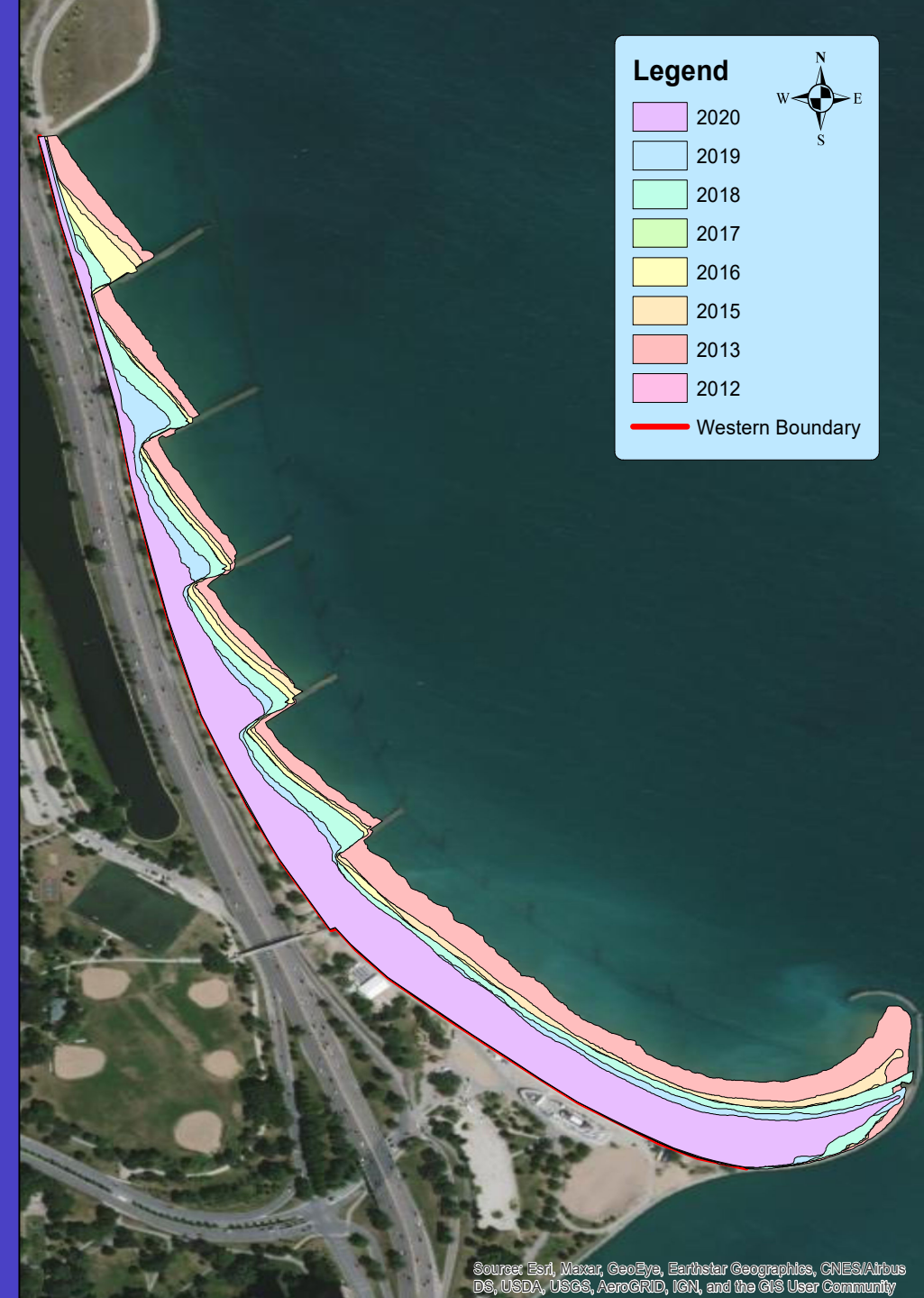


Using maps to study landscape change

By Maggie S.



