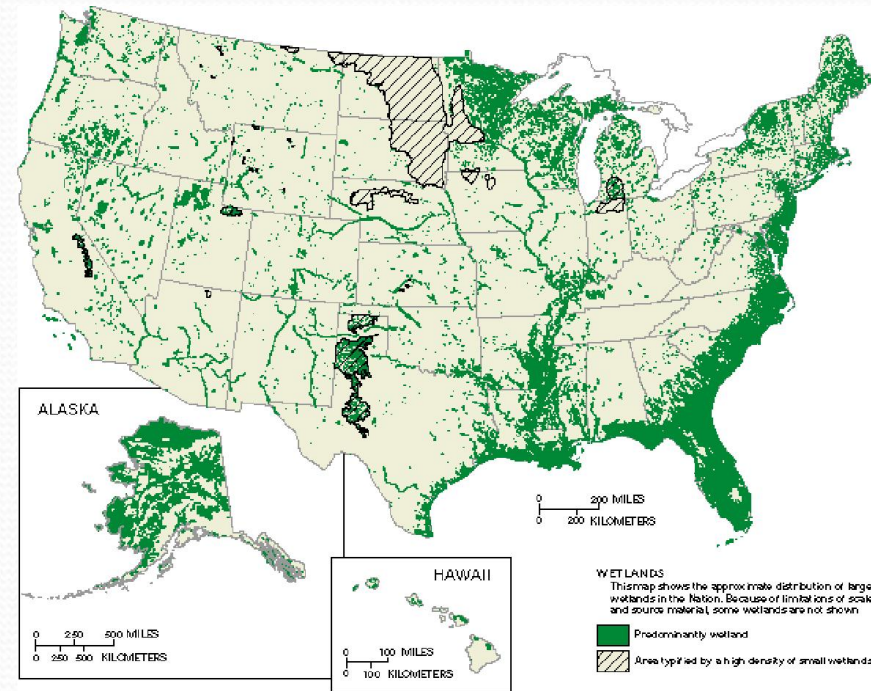


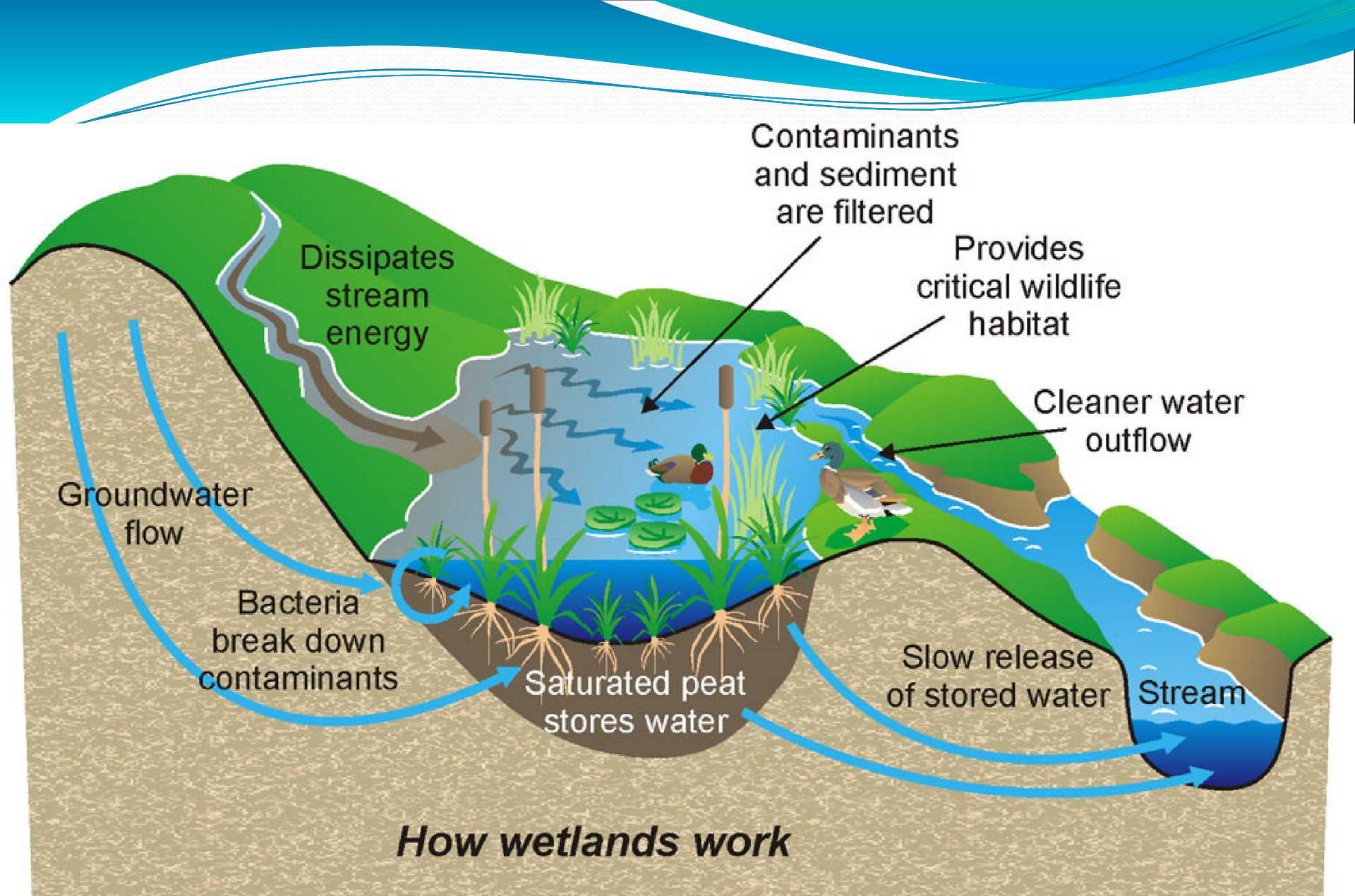
Wetlands

Areas of land that are covered by water at least part of the year.

Roles of Wetlands in the Ecosystem

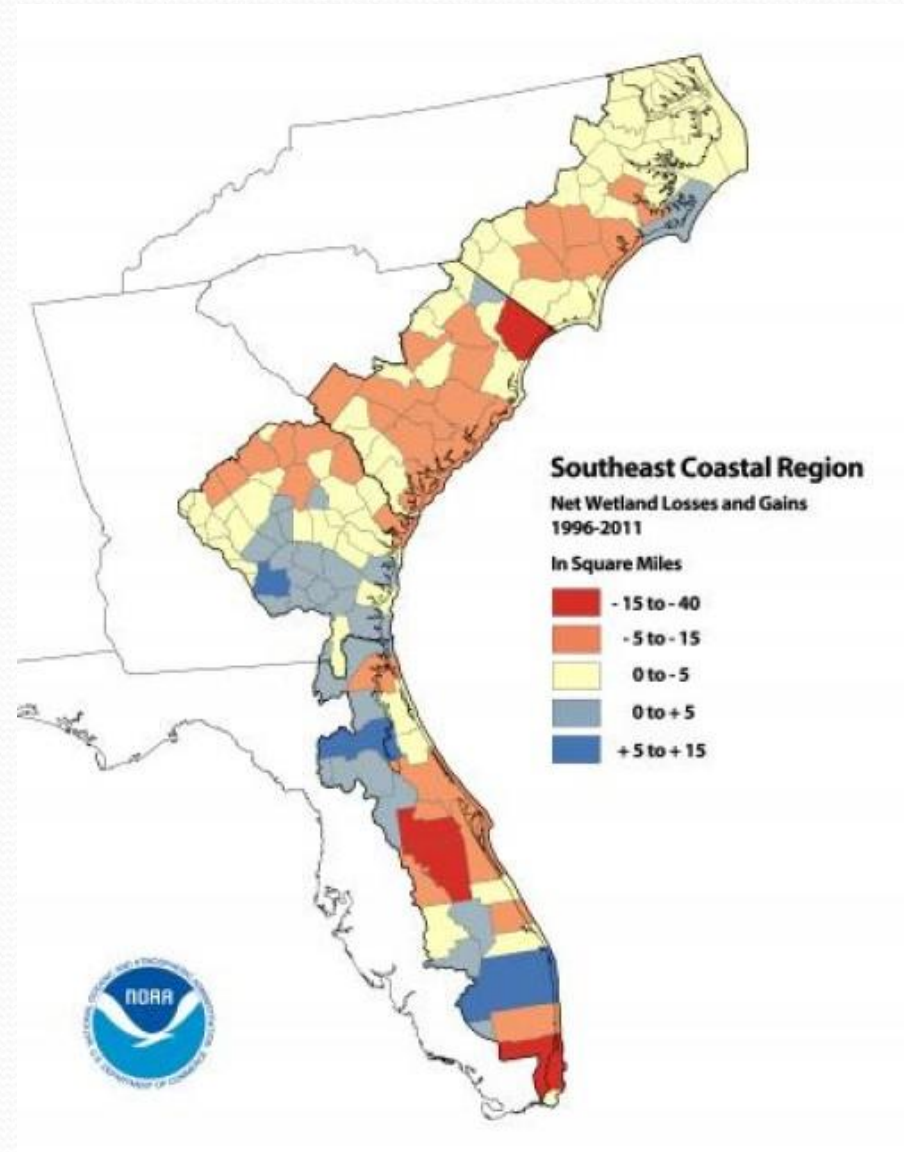
- **Wetlands prevent flooding by holding water much like a sponge.**
- **Natural water quality improvement.**
- **Shoreline erosion control**
- **Fish and wildlife habitat**
- **Natural products for economy (etc. shellfish, timber, blueberries, medicines)**





