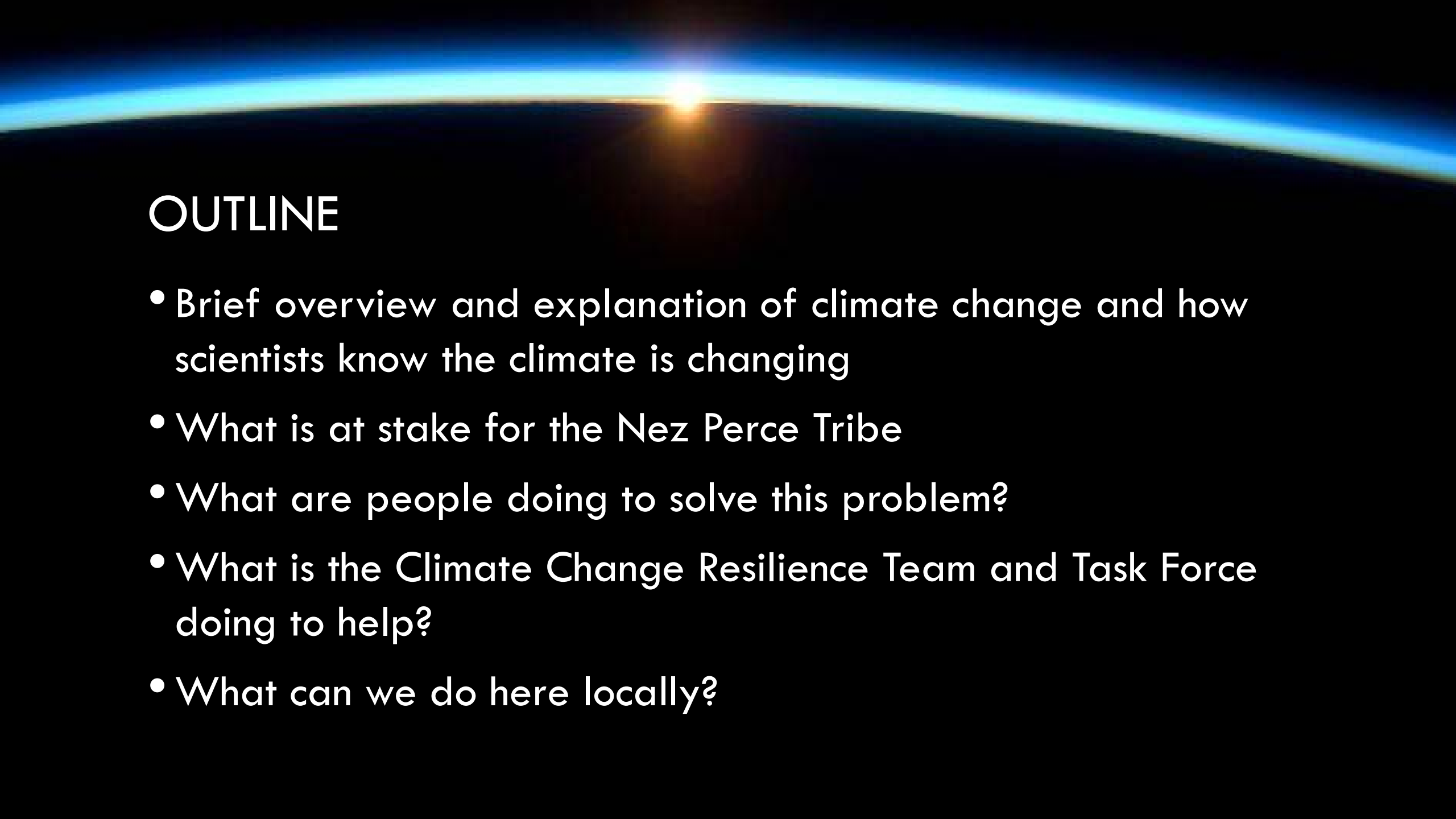
CLIMATE CHANGE 101: WHAT CAN WE DO?

NEZ PERCE TRIBE CLIMATE CHANGE TASK FORCE

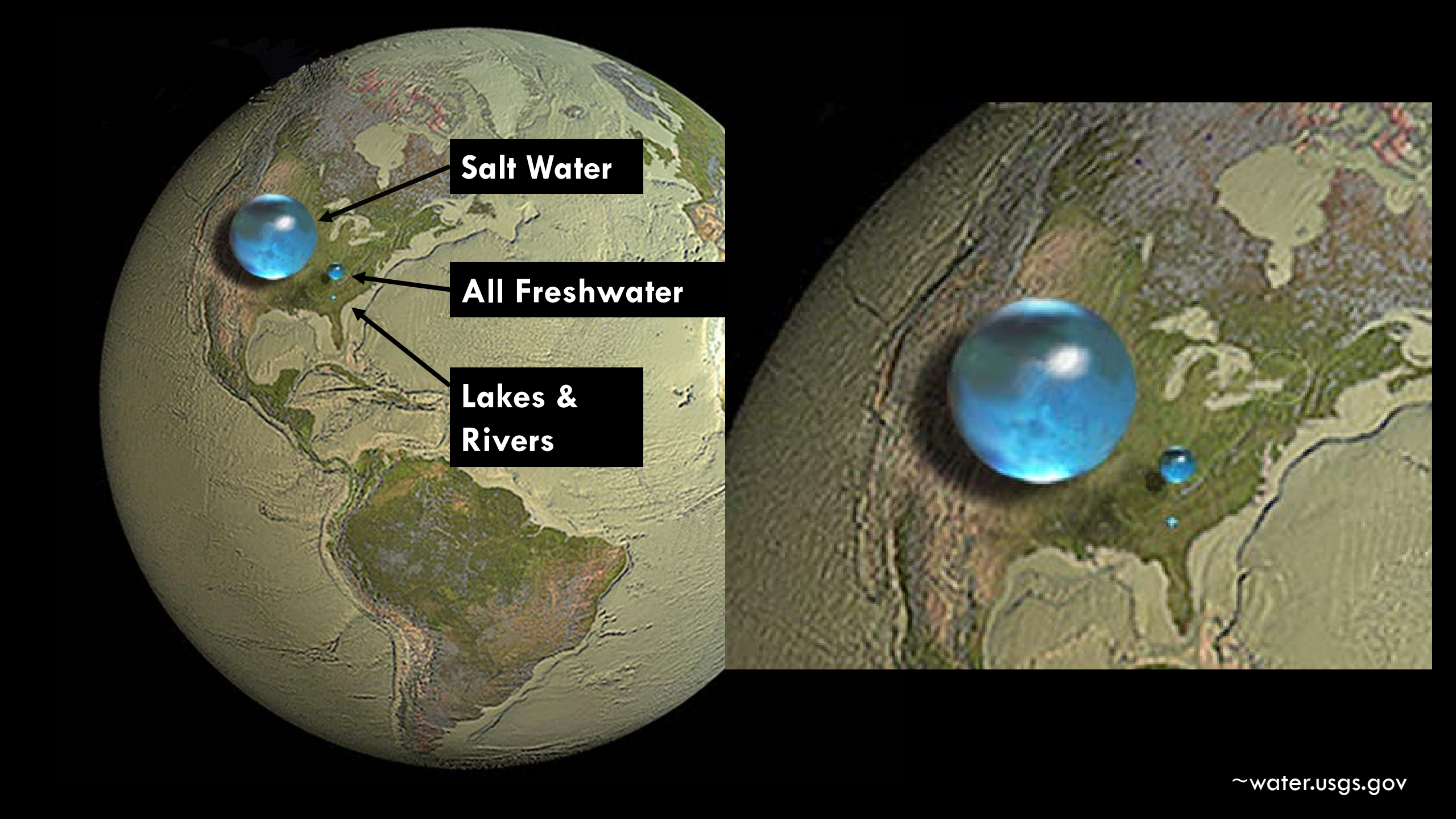
Presented by:
Stefanie Krantz - Climate Change Coordinator



