

Presented to

Century Village Community, WPB

By



TH!RD ACT

FLORIDA

and **Harriet Lankford**

with

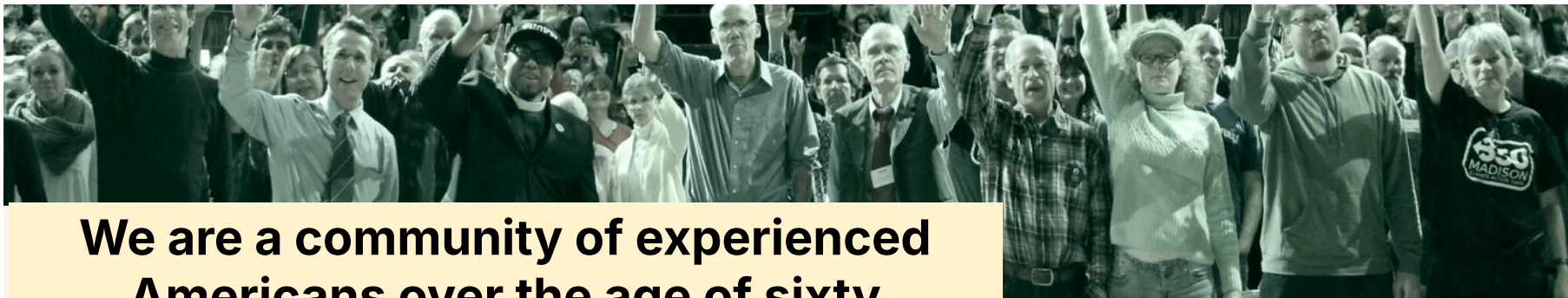
Mac Lankford

A freelance Student of the Climate and
Host of the Climate Science Study Group

Thursday, February 20, 2025 at 1:30 pm

Who We Are

TH!RD ACT



We are a community of experienced Americans over the age of sixty determined to change the world for the better. Together, we use our life experience, skills and resources to build a better tomorrow.

PROTECT THE CLIMATE AND STRENGTHEN DEMOCRACY

Working Groups

TH!RD ACT



Affinity Working Groups

- ◆ Lawyers
- ◆ Faith
- ◆ Creatives
- ◆ Unions
- ◆ Educators

Third Act Florida Current Members

Third Act
Florida
Members
Live in all
Regions of
the State



A scenic photograph of a sunset over the ocean. The sun is low on the horizon, casting a warm, golden glow across the sky and reflecting on the water. The sky is filled with soft, wispy clouds. In the foreground, a sandy beach curves along the water's edge, with gentle waves lapping at the shore. The overall mood is peaceful and hopeful.

Third Act Florida Working Group **Vision**

**Leave Younger Generations of
Floridians the Sustainable
Climate and Thriving Democracy
they Deserve.**

A sunset over the ocean with a sandy beach in the foreground. The sun is low on the horizon, casting a golden glow across the sky and water. The text is overlaid in white, bold font.

Third Act Florida Working Group Mission

**Provide an Organization for Elders
in Florida who want to Advocate
for Responsible Climate Policies
and Equitable Democracy.**

- **Fossil-Free Finance**

- Convince Financial Sector to Stop Financing Fossil Fuel Expansion

- **Democratizing Energy**

- Increase Citizen Participation in Governments' Energy Decisions

- **Uplift Democracy and Voting**

- Promote a Thriving Democracy, Fair Elections, Informed Voters

Third Act Florida Working Group Organization



**Built on a Foundation of
Working Principles and
Organized in Support of
Three Clusters of Activism.**

Use this QR Code to
link to sign-up form.

A bit of Mac's background...

1972 - Masters in Mechanical Engineering, Rice University

1972-2005 - U.S. Dept of Energy career in cutting edge science and technology development



2008 - We entered the Solar Electricity Era



**2005 - Master of Arts in Liberal Arts,
St. John's College, Annapolis, MD**

**This opened the door to self-
directed education**

especially with others !



- Solar Camp Grandma
- Solar Kicks - our company
- Natural History Museum in DC

***Science is not about
what we know -
it's about what we don't
know!***

(this is why it's fun!)

2018 - Decided to get his head around

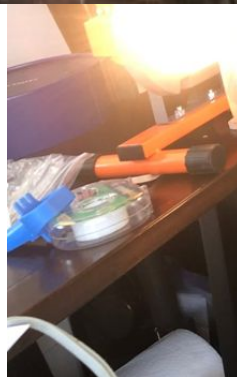
Global Warming & Climate Change

2018 - 2022 - Took several online courses on Climate Science

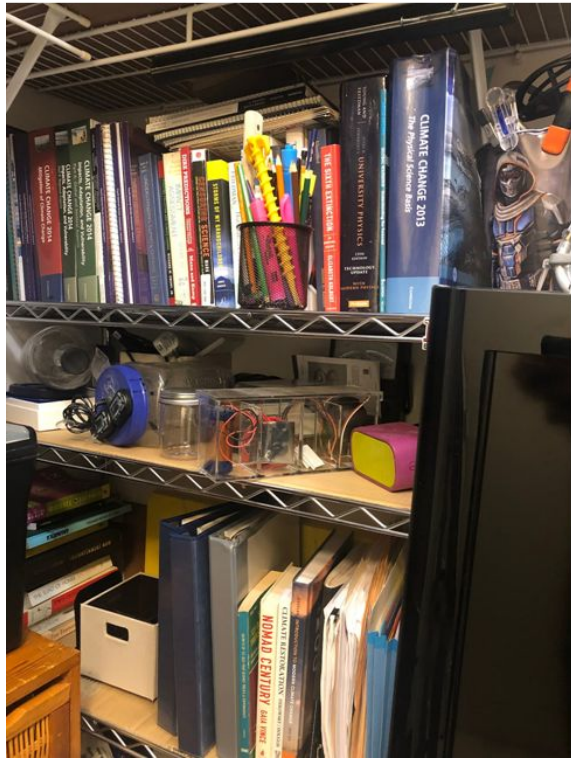
Mac's first "Lab" - in our Bedroom...!!



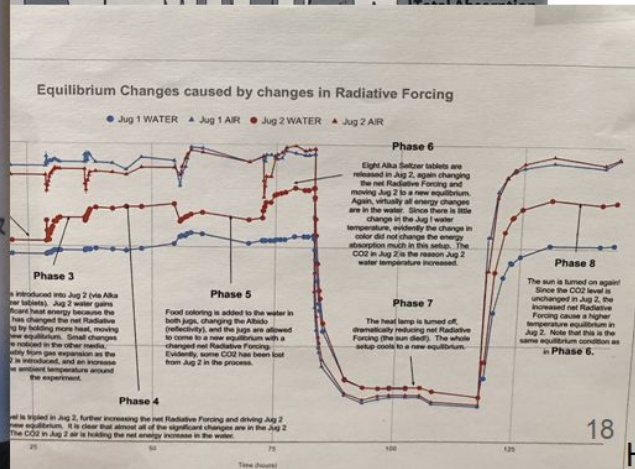
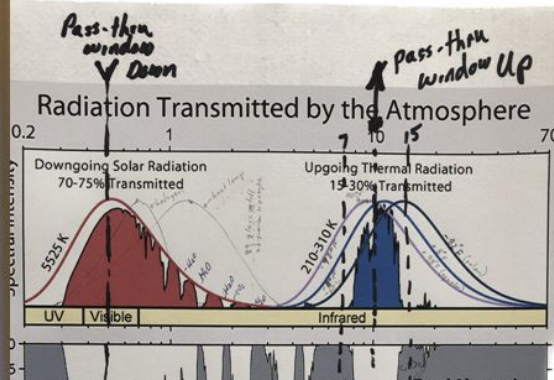
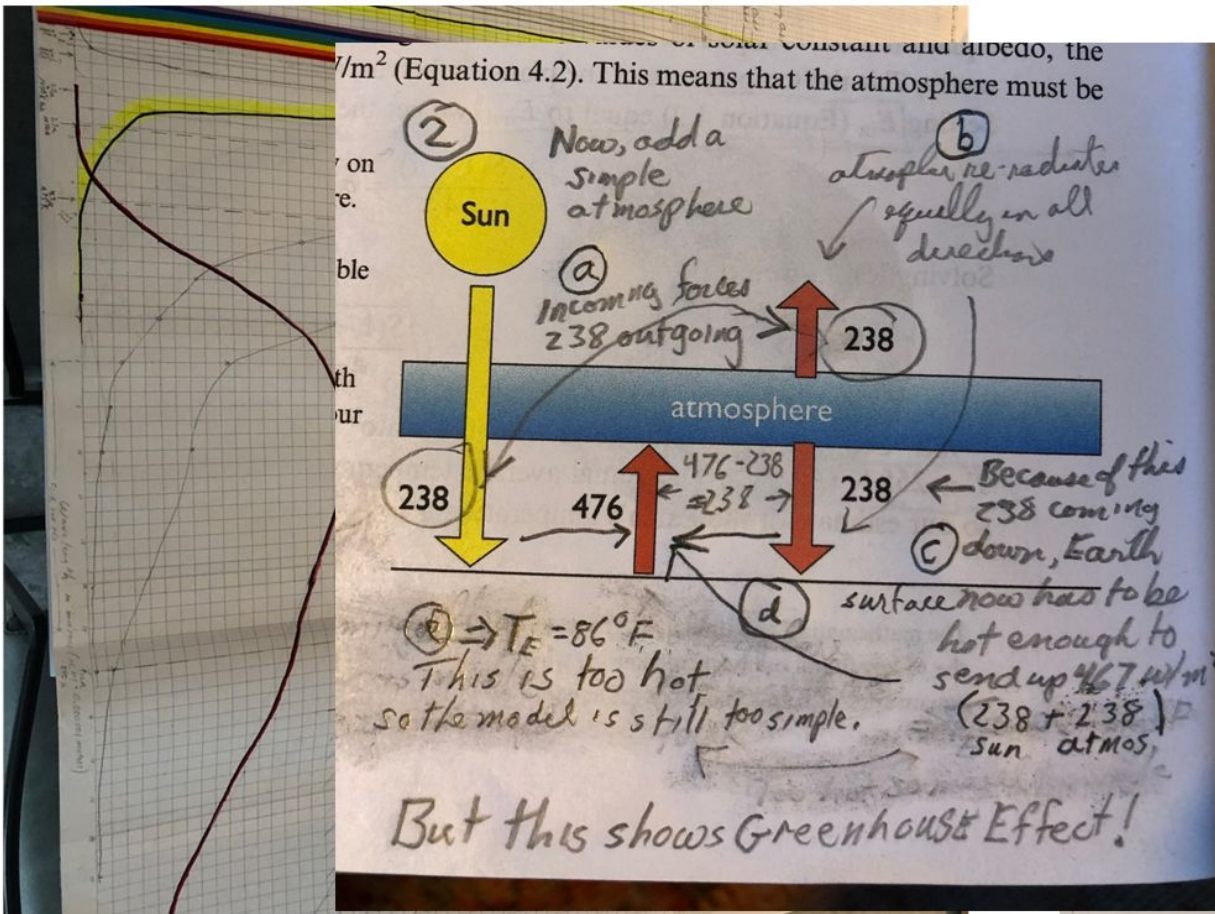
...then in my closet... !



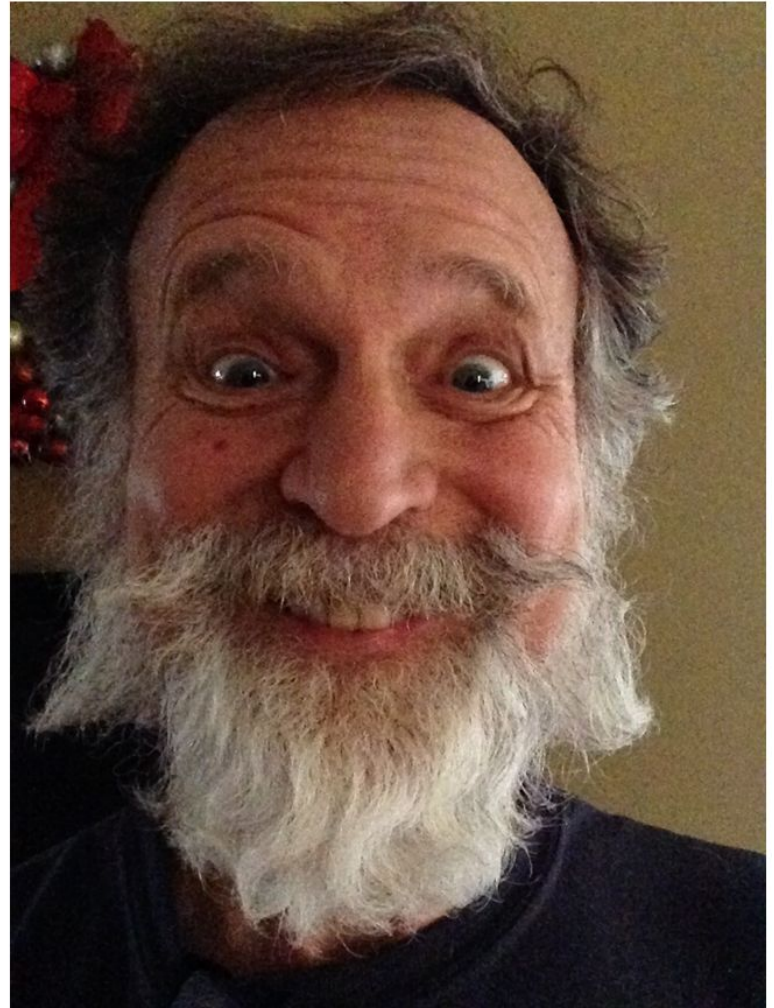
...banished him to HIS closet !



