

CLIMATE ACTION AND ENERGY EFFICIENCY

OPALCO

Co-op Run. Community Powered.

March 2024

Odd Fellows

Serving Community Since 1891



OPALCO

Serving Community Since 1937



Energy Efficiency

Energy Assistance

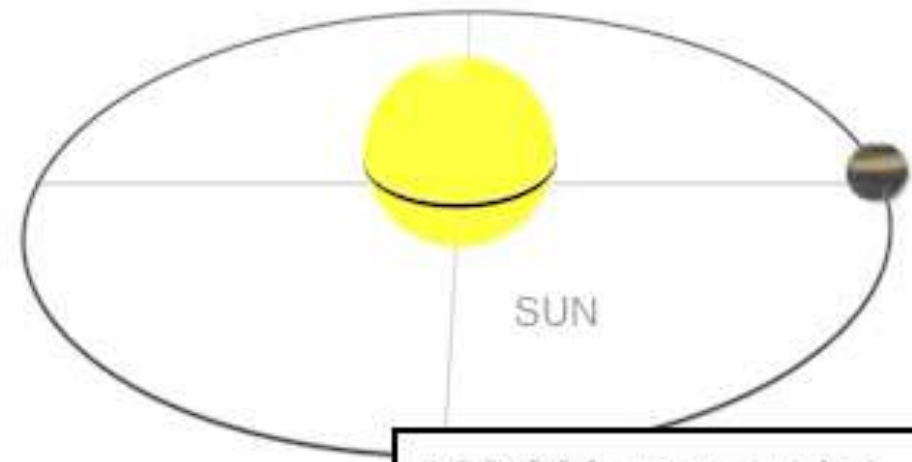
Why

Energy Efficiency

Energy Assistance

Orbital Cycles

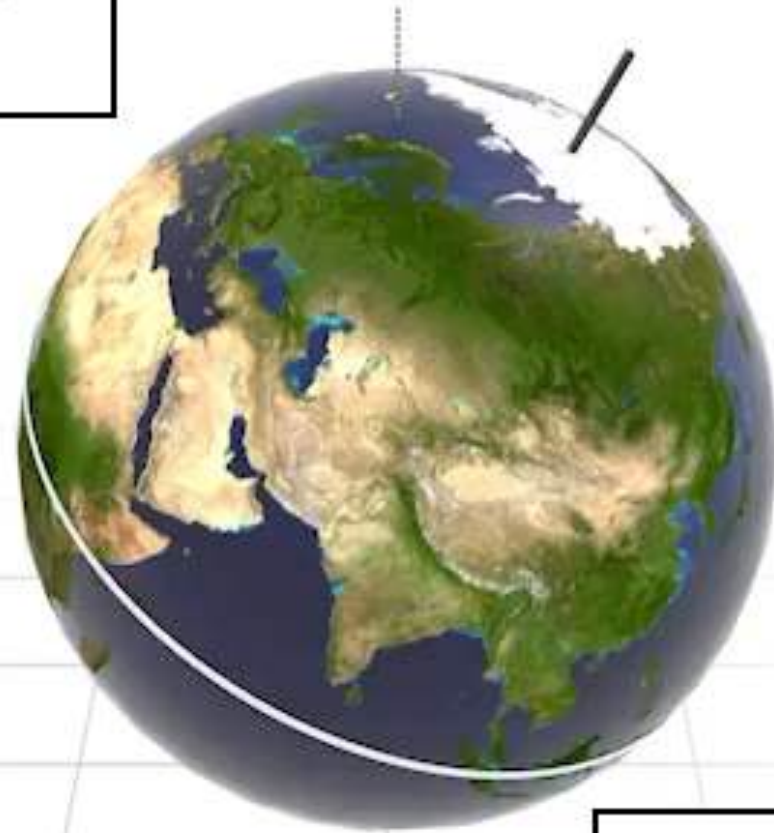
Three periodic motions in Earth's orbit, known as Milankovitch cycles, contribute a predictable amount of variation to Earth's climate over time frames of tens of thousands to hundreds of thousands of years.



100,000-year cycles
Changes in Eccentricity
(Orbit Shape)

*Changes in eccentricity exaggerated so the effect can be seen. Earth's orbit shape varies between 0.0034 (almost a perfect circle) to 0.058 (slightly elliptical).

26,000-year cycles
Axial Precession
(Wobble)



41,000-year cycles
Changes in Obliquity
(Tilt)