OUTLINE

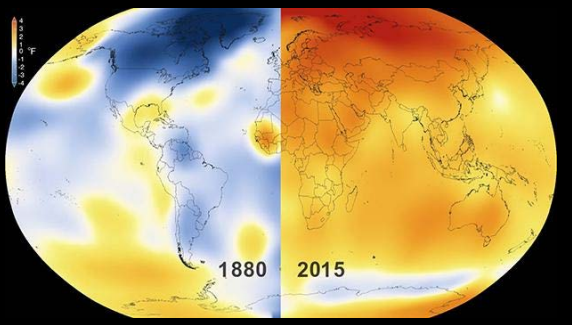
- Brief overview and explanation of climate change and how scientists know the climate is changing
- What is at stake for the Nez Perce Tribe
- What are people doing to solve this problem?
- What is the Climate Change Resilience Team and Task Force doing to help?
- What can we do here locally?

Globaïa's Félix Pharand-Deschênes



~water.usgs.gov

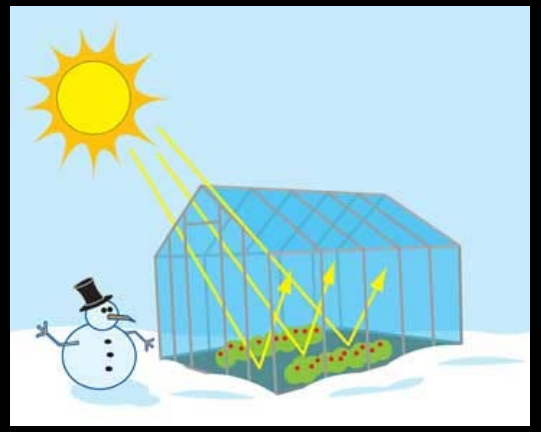
GLOBAL WARMING AND CLIMATE CHANGE



Weather is what is outside the window today, climate is average weather over time!

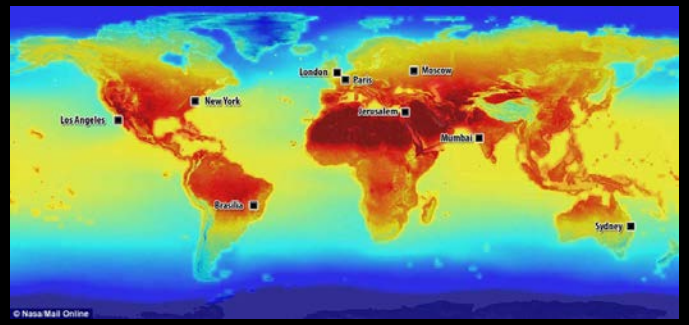
GLOBAL WARMING

- Gradual rising of Earth's Temperature
- Caused by the Greenhouse Effect

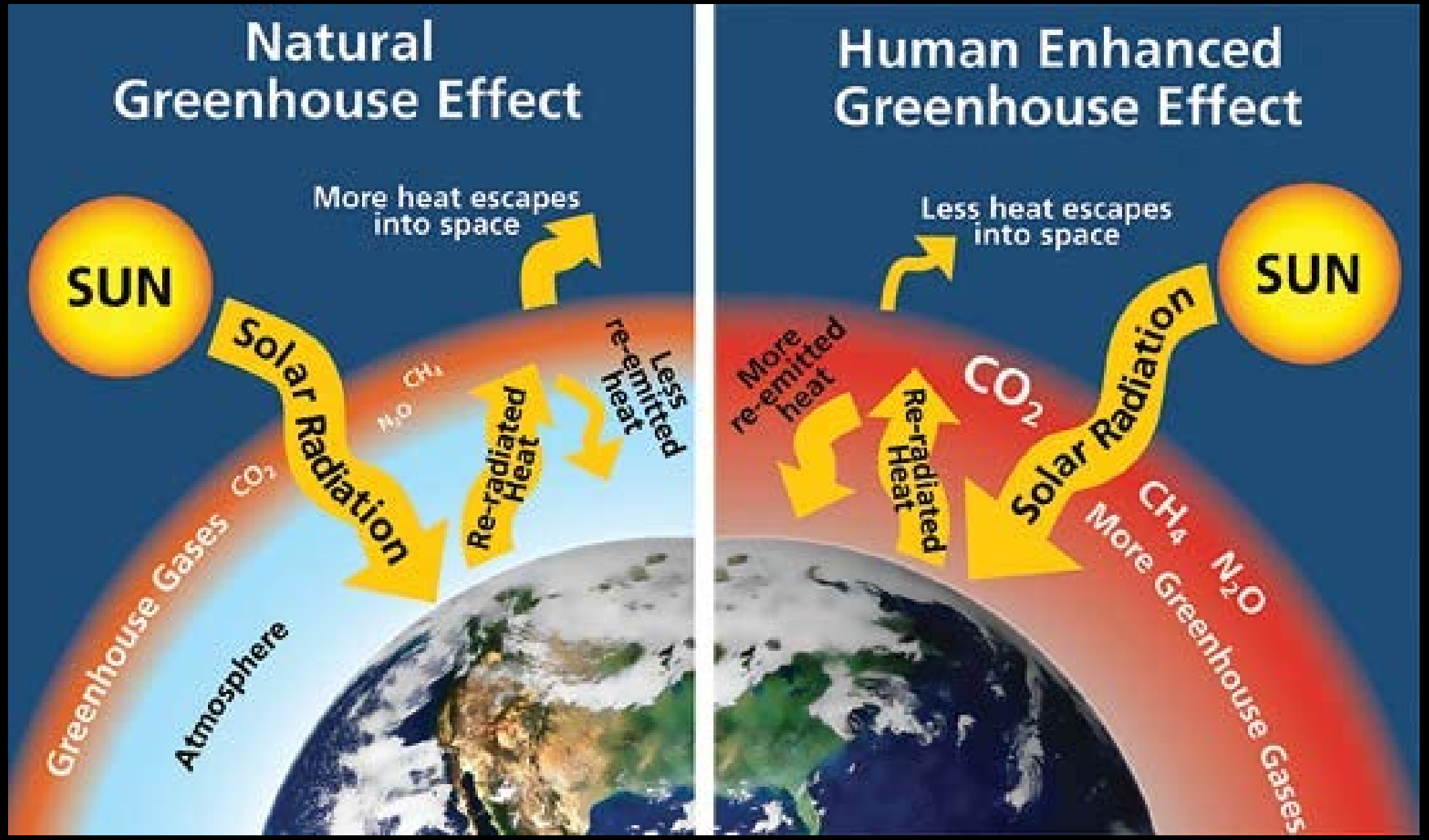


CLIMATE CHANGE

- Changes in temperature, precipitation, or wind patterns that occur over a significant time period; causes extreme weather, seasonal shifts, hydrogeologic changes…