Wetland Loss

- Wetland loss – decrease in wetland area due to the conversion of wetland to non-wetland habitats, as a result of human activity.
- The United States alone has lost more than half of its original wetlands
 - We continue to lose over 100,000 wetland acres a year.

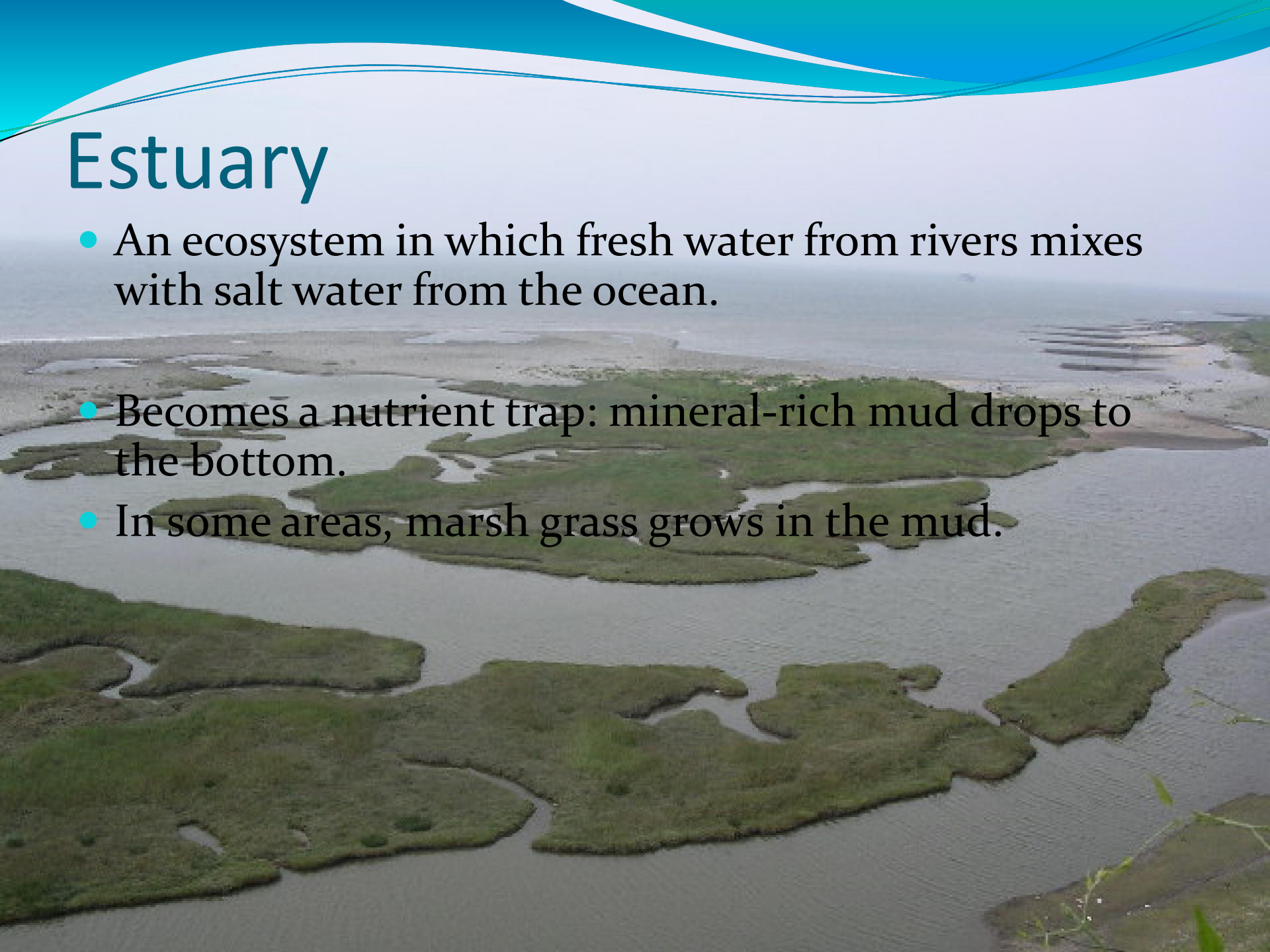


Wetland & Estuary Degradation

- Although wetlands can improve watershed water quality, their capacity to process pollutants without becoming degraded can be exceeded.
- Many NC wetlands have suffered functional degradation, although it is difficult to calculate the magnitude of the degradation.
- Some human activities that degrade wetlands are:
 - Urbanization
 - Industrialization
 - Agriculture
 - Marinas
 - Mining