Relative to orbital plane

22.1-24.5°

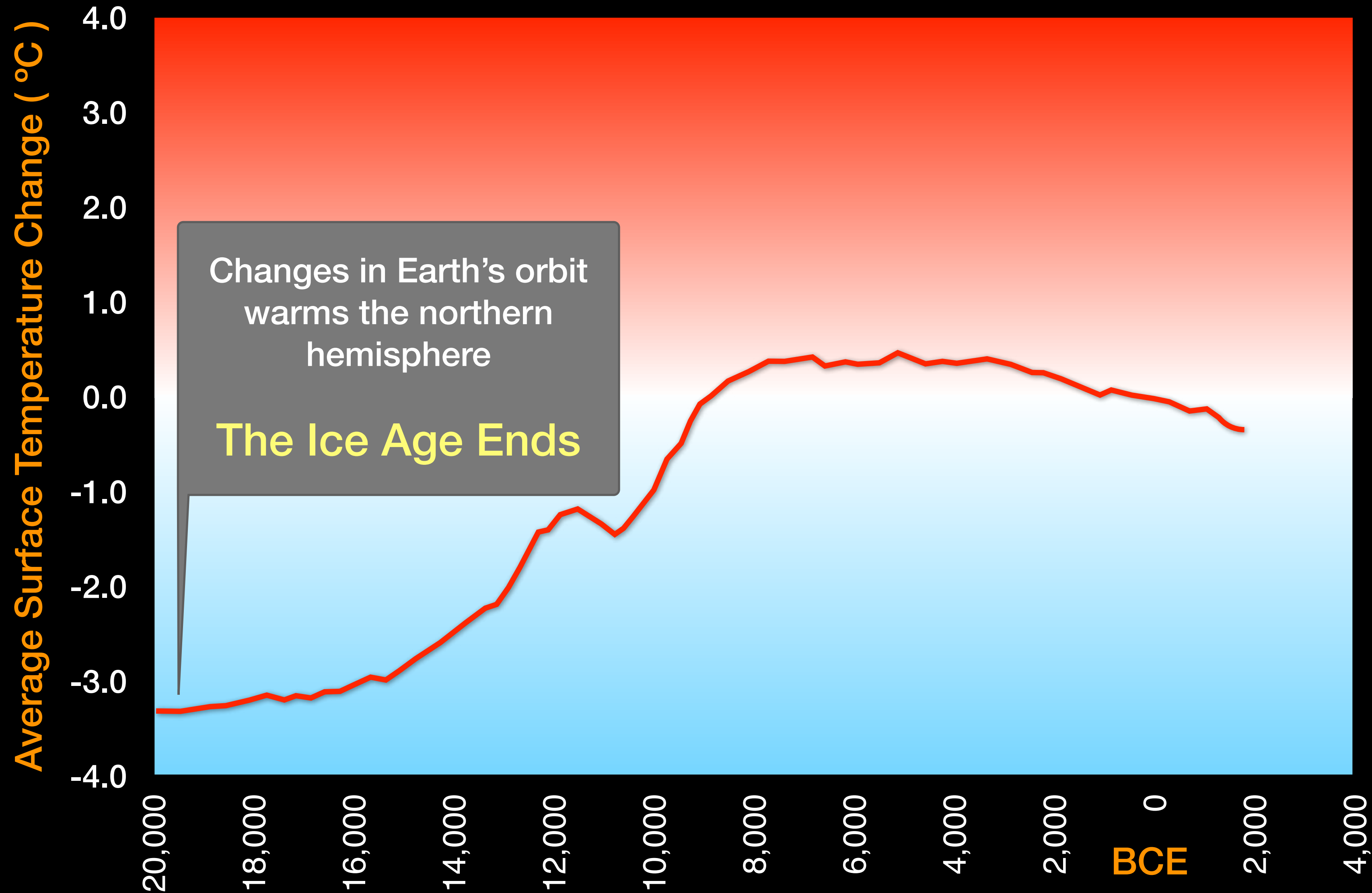


climate.nasa.gov

Milanković Cycle

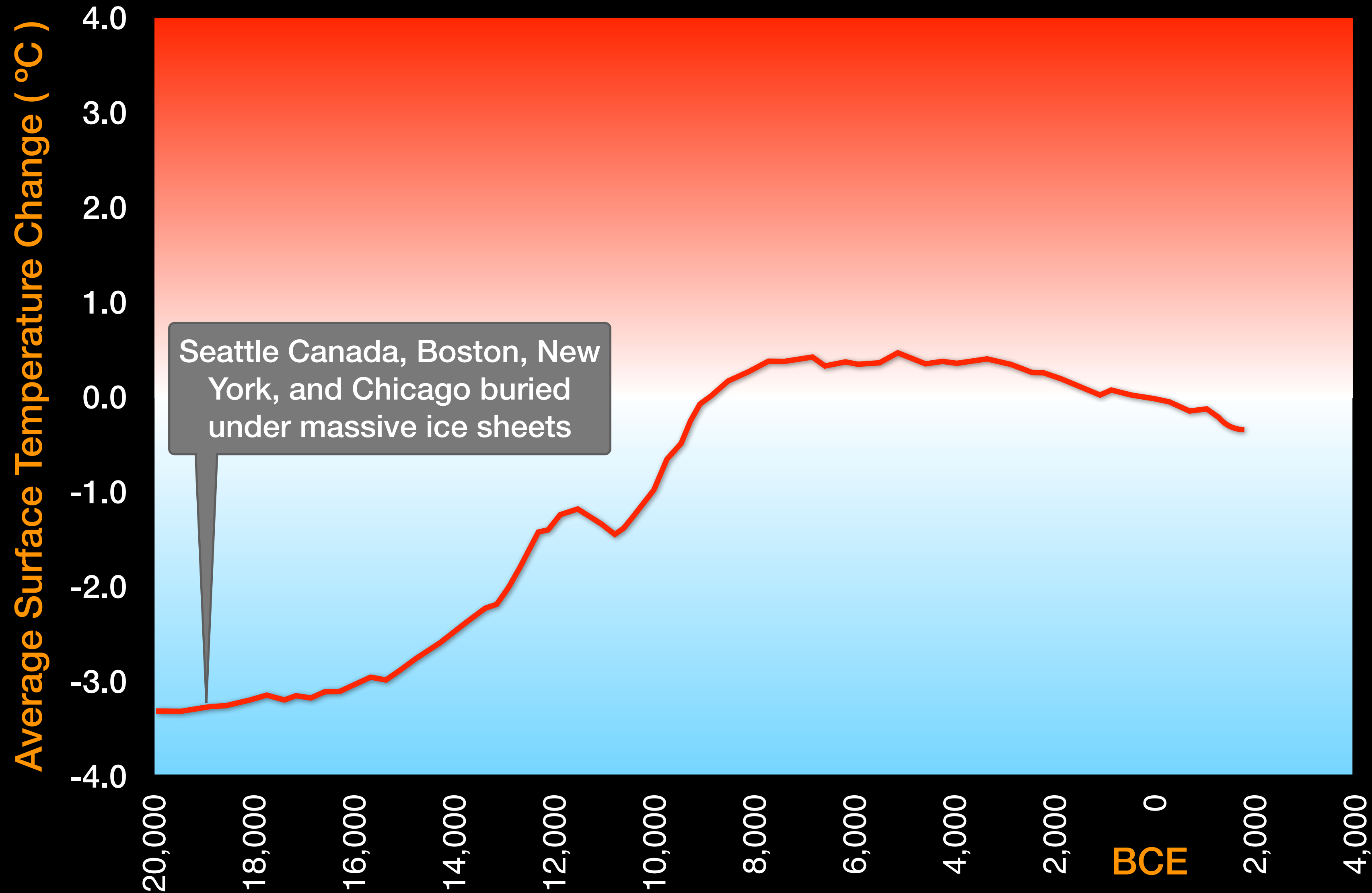
The northern hemisphere tilts toward or away from the sun about every 100,000 years

Earth's Changing Temperature *relative to pre-industrial average*

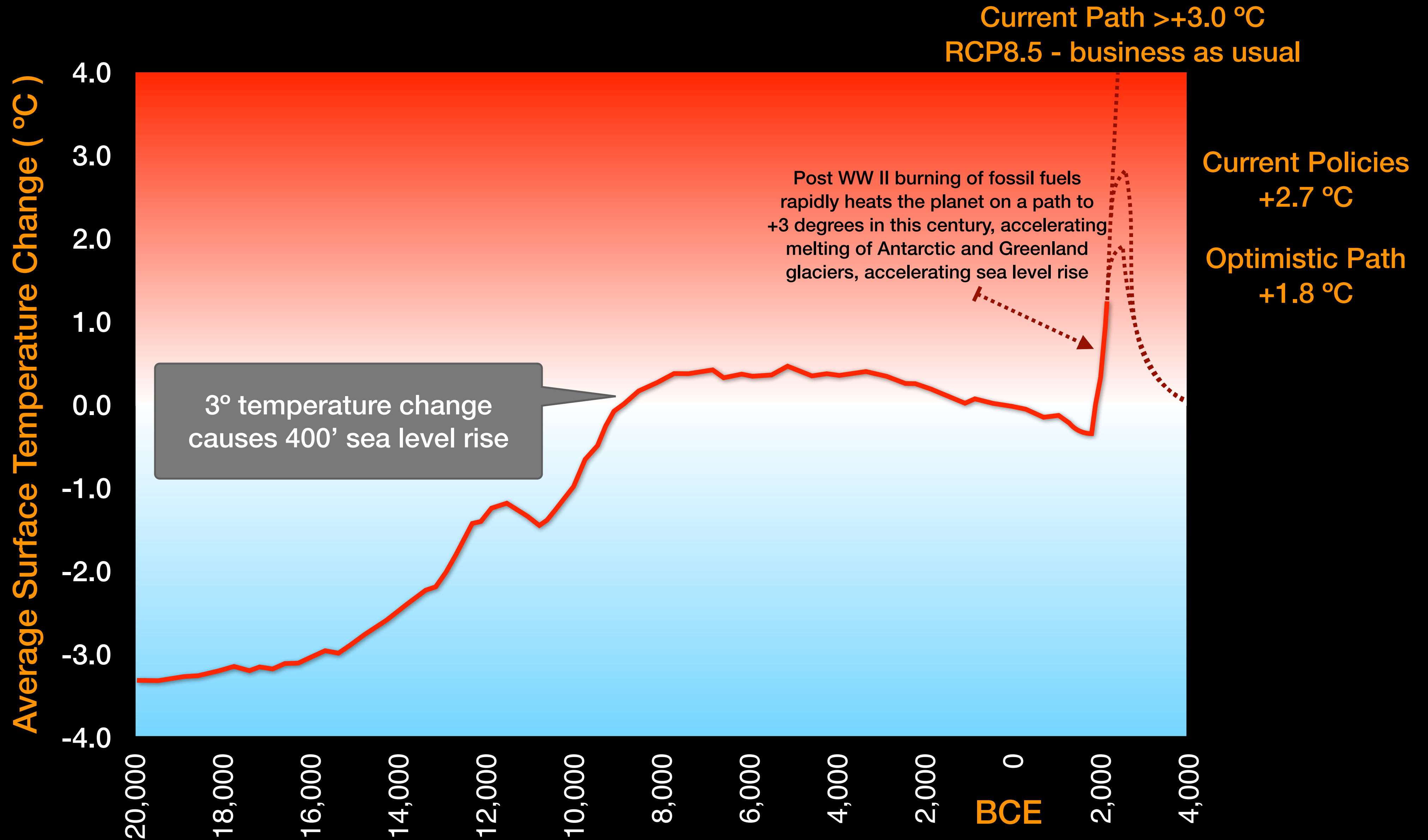


Changes in Earth's orbit
warms the northern
hemisphere
The Ice Age Ends

Earth's Changing Temperature *relative to pre-industrial average*



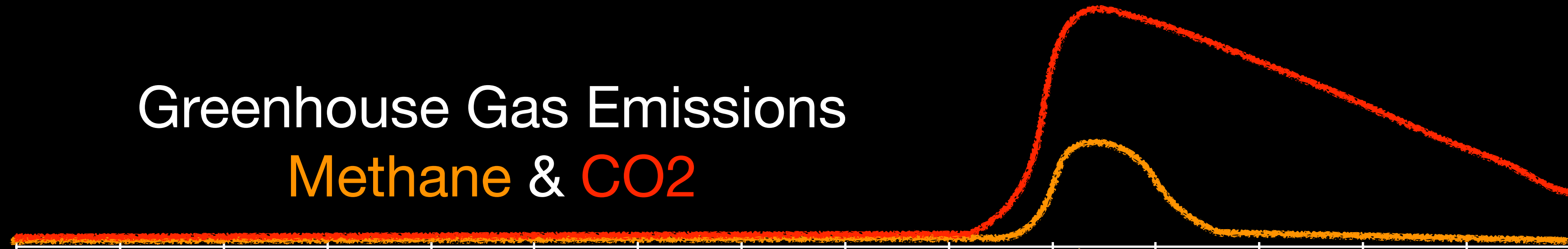
Global Heating: $+3^{\circ}C$ is a big deal!