About me



- From Chicago, Illinois
- I ran cross country and track in high school and college
- While studying science in high school and college, I found that I loved creative writing, and wanted to combine my interests!
- Including the perspective of humans and animals in my research now...
 - **Interviews, Imagery, and Observation**

My journey in science



- Went to college for environmental engineering, changed my major **7 times**, ended up studying environmental science
 - Physical environmental science= geography, geology, geomorphology
- Went to school away from home but always wanted to study problems related to Chicago
- Environmental Humanities= combining physical science, social science, creative writing!
 - **Stories** of landscape change



Background: Some Terms

- Longshore Drift
- Current
- Aerial Image
- LiDAR
- Salinity

Context: Lake Michigan

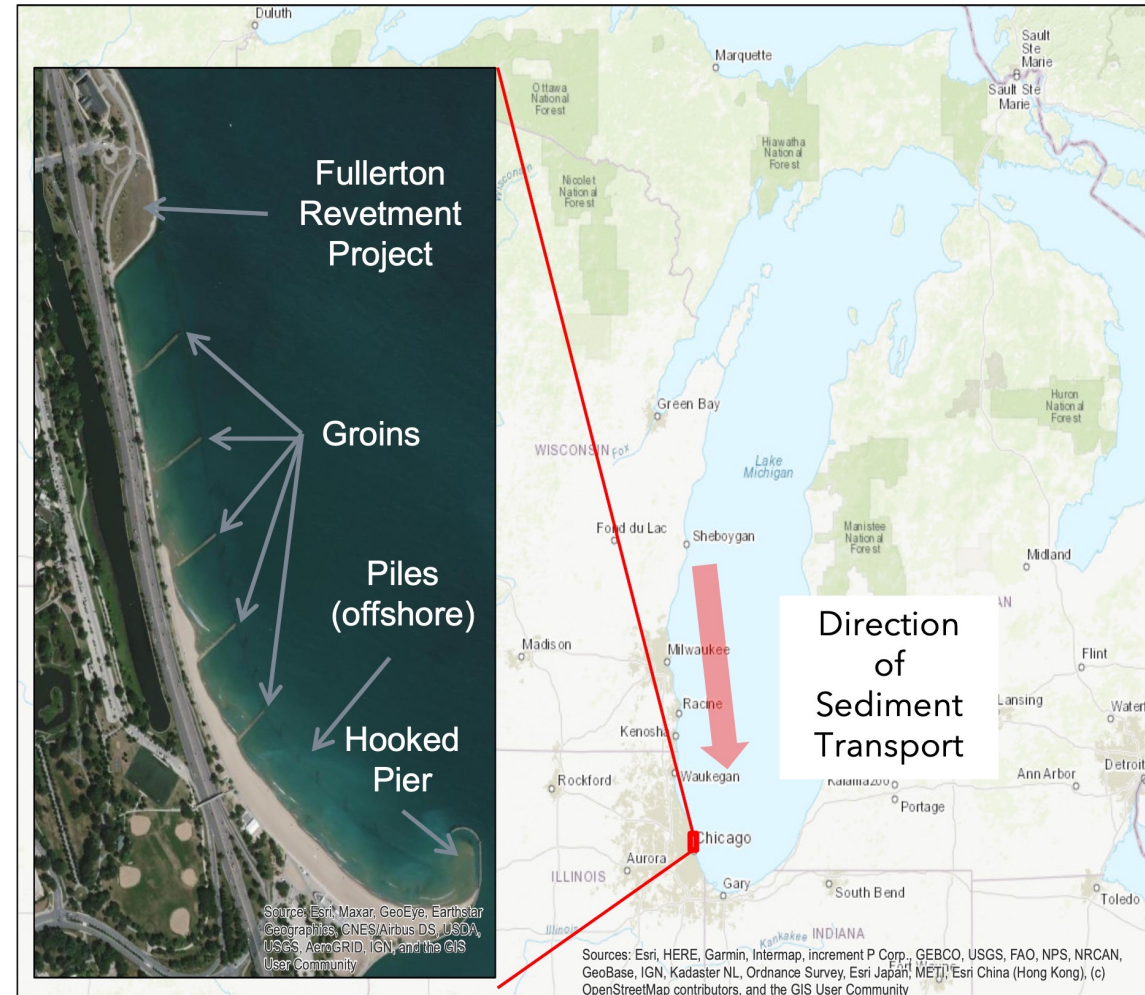


Great Salt Lake

Lake Michigan

Great Salt Lake	Both Lakes	Lake Michigan
