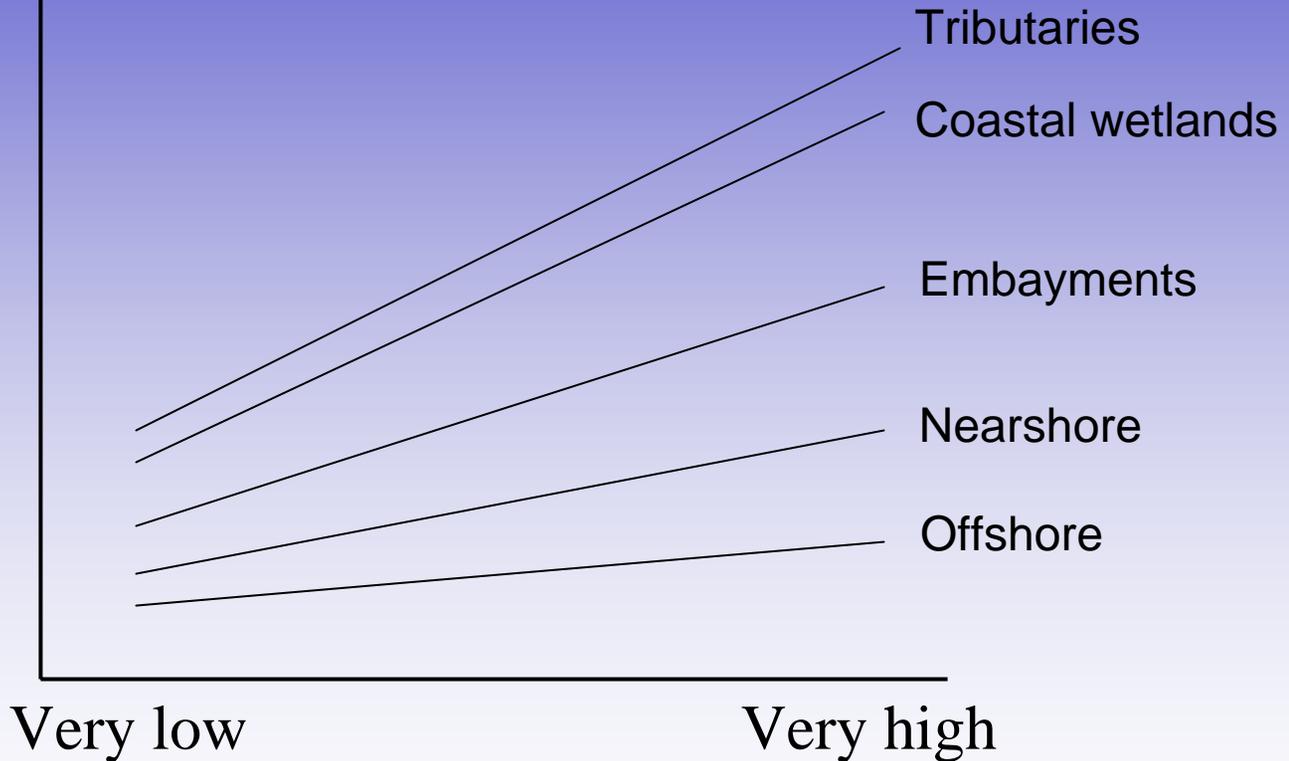
Patterns moving “downstream”

Decreasing Stressor Signal Strength (Concentrations)

Decreasing Slope of Enrichment

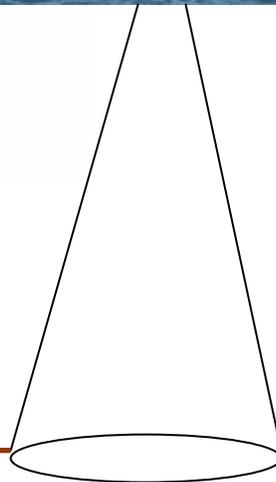
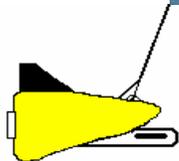
Decreasing Fidelity of Signal (weaker correlation, more variability)