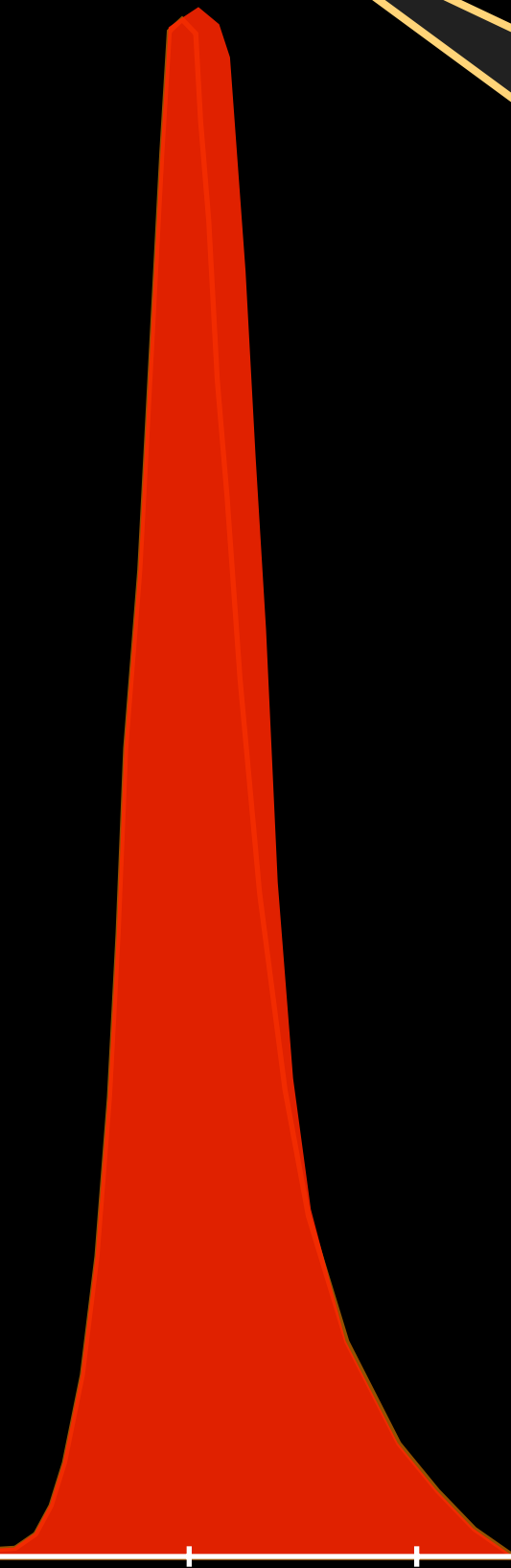
Fossil Fuel Greenhouse Gas Persist for over 500 years

Greenhouse Gas Emissions
Methane & CO2

CO2 life 500+ years
Methane life 20+ years



Fossil
Fuels



50 Years From Now

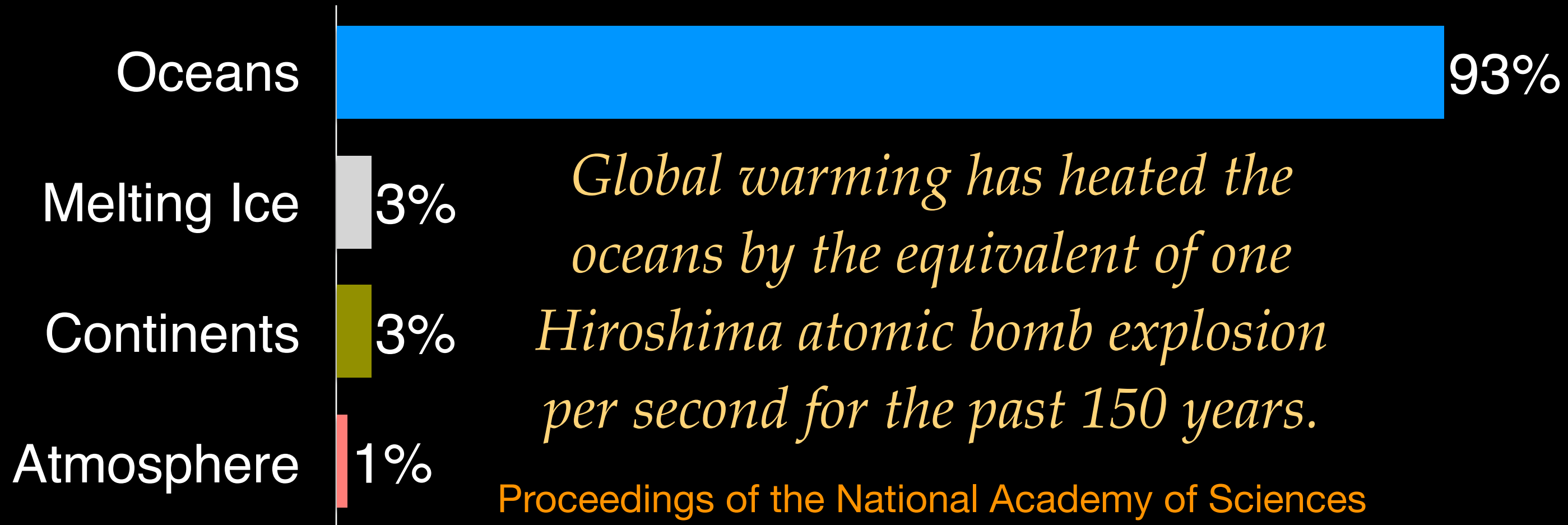
*One-third of all plant and animal species
could be **extinct***

*Olympic Peninsula glaciers **melted***

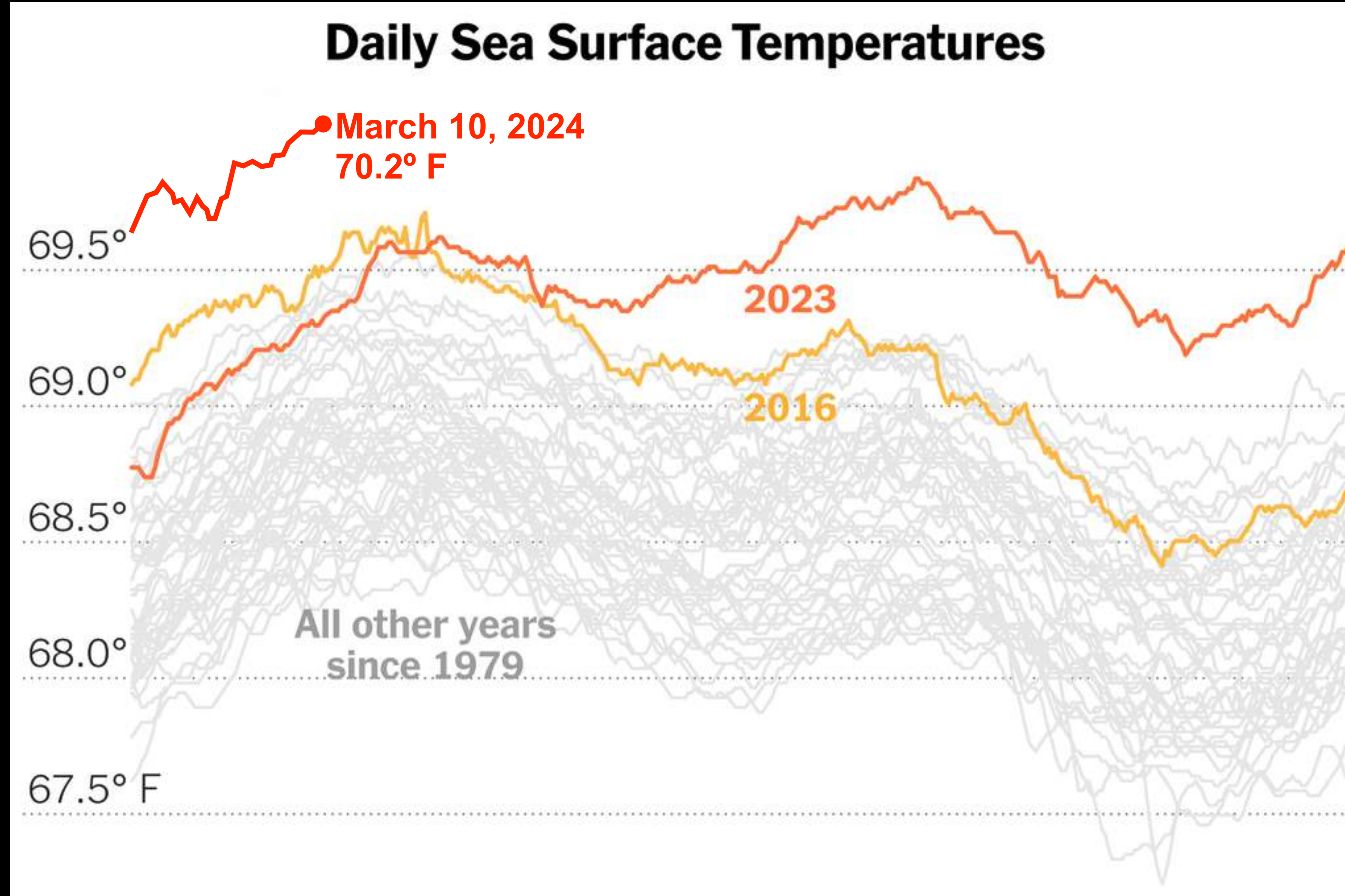
*from California to Alaska, most west coast
salmon species **extinct***