After a while, he seemed to be getting the idea...



**So,
I let him out
!!!**



But, it's been a great way to spend time with Grandkids - they are the best lab assistants!!



And he did make enough progress to put up demos at the local plant shop and at Earth Day.



And these days...

- Over the last two years, Mac has prepared and presented 100 studies to two study groups and led discussion
- Participants in the groups (about 8 - 12 typically) hail from WPB, Sweden, Montana, Colorado, Chicago, and NYC

And both of us lobby in Congress for Climate Action

Mac will now *clarify what happened in*
THE “LOADED DICE” GAME

And then, he'll share his best understanding of how our world might
be impacted over the coming decades

IF we stay on the path we now are following

or

**IF the world takes appropriate mitigation,
adaptation, and resilience action**



The “Loaded Dice” Game Explained!

The “Loaded Dice” Game

The game is based on Actual Data for the
average daily

Summer in the Northern Hemisphere
temperatures

The GAME is all about
WEATHER and CLIMATE

WEATHER →

is what is happening
NOW, or Today, or this
Month.

CLIMATE →

is the average of the
WEATHER over a
decade or longer (up
to 30 years).

39
N

A CLIMATE

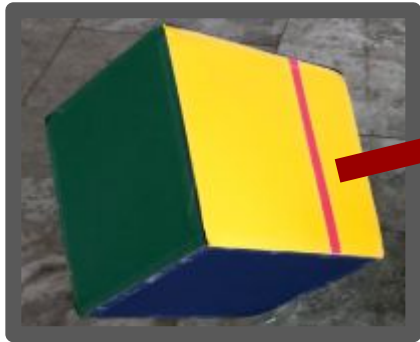


WEATHER

Of that
CLIMATE



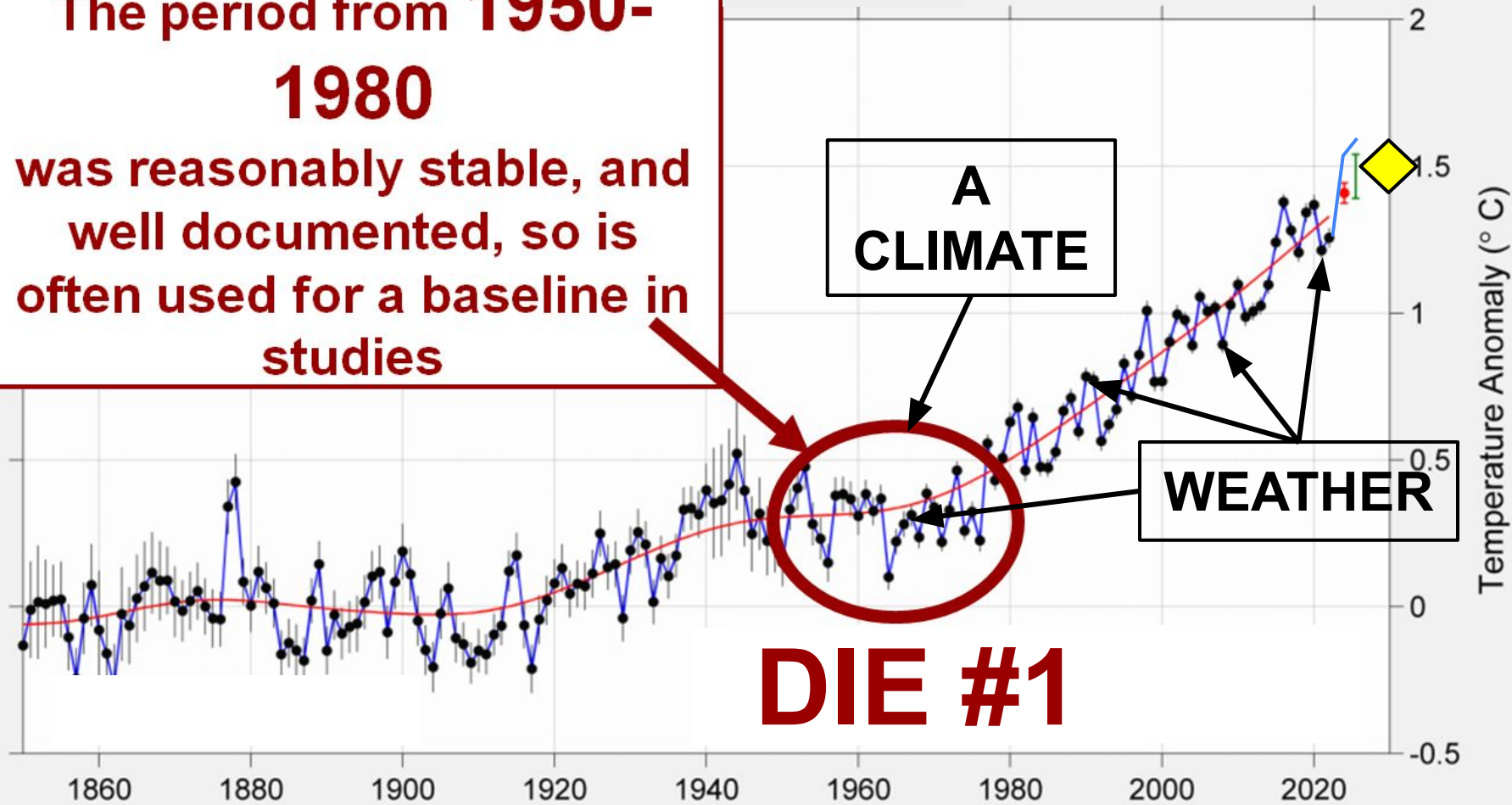
CLIMATES CHANGING



WEATHER

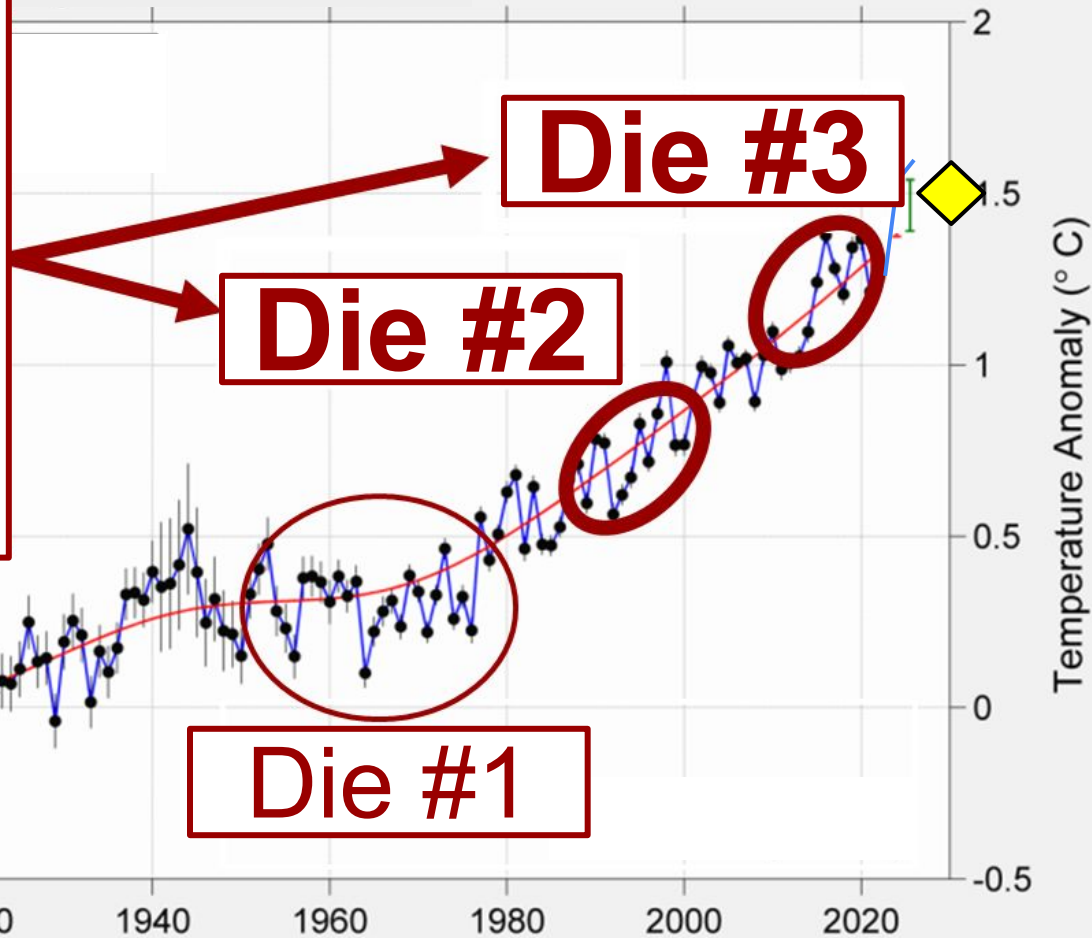
is whatever
shows up in
that time
period when
the "LOADED"
die is rolled

The period from **1950-1980** was reasonably stable, and well documented, so is often used for a baseline in studies



DIE #1

Die #2 and
Die #3 were
constructed using the
conditions of **Die #1** for
comparison