Log (TP)
or other
WQ measure



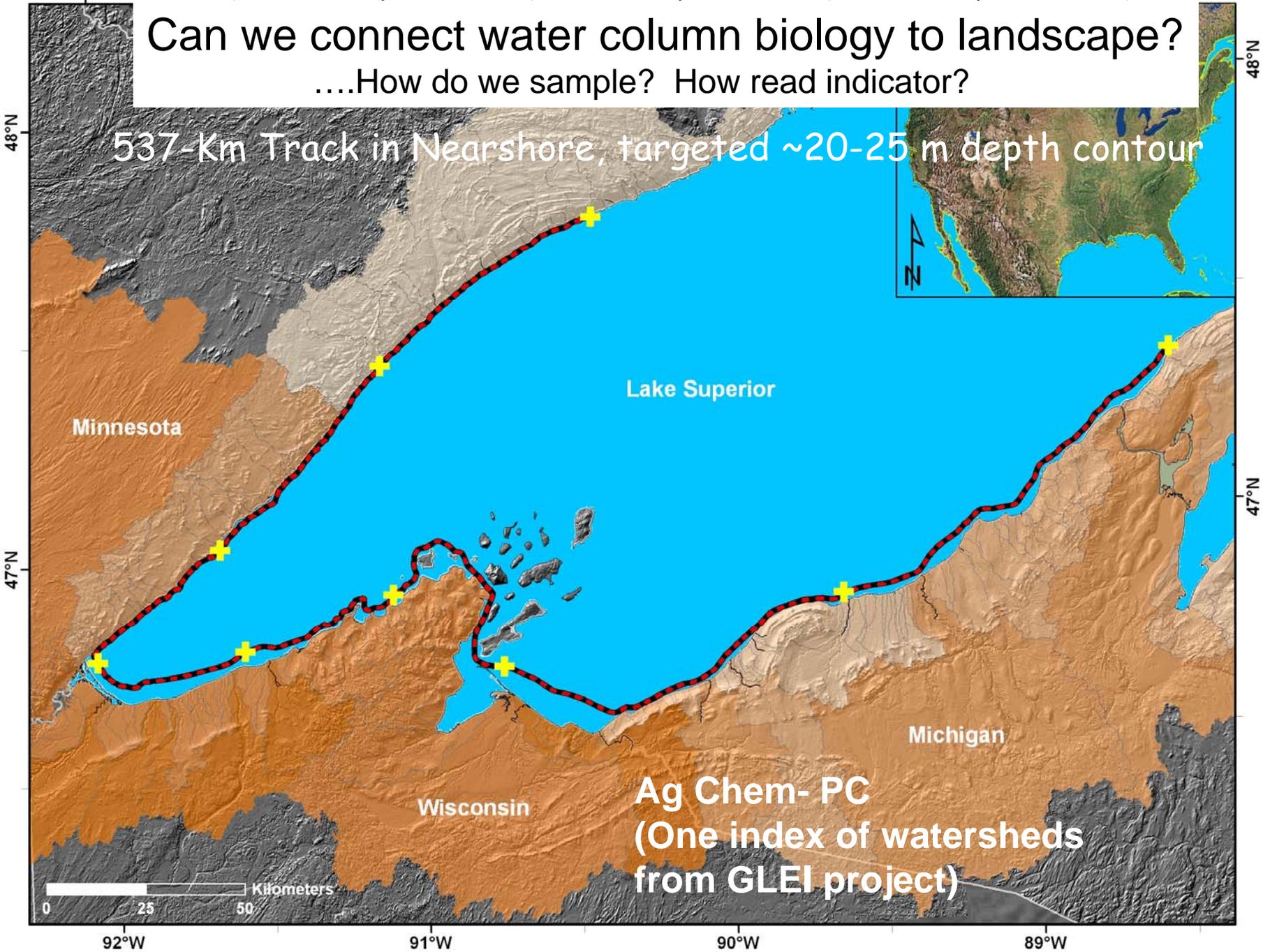
Landscape disturbance gradient
(Defined by GLEI project)