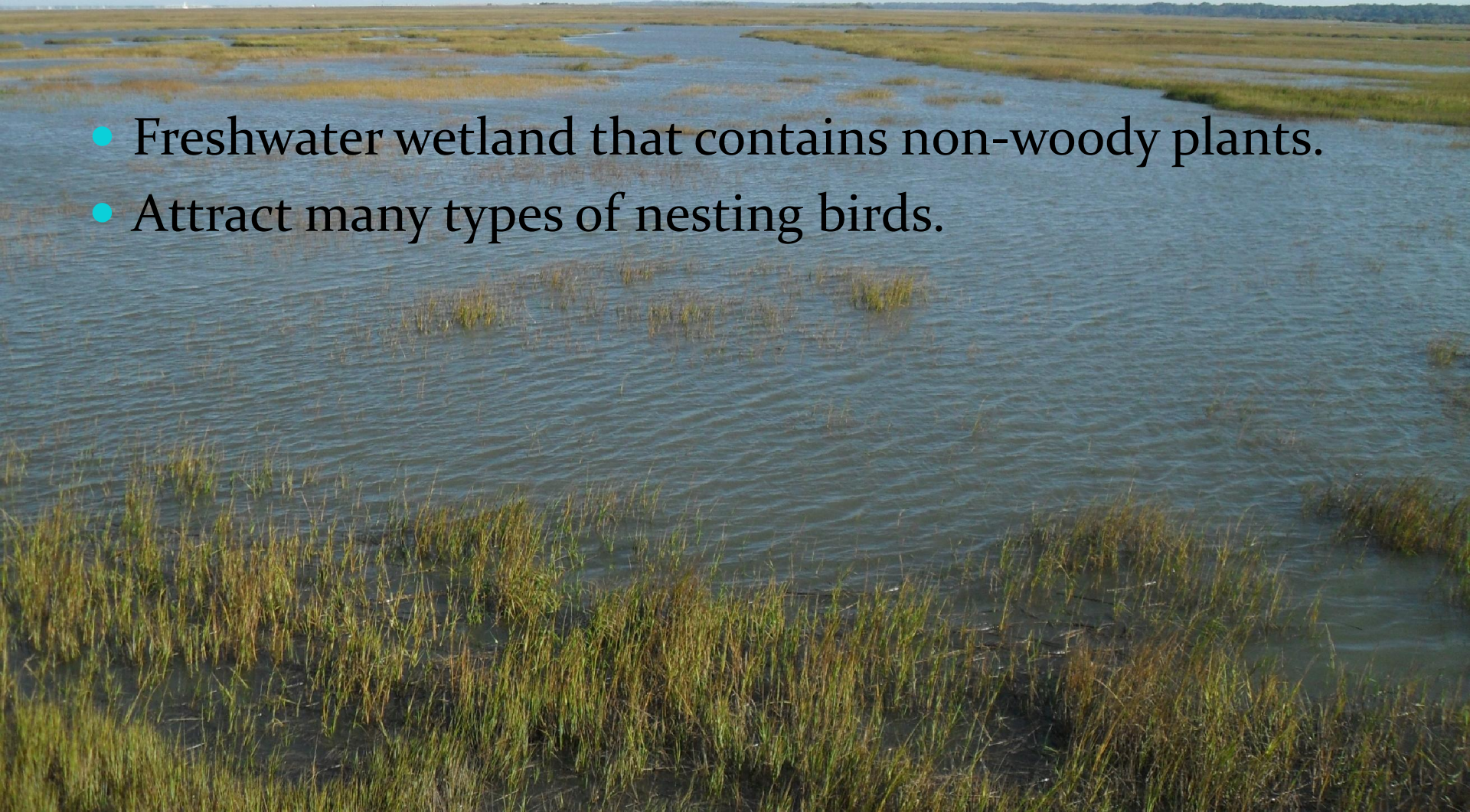
Estuary

- An ecosystem in which fresh water from rivers mixes with salt water from the ocean.
- Becomes a nutrient trap: mineral-rich mud drops to the bottom.
- In some areas, marsh grass grows in the mud.