Die #1

Is based on

1950 - 1980

Die #1

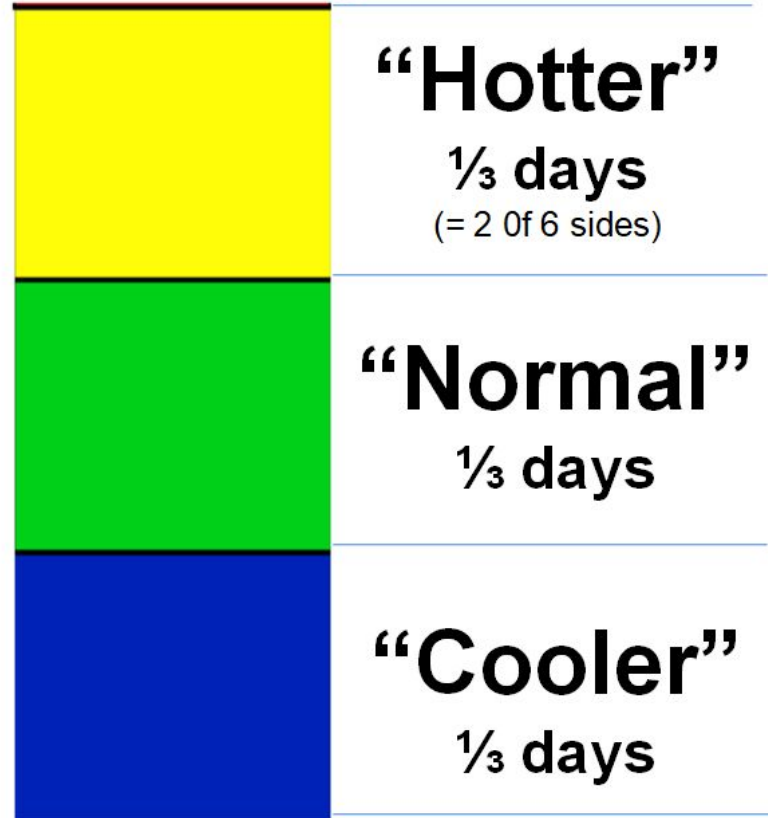
DEFINES

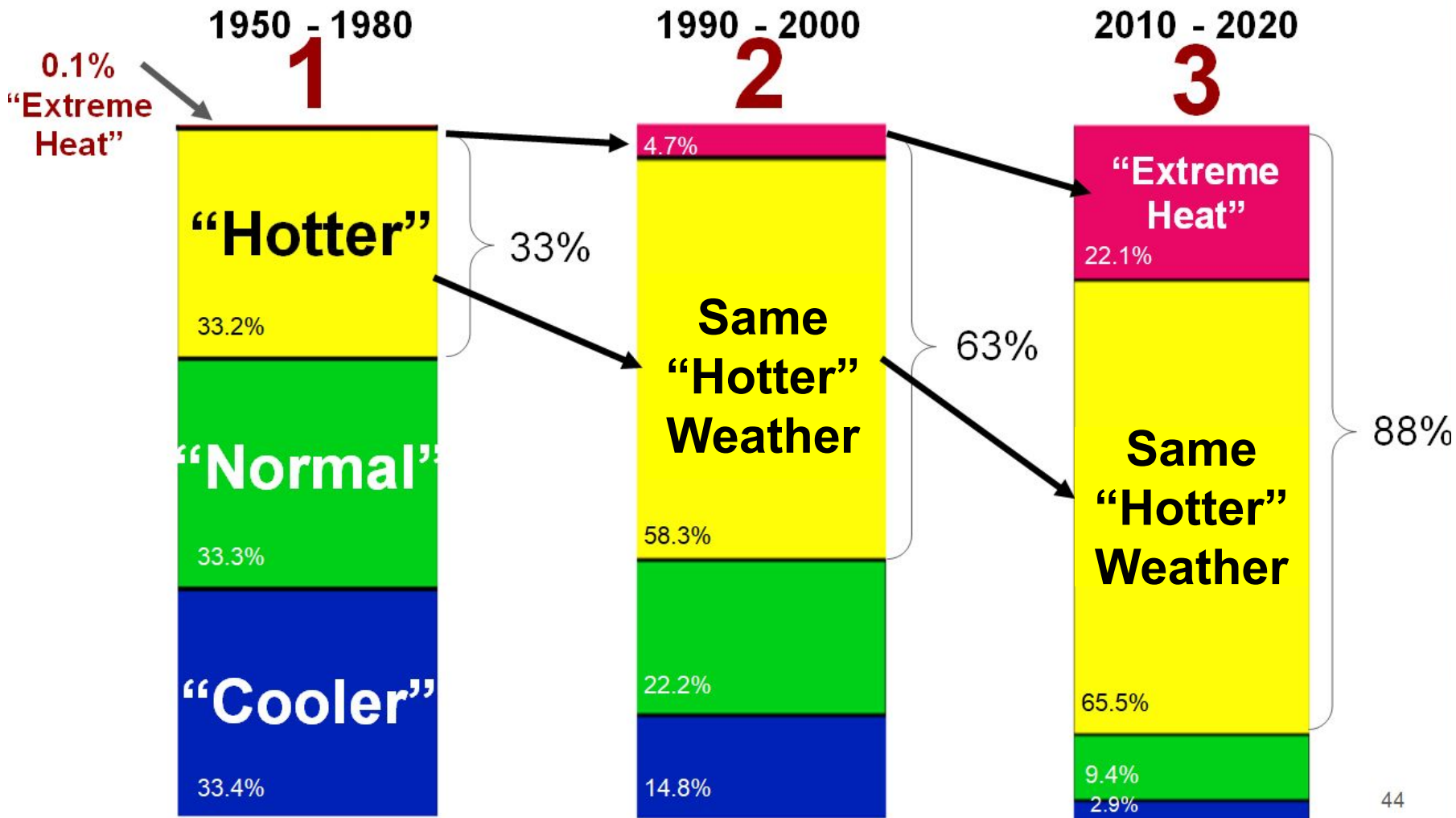
“Extreme Heat”,
“Hotter”, “Normal”,
and Cooler”

For ALL the Dice!

1

0.1% “Extreme Heat”







The **DICE blocks** are configured to reflect the ACTUAL **CLIMATES** in those decades !

The amount of each color on the **SIDES** LOADS THE DICE.

Each Die is a different **CLIMATE**

WEATHER is a roll of that die!



Let's look at the results of a recent GAME

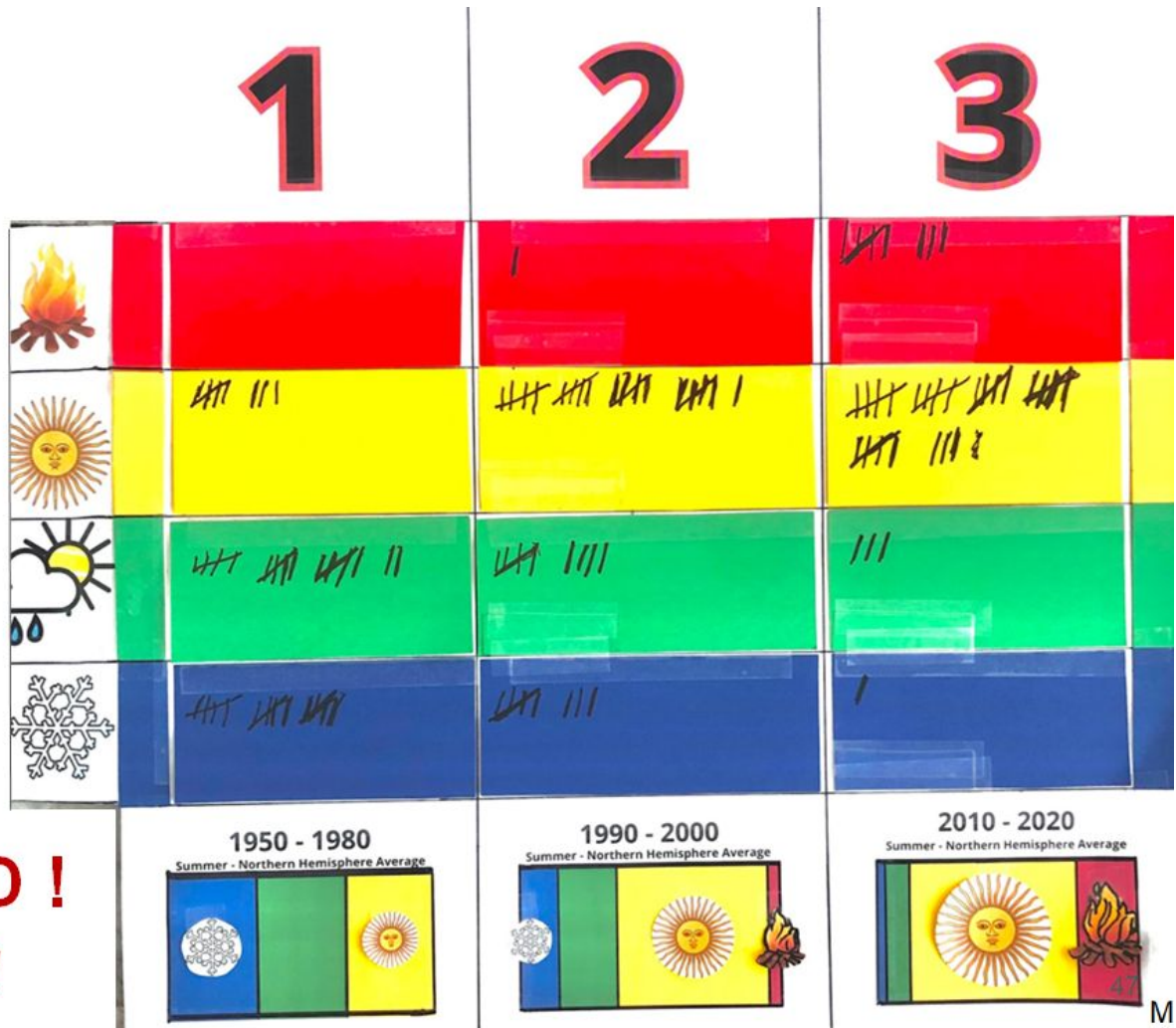
!!!

From Dice 1 → 3

- BLUEs basically disappear
- GREENs are far less
- YELLOWs and REDs come to Dominate!

It's almost like the DICE ARE LOADED !

...And That's the POINT !



Punchline of the game...

We **COULD still get a cool spell** at any day, week, or month... - **the die still has some BLUE.**

On the other hand, **you have to roll the die that's loaded to the current CLIMATE.** You get what you roll.

How do we know that Climate Change is caused by Humans?

To clarify:

CLIMATES CHANGE because of **GLOBAL WARMING**

GLOBAL WARMING comes from more solar heat coming in than can be sent back into space.

The **BLANKETING** of heat is done by greenhouse gases in the atmosphere

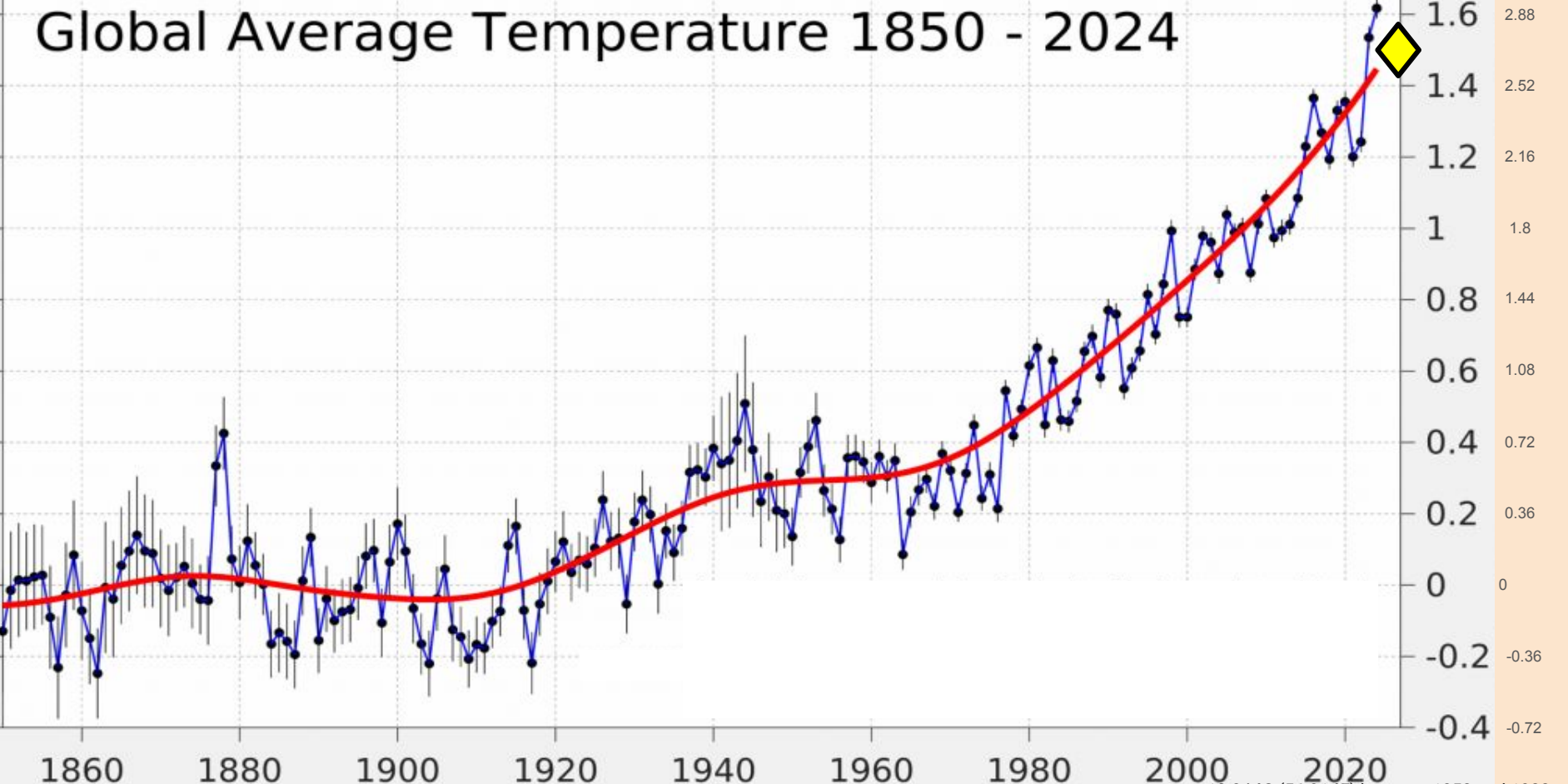
And research has shown...

1. The newly added greenhouse gases (GHGs) - come from burning **fossil fuels**.
2. Experiments and **predictions are consistent with what is actually happening**.