USEPA 2016, NASA 2015

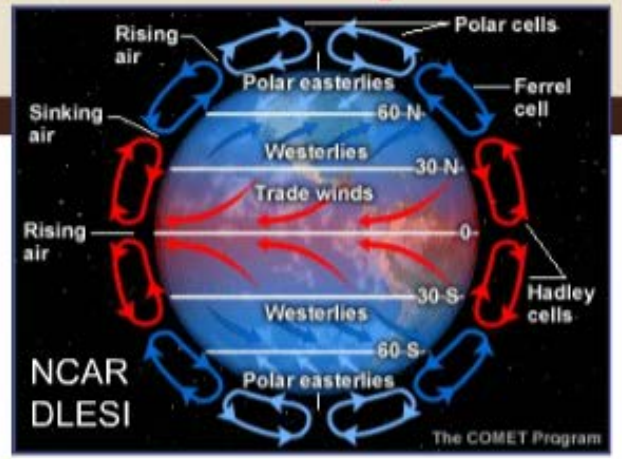


The planet would be frozen without the greenhouse effect!

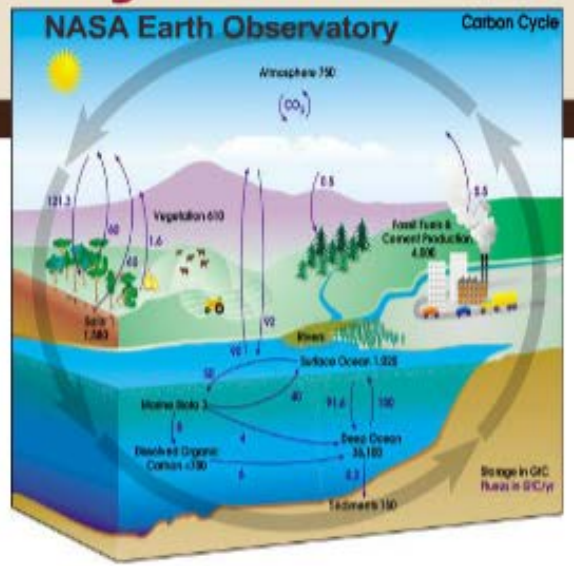
~W. Elder, NPS.

http://Milankovich Cycles

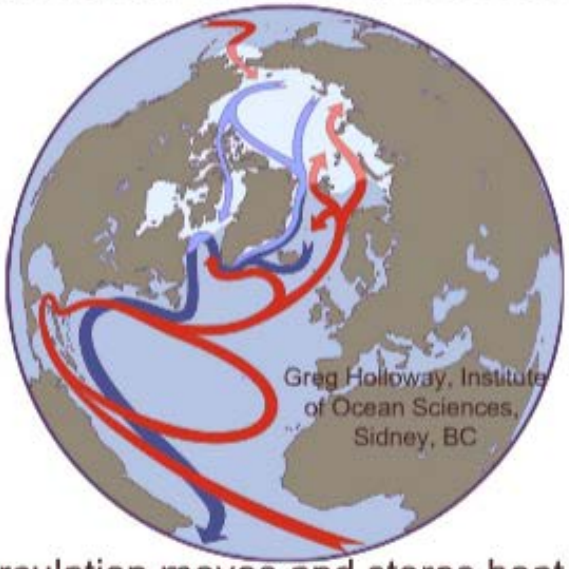
The greenhouse effect is part of a complex climate system.



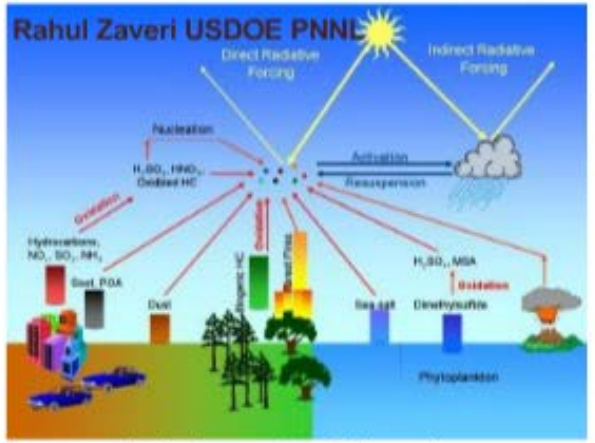
Atmospheric Circulation moves heat



Carbon Cycle moves, transforms, and stores CO_2



Ocean Circulation moves and stores heat and CO_2



Aerosols interact with solar energy

bon dioxide and the temperature of our planet

n 800,000 years ago until the present day

om CO_2 = Safe Level; (<2° C)

2017 Level of CO_2 is ~410

In 2014, CO_2 is about 400 ppm

1969 first moon landing

1908

Industrial CO2 Levels

Pre-Industrial CO2 Levels

2500 BC

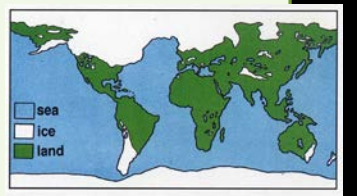
9500 BC; First agriculture 280 ppm

8
4
0
-4
-8

,000 600,000 500,000 400,000 300,000 200,000 100,000 0

Years Before Present Day

Figure created by B. Magi



Early humans left Africa 2 million years ago. The Pacific Salmon is 6 million years old.

Temperature is the ratio of "light" oxygen-16 to "heavy" oxygen-18.

National Geographic and NOAA 2017, Union of Concerned Scientists

Carbon dioxide and the temperature of our planet from 800,000 years ago until the present day

2017 Level of CO_2 is ~410

350 ppm CO_2 = Safe Level; (<2° C)

