



# Earth Day 2022

**Climate change and  
some thoughts about  
Local impact**







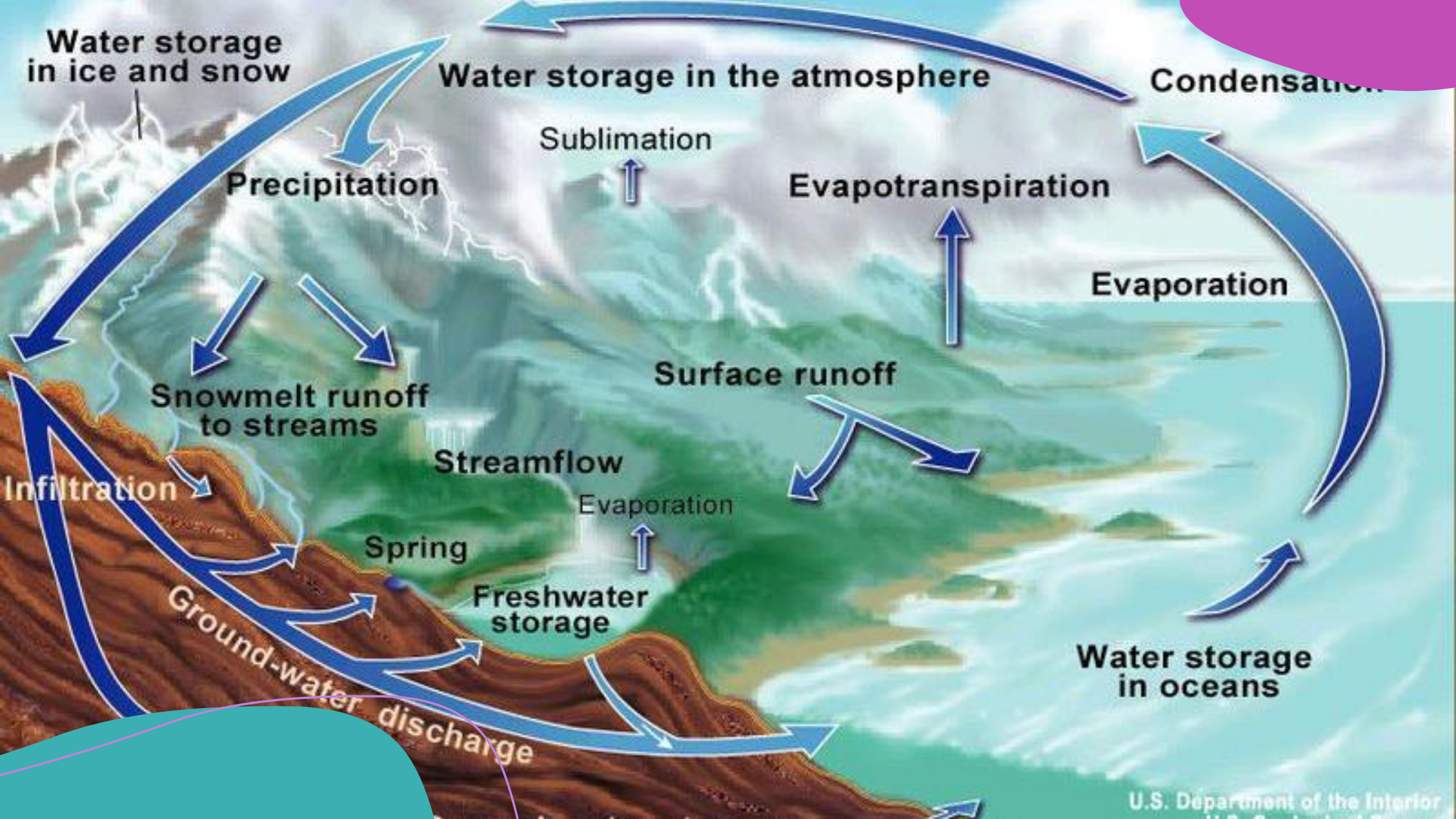




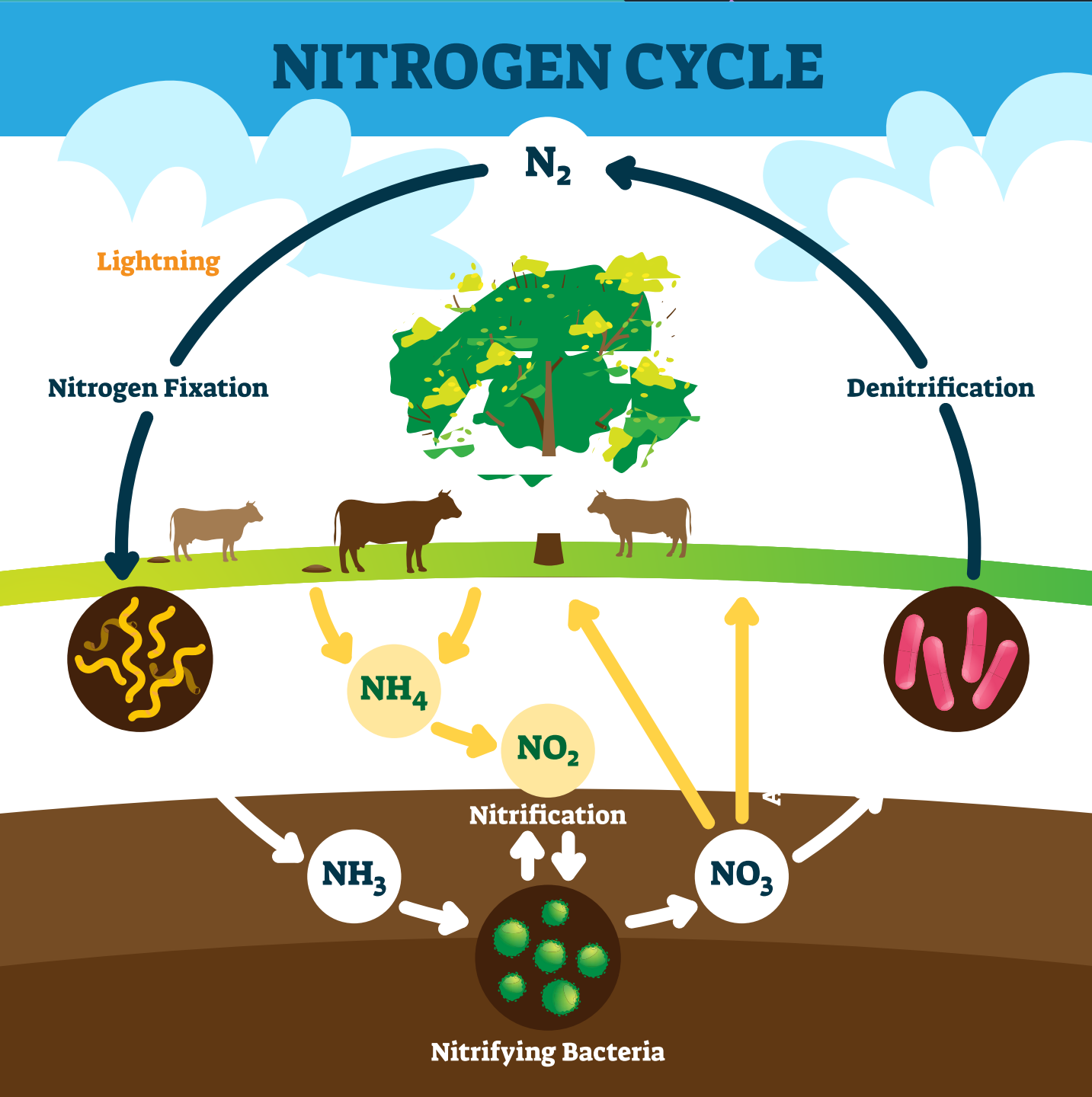




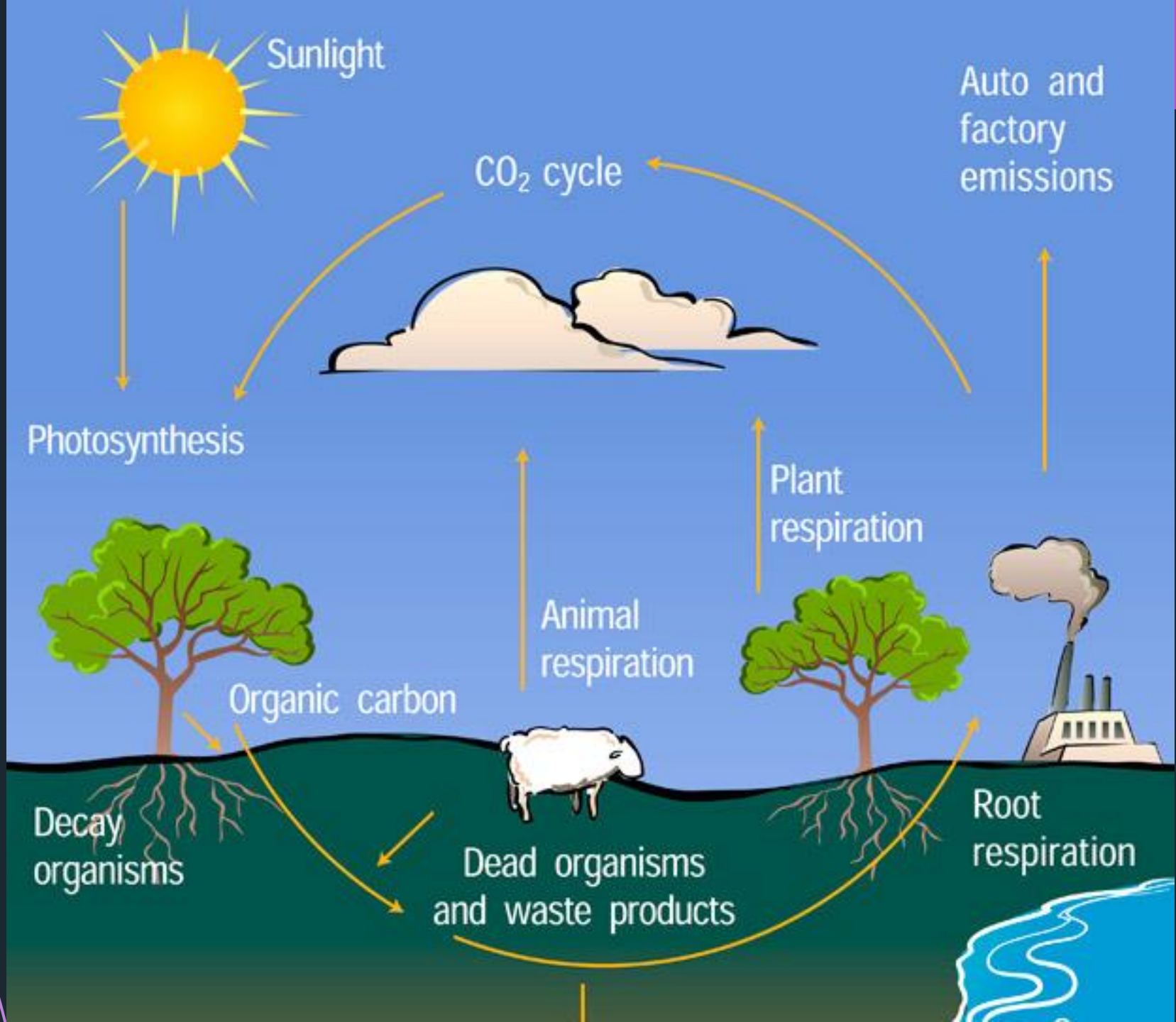




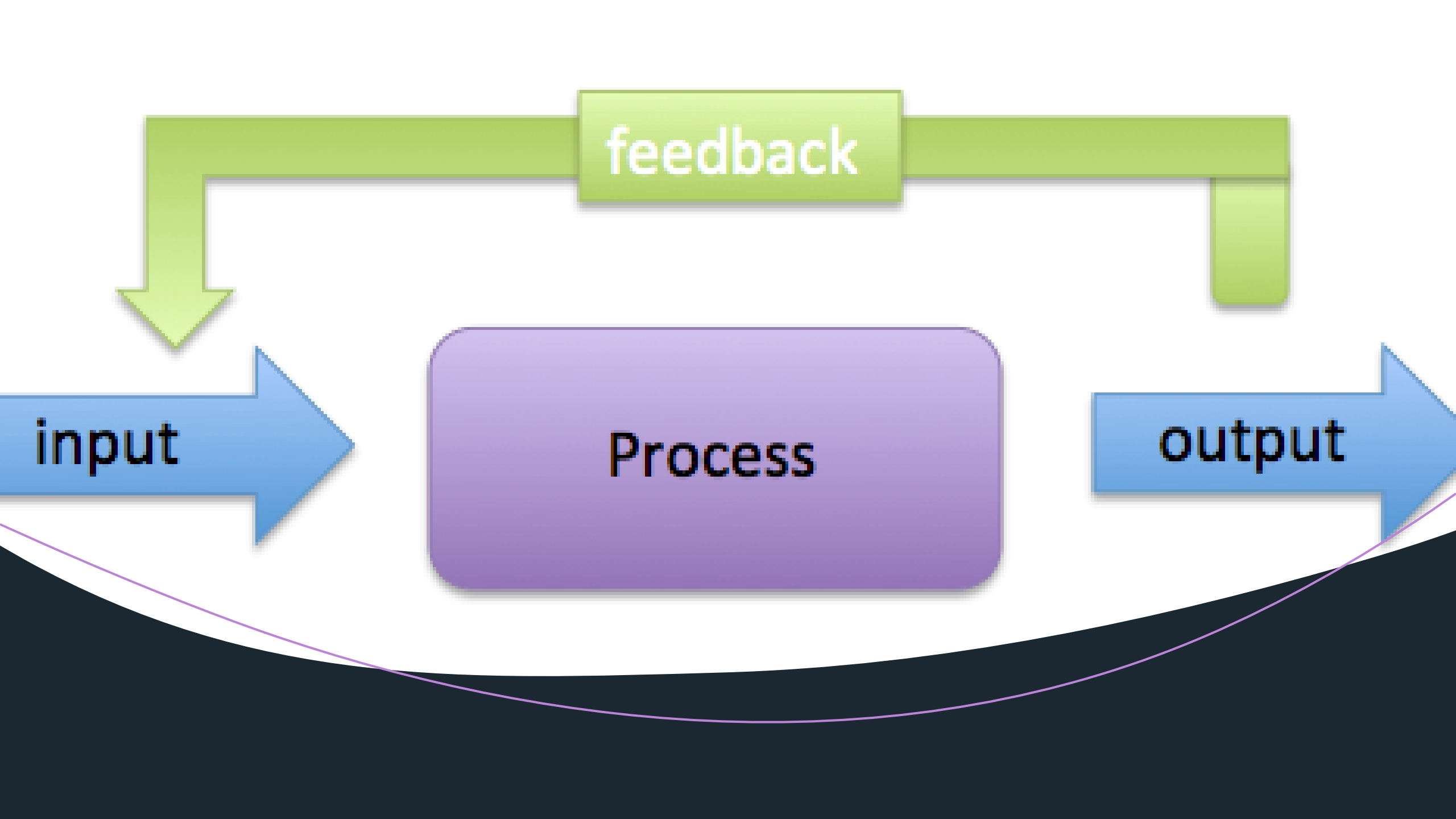