These and broad consistencies across disciplines verify that rapid Climate Change is coming from Human Behaviors

Global Average Temperature 1850 - 2024

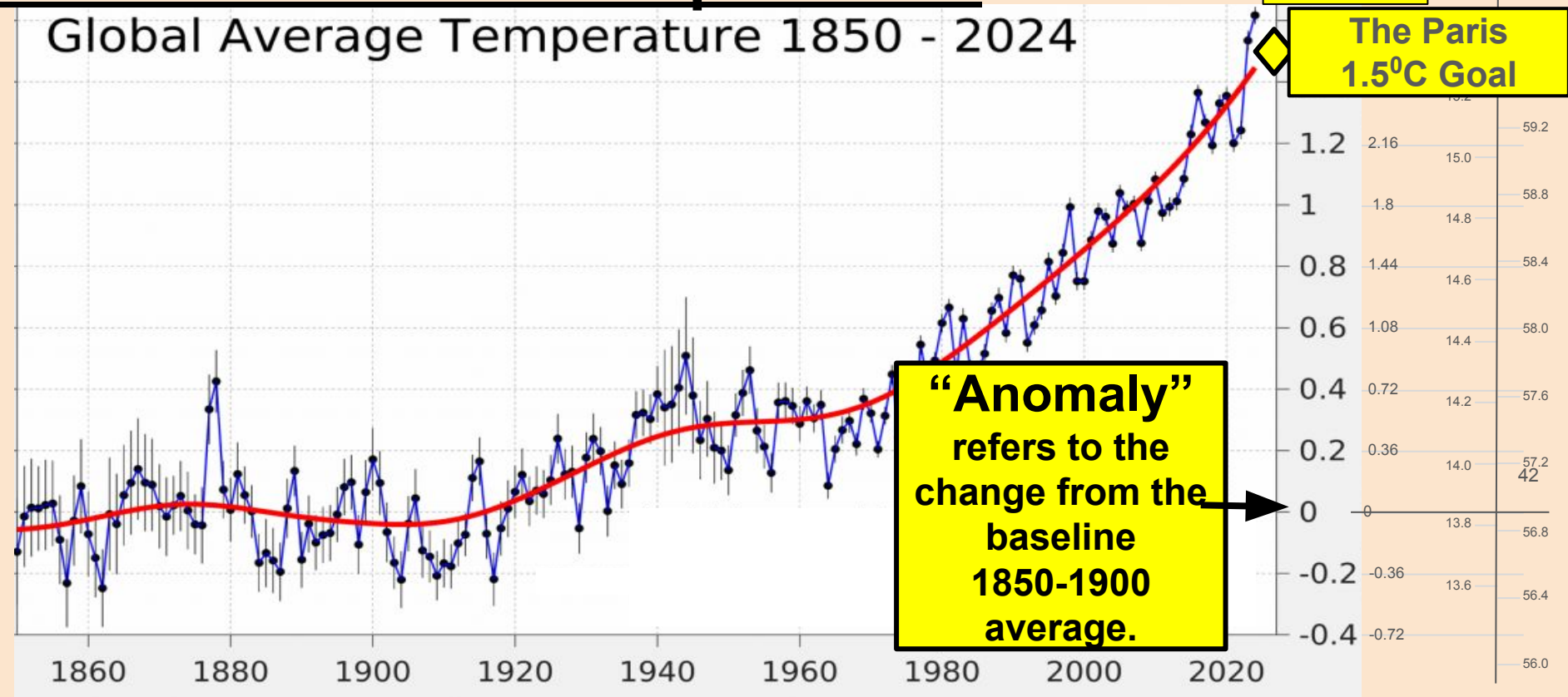
Anomaly
°C °F



We're going to learn about the TIMING and IMPACTS we may see, but first, let's get Oriented:

These are Actual Temperatures

Global Average Temperature 1850 - 2024

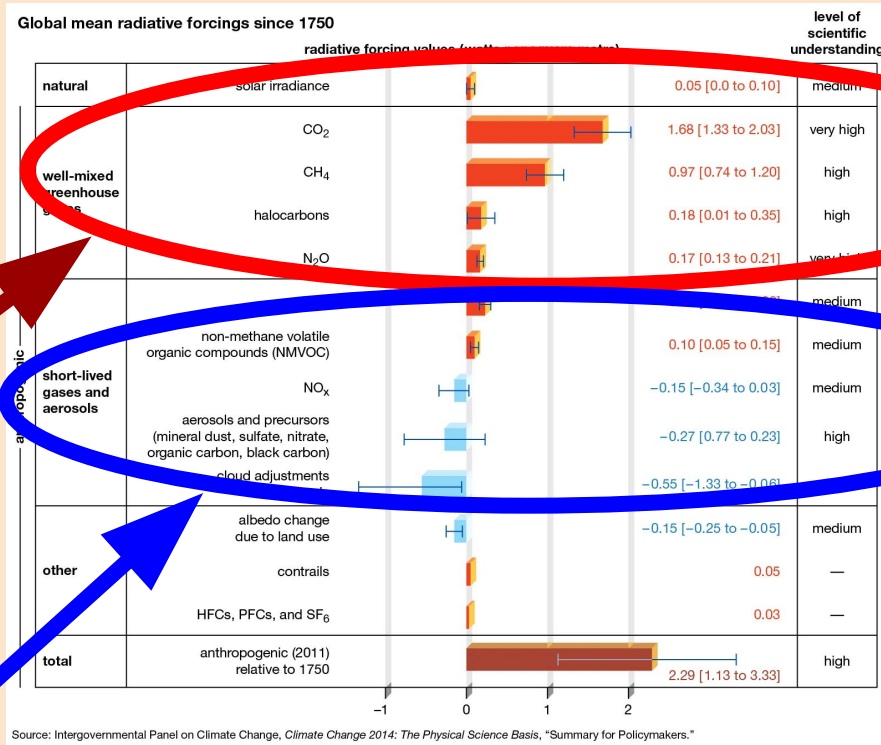


And some of the basic physics

The Atmosphere can be both **Heated and Cooled** by burning fossil fuel.

- **Well-mixed greenhouse gases** do a lot of heating

- **Aerosols** (particulate pollution) do a lot of cooling (!)



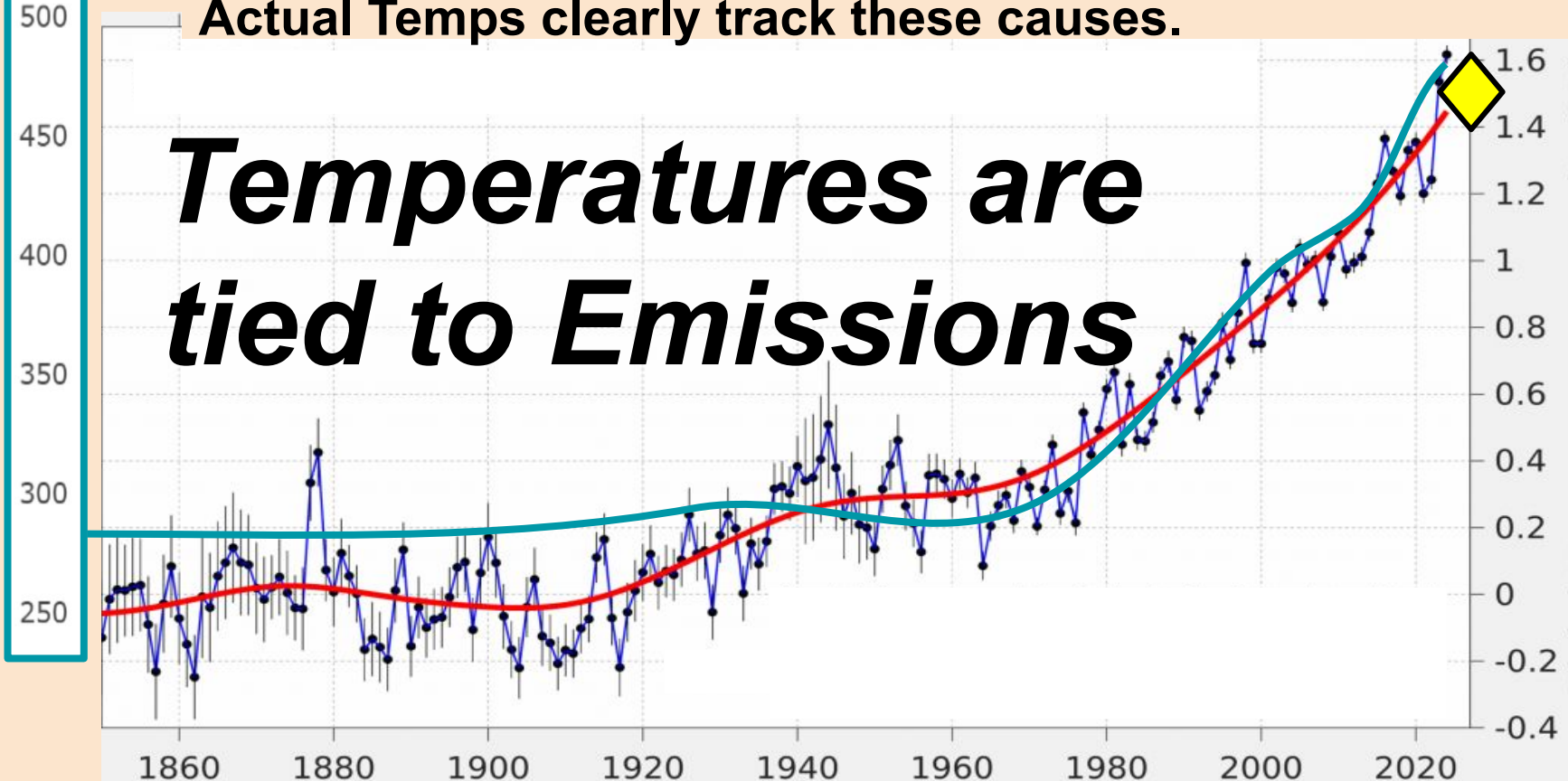
This constitutes a **FAUSTIAN BARGAIN** - we've been kept partially cooled by the killing aerosol pollution from the same burning that's been heating us up. Now it comes due as we want to clean up the killing pollution.

CO₂ Equivalent
ACCUMULATION
in atmosphere incl.
Aerosols (ppm)

2025 - Science has confirmed

relationships with GHGs, Aerosols, and other factors.
Actual Temps clearly track these causes.

Temperatures are tied to Emissions



What are the impacts that Scientists are so Concerned about?

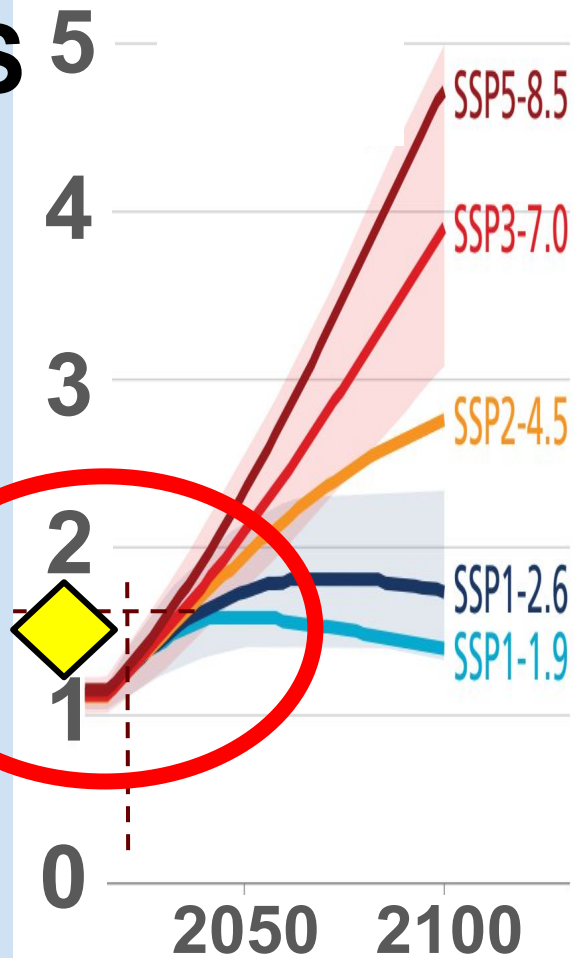
FIRST, let's get a handle on **TIMING**.