In 2014, CO_2 is about 400 ppm

1969 first moon landing

1908

2500 BC

9500 BC; First agriculture 280 ppm

Industrial CO2 Levels

Pre-Industrial CO2 Levels

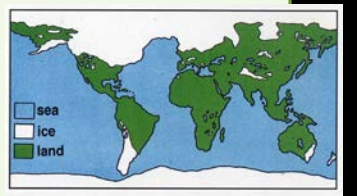
400
375
350
325
300
275
250
225
200
175

8
4
0
-4
-8

800,000 700,000 600,000 500,000 400,000 300,000 200,000 100,000 0

Years Before Present Day

Figure created by B. Magi



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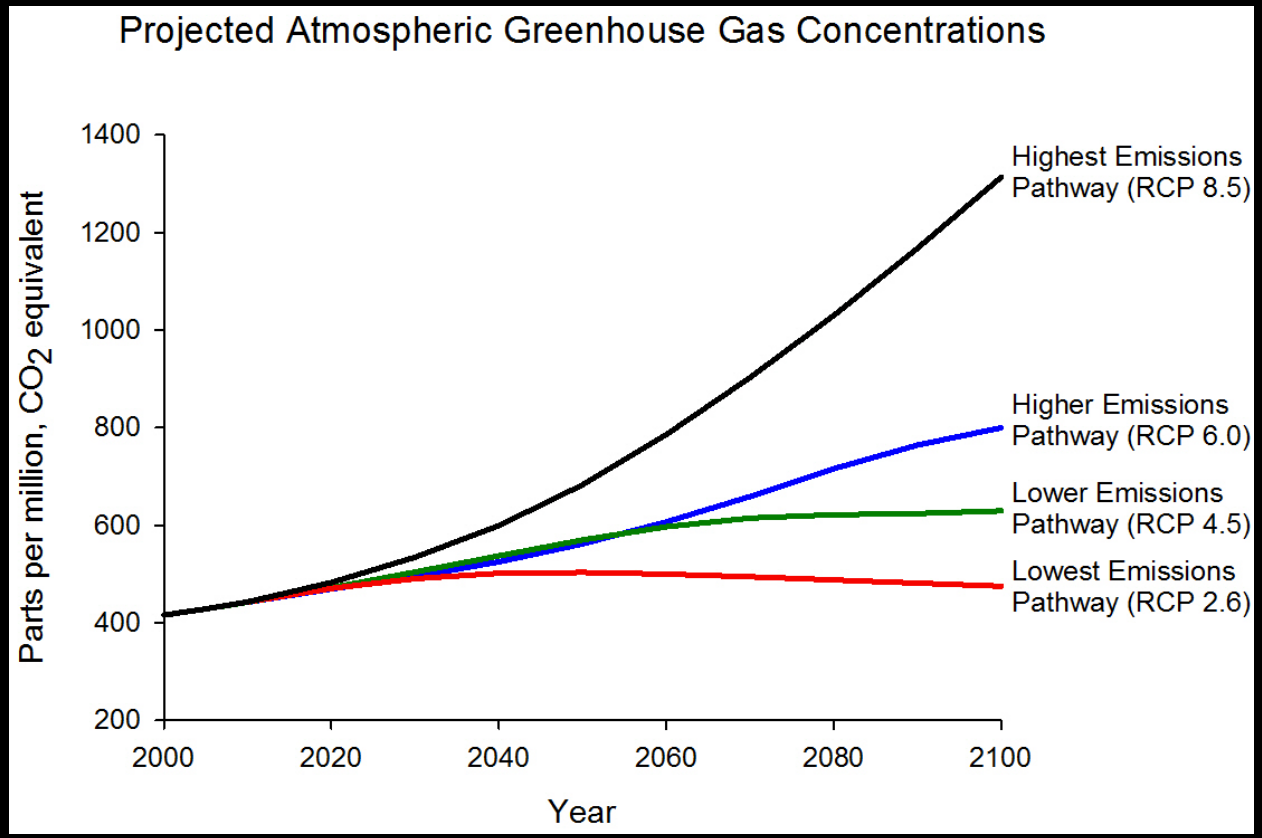
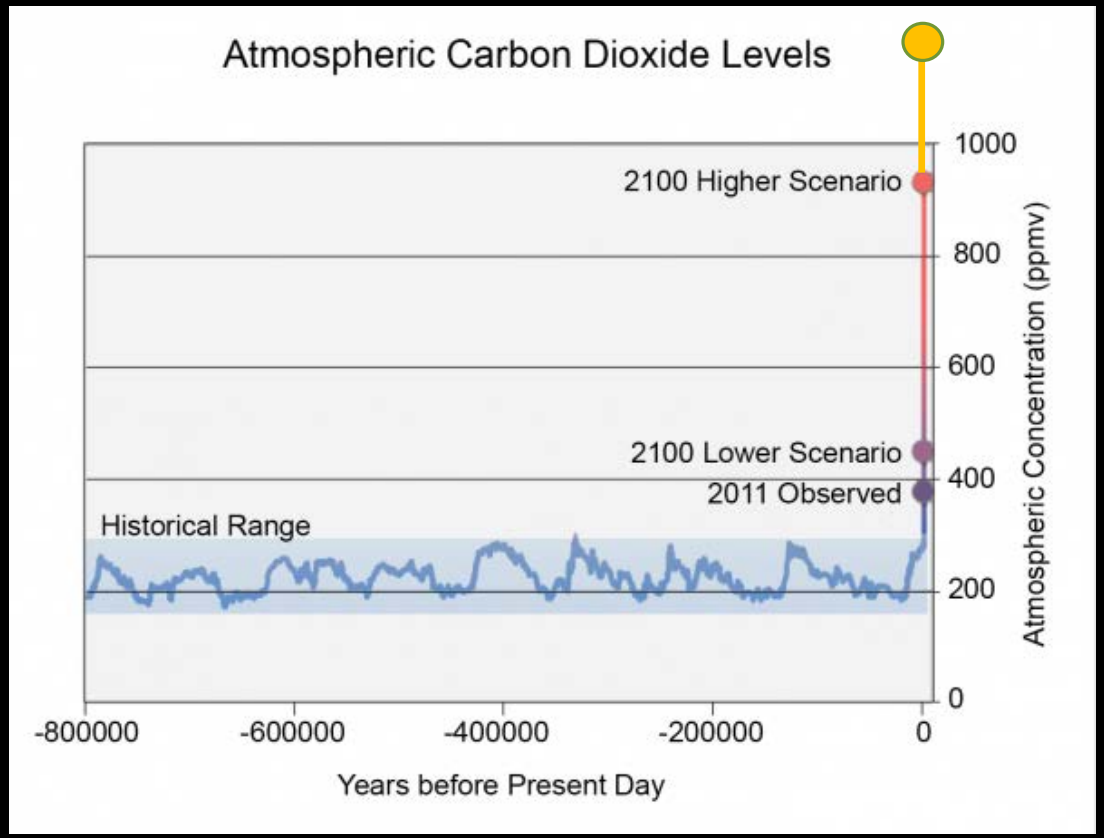
National Geographic and NOAA 2017, Union of Concerned Scientists

HOW MUCH CO_2 WILL BE IN THE ATMOSPHERE BY 2100?





