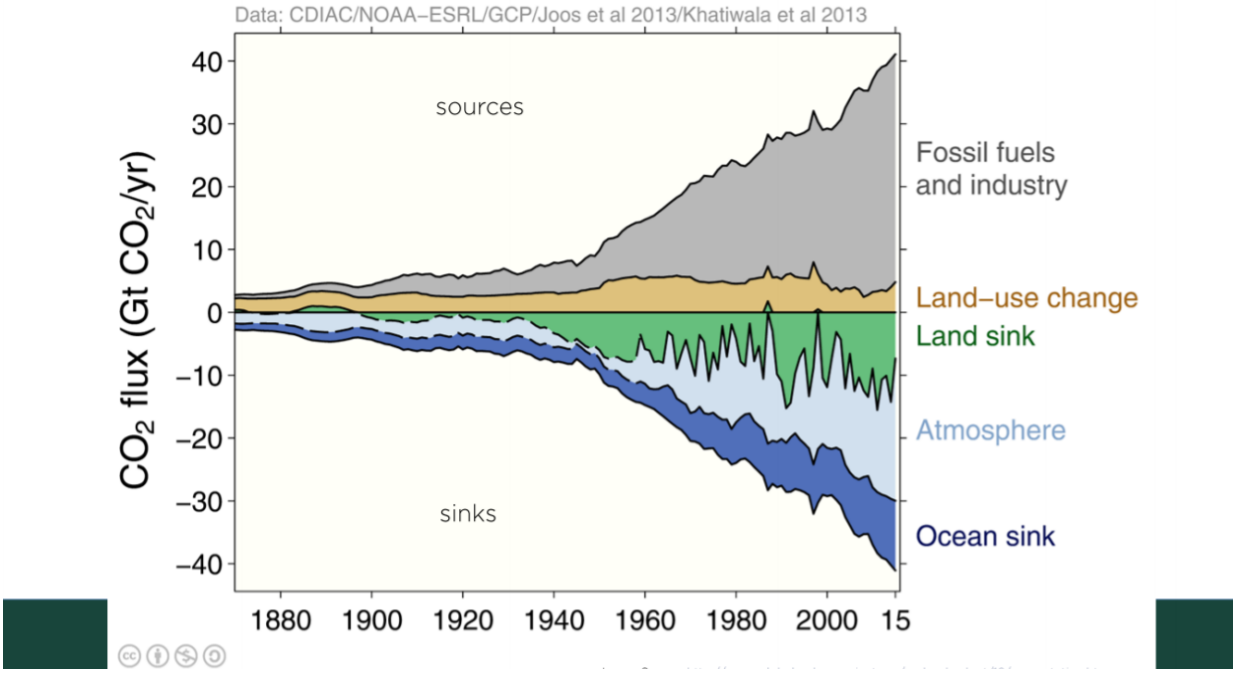
FOREST CARBON 101

Forest Carbon 101: Fast Facts

- What are greenhouse gases?
  - **Greenhouse gases** are gases in the Earth's atmosphere that let sunlight pass through but trap in heat, increasing the temperature of our climate and oceans. This process is called the **Greenhouse Effect.**
  - There are several types of greenhouse gases, such as methane and nitrous oxide, but one of the most important greenhouse gases is **carbon dioxide**.
  - Global temperature is rising at an alarming rate—faster than any temperature increase in our recorded history. We know that human activity is a huge factor, and we also know how to stop it.
- How is carbon dioxide released? And how is it stored?
  - **Carbon sources** release carbon-based gases like carbon dioxide into the atmosphere. Some of these sources are natural, like when plants and animals decompose, and many are manmade, such as the burning of fossil fuels. **Carbon sinks** sequester, or store, these carbon-based gases. Some important carbon sinks include forests and oceans.
  - As you can see below, land can also be a sink. Improperly managed land, including forests impacted by wildfires, can end up releasing the carbon it originally stored.



- How do trees store carbon?