***if no big changes might happen for 100 years,
maybe our best strategy is to do nothing at this
point....***

TIMING PREDICTIONS

now being made

- The lines are 2020 projections for different cases - “**Shared Socio-economic Pathways**”
- We’re already above projections for 2024 and past the Paris Goal of 1.5 °C



Let's put these two charts together

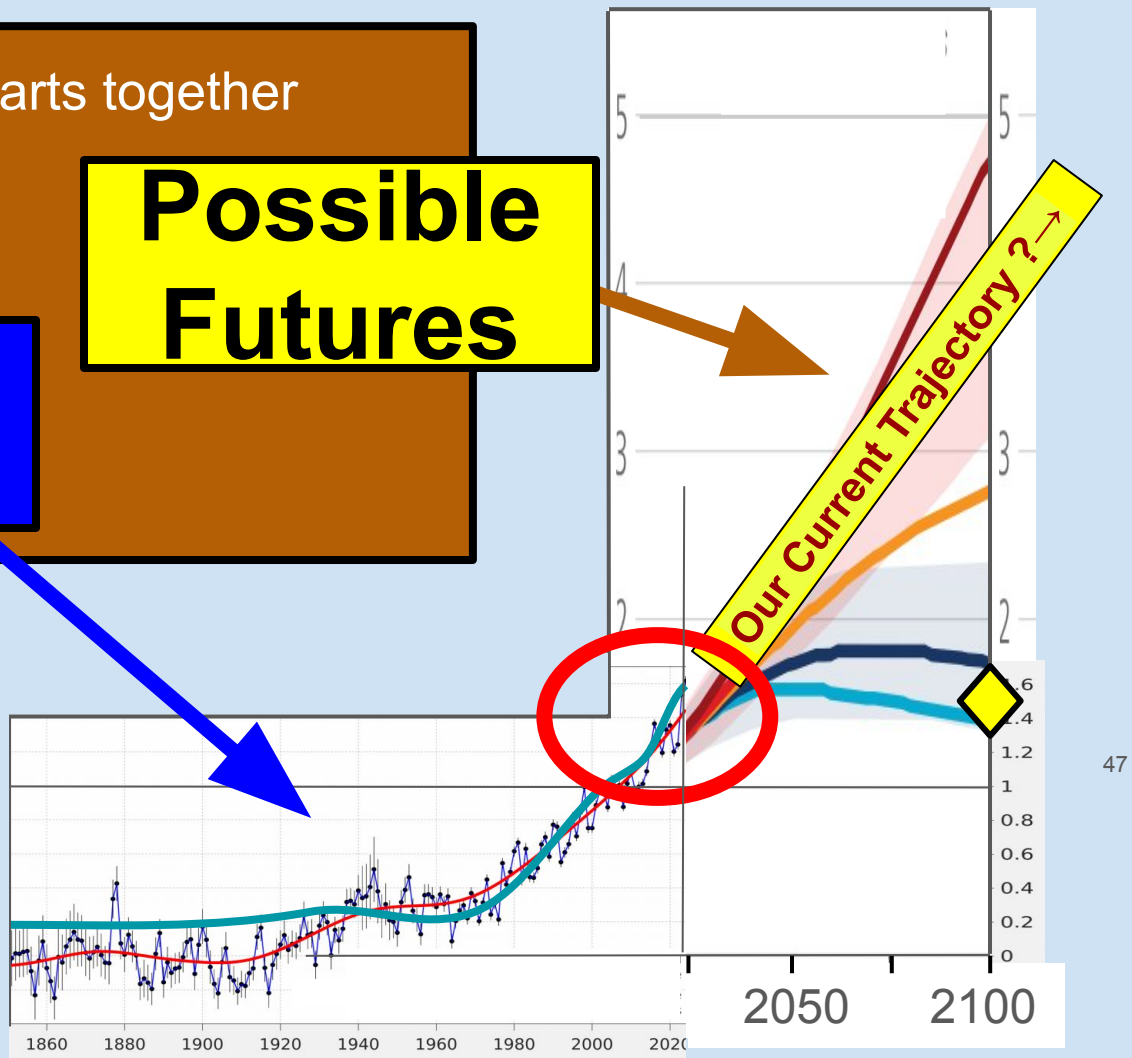
ACTUAL TEMPS
TO DATE

Possible
Futures

Our Current Trajectory? →

Our Current Trajectory

could be at the high end
of cases researched



We can now get a feel for the approximate **TIMING** of the benchmark temperatures, if we maintain our current Trajectory

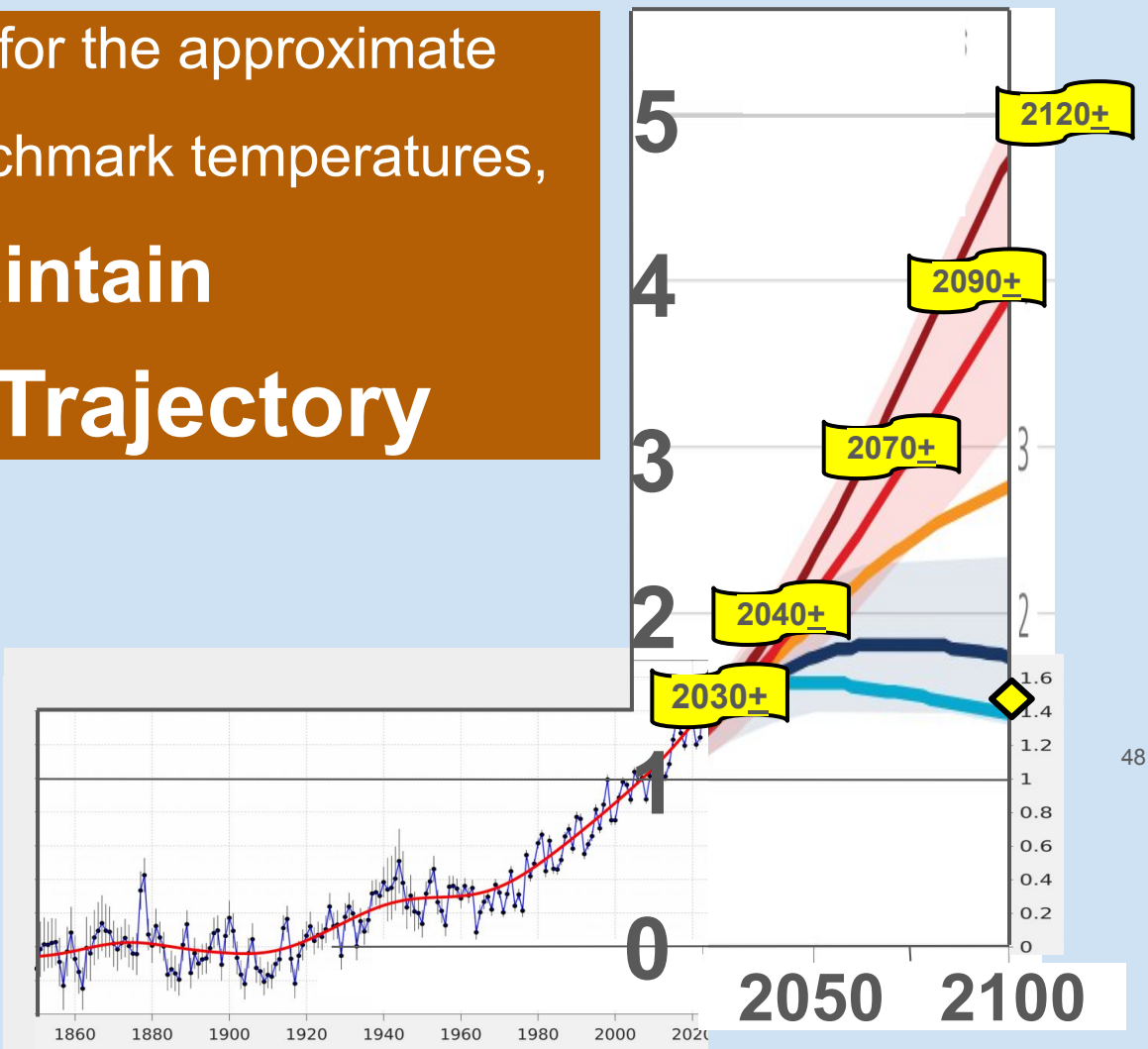
2030 ± 1.5 °C = 2.7 °F
(may be there now)

2040 ± 2.0 °C = 3.6 °F

2070 ± 3.0 °C = 5.4 °F

2090 ± 4.0 °C = 7.2 °F

2120 ± 5.0 °C = 9.0 °F



IMPACTS

on

Weather

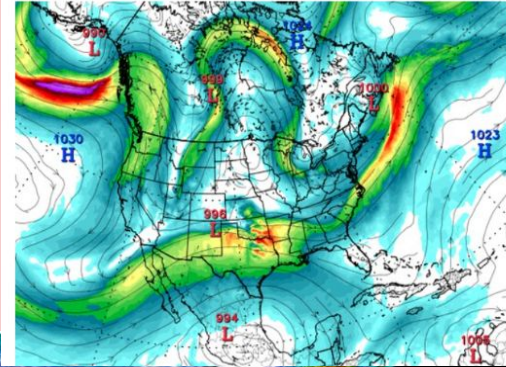
And

Climates

- **Globally - Increasingly Erratic and Intensifying Weather has already started**

With Warming, the poles warm faster than the equator, weakening the POLAR VORTEX, allowing large kinks to develop in the jet stream bringing radically changing weather.

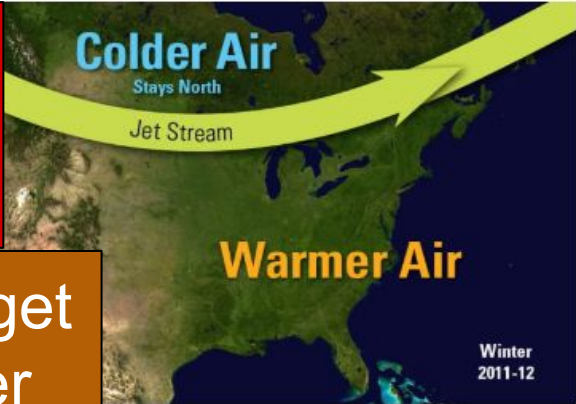
The weird jet stream



Hottest days get a lot hotter

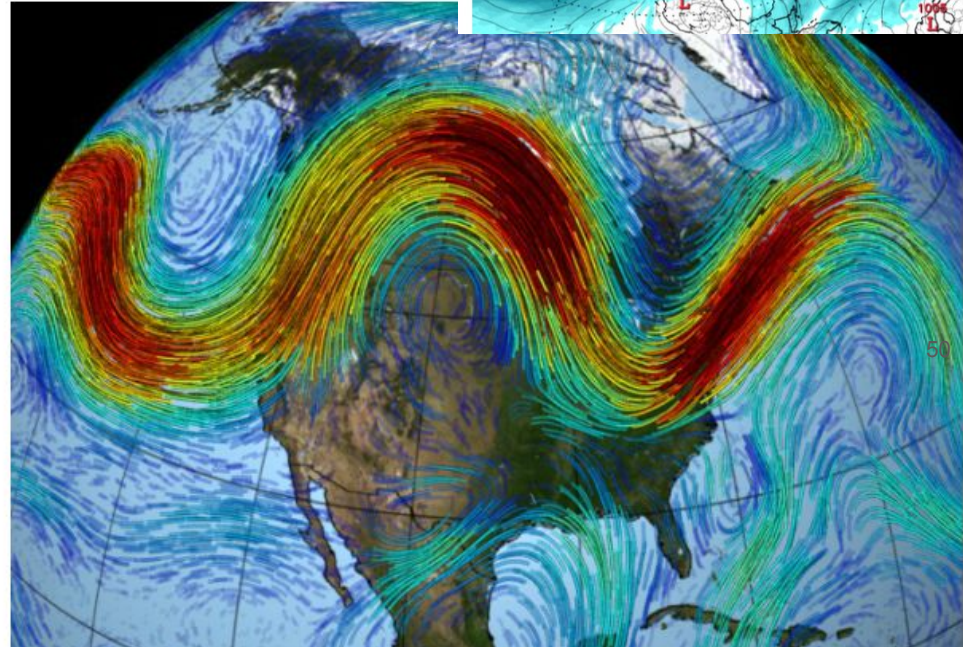
Droughts get a lot dryer

Downpours get a lot more intense



[Extreme jet stream pattern brings bizarre weather, storms to Lower 48 - The Washington Post](#) and

[A Wacky Jet Stream Is Making Our Weather Severe | Scientific American](#)

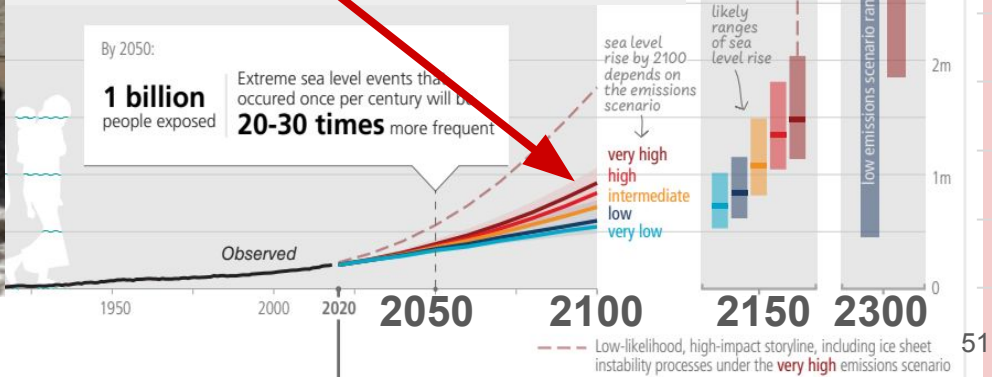


● Rising Sea Levels and Extreme Sea Level Events have Already Started

We are currently close to the **“Very High” trajectory** shown below.