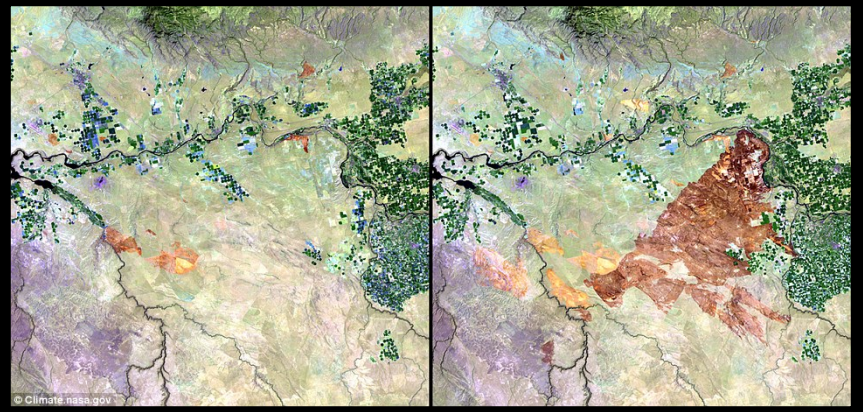
U.S. EPA and www.globalchange.gov

Evidence of Change: Glaciers, Coral Reefs, Wildfires, Drought, and Floods

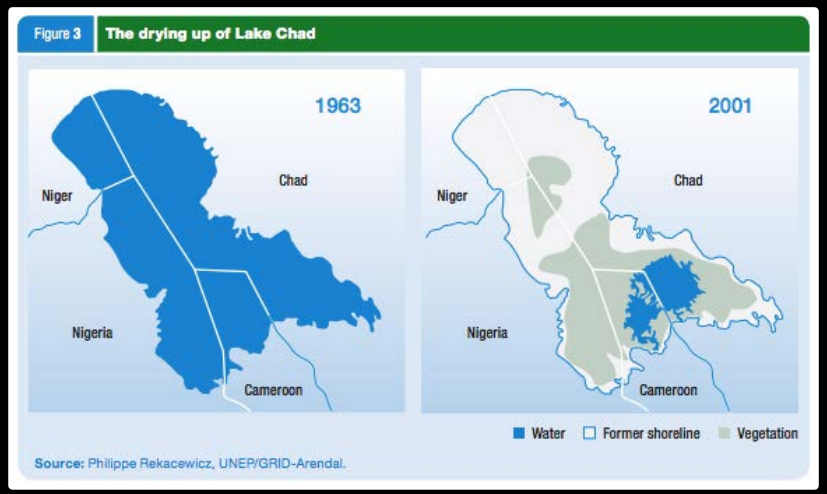
Kenai Fjords, Alaska

http://EIS/

American Samoa

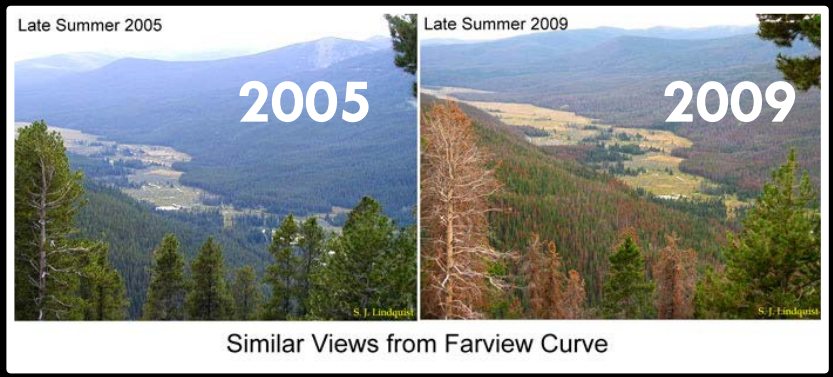


2010 summer wildfire in Idaho burned over 200,000 acres in a single day



Lake Chad, Africa 1963 to 2001

Lake Oroville, California Drought



Rocky Mountain National Park, Pine Beetle Outbreak

Sources: USGS, UNEP, NASA, NOAA, NPS

Tribal Communities on the Front Lines

The Village That Will Be Swept Away

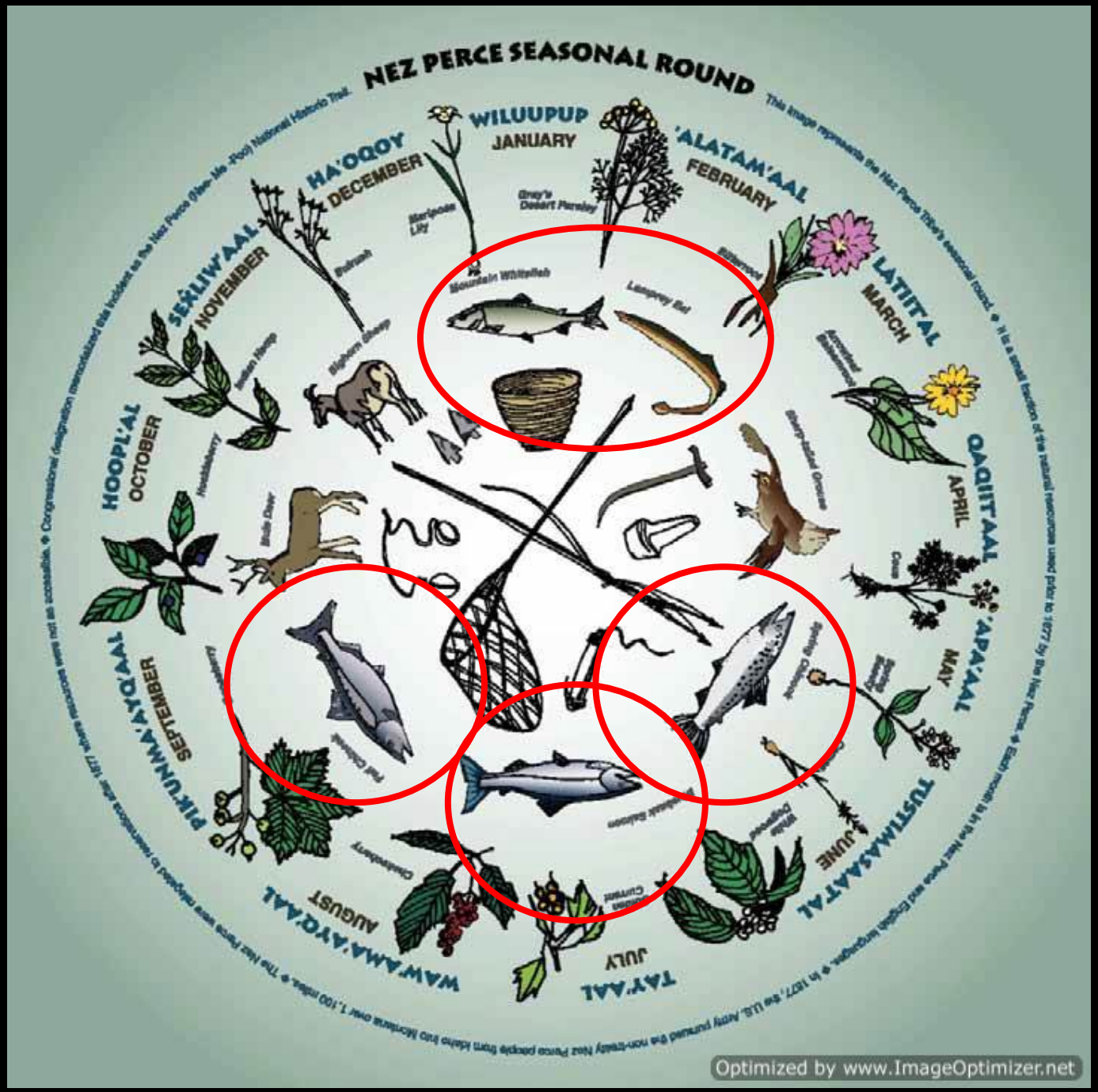
Residents of Newtok, Alaska, voted to relocate as erosion destroyed their land.

Quinault Indian Nation Plans for Village Relocation

As the threats of tsunami and sea level rise are joined by real and potential climate impacts, the Quinault community looks to move the lower village of Taholah to higher ground.