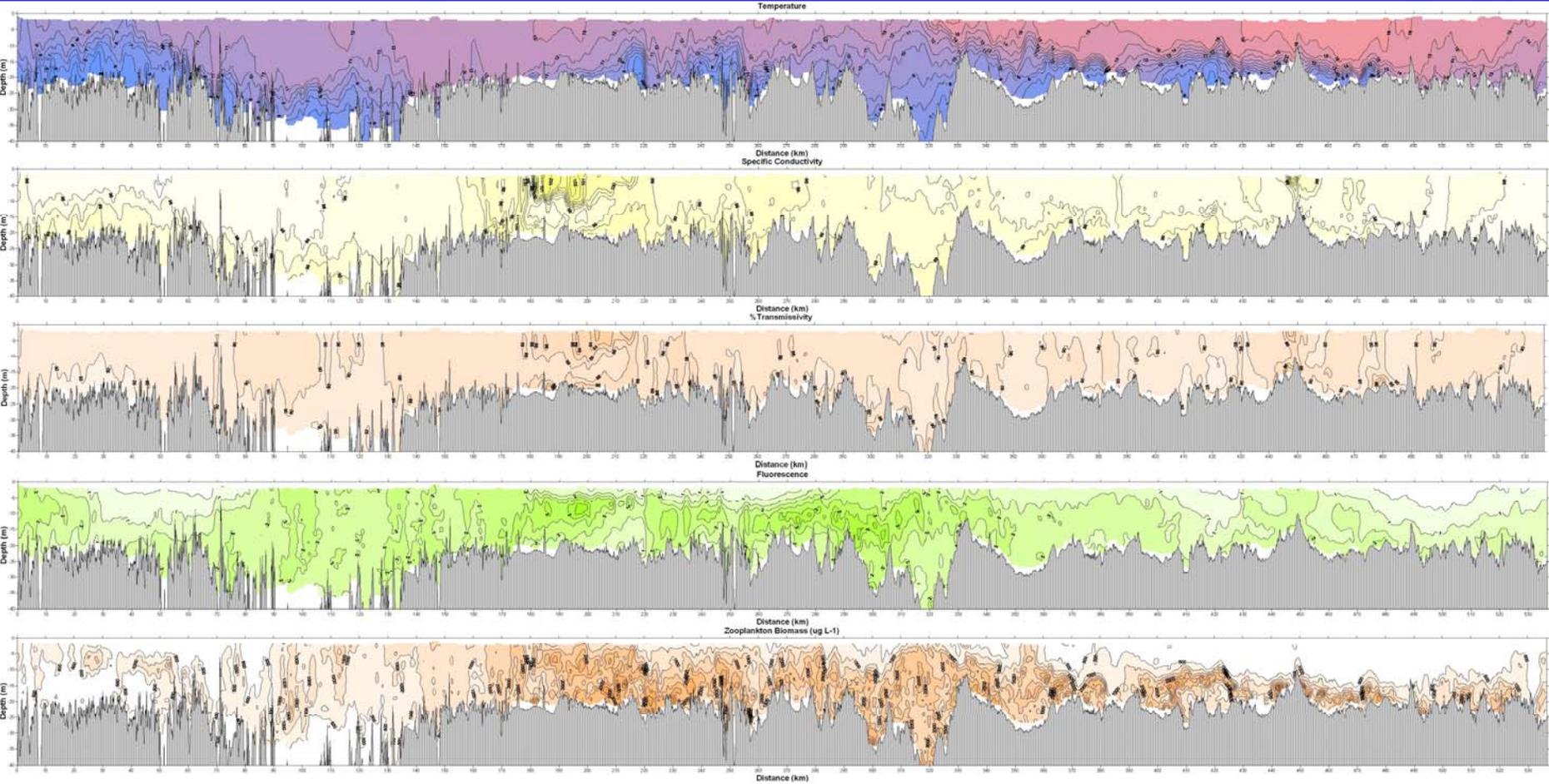
Searching for landscape signals in a noisy nearshore



Can we connect water column biology to landscape?How do we sample? How read indicator?