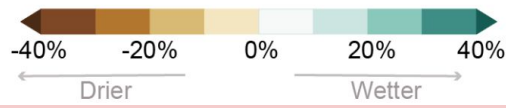
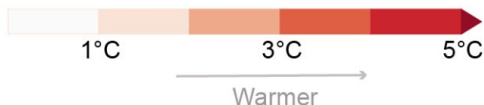
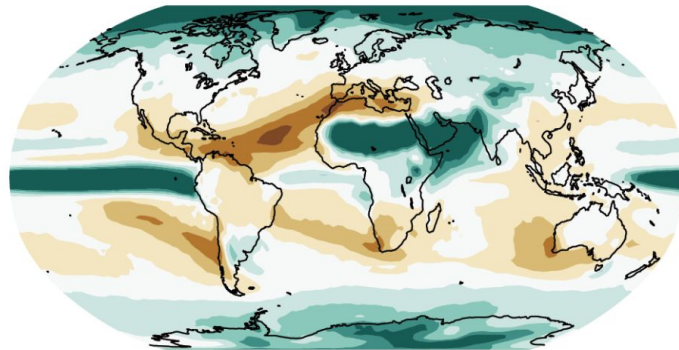
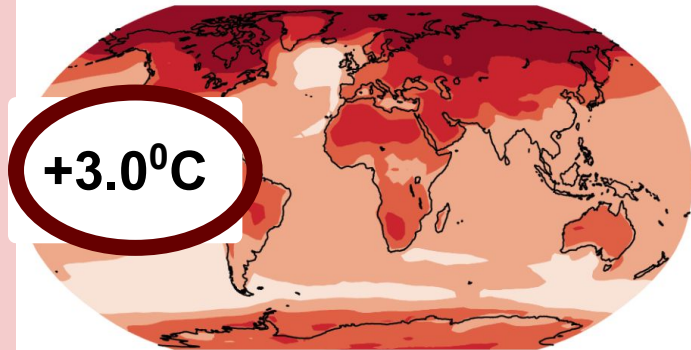
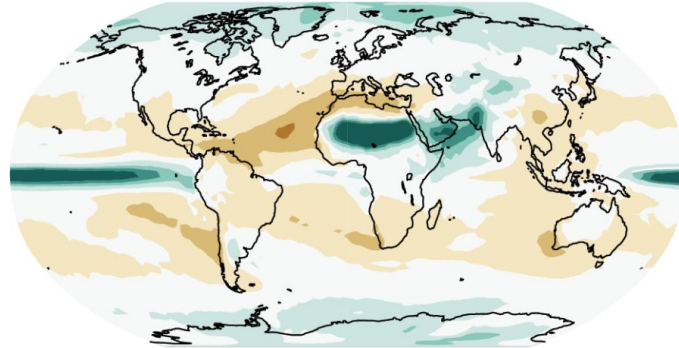
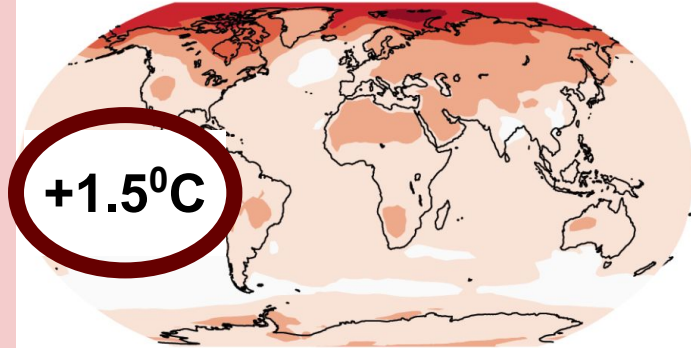
**3+ Feet Possible
this century
without Tipping
Points**



Globally, Climates Change

Warming will be **stronger** in the Arctic, on land and in the Northern Hemisphere

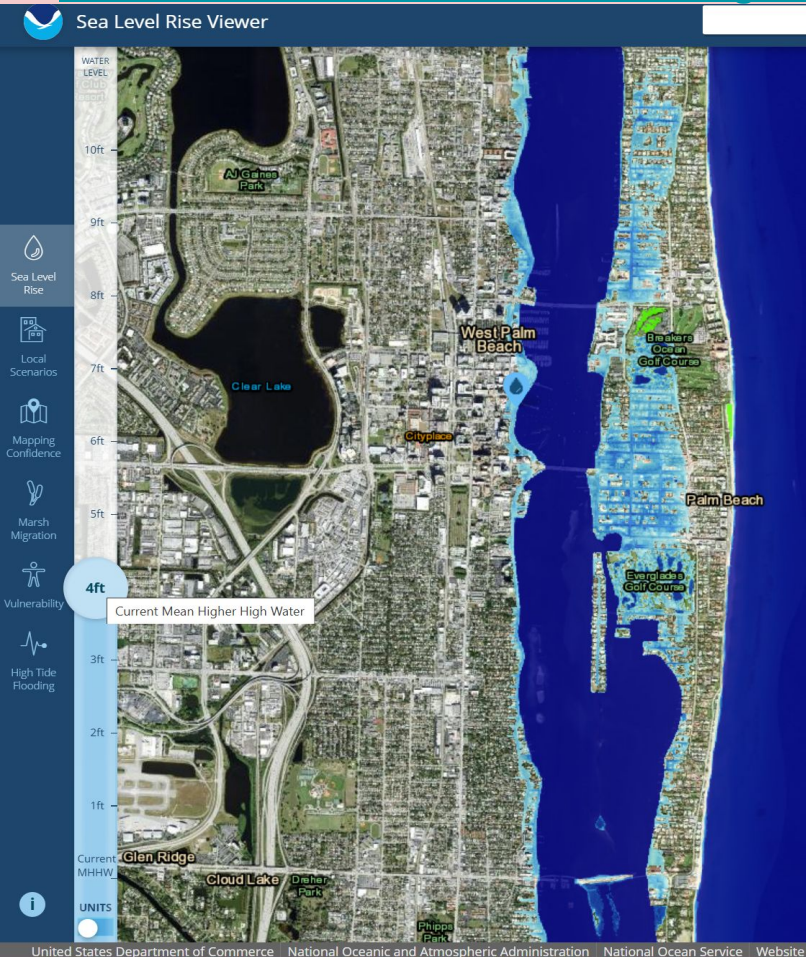
Precipitation will **increase** in high latitudes, the tropics and monsoon regions and **decrease** in the subtropics



Impacts Worsen
with every
increment of
Warming

Average
Warming and
Precipitation
Changes are
REGIONAL

Sea Level Rise and Coastal Flooding Impacts



In one way, we're in better shape than Miami (for awhile)

This is a possible scene in 2100

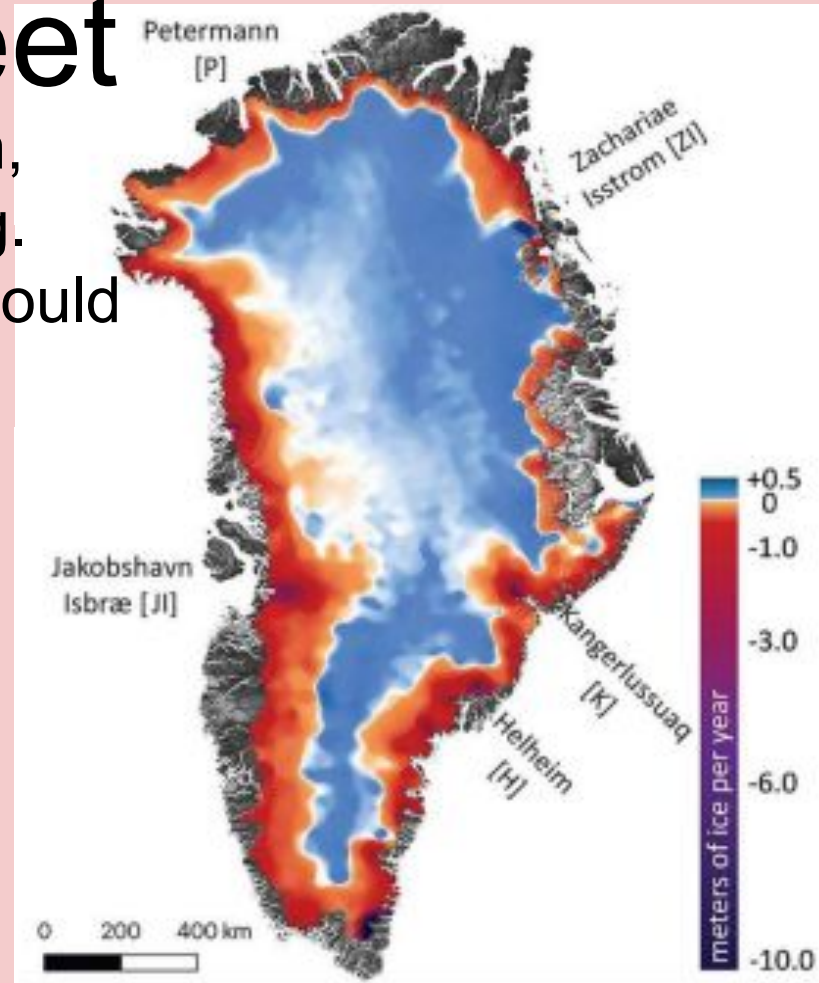


Tipping Points

Add to the Impacts on Weather and Climates

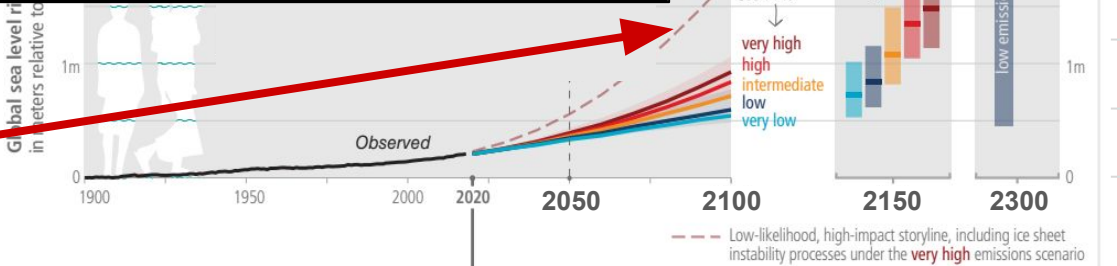
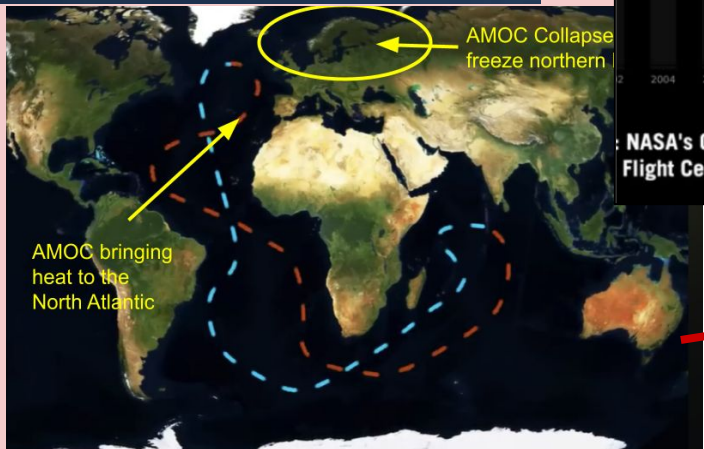
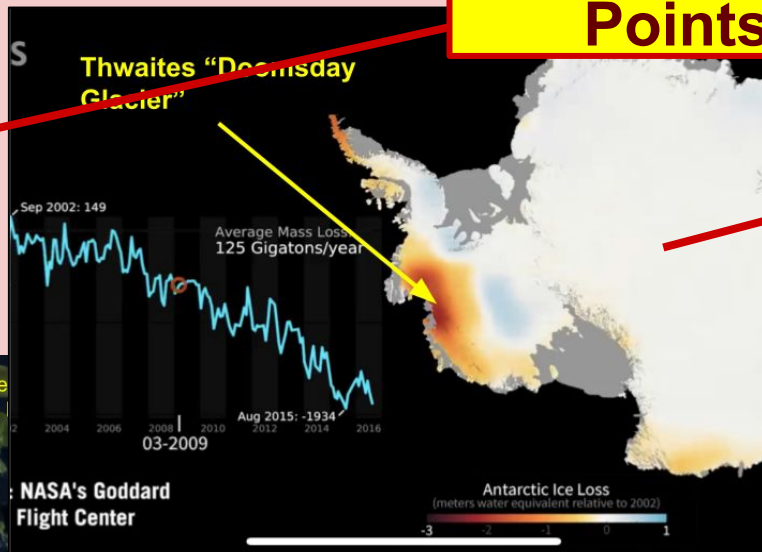
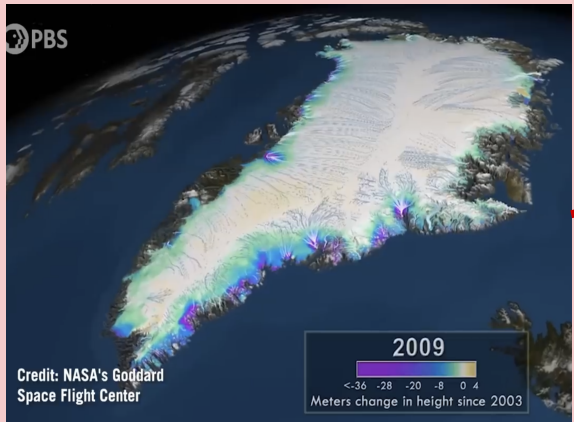
Greenland Ice Sheet

melts when below a certain elevation, where the air is warmer and warming. Tipping may already be in play and could bring 10 feet of global sea level rise.