Few species live in the water: Brine shrimp	Migratory birds depend on them!	Abundant fish and plant life
950 mi ² (1,600mi ² max) 4.3 mi ³	So big it can be difficult to see the other side	22,406 mi ² (same as max) 1,180 mi ³
River inputs have dams	Rivers flow into them	River inputs connect to ocean
Small waves, storms add significant area	Water added during storms	Impacted by tides and waves

The problem: North Avenue beach is shrinking! Why?



~2016



2021



On the ground pictures tell a story...

But not the full story



2009

Image USDA/FPAC/GE

Presentation title



2021

Image NOAA
Image © 2023 TerraMet

**look
from
above!**

Try it yourself!

- Use tracing paper to compare historic shorelines:
 1. Use the two red dots on each image to anchor your tracing paper: draw them in red.
 2. Outline the 2012 shore in PINK
 3. Outline the 2015 shore in YELLOW
 4. Outline the 2018 shore in GREEN
 5. Outline the 2021 shore in PURPLE

What do you notice?

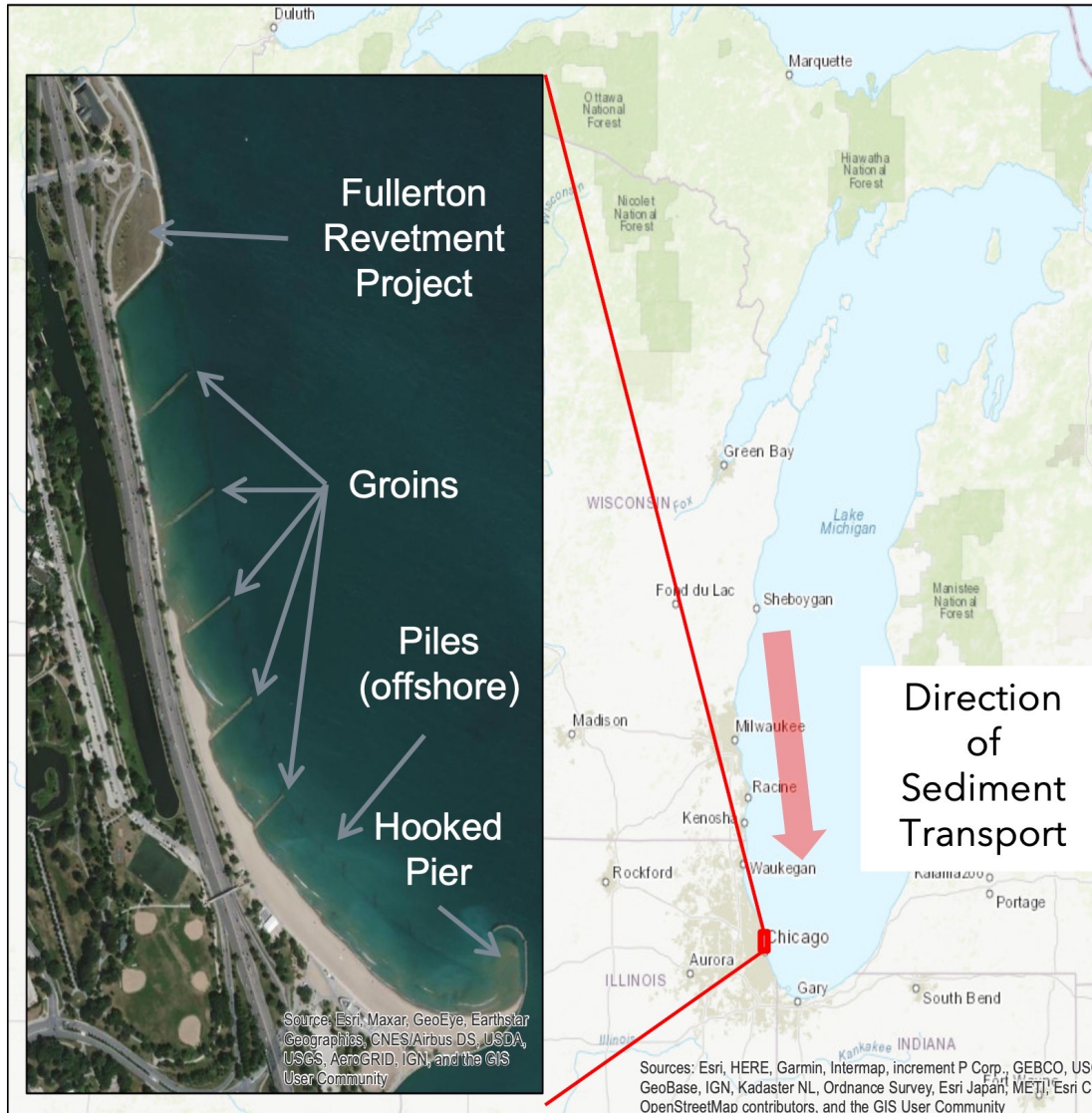
Where is the largest loss of sand?