# NITROGEN CYCLE



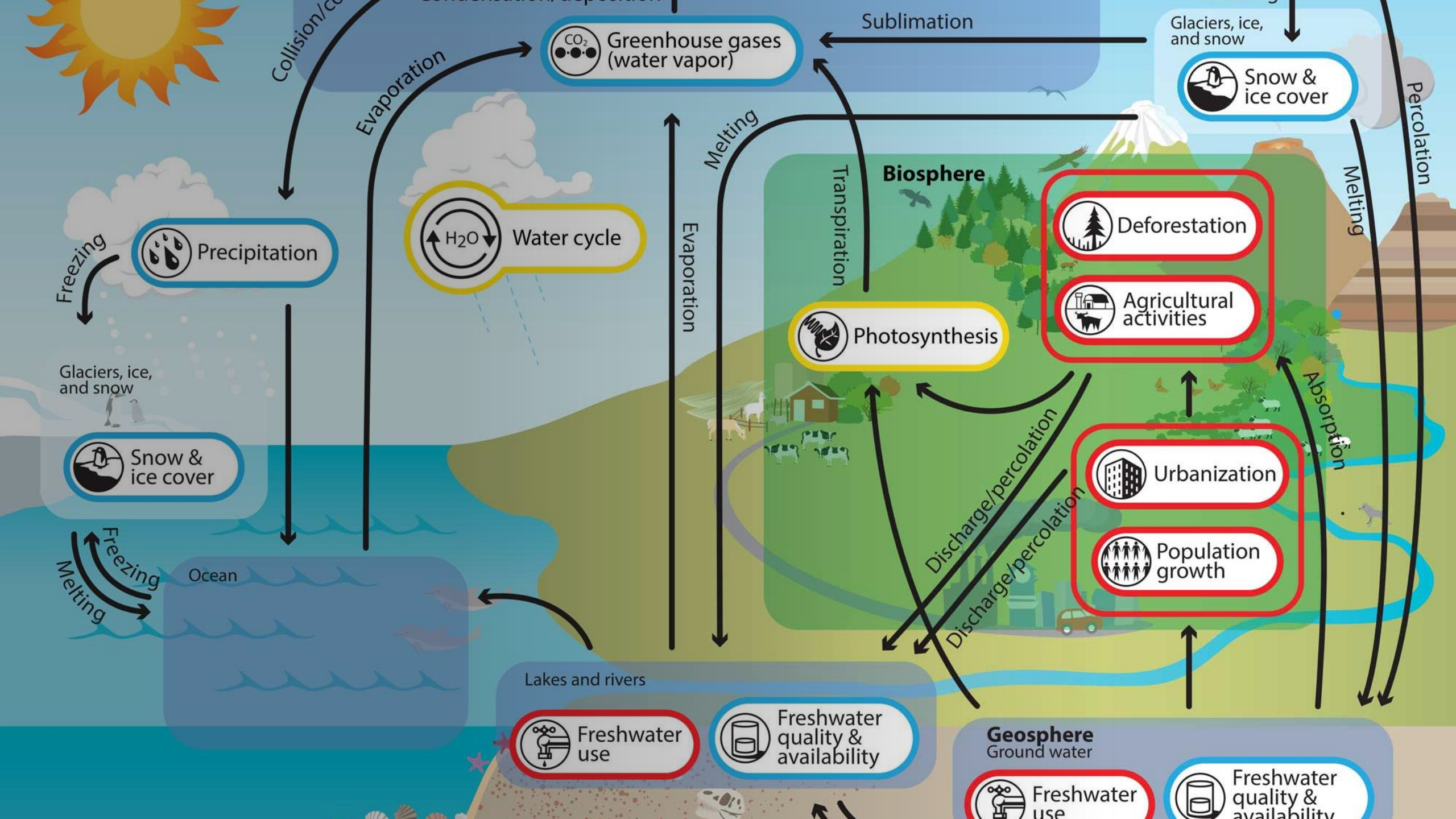




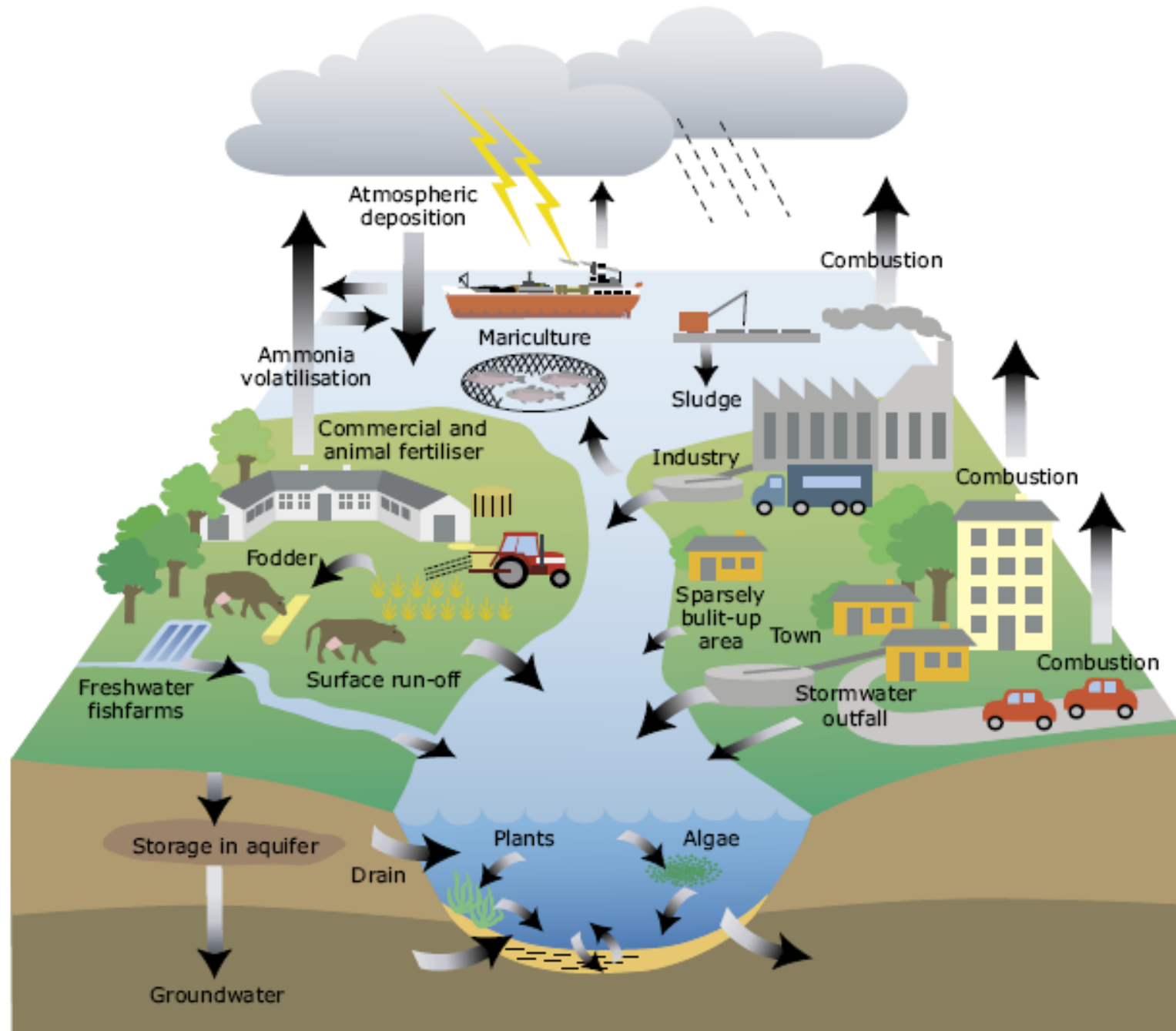




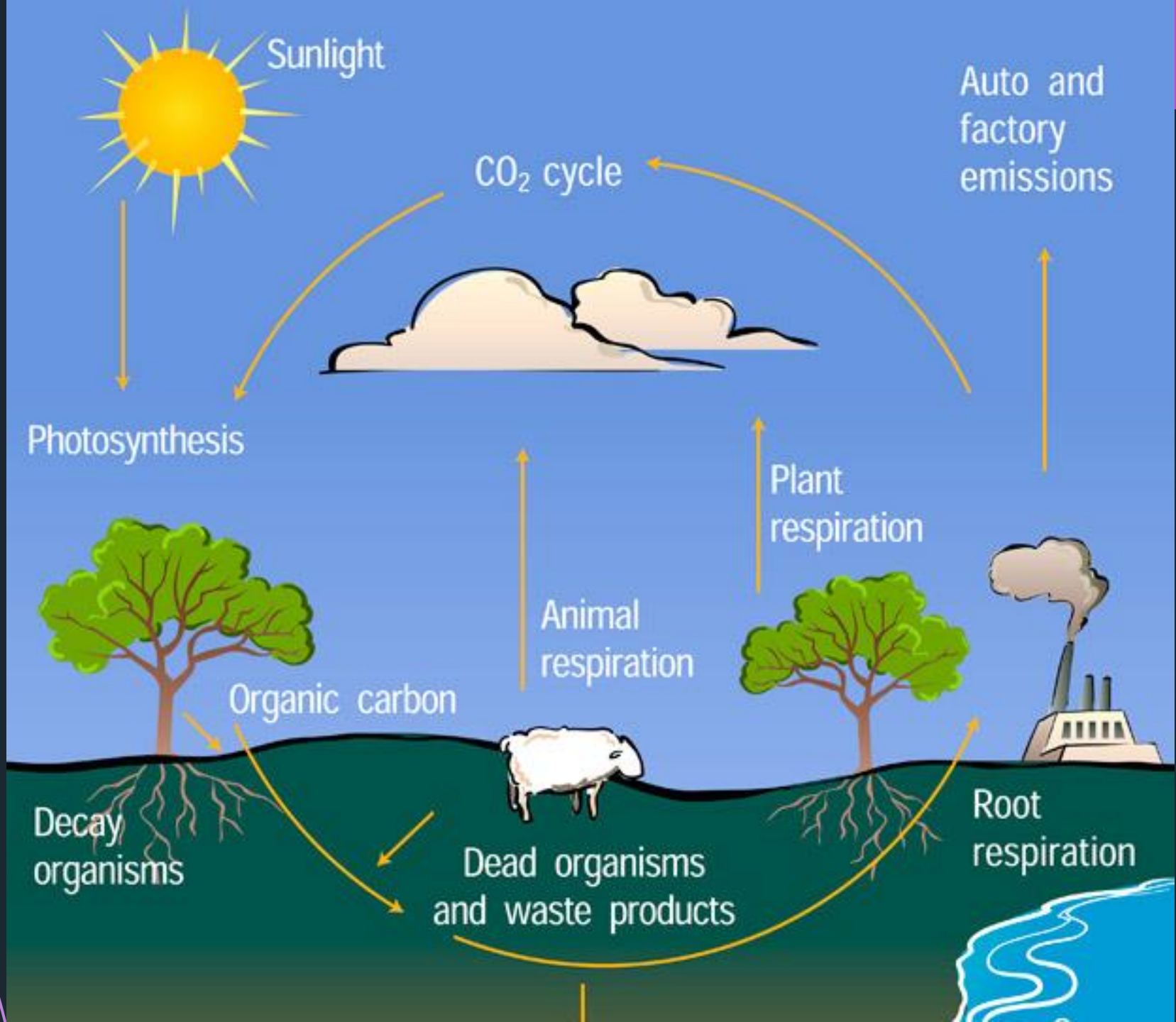


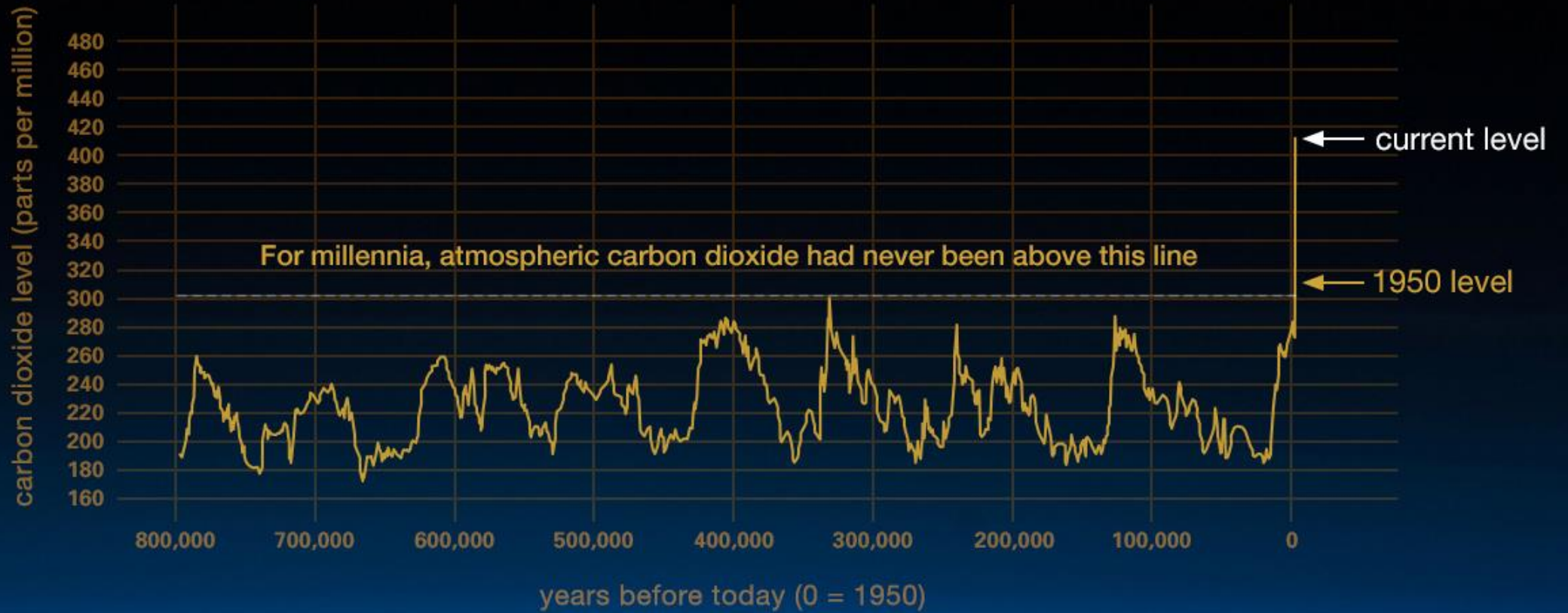




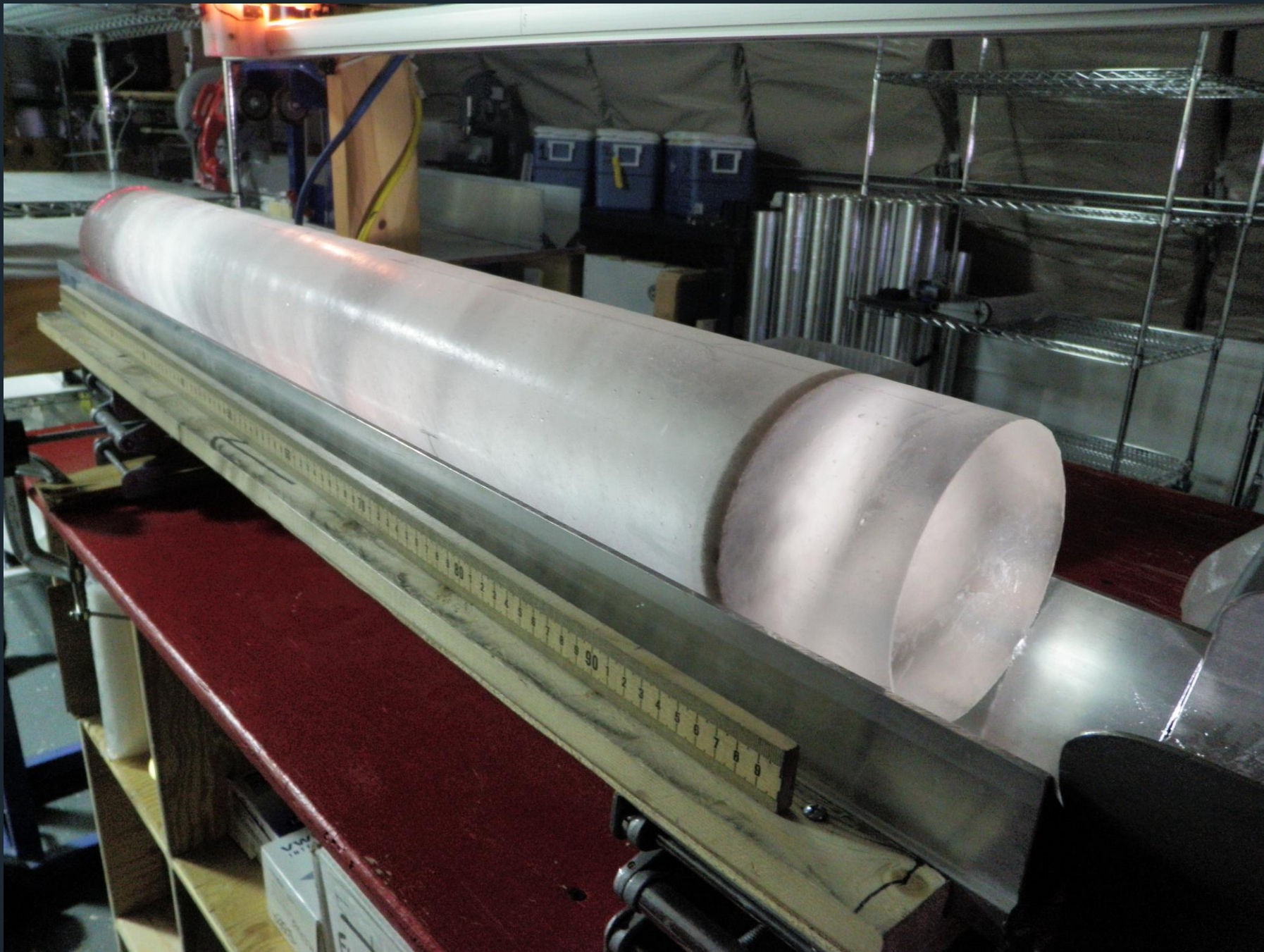