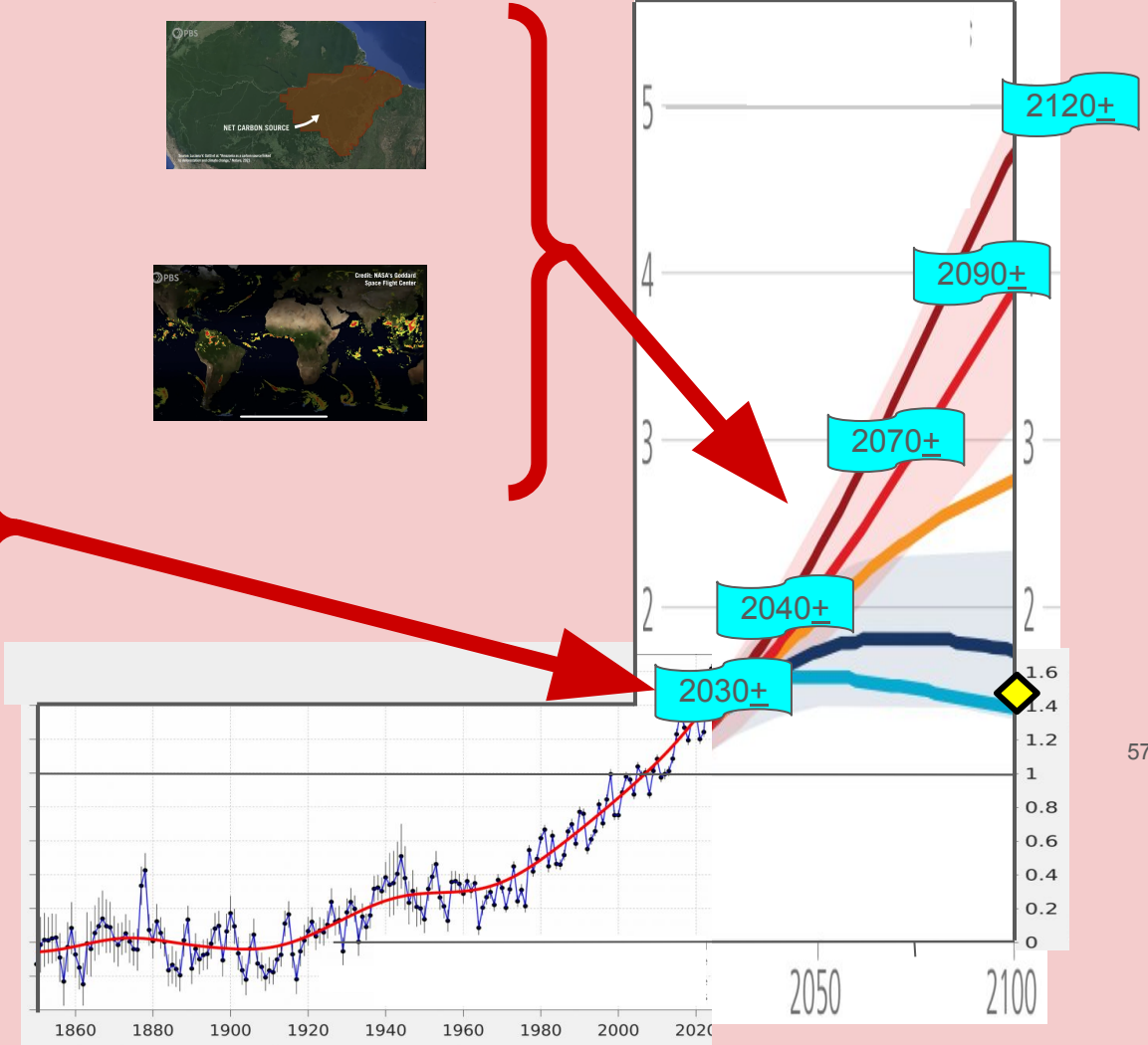
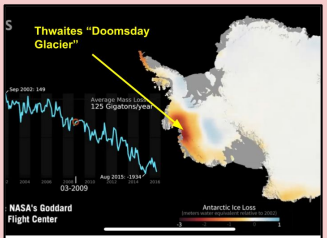
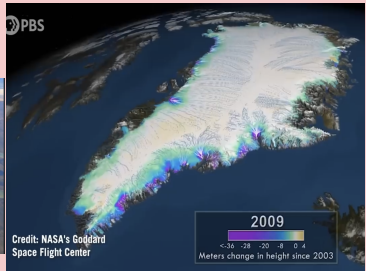
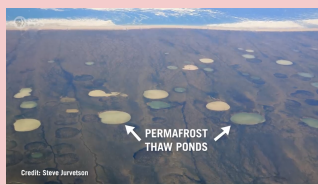
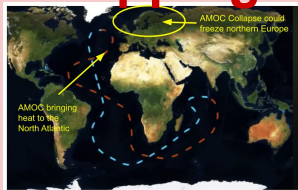


Rising Sea Levels

50 Feet Possible with Tipping Points



Tipping Points may be tripping now or soon



IMPACTS

On

Living Things

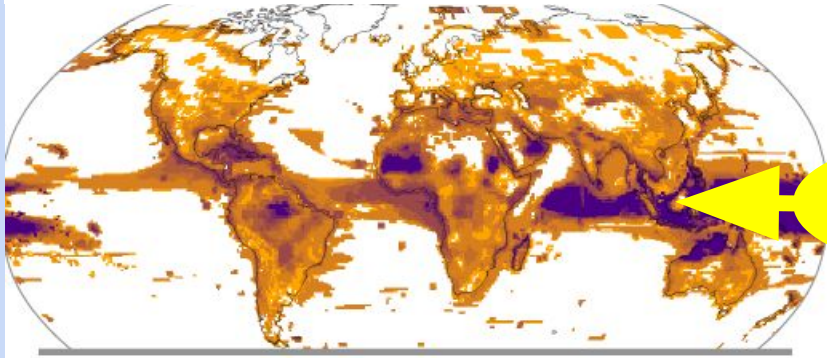
And

Societies

on our current trajectory



Percentage of **species exposed** to dangerous climatic conditions

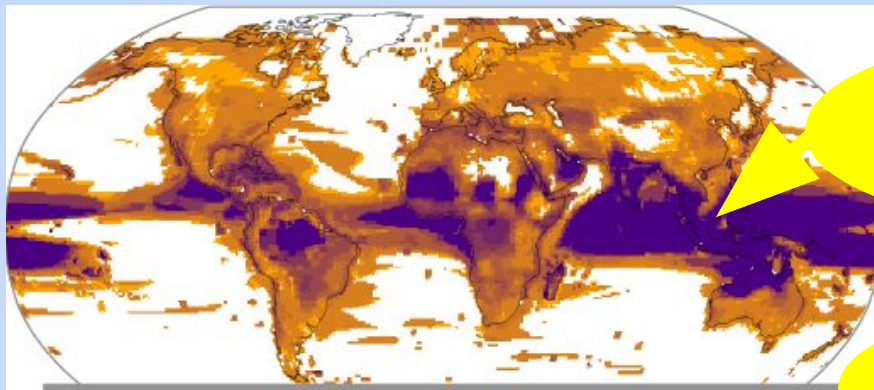


3.0°C

2070 ± Up to 29%

of the land and forest species assessed face a very high risk of extinction

Enormous destruction of Species



4.0°C

2090 ± Up to 39% of the

land and forest species assessed likely face a very high risk of extinction. local extinctions of about 50% of tropical marine species.

59

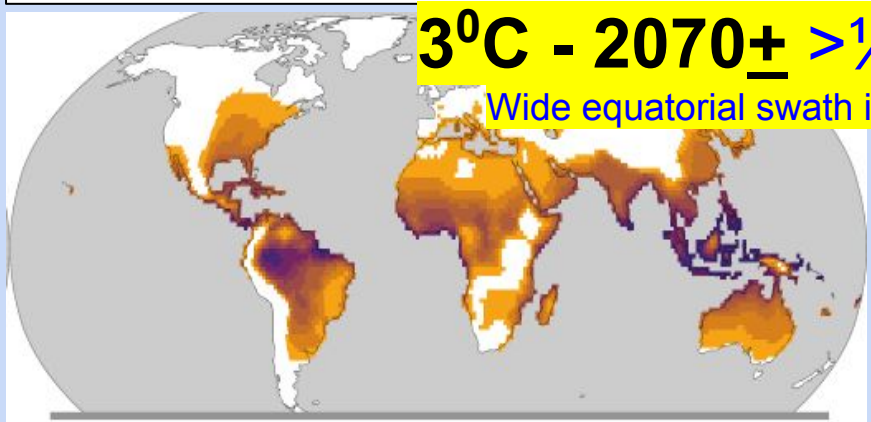
At 5 °C **2120 ± Up to 48%** of

the land and forest species assessed likely face a very high risk of extinction.



Number of days per year where mean surface air temperature and relative humidity may induce hyperthermia that poses a risk of mortality. The duration and intensity of heatwaves are not presented here.

Heat-humidity risks to human health



3°C - 2070± >1/3 - 1/2 of the year

Wide equatorial swath impossible to work outside

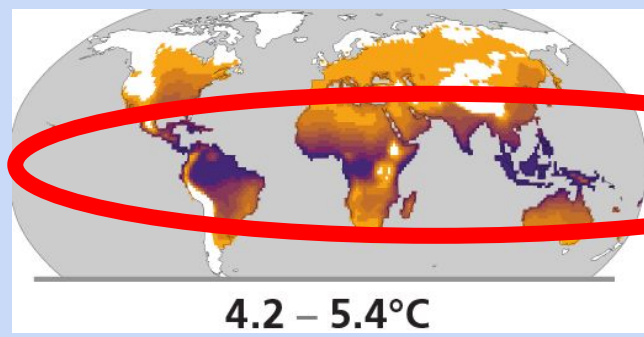
2.4 – 3.1°C

Adverse impacts on all food sectors becomes prevalent ^j
2.25 B more people at risk from dengue.^m Globally, adaptation options related to agroforestry and forestry have a sharp decline in effectiveness at 3 C with a substantial increase in residual risk. ^s .

[Foreword and Preface Technical Summary C.3.3, C.6.5, SYN3.2](#)

Huge Areas with risk of death outdoors for most of the year

4 °C - 2100 ± 4 B people with different levels of water insecurity. ⁱ
 30% loss of crop and livestock areas globally. ^H

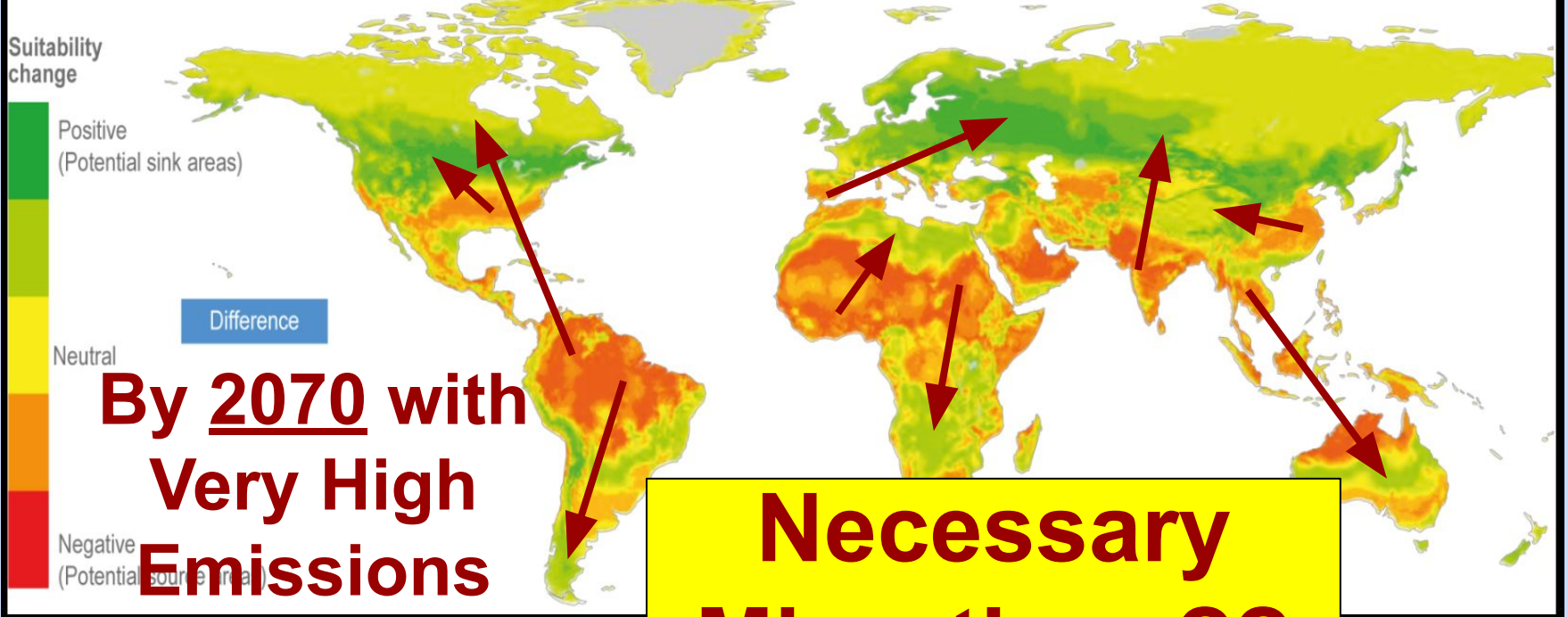


4.2 – 5.4°C

[Foreword and Preface Technical Summary C.4.1, C.3.1](#)

Projected **shift of human temperature niche**

For millennia, human populations have resided in the same narrow part of the climatic envelope available on the globe, characterized by a major mode around 11°C to 15°C mean annual temperature. Map shows the projected geographical shift of this temperature niche.