Marshes

- Freshwater wetland that contains non-woody plants.
- Attract many types of nesting birds.



Swamps

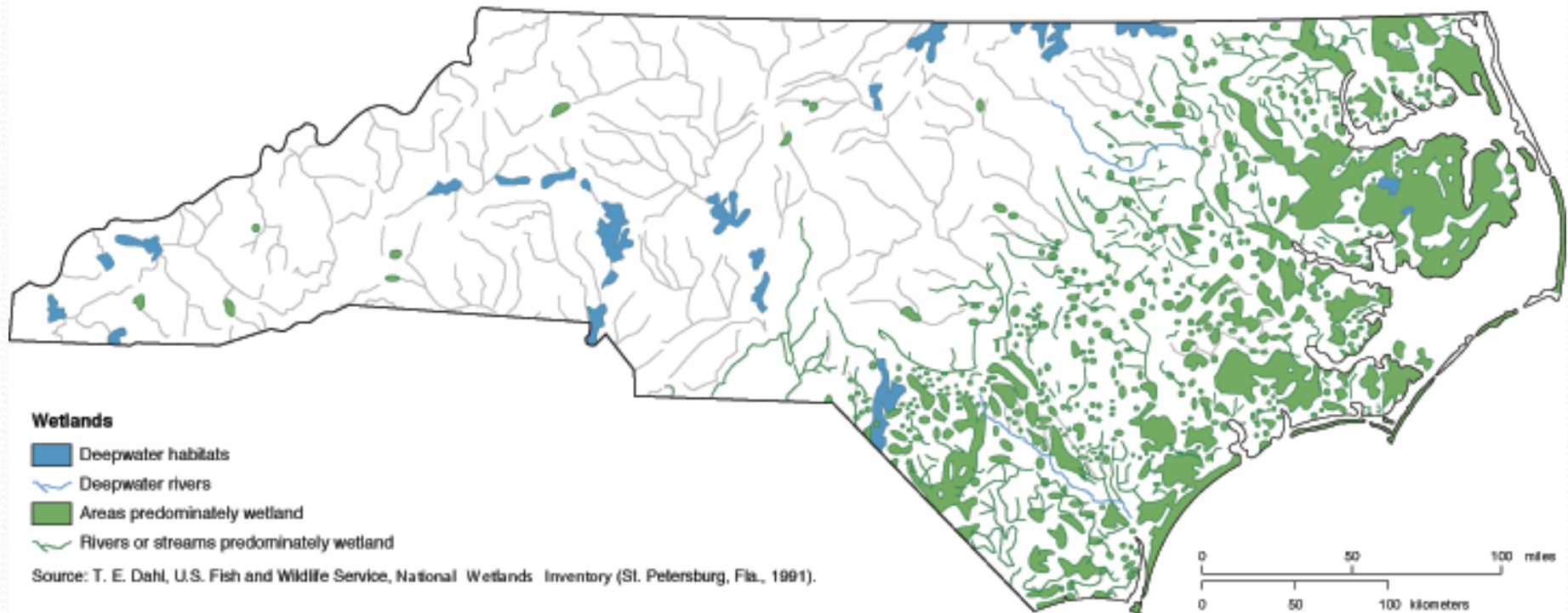
- Freshwater wetland that contains woody plants and shrubs.



Water Ecosystems

- Freshwater: lakes, rivers and wetlands (swamps and marshes)
- Mix of fresh and saltwater : estuary