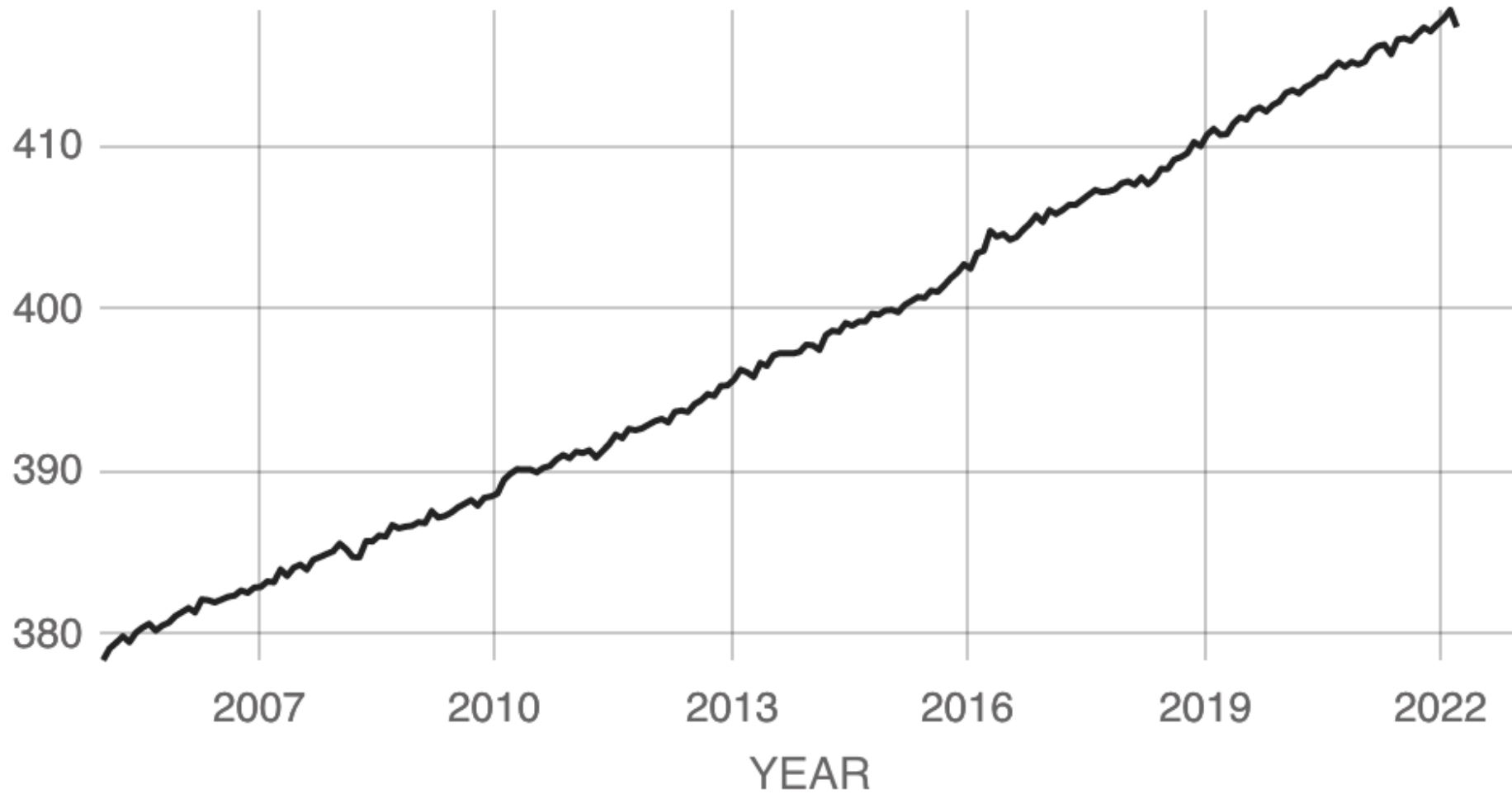








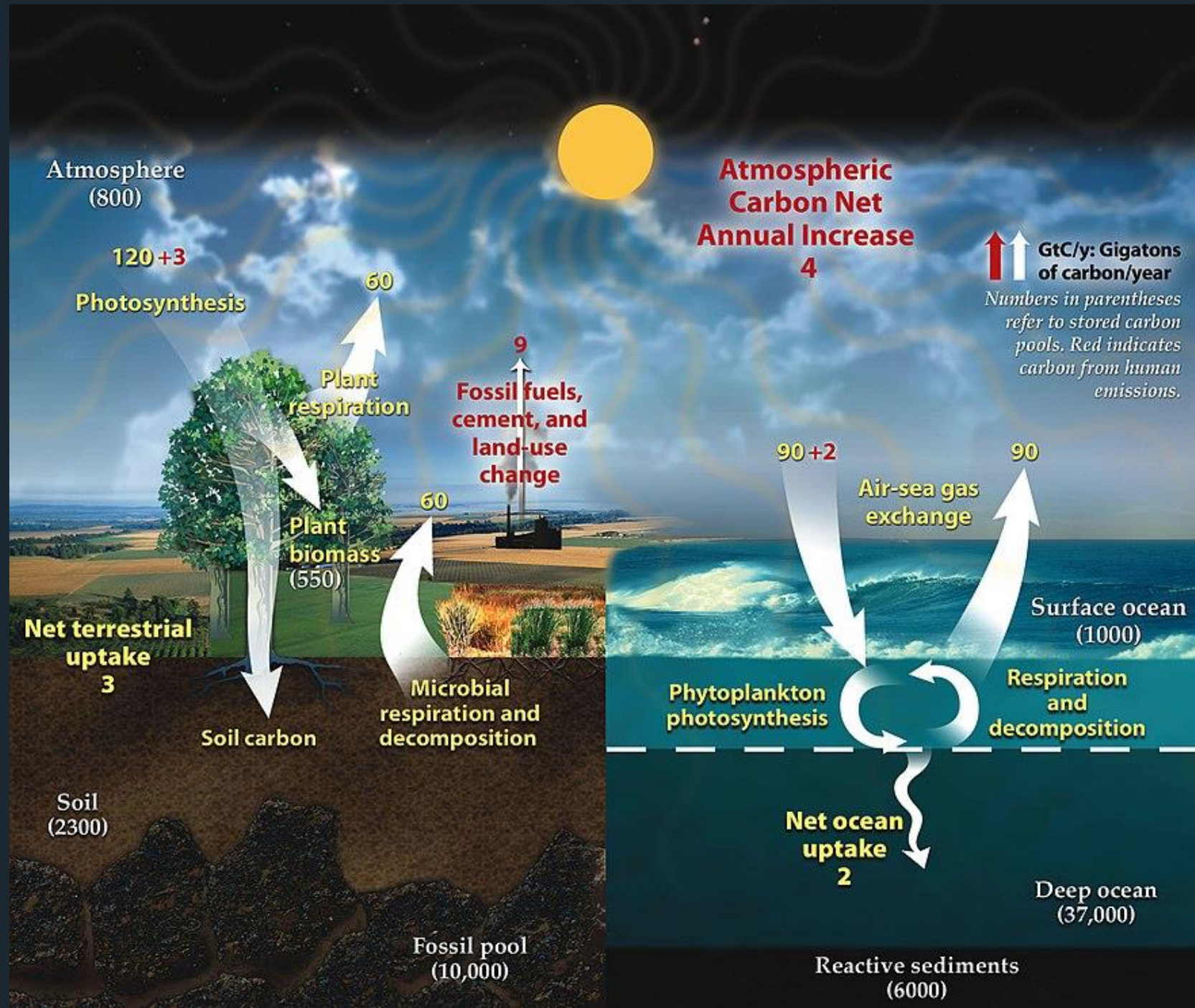
CO2 (parts per million)



417 ppm  
today!

Source: [climate.nasa.gov](https://climate.nasa.gov)

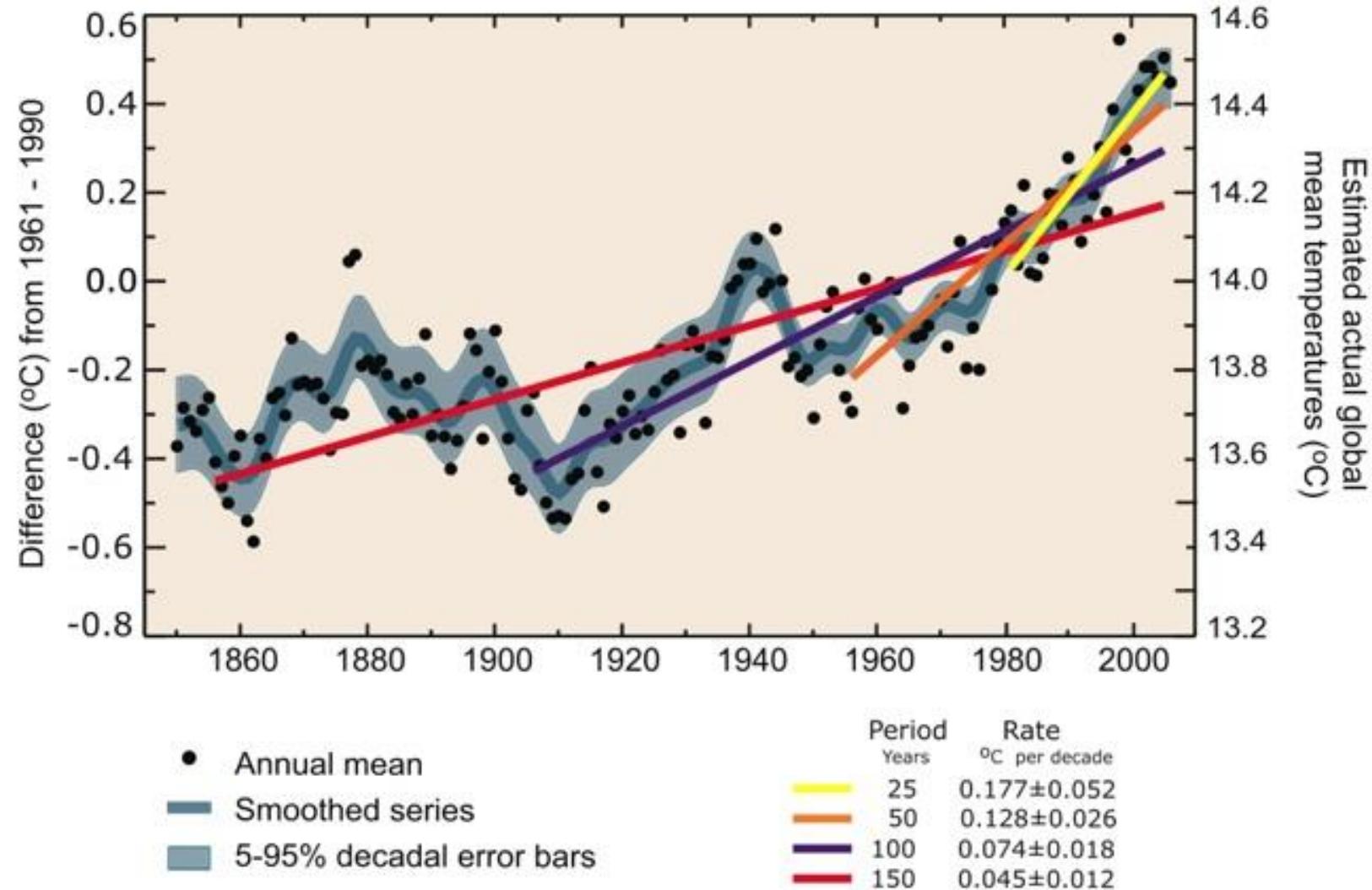






**GtC/y: Gigatons of carbon/year**  
*Numbers