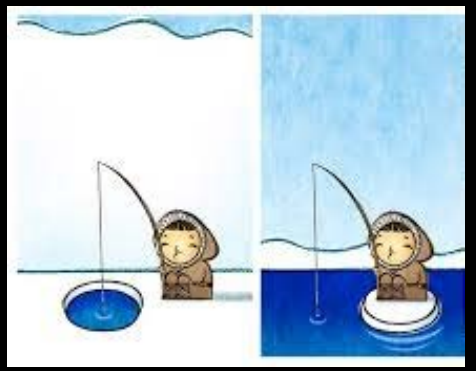
~U.S. Climate Resilience Toolkit

WHAT'S AT STAKE FOR THE NEZ PERCE TRIBE?



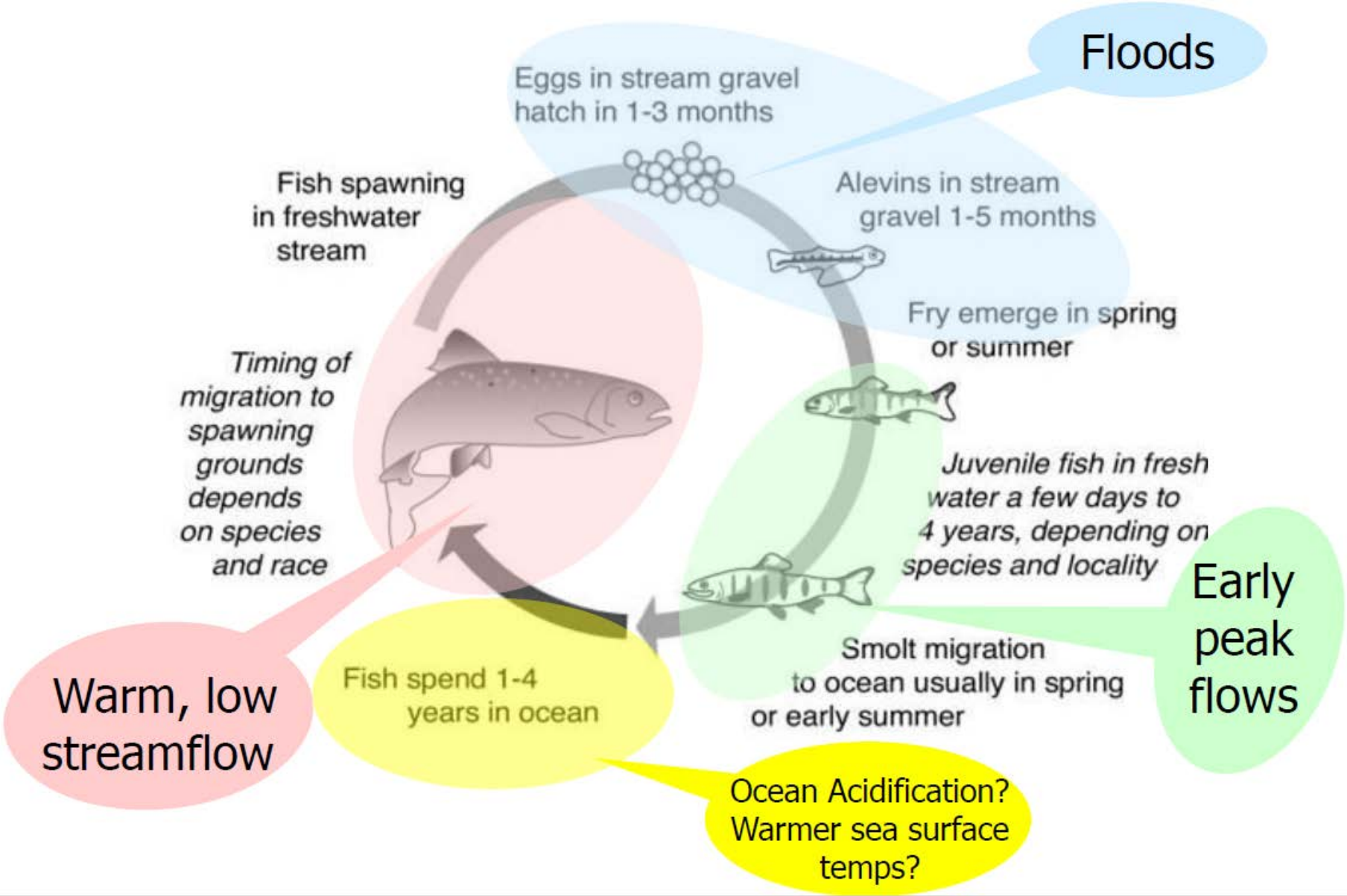
Fish

- Migratory Fish depend on food sources in the ocean and cold water in rivers to reproduce
- Fish time their migration with stream flow
- Peak stream flows are getting earlier and the summer low flow season is getting longer
- Unseasonable stream warming events can cause fish kills