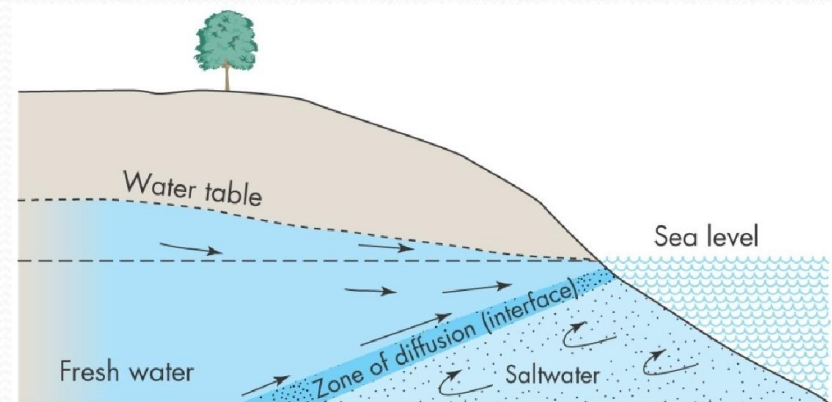
Figure 4. Wetlands



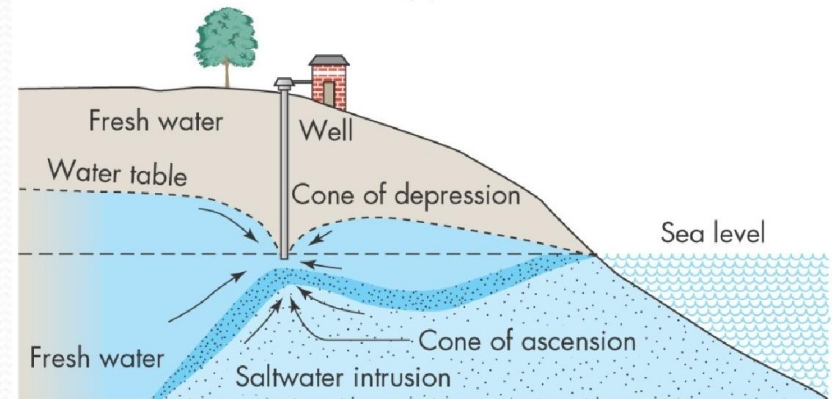
Saltwater Intrusion in North Carolina

What is saltwater intrusion?

- **Saltwater intrusion** is the movement of saltwater into freshwater aquifers along the coast



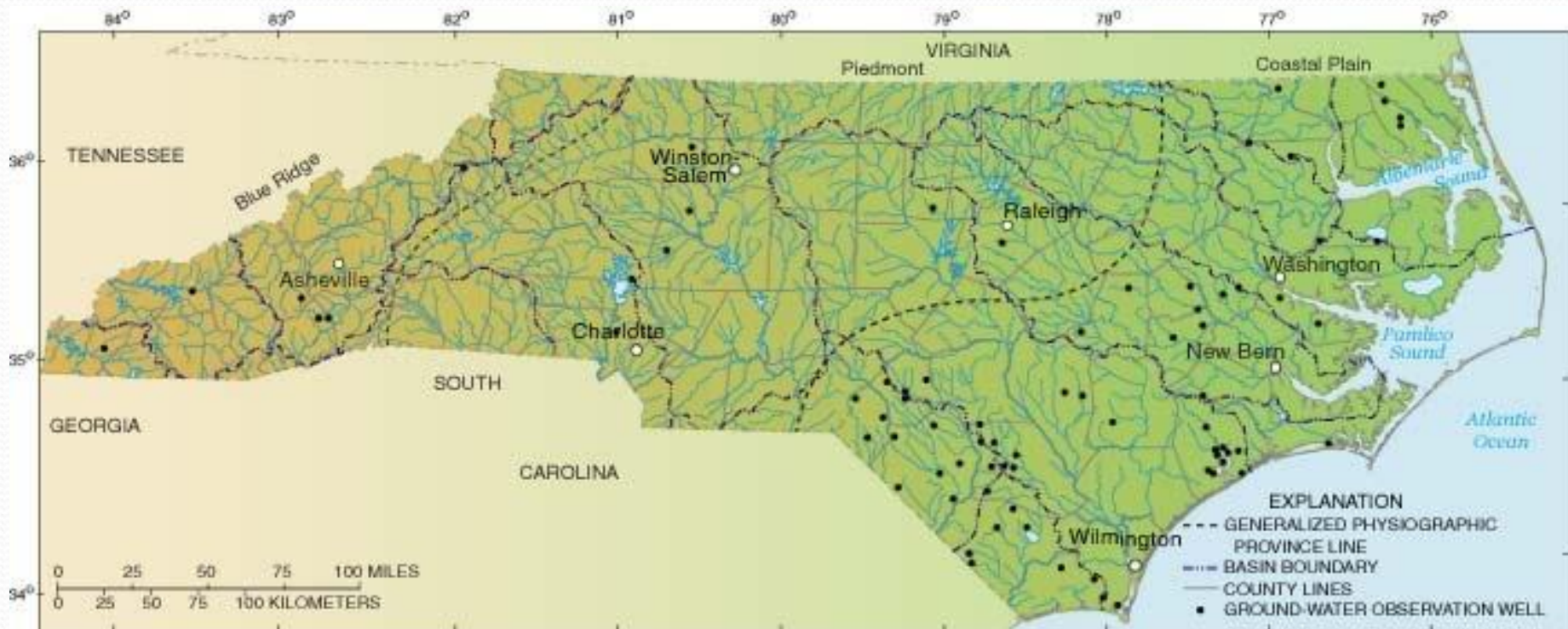
(a)



(b)

How does it occur?