0 200 400 600 800 1000 1200 1400 1600 1800 2000 2200 2400 2600 2800 3000
BCE

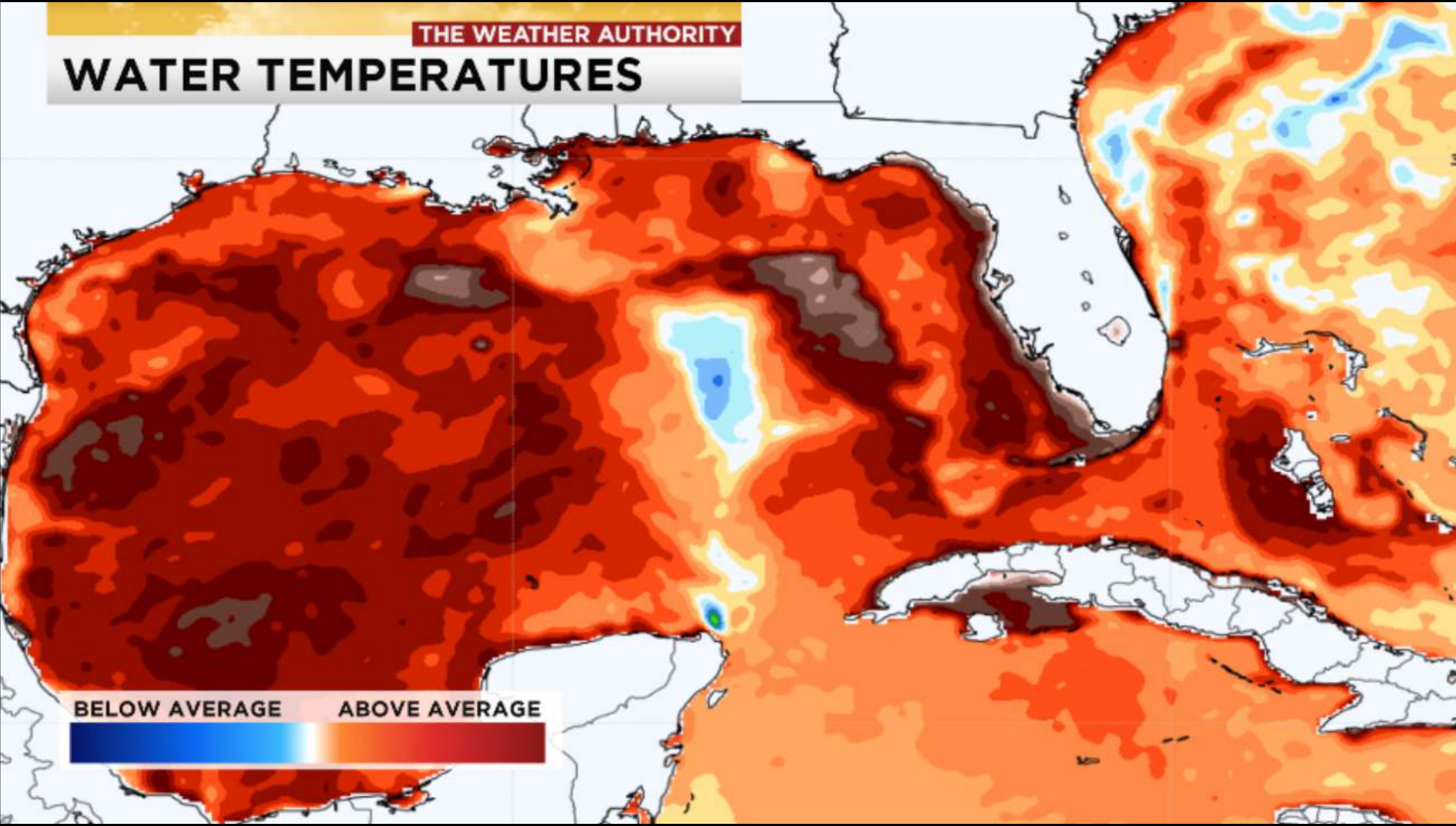
Where is the heat from global warming going?