Rank the cells: 1=smallest loss,
6=most significant loss

Are there any patterns?

Brainstorm: what causes those
patterns?

Twist: it's not just lake level...



Hardened Shoreline

- The use of concrete or metal to restrict a shoreline to a fixed shape
- Can impact how sand is able to travel!



Climate and Water: West vs. East

Eastern United States (Chicago)

- Rivers flow mostly un-altered -> potential for flooding
- Development of buildings too close to shoreline -> rising and lowering shorelines -> erosion -> relocation
- Unpredictable increases in rain, wind, waves -> harder to prepare response
- Increase in intense storms -> small-scale rising and lowering

Western United States (Utah)

- Dams on rivers to divert water -> less precipitation -> more water for homes and industry, not the lake
- Decreasing snow and rainfall -> Snow and rainfall supply rivers with water -> lower lake levels
- Hotter summer temperatures-> more evaporation-> shallower water

Try it yourself!

Use tracing paper to compare historic shorelines of the **Great Salt Lake**, notice differences in size and **color**



What does this mean?

For **policymakers** (Utah state government and federal government...)- there is a responsibility to address the issues that images present

For **professional scientists**- sometimes the simplest methods are the best ones!

For **people like you!** - you have the power to think about and track environmental problems that you notice, and to ask questions about how to respond to them!

Customized Report for Water
2023 General Session
Found 39 Bills

HB0272 Water Efficient Landscaping Amendments	Introduced
Sponsor: Owens, D.	
HB0276 Water Supply Amendments	Introduced
Sponsor: Lyman, P.	
HB0286 Great Salt Lake Funding Modifications	Introduced
Sponsor: Briscoe, J.	
HB0307 Utah Water Ways	Introduced
Sponsor: Musselman, C.R.	
SB0076 Water Amendments	Introduced
Sponsor: Sandall, S.	
Floor Sponsor: Snider, C.	
SB0076S01 Water Amendments	Introduced
Sponsor: Sandall, S.	
Floor Sponsor: Snider, C.	



39 Bills this legislative session under keyword "water"

A close-up photograph of white, bubbly foam on a beach. The foam is in sharp focus in the foreground, with individual bubbles and textures clearly visible. The background is blurred, showing a sandy beach and a blue sky with light clouds. The text "Thank you!" is overlaid in the bottom left corner in a white, bold, sans-serif font.

Thank you!