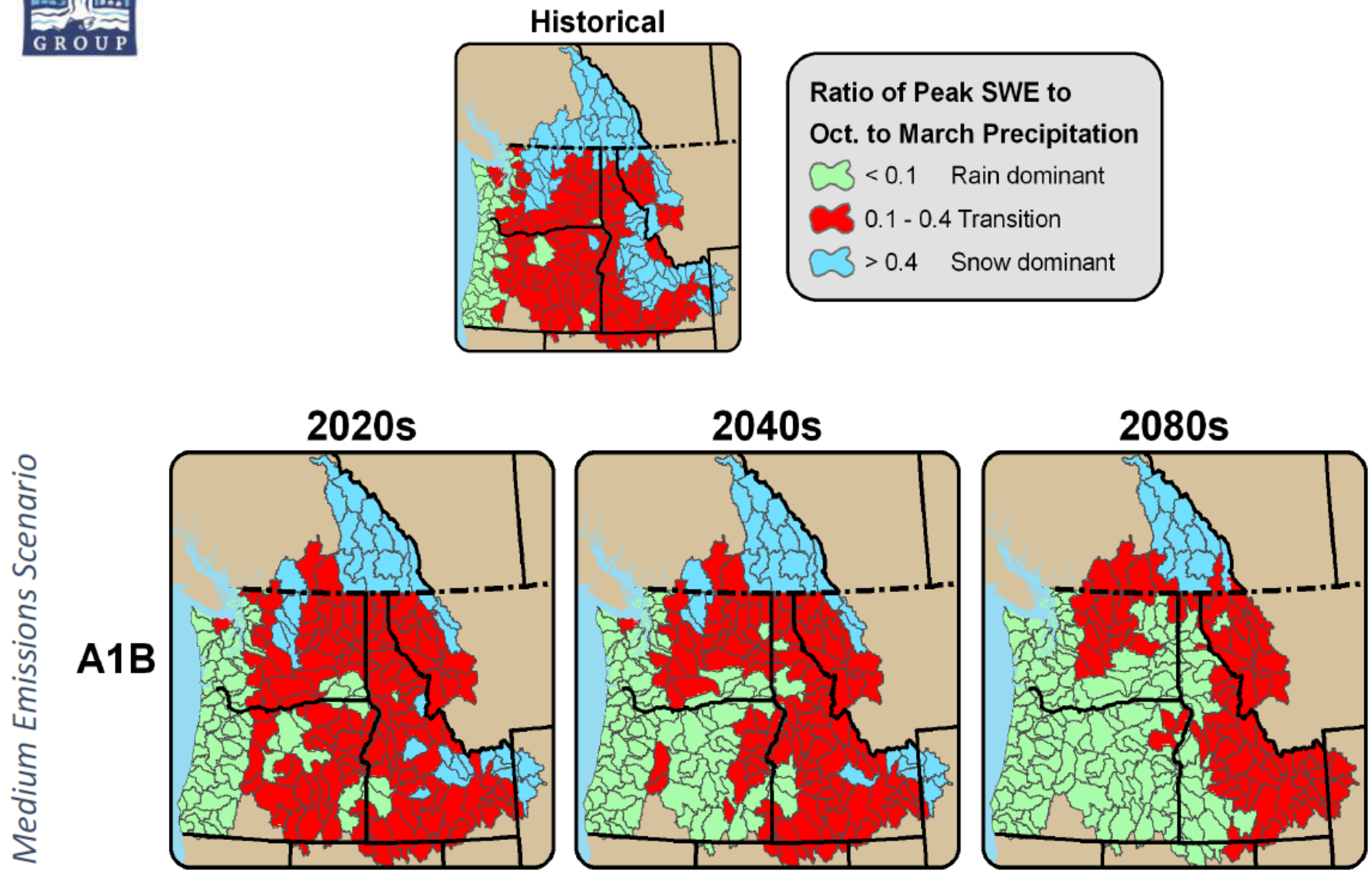
Cartoon Movement VACK

Salmon Impacted Across Full Life-Cycle



Climate Impacts Group – Lara Whitley Binder

Basin Transformations: *Shifting from Snow to Rain*

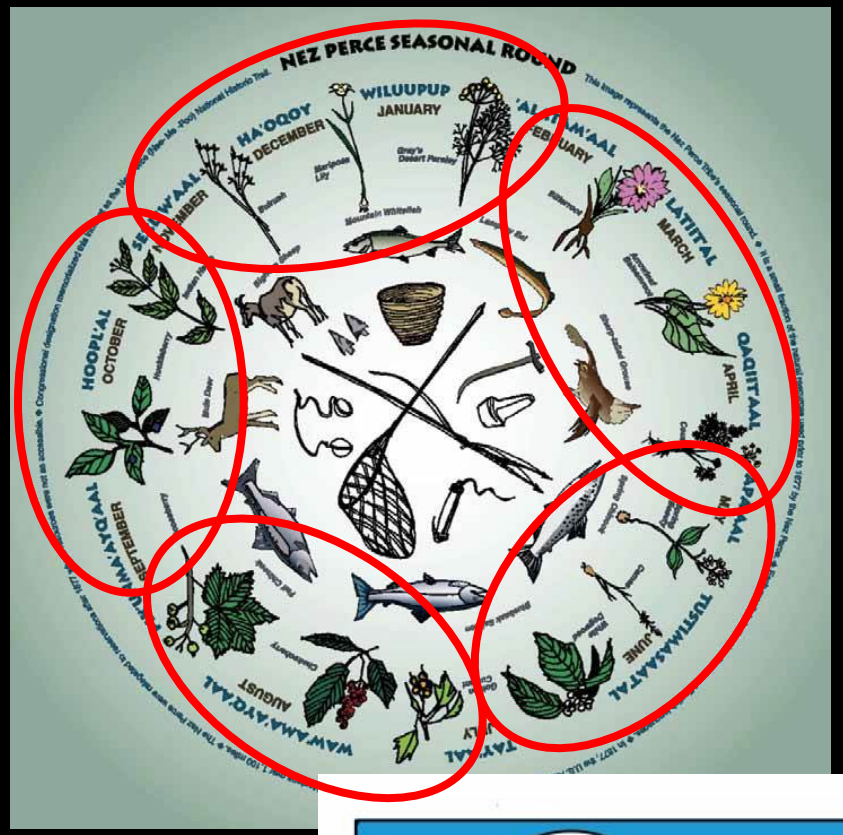


Tohver et al. 2014; map by Rob Norheim (CIG)

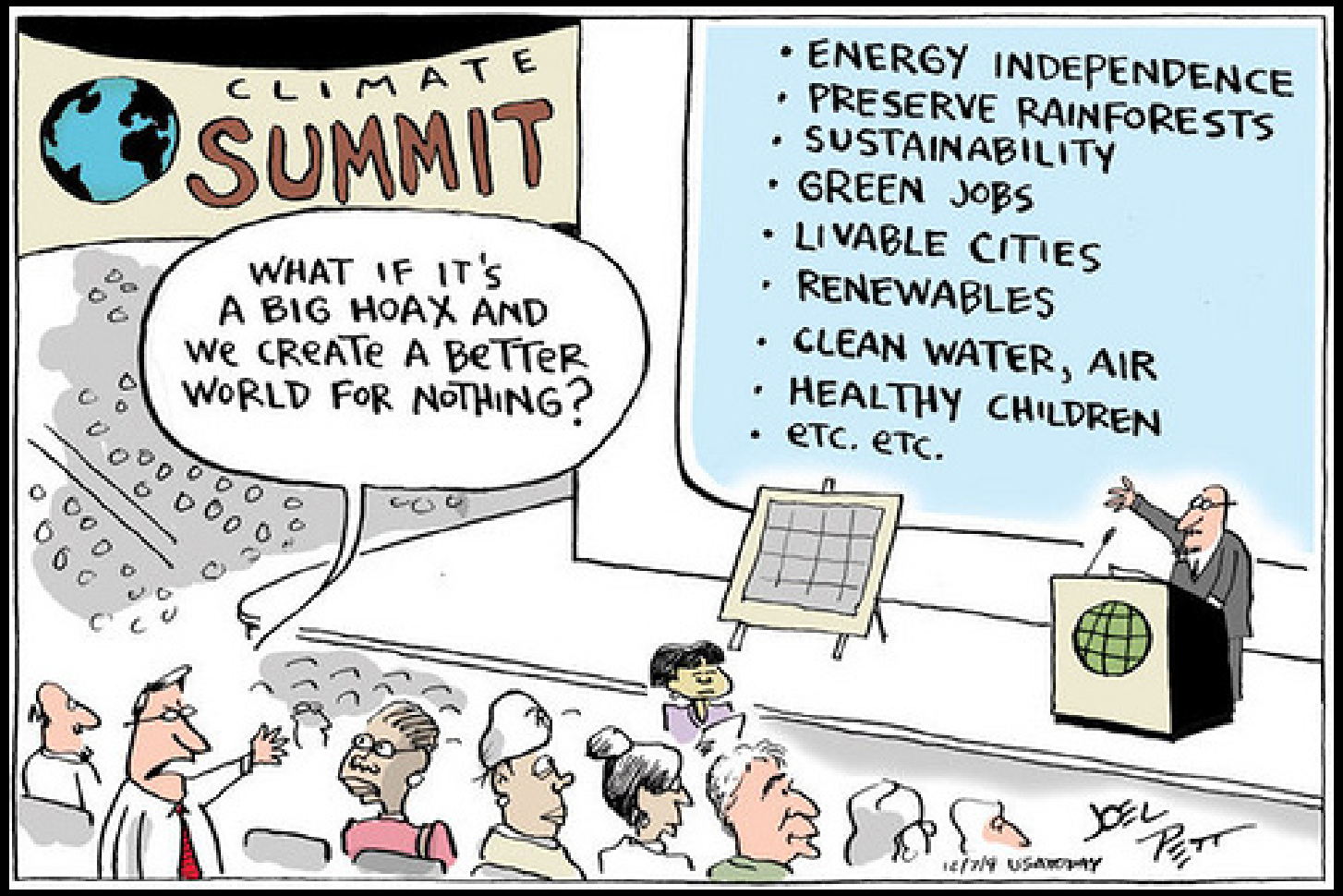
Climate Impacts Group – Lara Whitley Binder