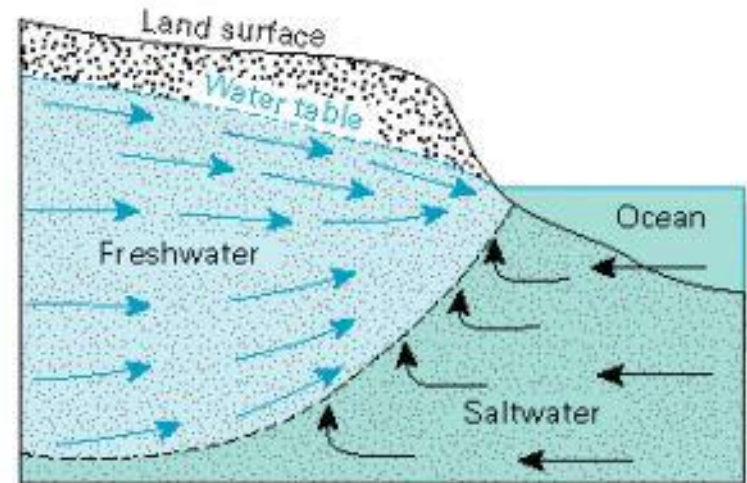
- Saltwater has a higher mineral content than freshwater so it is denser and has a higher water pressure.
- Saltwater can push inland beneath the freshwater.



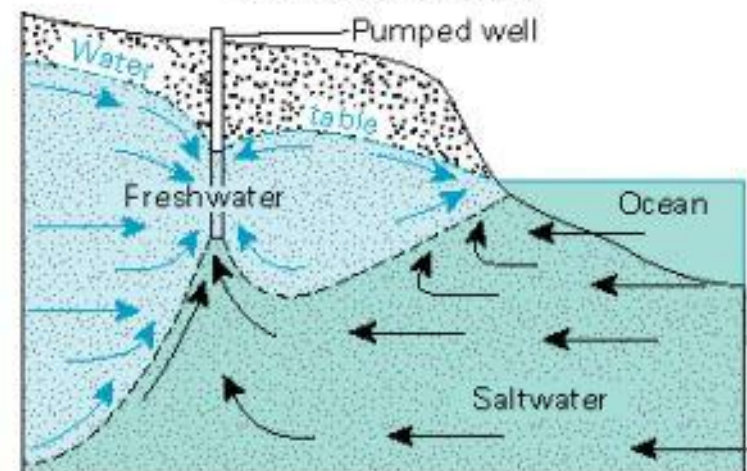
Do human activities make a difference?

- Human activities have increased saltwater intrusion in many coastal areas by:
 - An increase in drilling of freshwater along a coastal area
 - Digging navigation channels
 - Digging drainage canals