Ocean Temperatures Are Off The Chart

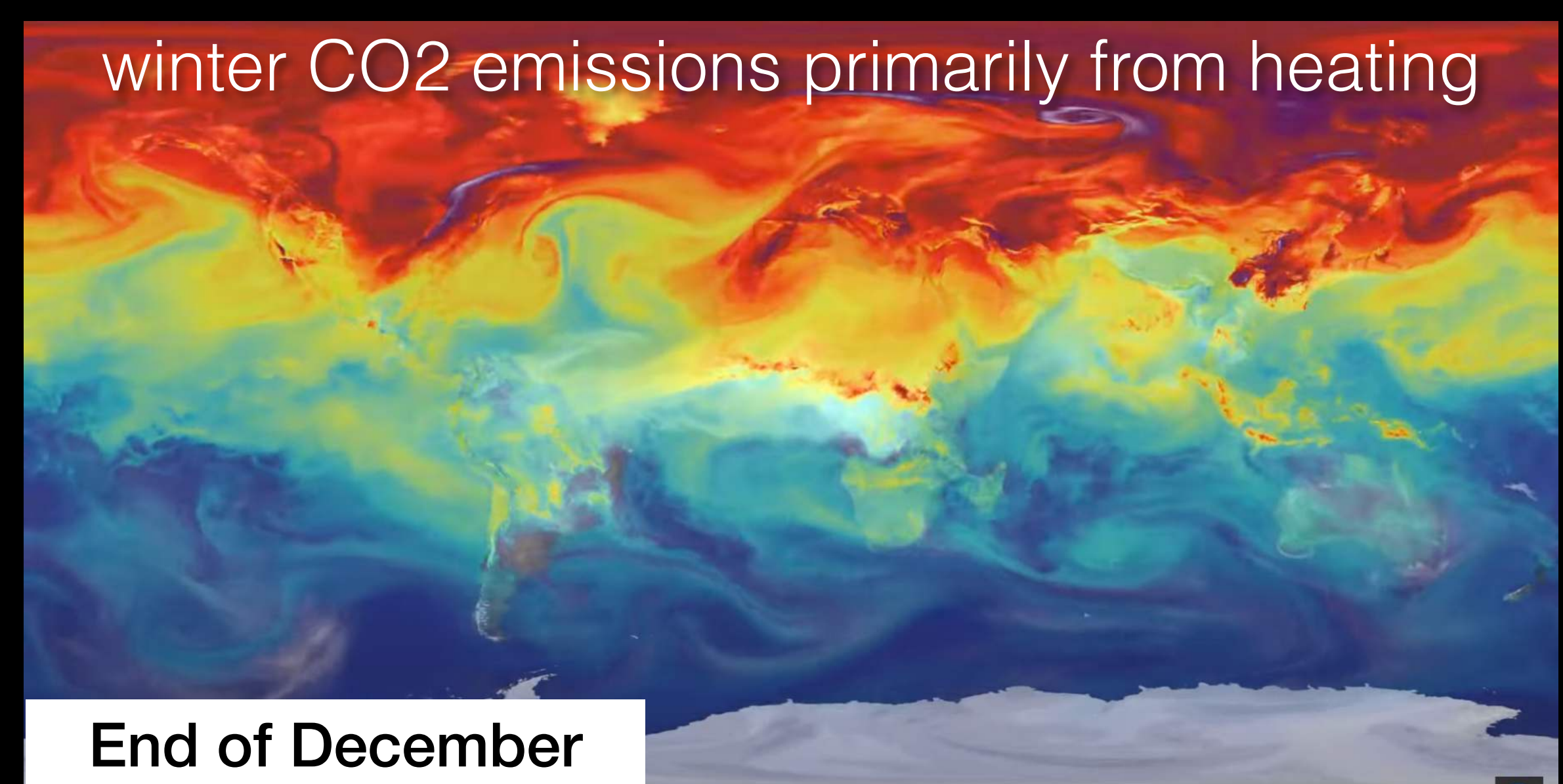
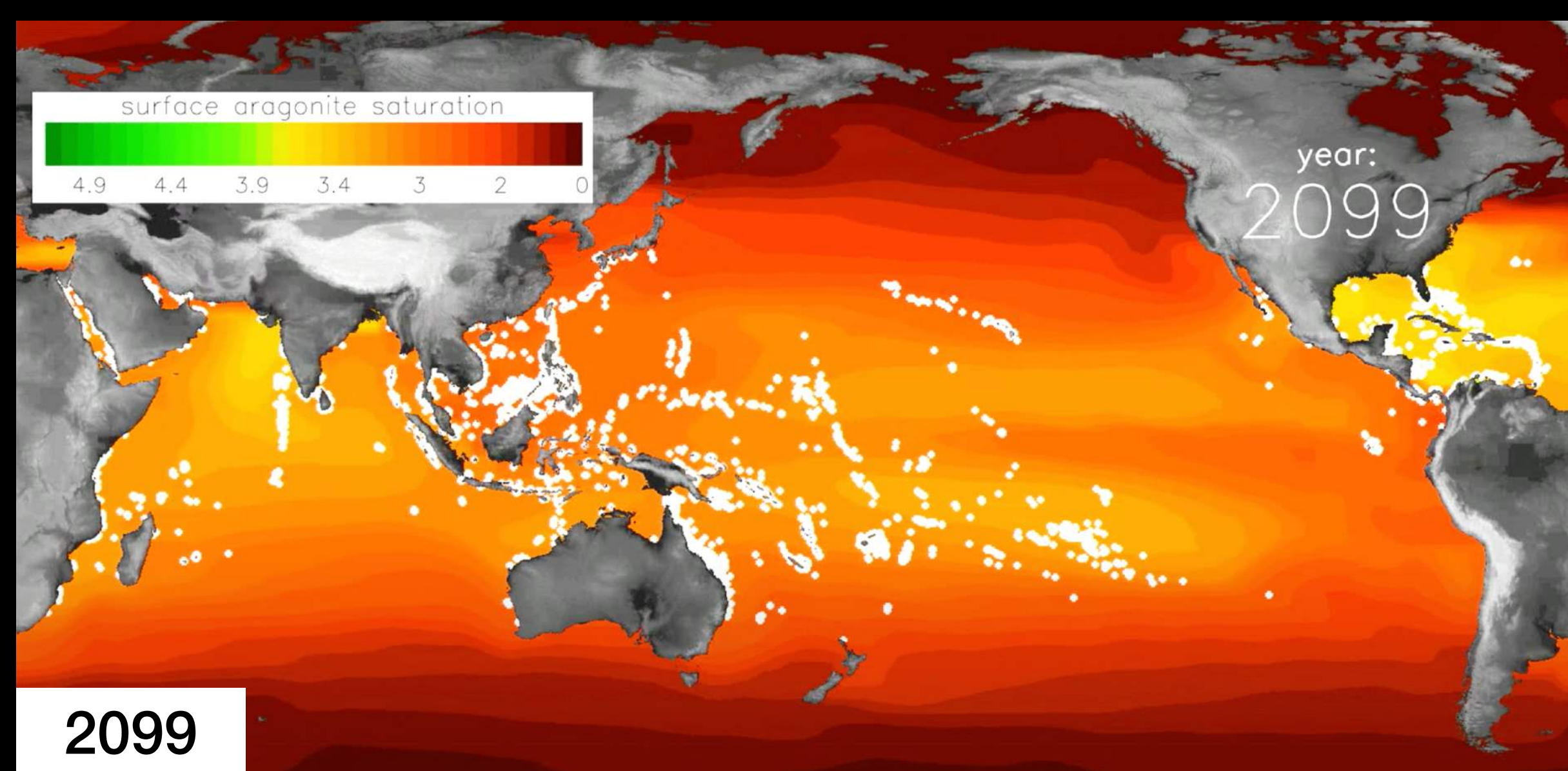
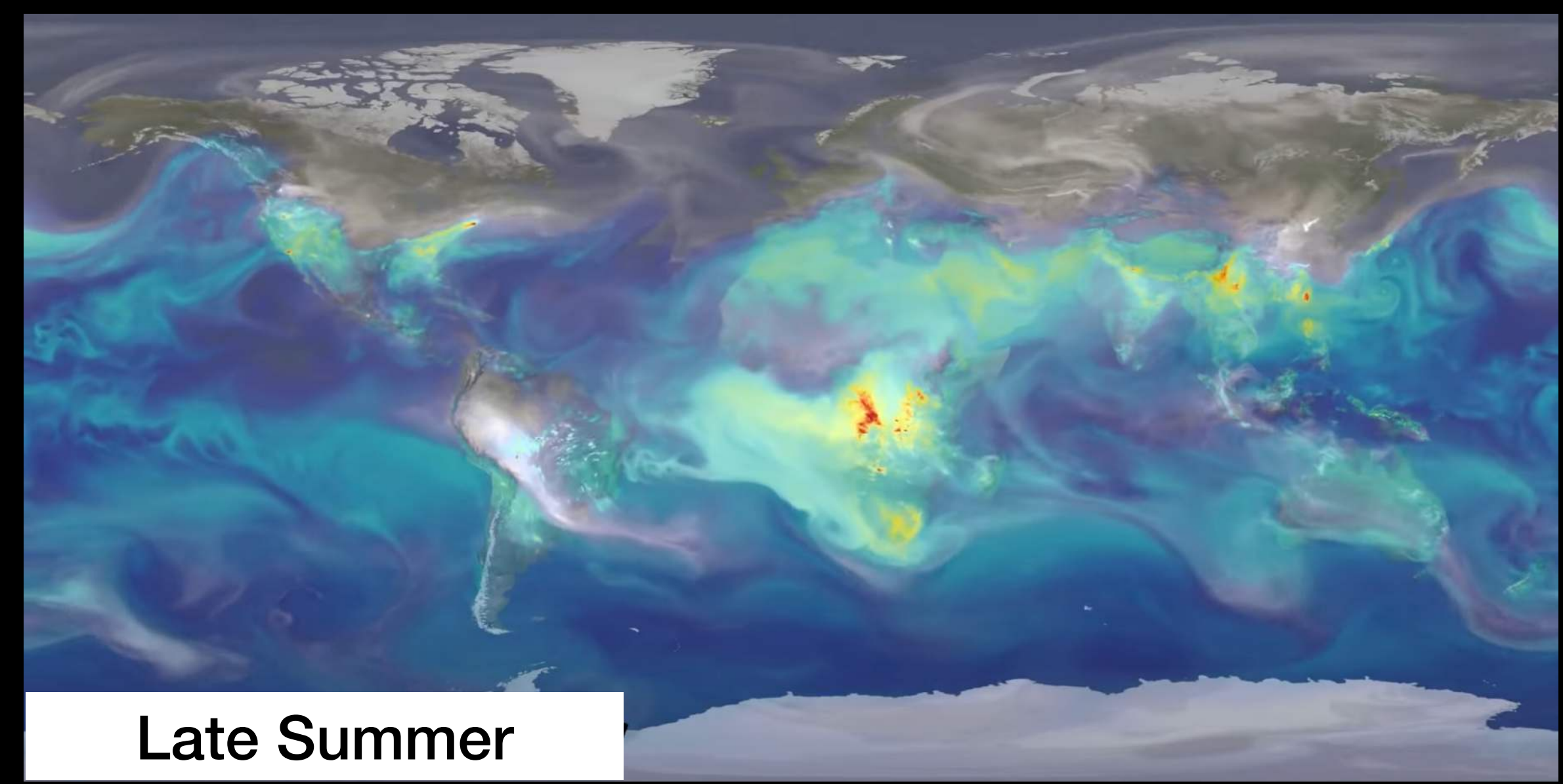
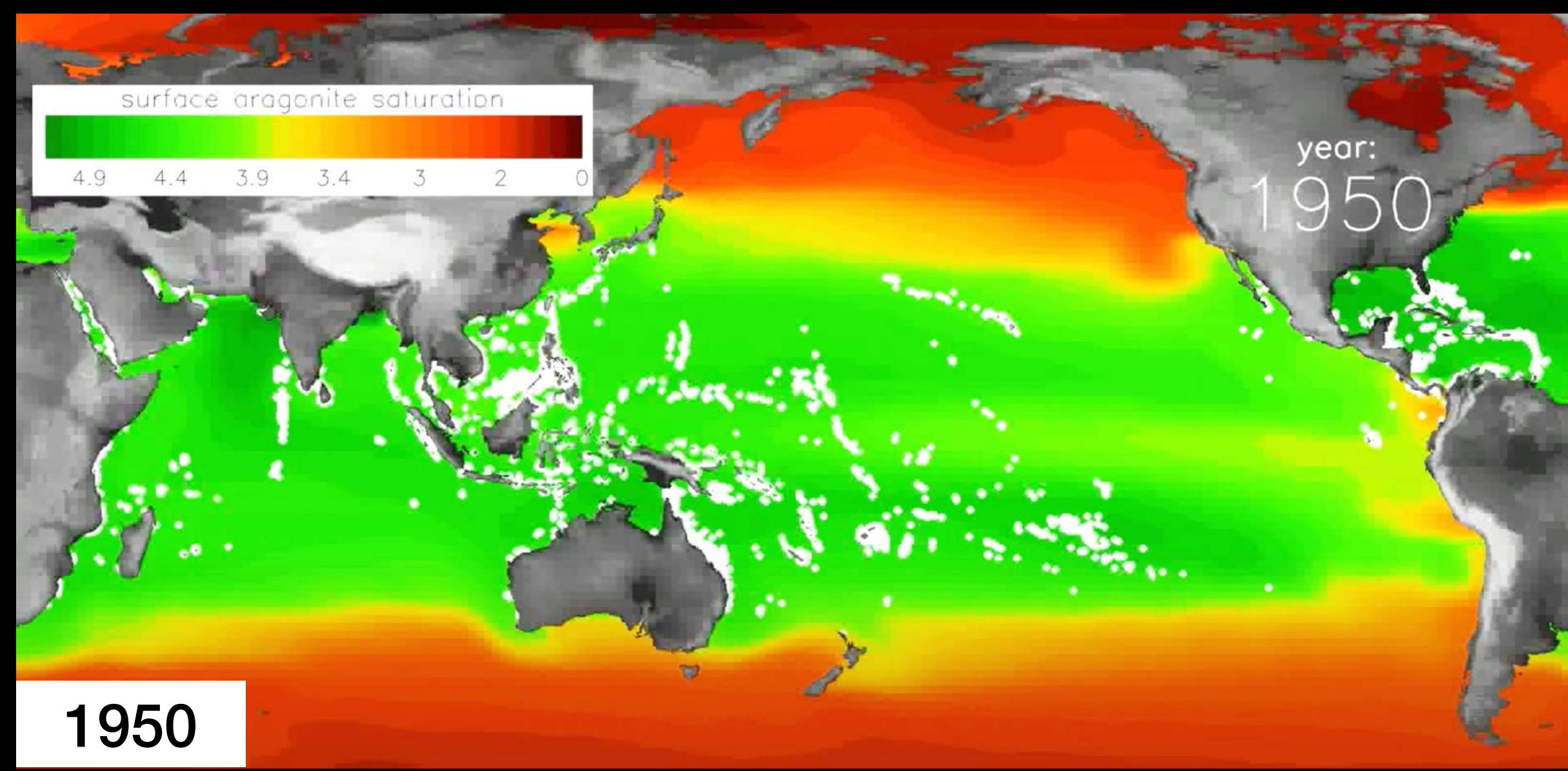