in parentheses refer to stored carbon pools. Red indicates carbon from human emissions.*

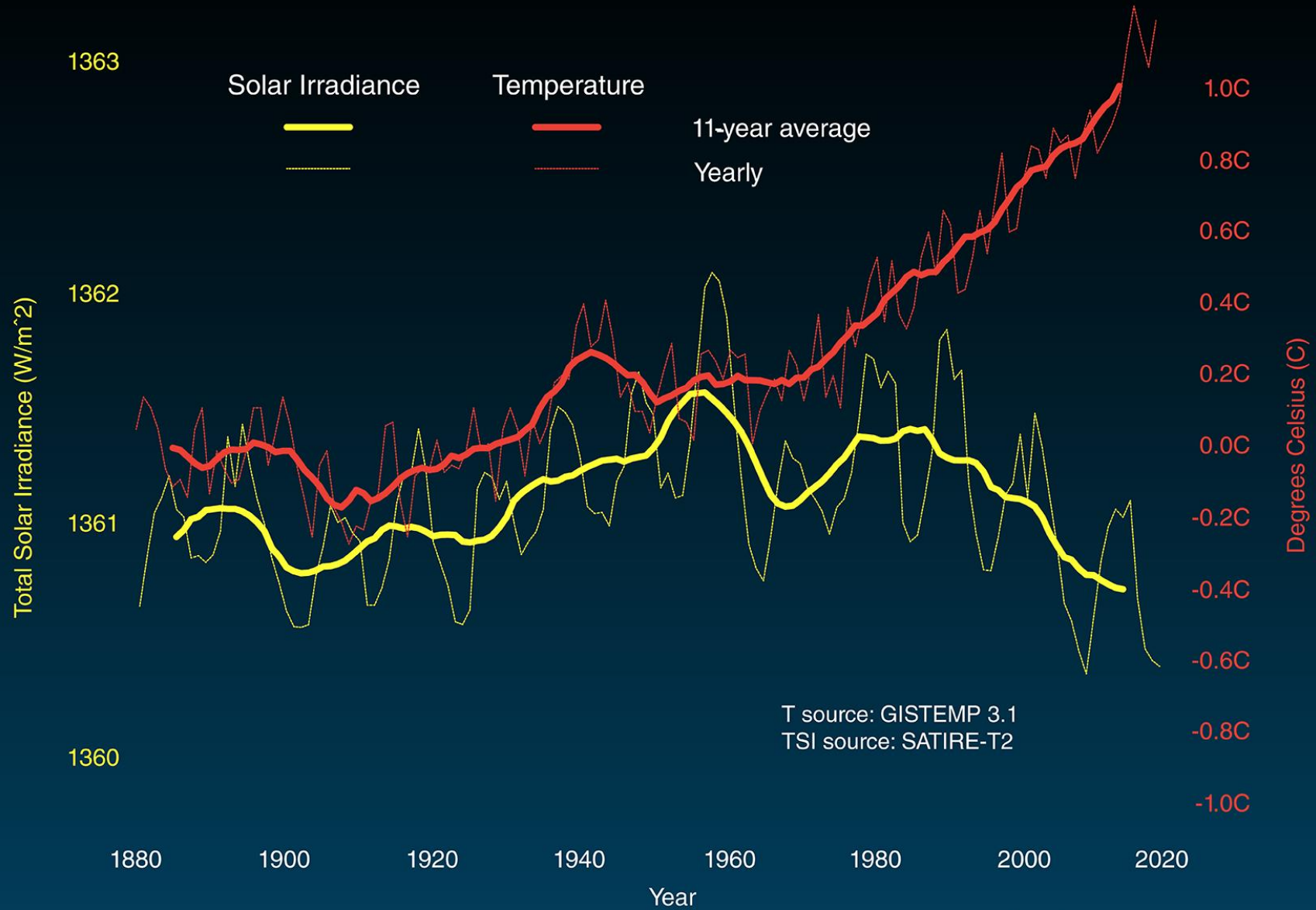
# Global Mean Temperature



Intergovernmental Panel on Climate Change working group 1 [http://ipcc-wg1.ucar.edu/wg1/FAQ/wg1\\_faq-3.1.html](http://ipcc-wg1.ucar.edu/wg1/FAQ/wg1_faq-3.1.html)



# Temperature vs Solar Activity



T source: GISTEMP 3.1  
TSI source: SATIRE-T2

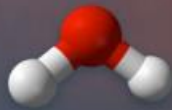
# OCEAN ACIDIFICATION

HOW WILL CHANGES IN OCEAN CHEMISTRY AFFECT MARINE LIFE?