TRADITIONAL GATHERING

- Seasonal shifts are changing plant phenology – the timing of leaf out, blooming, seed production, and tuber production
- Plants are moving upslope and north
- The root gathering season is shorter, and the quality of the roots is often lower
- Traditional knowledge of the timing of these events, harvesting and cultivation methods, and suitable habitat for plants is extremely valuable and needed for climate change adaptation planning



Can We Stop Global Warming?



YES, WE CAN!

MILLIONS OF PEOPLE
ARE WORKING ON IT
AND SO IS THE
NEZ PERCE TRIBE!

AND YOU CAN HELP!

Getty Images

The Nez Perce Tribe is Working on Short Term Mitigation Measures and Climate Adaptation Planning in order to…

- Educate community members and staff about what's at stake and what can be done
- Reduce the tribe's Carbon Footprint | Green our Transportation System
- Transition to Green Energy while Reducing Energy Use Now
- Use Green Products and Avoid Products that are NOT Green like Plastic and Styrofoam
- Create Green Jobs, a Sustainable Food Supply, and a hopeful future
- Restore Biological and Ecosystem Diversity and Save Fish and other First Foods

WHAT IS THE CLIMATE RESILIENCE TEAM DOING?

- Working on a Vulnerability Assessment and Climate Adaptation Plan
- Working on a Survey for Tribal Members
- Planning workshops/interviews with elders/tribal staff to learn about their observations (we can use as much help as we can get with this!!)
- Brainstorming about ways we can help and helpful projects that could be implemented
- Searching for funding
- Volunteering at the Community Garden

WHAT ARE THE TOP WAYS TO REDUCE OUR IMPACT TO THE CLIMATE?

1. Refrigerant Management
2. Wind Turbines (Onshore)
3. Reduced Food Waste
4. Plant-Rich Diet
5. Tropical Forests (stop cutting them down)
6. Educating Girls
7. Family Planning
8. Solar Farms
9. Silvopasture
10. Rooftop Solar
11. Regenerative Agriculture
12. Temperate Forests
13. Peatlands
14. Tropical Staple Trees
15. Afforestation
16. Conservation Agriculture
17. Tree Intercropping
18. Geothermal
19. Managed Grazing
20. Nuclear

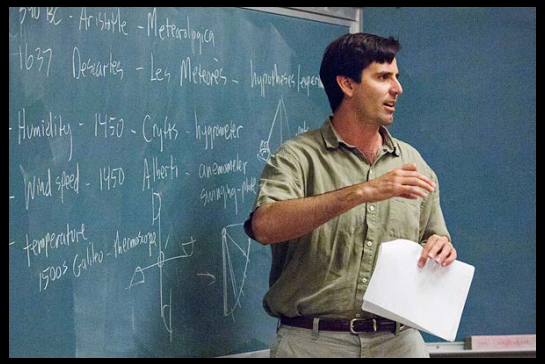
http://www.drawdown.org/

Scientists, governments, TRIBES, engineers, citizens, and business leaders are working towards solving this crisis

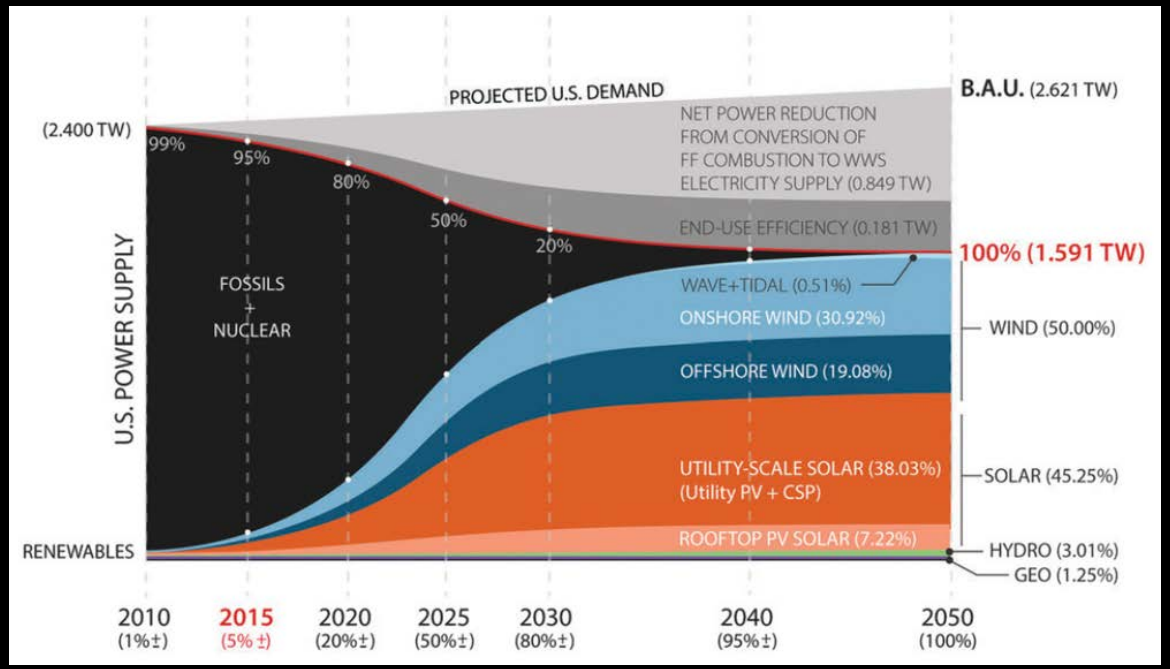
- Tesla has invented a car that travels 400 mpg on a charge and is putting charging stations all over!
- Wind Energy is now CHEAPER THAN COAL
- Soil restoration can take carbon out of the atmosphere!

Digital Trends, https://ironline.american.edu/blog/Why-COP21-Was-a-Milestone/, land art generator, Source: nativenewsonline.net ~ Photographer Unknown

So, Just How Much Would it Cost to Convert To Renewable Energy? Can we Afford it?



This guy and his team at Stanford University figured out how! And, it is cheaper than the alternative and would create good jobs! Really! Check it out!



"Based on our findings, there are no technological or economic barriers to converting the entire world to clean, renewable energy sources, It is a question of whether we have the societal and political will."

~Mark Z. Jacobson

http://thesolutionsproject.org/

“This planet can be a paradise in the 22nd century.”

~E.O. Wilson

We do not have to chose between the economy and the environment

QUESTIONS?

Qe 'ci 'yéw 'yew