537-Km Track in Nearshore, targeted ~20-25 m depth contour





Duluth/Superior

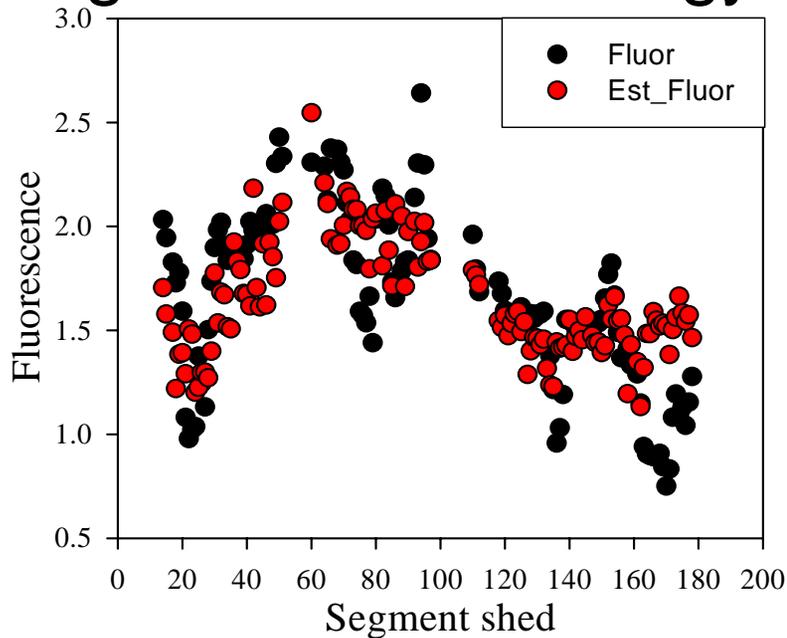
Bayfield WI

Ontonagon MI

An environmental 'CAT' scan with multiple sensors

From Yurista and Kelly

Connecting Nearshore Biology to Landscape



Raw

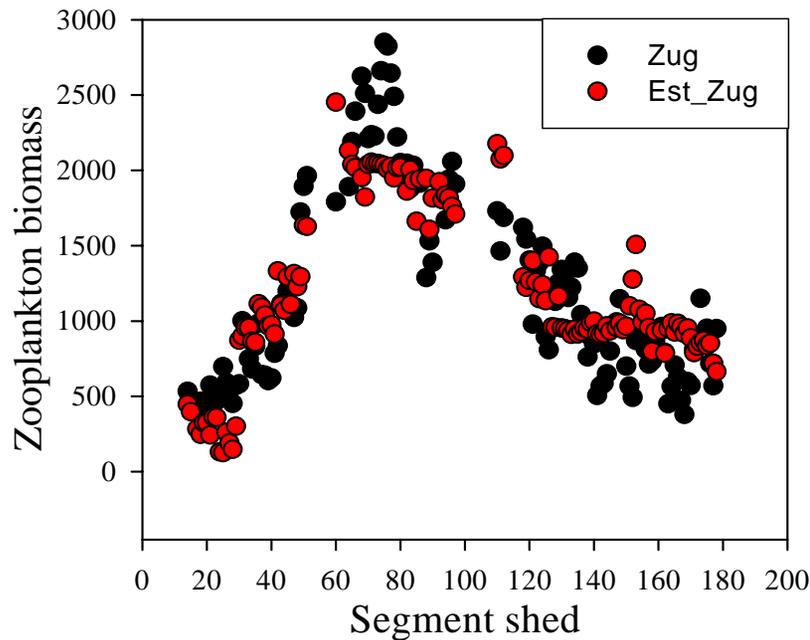
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CONST 2.278

AC 0.1014

PD 0.1028

SO -0.0373



Raw

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CONST 3691.2

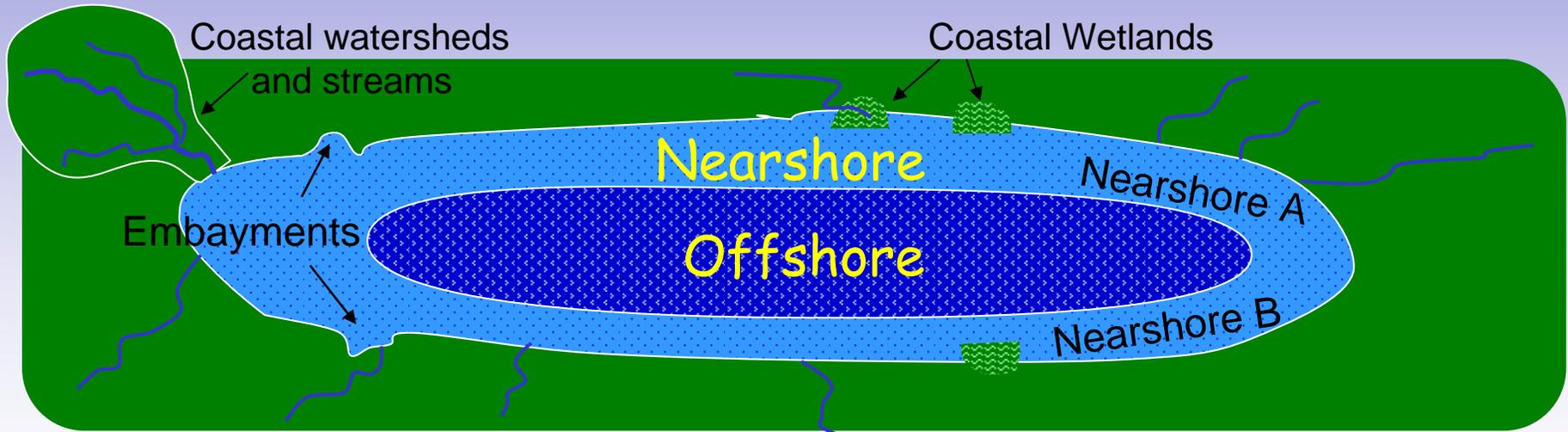
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AD 127.3616

SL 139.1

GREAT LAKES

Integrated Monitoring and Assessment...



...Including Coastal Systems