CO<sub>2</sub> absorbed from the atmosphere



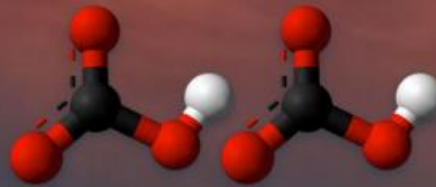
carbon dioxide



water



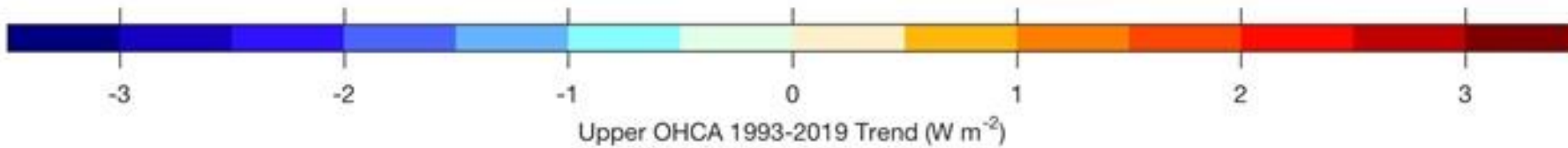
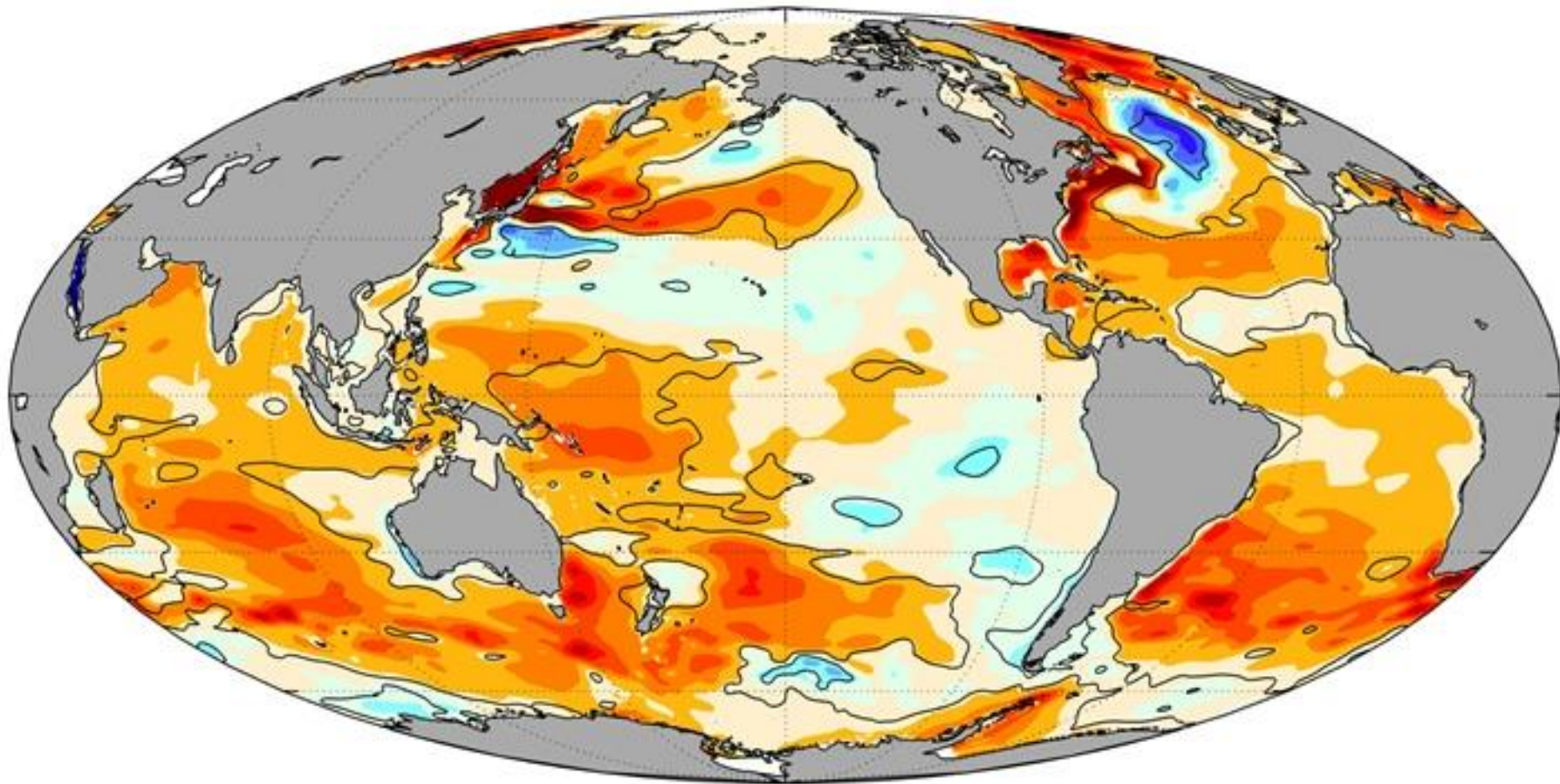
carbonate ion



2 bicarbonate ions

consumption of carbonate ions impedes calcification






# Learn from NOAA.gov for more!

The image shows a screenshot of the NOAA.gov website. At the top, there is a navigation bar with a hamburger menu icon on the left, a search bar, and links for "News", "Tools", and "About". Below the navigation bar is a large banner image of a volcanic landscape with a rainbow in the sky. Overlaid on the banner is the NOAA logo and the text "National Oceanic and Atmospheric Administration, U.S. Department of Commerce". A search bar is also present on the right side of the banner. The main content of the banner is a large white text overlay that reads "#EarthDay: Invest your time, know-how for a healthy planet and a Climate-Ready Nation >". Below this text is a smaller line of text: "Plus: How NOAA science, service and stewardship are put into action every day >". On the left side of the screenshot, there is a vertical blue sidebar with ten white icons representing different NOAA programs: a sun, a key, a person, a fish, a tree, a beaker, a microscope, a globe, a leaf, and an apple.

An official website of the United States government [Here's how you know we're official](#) ▾