Florida And Gulf Waters Were Over 100° F Last Summer



OCEAN ACIDIFICATION

CO₂ EMISSIONS



NW Extreme Weather



Doe Bay, WA



West Sound, WA

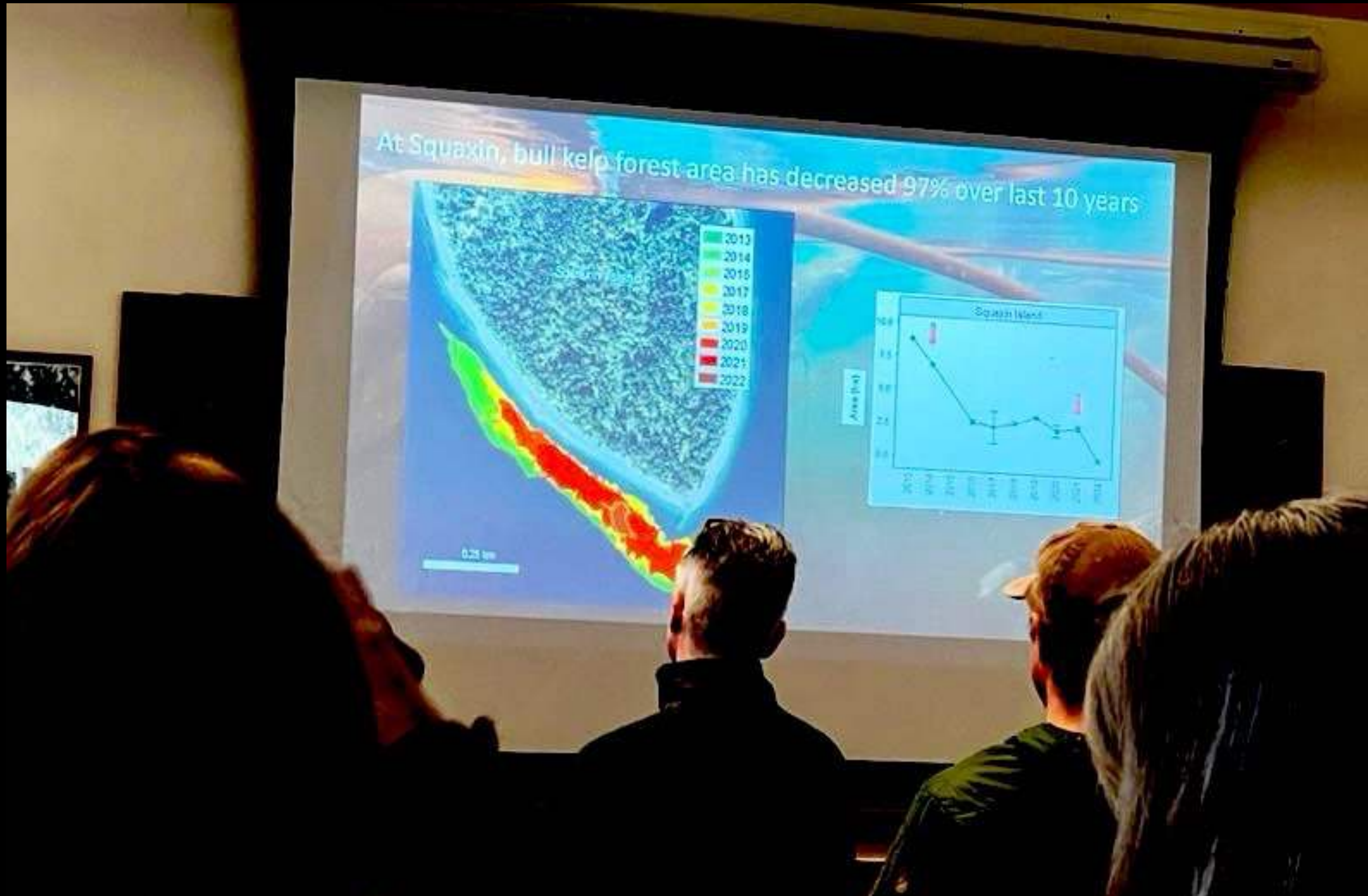


Bellingham, WA

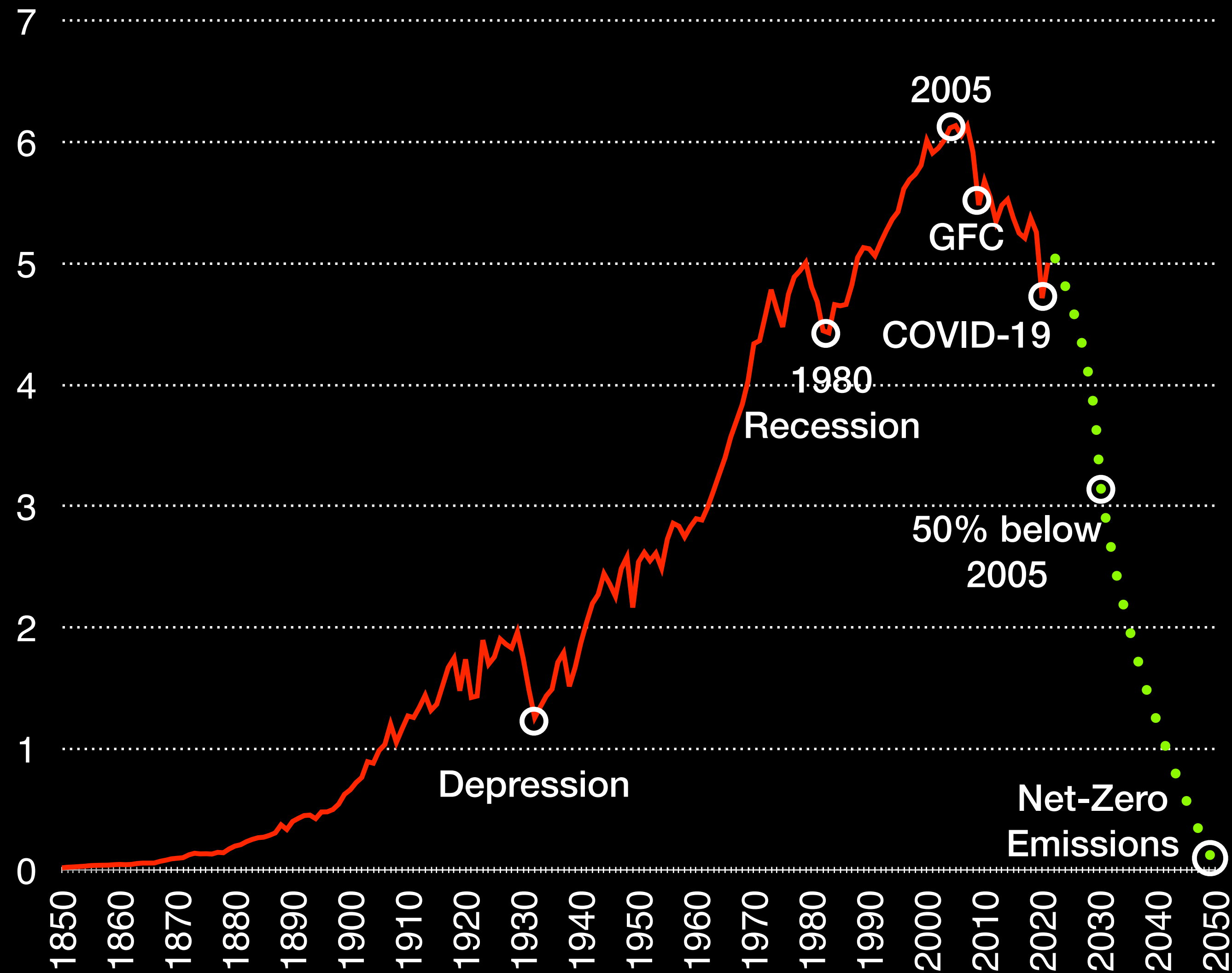


BC, Canada

Bull Kelp Forest In Salish Sea Decreased 97% Over Last 10 Years



US Annual CO₂ Emissions: 1850 - 2050 (billions of tons - Gt)