Natural Conditions

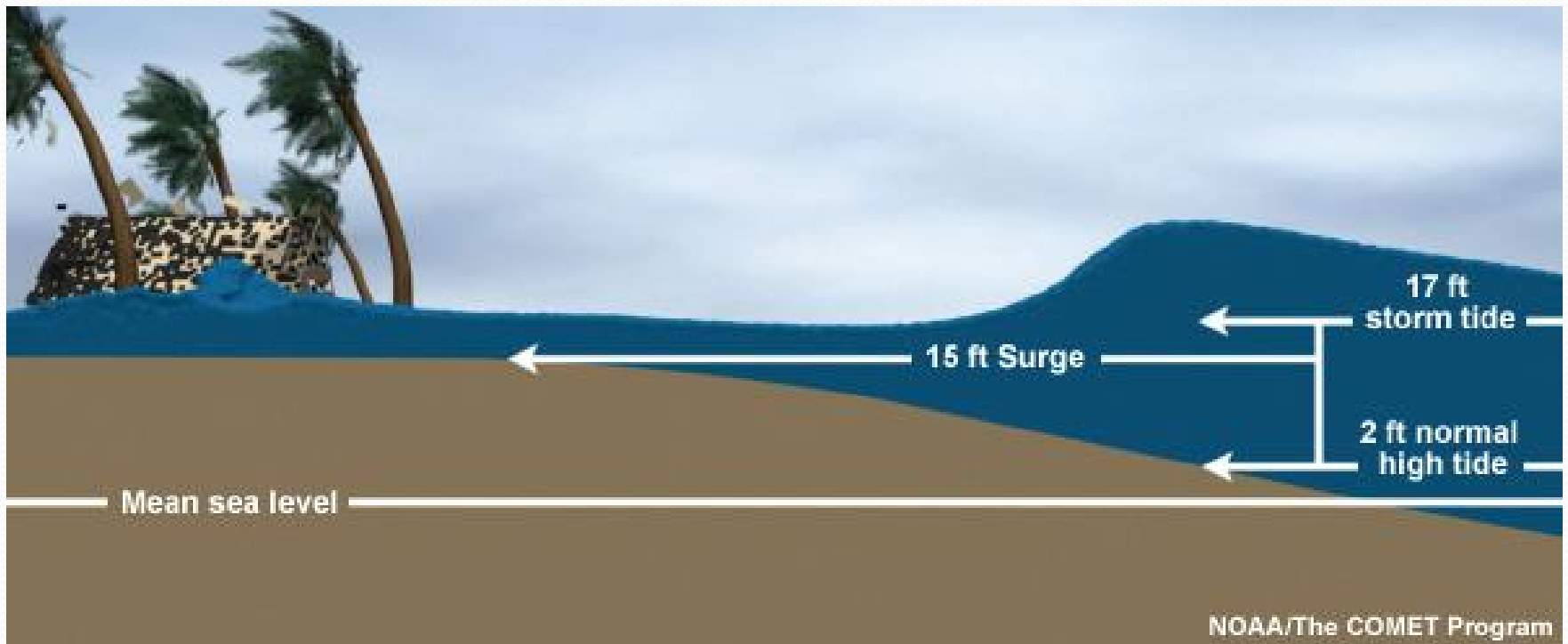


Salt-Water Intrusion



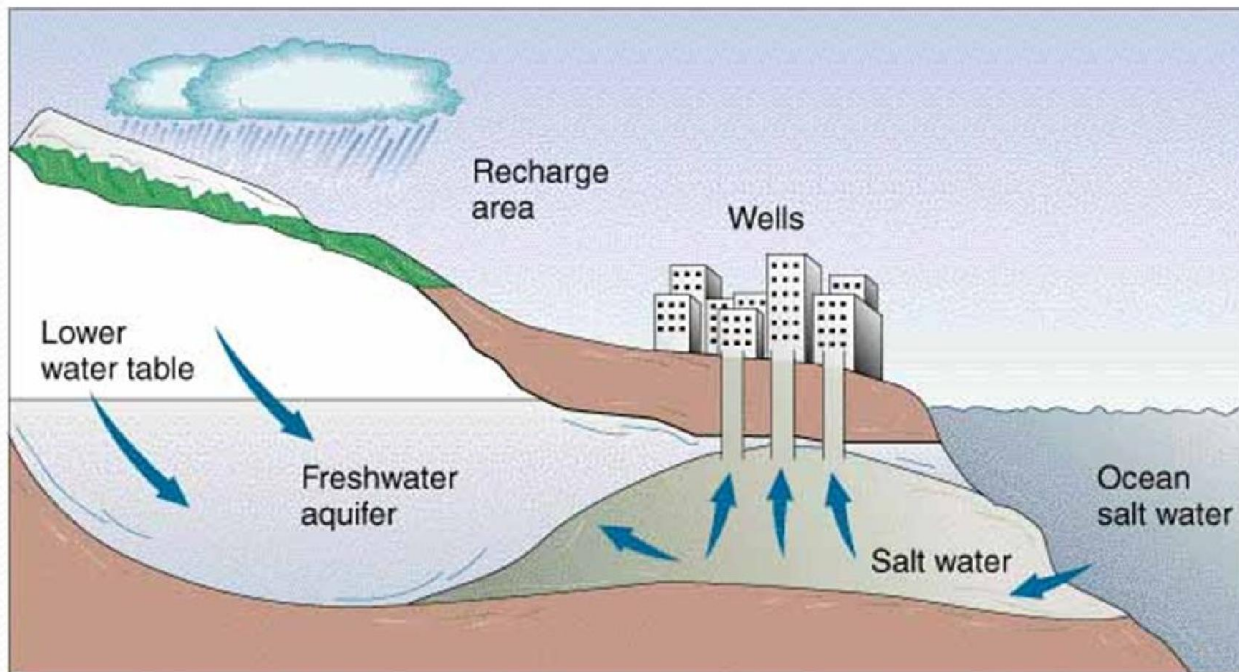
Does weather make a difference?

- Saltwater intrusion can be worsened by extreme events like hurricane storm surges and sea level rise



Why is saltwater intrusion an issue for North Carolina?

- It can lead to contamination of drinking water sources



Saltwater Intrusion

How to prevent saltwater intrusion

- The use of injection wells, subsurface barriers, and monitoring systems would improve water quality and prevent saltwater intrusion.

- <https://www.youtube.com/watch?v=VjwN7vjwNWO>

