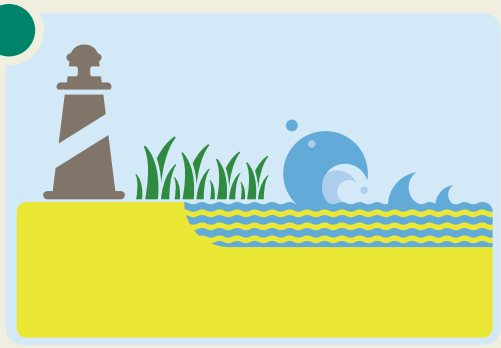
How do wetlands help lessen the impacts of climate change?

1 They protect coastal regions from storms

- Vegetation in a coastal wetland acts as a buffer against waves that hit the coast. The vegetation is sturdy and resilient and stabilizes soils. When the waves hit a coastal wetland, energy gets dispersed through the vegetation and dissipates the wave's power — protecting the coast from erosion.
- When sea levels rise during a storm surge, coastal wetland vegetation helps slow water as it moves inland, making the surge less destructive.

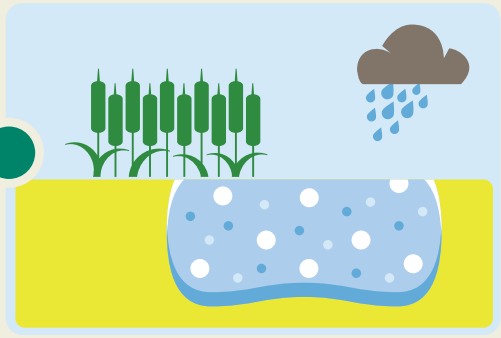


2 They're a source of water during droughts

- Wetlands are more than just the water we see — they are connected to water underground, helping recharge groundwater and aquifers. Wetlands can be a source of water at the surface, but they also help make sure we have sustainable underground water resources during periods of drought, which can help maintain flow in rivers and streams.

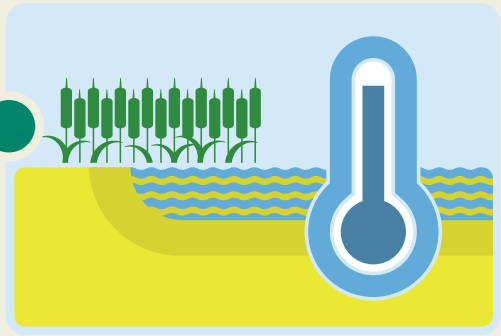
3 They store water during floods

- Some floodwater is stored in wetlands, "trapping" the water instead of having it cascade down the landscape all at once. (Like a stop sign.)
- Water that does leave wetlands is slowed by vegetation that act like obstacles through which the water must move to exit the wetland. (Like a lower speed zone.)
- Wetlands can't totally stop floods, but by desynchronizing and slowing movement of water, they reduce the damage and danger caused by floods (like keeping water out of basements).



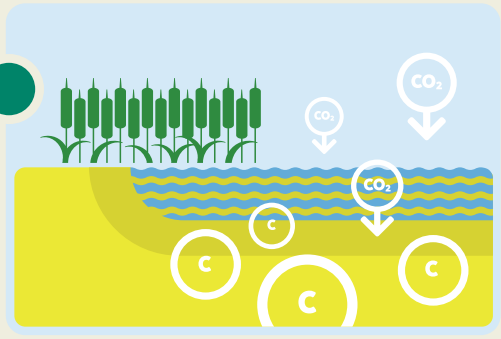
4 They create a cooling effect

- Water in wetlands can act as a **heat sink**, decreasing surface air temperatures above wetlands relative to those of other surfaces (soil, concrete, etc.). This is possible because water can absorb more heat before changing temperature than soil or air.
- Wetlands have high rates of **evapotranspiration**. This process. driven by vegetation in wetlands, converts water into gas — increasing humidity of the atmosphere. This process uses heat energy from the air, resulting in cooler air temperatures (just like when you sweat).



5 They store carbon (but how do they do it?)

- **Marshes** are highly productive ecosystems, meaning they grow lots of plants fast and pull lots of carbon dioxide out of the atmosphere.
- In **peatlands**, decomposition is slow — so over thousands of years carbon (dead plant material) accumulates, more than in any other ecosystem.
- **Blue carbon** is carbon that comes from the ocean (often in the form of sediment), but gets stored in coastal wetlands. Coastal wetlands cover less area than the world's forests, but absorb carbon at a much faster rate.



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