Find your local weather 📍

News | Tools | About

 National Oceanic and Atmospheric Administration  
U.S. Department of Commerce

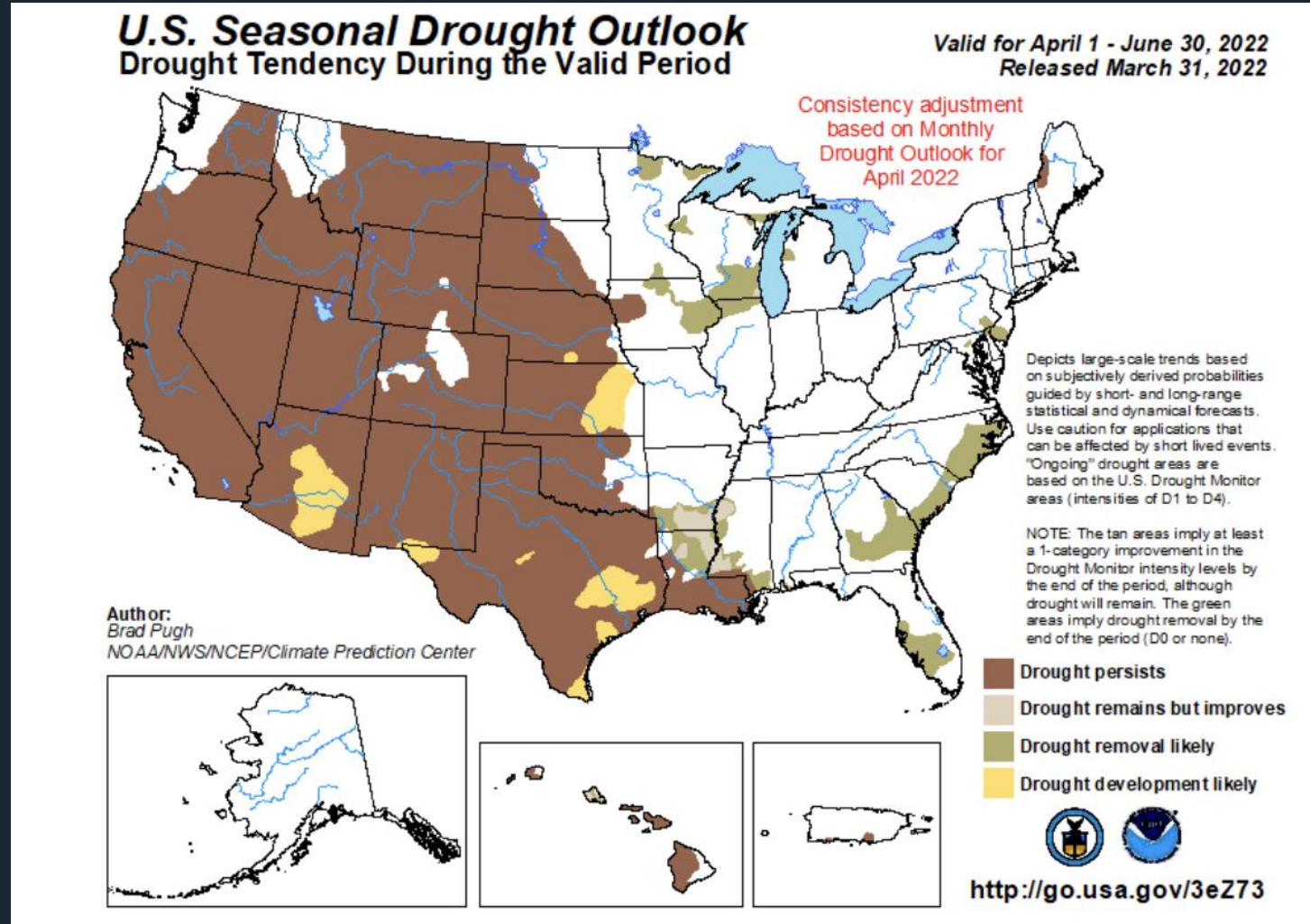
Search NOAA sites 🔍

## #EarthDay: Invest your time, know-how for a healthy planet and a Climate-Ready Nation >

Plus: How NOAA science, service and stewardship are put into action every day >



# West and Southwest US has been in drought conditions since 2000.



# Media is really poor and helping our climate dialogue

The screenshot displays the AMS Journals website interface. At the top left is the AMS logo (American Meteorological Society) and the 'Journals' title. Navigation links include 'JOURNALS', 'BROWSE', 'PUBLISH', 'SUBSCRIBE', and 'ABOUT'. On the top right, there are 'Sign in' and 'Sign up' links, and a search bar with a magnifying glass icon.

The main content area features a left sidebar for the 'Bulletin of the American Meteorological Society', showing 'Volume 89: Issue 9' and expandable sections for 'Cited By', 'Metrics', and 'Related Content'. The main article title is 'THE MYTH OF THE 1970s GLOBAL COOLING SCIENTIFIC CONSENSUS' by Thomas C. Peterson, William M. Connolley, and J... (with a 'View More +' button). The article is marked as 'Full access' and 'Article' type. Publication dates are listed as 'Published-online: 01 Sep 2008' and 'Print Publication: 01 Sep 2008'. The DOI is 'https://doi.org/10.1175/2008BAMS2370.1' and the page range is '1325-1338'. Action buttons include 'Article History', 'Download PDF', and 'Get Permissions'. Below these are tabs for 'Abstract/Excerpt', 'Full Text', and 'PDF'. The visible text of the article begins with: 'Climate science as we know it today did not exist in the 1960s and 1970s. The integrated enterprise embodied in the Nobel Prizewinning work of the Intergovernmental Panel on Climate'.



# Locally, there are ways to help.

**PROTECTING OUR PLANET STARTS WITH YOU** 

<p><b>BIKE MORE DRIVE LESS</b></p> 	<p> <b>reduce REUSE recycle</b></p> <p>Cut down on what you throw away. Follow the three "R's" to conserve natural resources and landfill space.</p>	<p><b>choose sustainable</b></p>  <b>seafood</b> <p>Learn how to make smart seafood choices at <a href="http://www.FishWatch.gov">www.FishWatch.gov</a>.</p>	<p>Trees provide food and oxygen. They help save energy, clean the air, and help combat climate change.</p>  <b>PLANT A TREE</b>
<p> <b>EDUCATE</b></p> <p>When you further your own education, you can help others understand the importance and value of our natural resources.</p>	<p><b>CONSERVE WATER</b></p>  <p>The less water you use, the less runoff and wastewater that eventually end up in the ocean.</p>	<p> <b>-SHOP- WISELY</b></p> <p>Buy less plastic and bring a reusable shopping bag.</p>	<p> <b>Don't send chemicals into our waterways.</b></p> <p>Choose nontoxic chemicals in the home and office.</p>
<p><b>Volunteer!</b></p>  <p>Volunteer for cleanups in your community. You can get involved in protecting your watershed too!</p>		<p> <b>Long-lasting light bulbs - ARE A - BRIGHT IDEA</b></p> <p>Energy efficient light bulbs reduce greenhouse gas emissions. Also flip the light switch off when you leave the room!</p>	

[oceanservice.noaa.gov](http://oceanservice.noaa.gov)