    - Through **photosynthesis**, trees, and other plants, use the energy from sunlight to convert water (H2O) and carbon dioxide (CO2) into oxygen (O2) and glucose (C6H12O6). Glucose is a type of sugar, and it physically stores all the carbon from carbon dioxide. In fact, about half of the dry weight of wood is made up of carbon.
- How can we help our forests store more carbon?
    - We can improve and maintain the amount of carbon our forests store through three main **forest-based strategies**:
        - Maintain and increase forestland through reforestation
        - Maintain or increase carbon stocks by practicing climate-smart forest management as well as adapting forests for climate change and increasing forest resiliency
        - Increase sustainable wood use by engaging in sustainable harvest practices and replacing energy intensive resources with wood
- How does climate change affect our forests?
    - Climate change is a **threat multiplier**, meaning that it exacerbates existing damage and increases the land's vulnerability to more threats. This chronic stress opens up the land to threats like insect pests, forest diseases, invasive species, wildfires, and flooding.
- How can we manage risk?
    - **Resistance**: improve defenses against disturbance and maintain relatively unchanged conditions
    - **Resilience:** accommodate some degree of change and return to prior condition following disturbance
    - **Transition:** intentionally facilitate change and enable ecosystem to respond to change and new conditions
- What are **natural climate solutions**?
    - Natural climate solutions conserve, restore, and improve land management strategies as well as remove carbon from the atmosphere, keep our air and water clean, and maintain healthy soil.
    - Reforestation, natural forest management, and avoiding conversion are some of the most effective natural climate solutions we can provide for our forests

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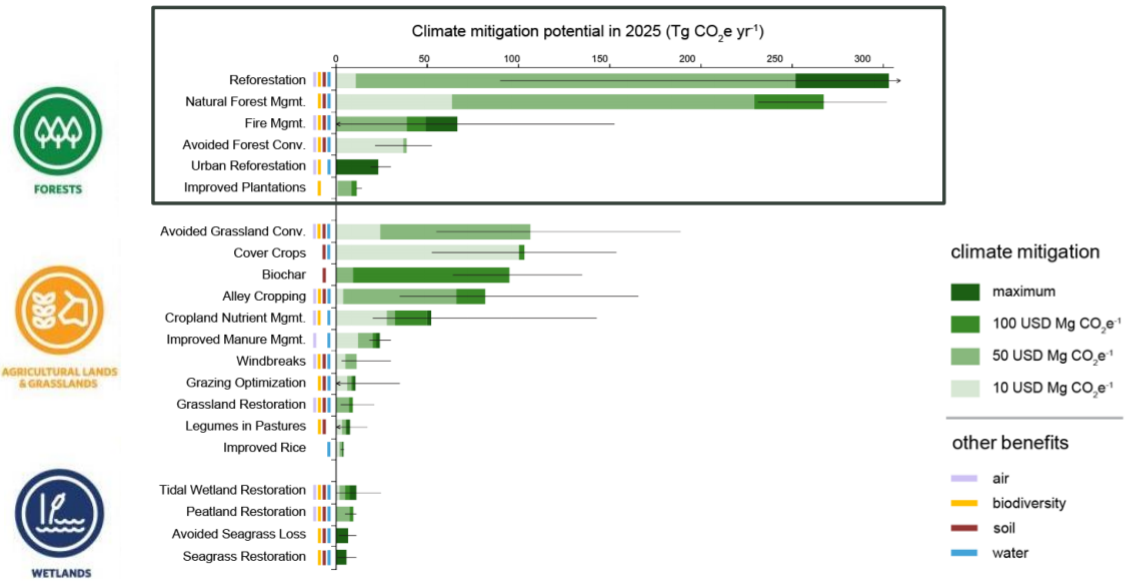
Added Potential Mitigation From Natural Climate Solutions in the U.S.



- What are some of the **co-benefits** of natural climate solutions?
  - Protecting our forests will also mean improving air and water quality, safeguarding biodiversity, enhancing soil and farm productivity, improving public health, and increasing income for rural landowners.
- How much time do we have?
  - The longer we wait, the more resources it will take to reverse the effects of climate change
  - The Intergovernmental Panel on Climate Change says that we must reach net zero carbon emissions by 2050 if we want to avoid the worst impacts of climate change.
  - We cannot reach net zero greenhouse gas emissions by 2050 without nature – we need to both reduce fossil fuel emissions and remove greenhouse gases already in the atmosphere, and one of the best ways to do this is through land sector carbon storage.