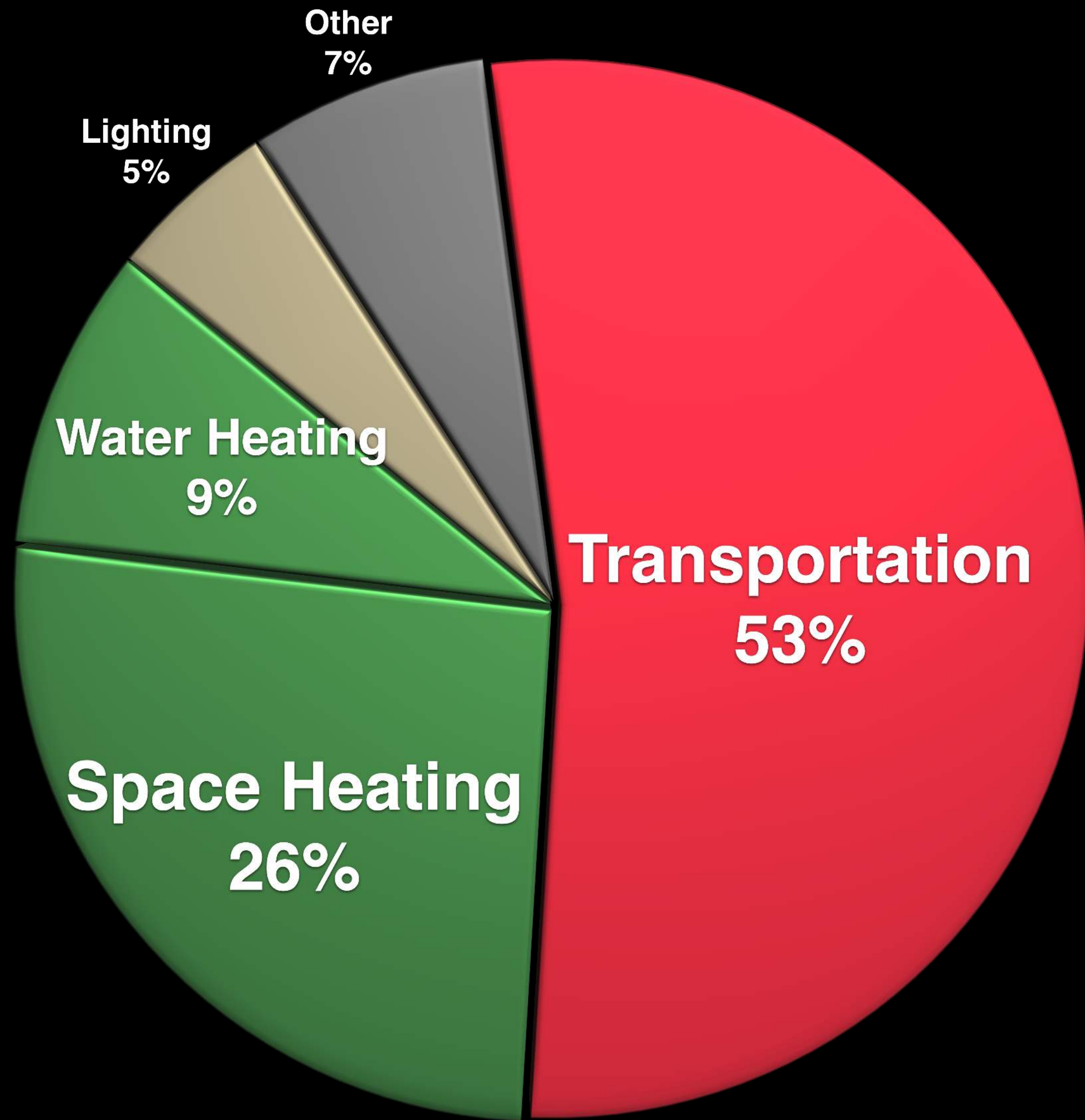


US Objectives

- reduce GHG emissions 50% below 2005 levels by 2030, Net-Zero by 2050
- invest in infrastructure, renewables + storage, resilience, electrify transportation (cars, trucks, ferries, planes)
- delivering 40% of the benefits to disadvantaged communities
- increase clean-tech jobs

Washington Objectives

- mirrors Federal objectives
- substantial funds from federal investment will flow through state (e.g. WA departments of Commerce and Transportation)



In San Juan County, over
80% of energy use
and
81% of CO2 emissions
come from
transportation and heating

San Juan County Carbon Footprint: 218,655 Metric Tons per Year

Major Sources

Share of Total CO₂ Emissions

source: SJC Community and County Operations GHG Emissions, 2023

Transportation

47%

WA Ferries

On-road Vehicles

Recreational Boating

Heating

34%

Wood Heat

Propane Heat

Tree Loss

visitors + locals

1,000
acre
wildfire

0%

5%

10%

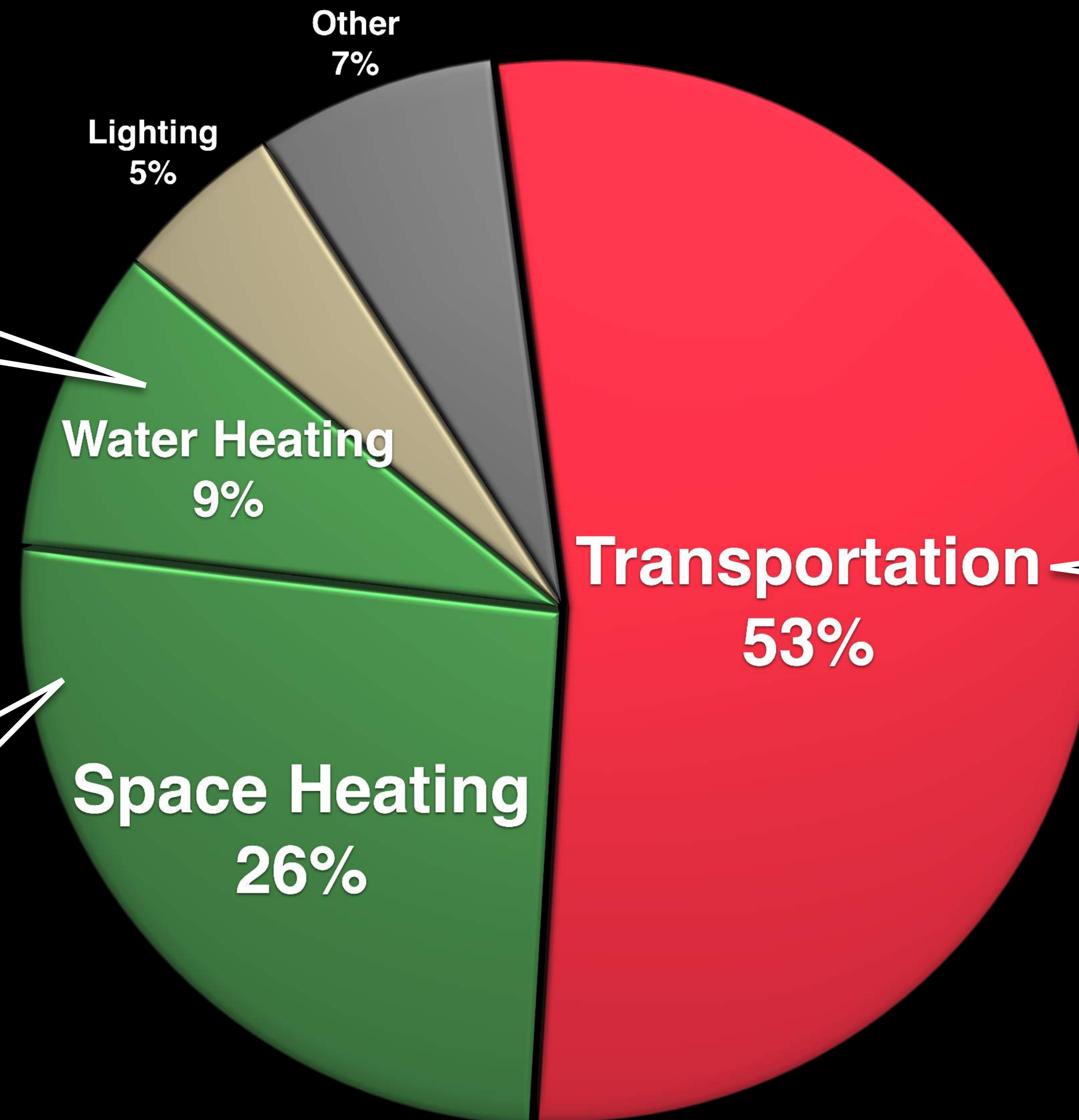
15%

20%

= 81% of total CO₂ emissions

The Next Wave of Efficiency: Electrification of heating and transportation

Home Energy Use



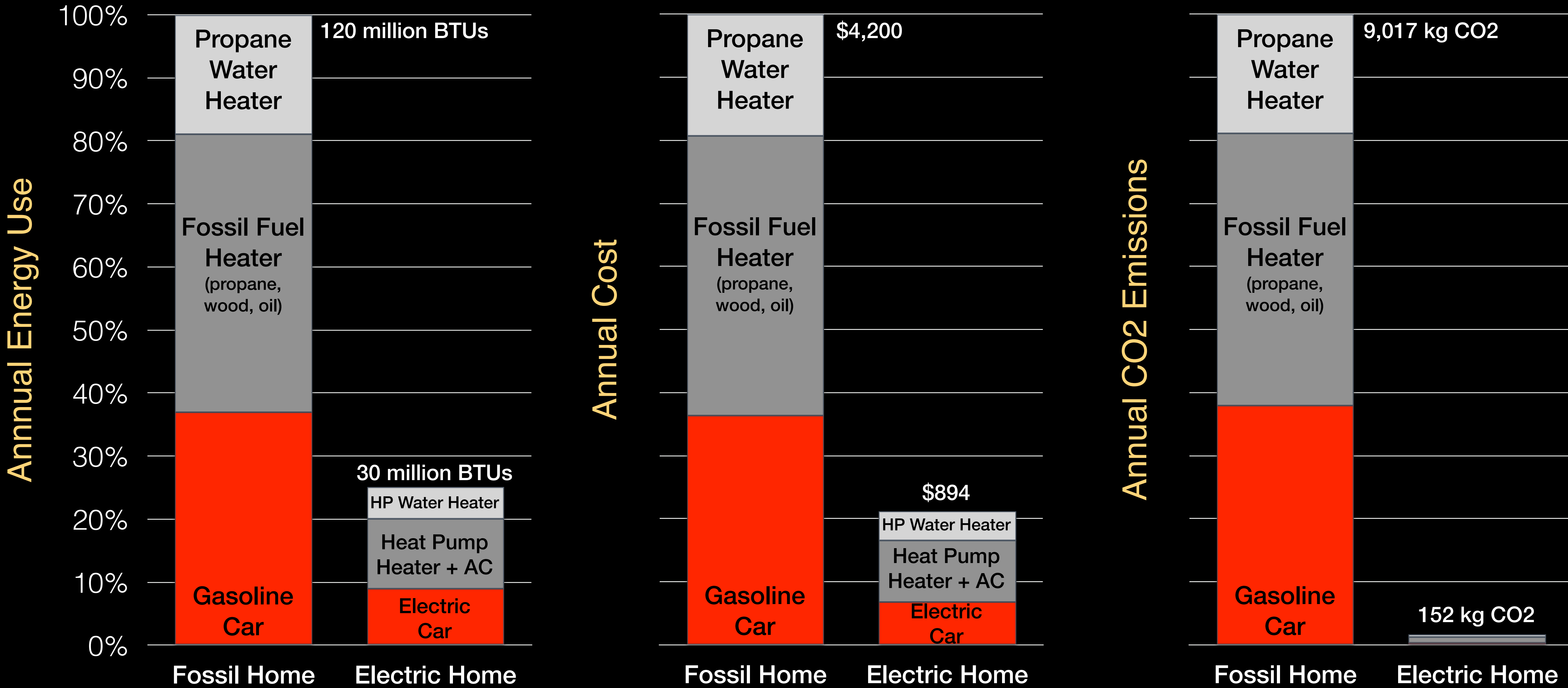
Heat pump water heaters are **3 times** more efficient than propane gas

EVs are **5 times** more efficient than gasoline vehicles

Heat pumps are **4 times** more efficient than propane gas

Beneficial Electrification: More Efficient, Lower Cost, Much Cleaner

Save Energy → Save Money → Save the Planet!