HAPPY

EARTH

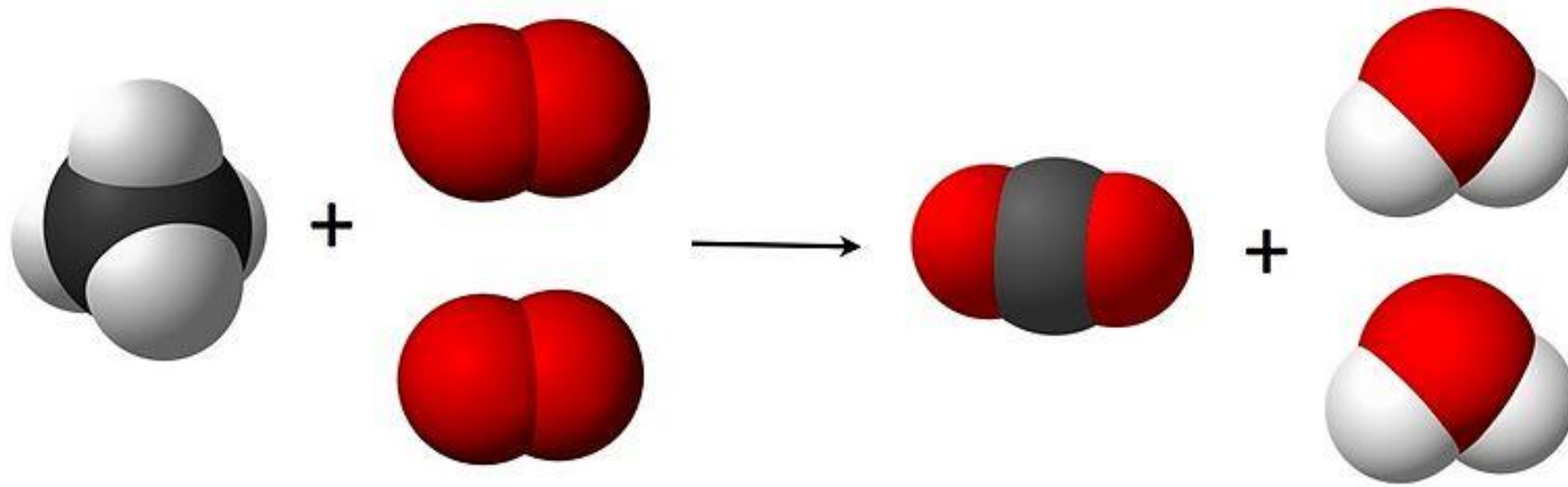
DAY 22 APRIL





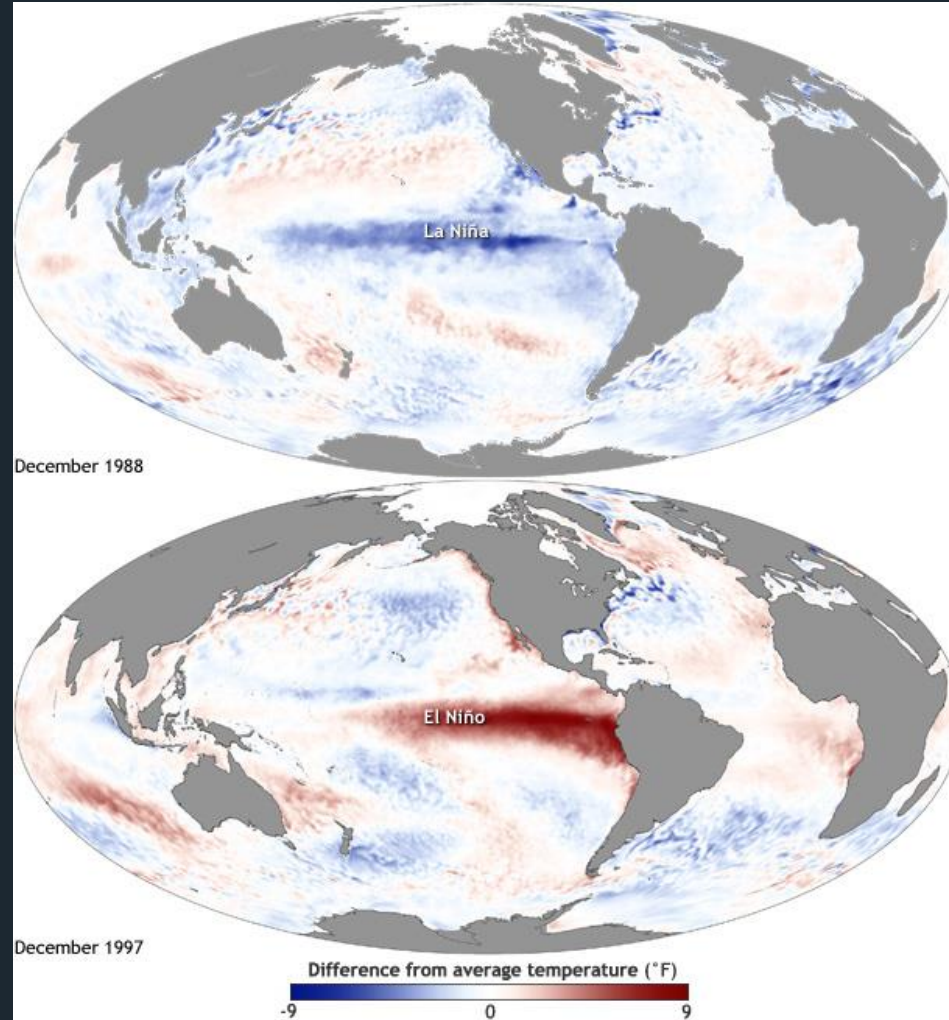
THE END



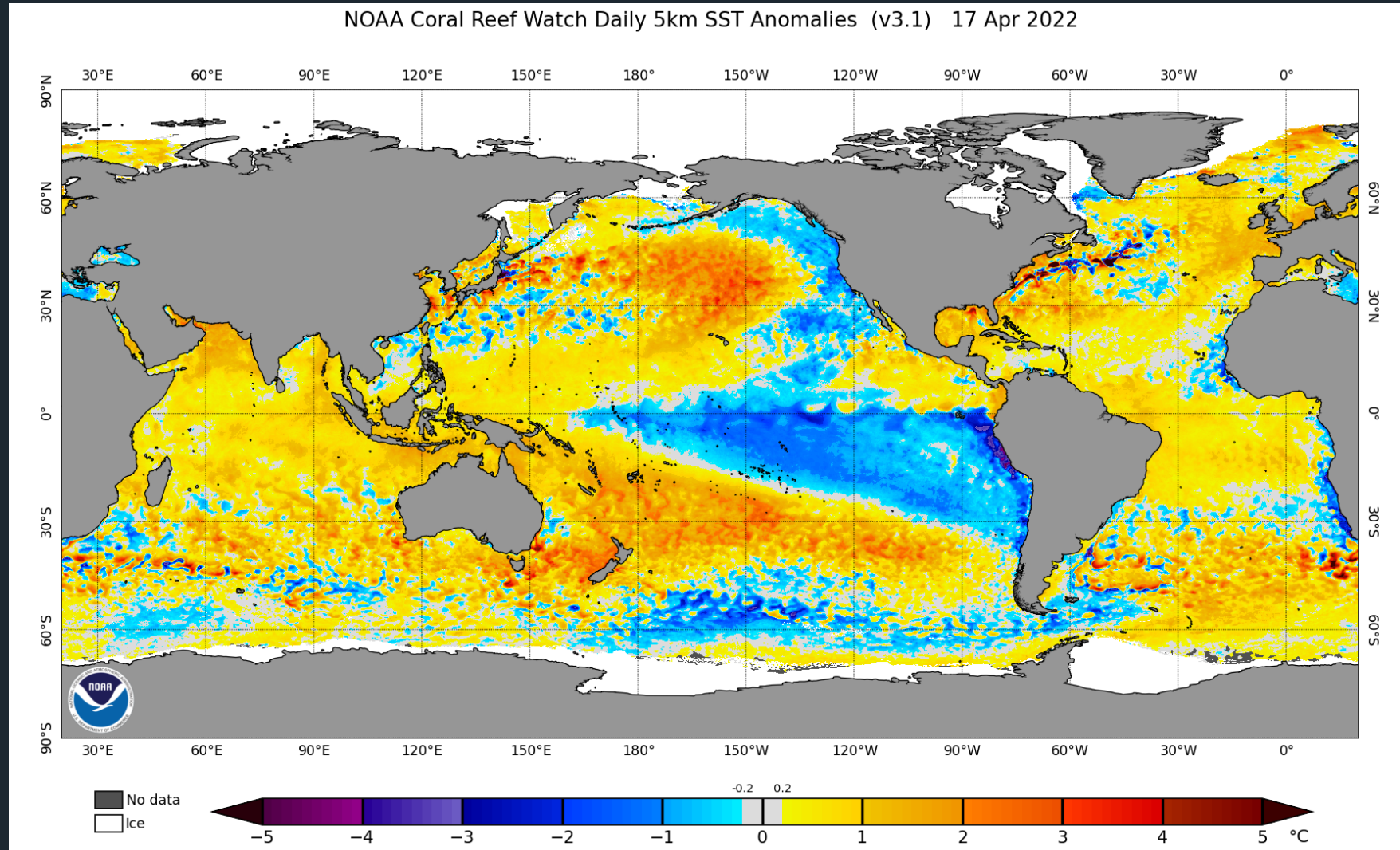




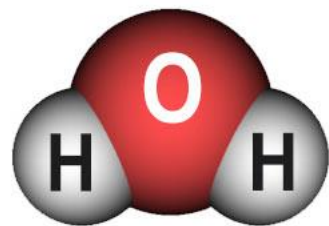
# ENSO – El Nino South Oscillation



# ENSO – El Nino South Oscillation (Today)

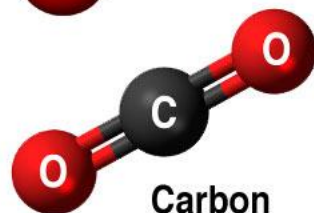
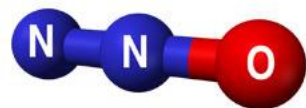




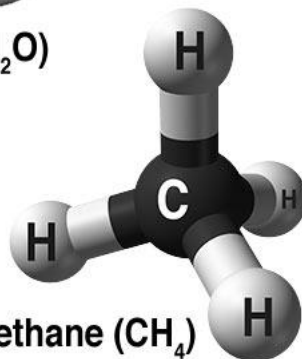


Water vapor ( $\text{H}_2\text{O}$ )

Nitrous oxide ( $\text{N}_2\text{O}$ )



Carbon dioxide ( $\text{CO}_2$ )

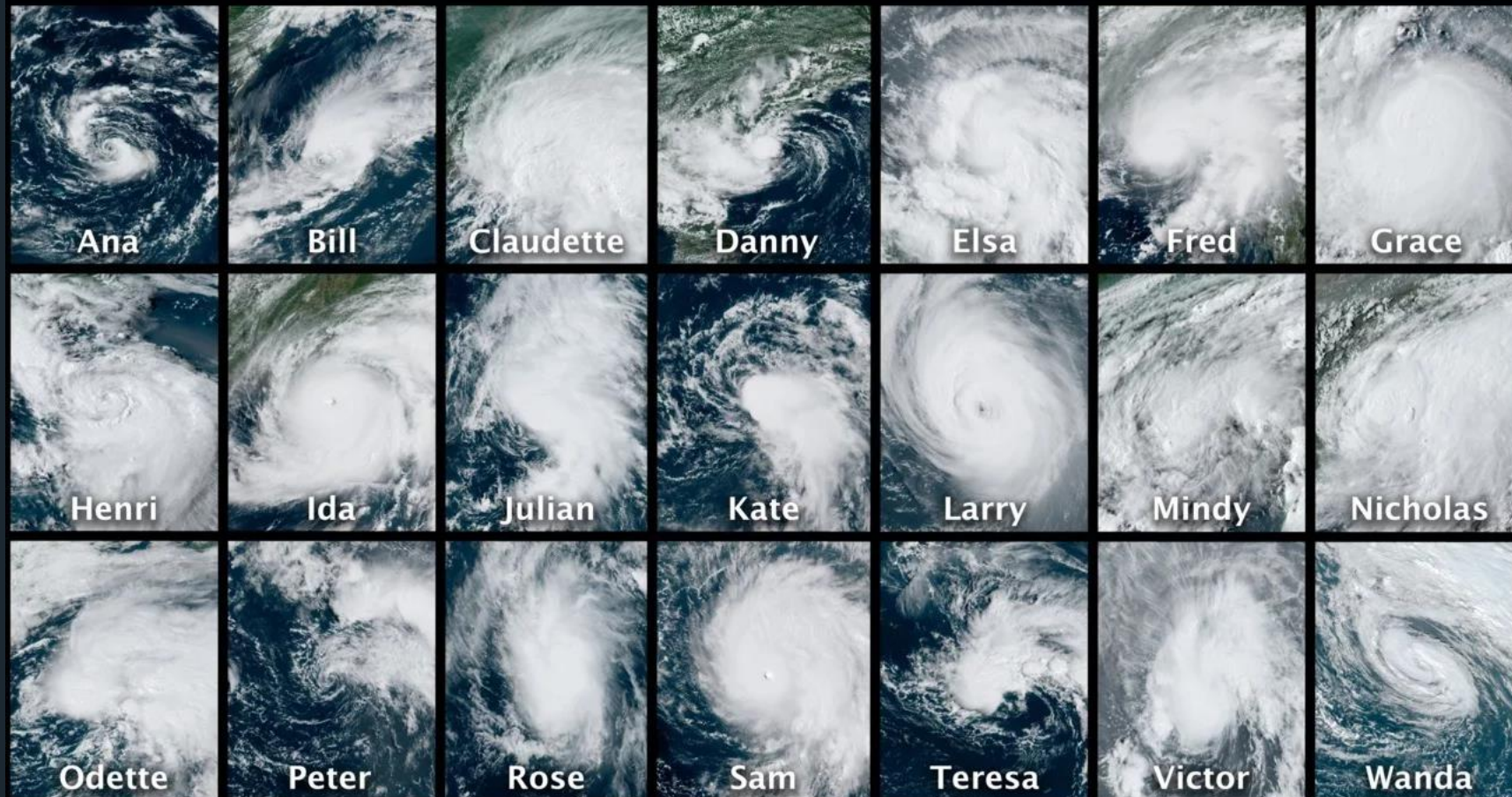


Methane ( $\text{CH}_4$ )





# 2021 Atlantic Hurricane Season



All 21 named storms from the busy 2021 Atlantic hurricane season are seen in a composite image from NOAA's GOES East satellite. *NOAA*