Typical SJC home (40 million BTU), and driving (10,000 miles per year, 26 MPG)

San Juan County, in the heart of the Salish Sea, inspire the world



*The Salish Sea is a microcosm for the planet,
as the climate emergency accelerates.*

*Its pristine waters and precious marine
ecosystem are in peril, as is our community.*

What we do here will inspire the world.

Energy Efficiency

Energy Assistance

Switch it Up: On-Bill Financing

- \$48M
- \$100k per member
- 10 years / 2%
- No cash down
- Good credit with OPALCO

<https://www.opalco.com/save/the-island-way/switch-it-up/>

- ✓ Heating Systems
- ✓ Solar and Battery Systems
- ✓ Weatherization
- ✓ Appliances
- ✓ Fiber Internet Connections
- ✓ EV Chargers
- ✓ Commercial
- ✓ New Construction

Rebates and Incentives

- Energy Star Washing Machine / Dryer
- Ductless Heat Pump
- EV Charging Station
- Fuel Switching
- Insulation
- Windows
- Heat Pump Water Heater

<https://www.opalco.com/save/residential-rebates/>

<https://www.rewiringamerica.org/>

Energy Assistance Programs

- Assist Monthly Bill Credits
- Project Pal
- LIHEAP - Low-Income Home Energy Assistance Program
- Community Solar grants: low-income access to solar benefits
- <https://www.opalco.com/account-services/energy-assist-program>
- Orcas Community Resource Center: <https://orcascrc.org/>

In 2023

OPALCO awarded ~\$82,000 of PAL assistance to 308 low-income households.

Energy Assist participation increased with an average of 267 households receiving monthly bill credits which totaled ~\$128,000.

Energy Assistance Programs

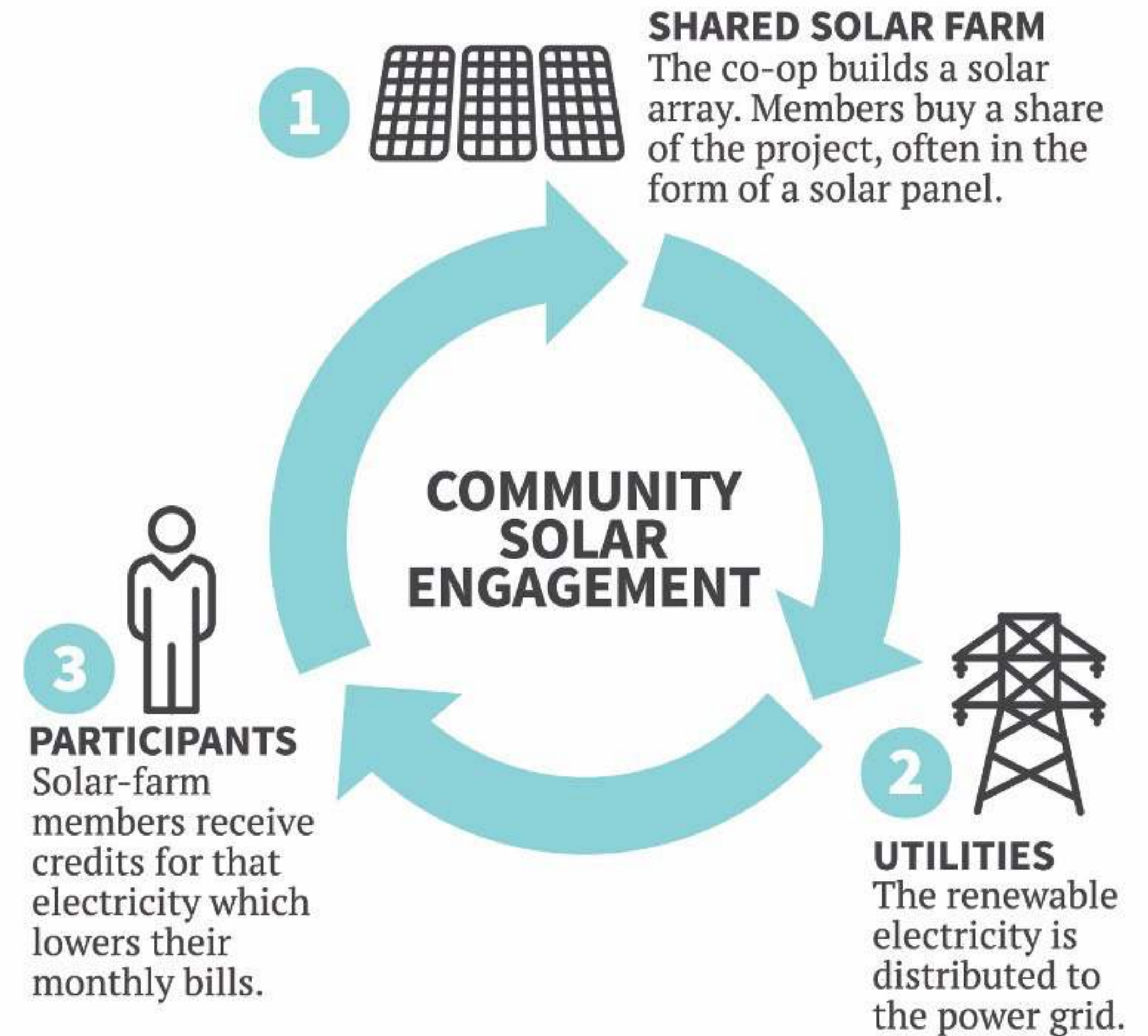
Assistance History		2018	2019	2020	2021	2022	2023	2024	Grand Total
Energy Assist Credit	# of Accounts	444	460	574	577	546	519	381	1,121
	Total Assistance	111,996	135,595	158,434	158,740	156,761	141,748	31,682	894,957
PAL	# of Accounts	212	205	329	363	297	268	86	835
	Total Assistance	45,155	53,137	80,975	104,880	82,912	80,500	21,500	469,060
EAP Residential - COVID	# of Accounts			88	74	63			98
	Total Assistance			21,535	27,606	8,348			57,489
EAP Commercial - COVID	# of Accounts			107	97	79			119
	Total Assistance			73,340	87,233	21,998			182,570
PAL - COVID	# of Accounts			131	122				222
	Total Assistance			15,000	12,200				27,200
Grand Total	# of Accounts	460	488	835	825	754	584	403	1,458
	Total Assistance	157,151	188,732	349,283	390,659	270,018	222,248	53,182	1,631,275

<https://www.opalco.com/dashboard/>

Community Solar

- Can buy shares
- \$300 per share with >28,000 shares
- Energy will show as a credit monthly to their bill
- \$1M of the shares will directly fund low-income/energy assistance
- Funded via the WA Commerce Clean Energy Fund Low Income Solar Grant
- Final Economics – TBD
- Further grants and funding in progress
- Email solar@opalco.com

HOW COMMUNITY SOLAR WORKS



Source: Shelton Group, Inc.

Bailer Hill Microgrid



- Located on 19 acres on San Juan Island at Douglas Road and Bailer Hill Road
- 1 MW of Battery Storage (on average roughly powers 650 homes for 4 hours)
- Currently OPALCO has Oak Knoll Farm sheep grazing on it. Entire parcel will remain open to livestock grazing throughout the duration of the project
- 2.7 MW Solar Array – 600 panels
- Array will produce 3,800 MWh annually – 5% of our annual output for our whole system
- \$1M of the project is allocated to towards OPALCO's low income energy assistance program through grant funding
- Current status: staging contractors and materials, applying for conditional use permit
- <https://www.opalco.com/quick-fact-bailer-hill-microgrid/2024/01/>

Exploring Tidal Energy



- Phase One grant from DOE to explore permitting feasibility
- Rosario Strait
- 2MW energy production
- Orbital / Orkney Islands
- <https://www.opalco.com/quick-fact-opalco-tidal-energy-pilot-project/2022/11>

Learn More: www.opalco.com

- Quick Facts: <https://www.opalco.com/about-community/quick-facts/>
- Board Materials / Document Library: <https://www.opalco.com/about-community/document-library/#rlfboardmeetingsandmaterials>
- Lower My Bill Toolkit: <https://www.opalco.com/account-services/toolkit/>
- Blog: <https://www.opalco.com/blog/>
- Energy Tips: <https://www.opalco.com/save/green-tips/>

Thank You!