Climate Change 2022: Impacts, Adaptation and Vulnerability Figure A1.28

Where are the Greatest Risks?

Weather - Intensity and Erratic Change Everywhere

Climates -

Global - Warming Impacts + Tipping Points

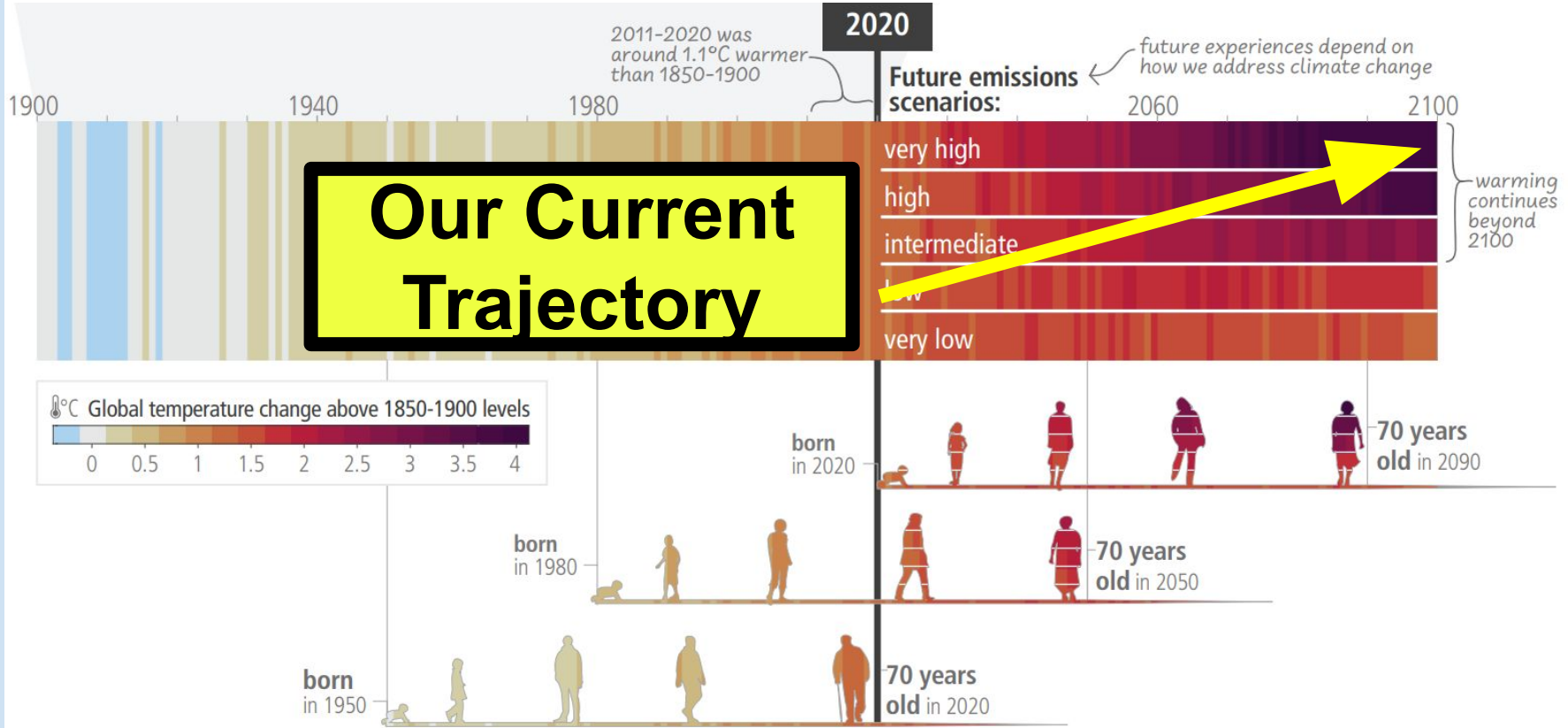
Equatorial - Heat, Humidity, and Extinctions

Regional - Monsoon, Droughts, Sea Levels, Freezing

Local - Flooding, Lifestyles, and Occupations

Societal - Massive Migrations, Conflicts

Our Trajectory decisions will determine our Children's Fate...

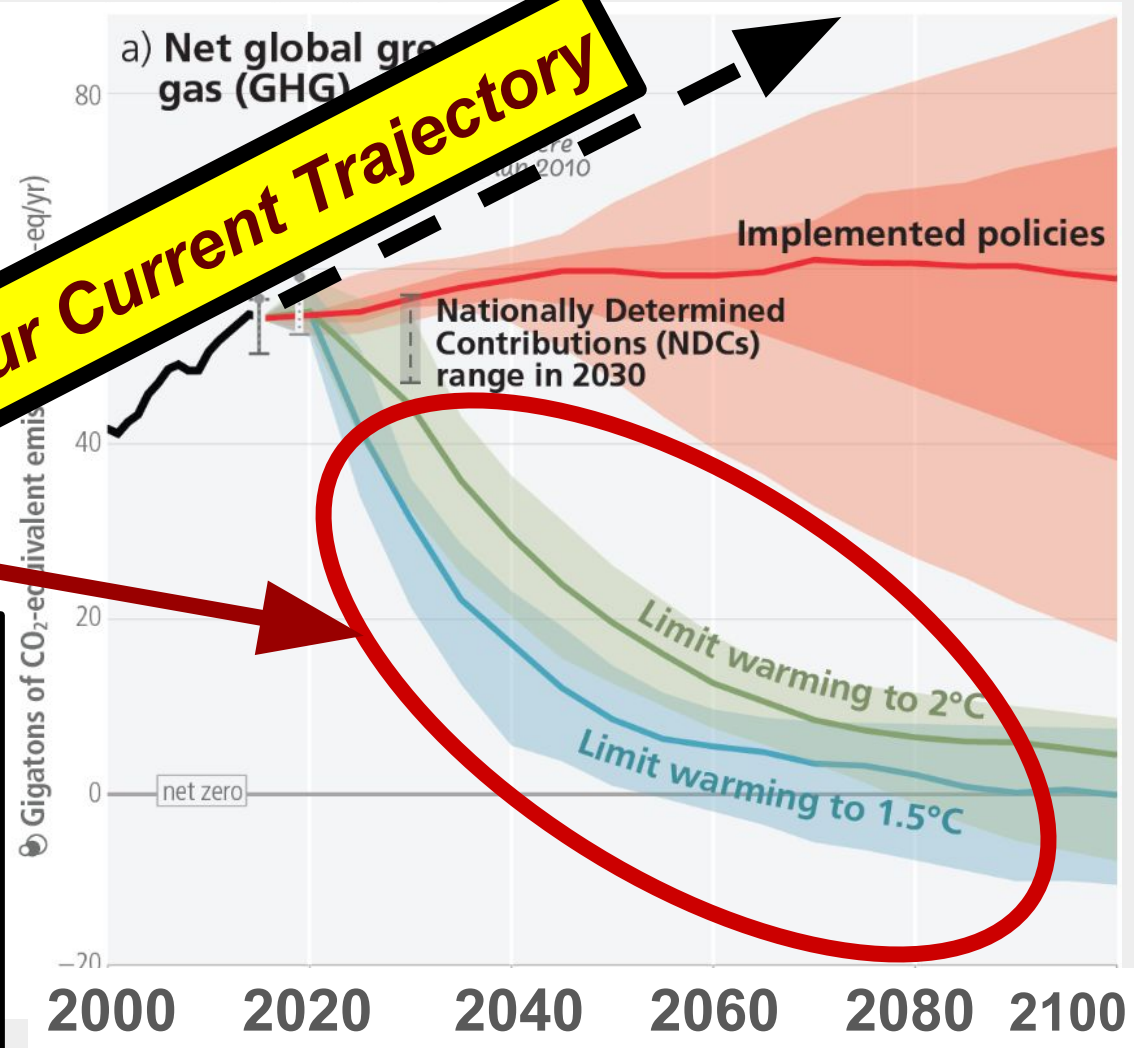


Temperatures are tied to Emissions

Here's the change we need to limit the warming

There is no will to limit warming to 2°C now - we're addicted

Our Current Trajectory



My Conclusions concerning

IMPACTS

- At our current trajectory, by **2040 - 2070** we must expect **dramatic extinctions** and **uninhabitable regions**
- **Global-scale migrations** (people and species) could not be prevented

What actions could reduce the impacts to below 3⁰C?

Build Political Will

End emissions


Take carbon out of the air

Solar radiation modification


Local Adaptation

katharinehayhoe  7/9/23 ...

If you are worried about climate change and want to make a difference,


 start a conversation about why climate change matters and what people can do

 join a climate action group

 consider where you keep your money

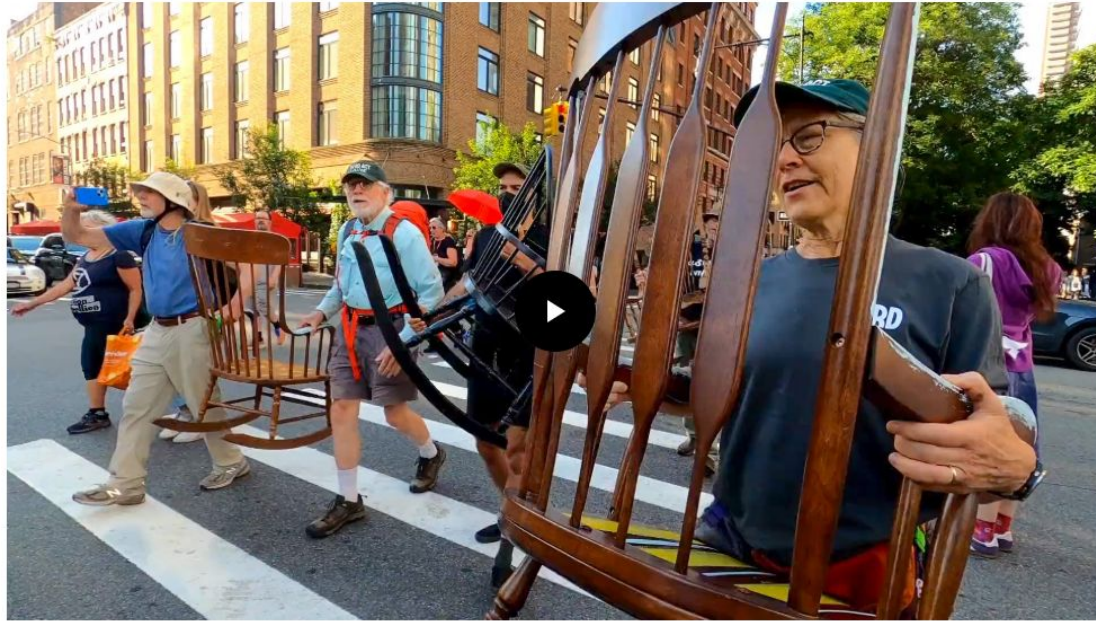
 spark ideas for change at work & school

 hold politicians accountable

 reduce your personal footprint AND make your actions contagious by talking about them

As Bill McKibben says , "the most important thing an individual can do right now is not be such an individual."

To most, the word *retirement* conjures images of long rounds of golf, hotly contested games of bingo, and sitting in a recliner chair with the Sunday crossword. But for the seniors of Third Act, this couldn't be farther from the reality.



Founded by legendary climate writer and activist, Bill McKibben, ThirdAct is bringing together elders around the United States for collective action on climate and democracy. And they are not just writing postcards and signing petitions from the comfort of their home. They are taking to the front lines of protests to demand an end to the reign of the fossil fuel industry.

Harriet's "28 Ideas that float my boat"

● **Reuse - Repair**

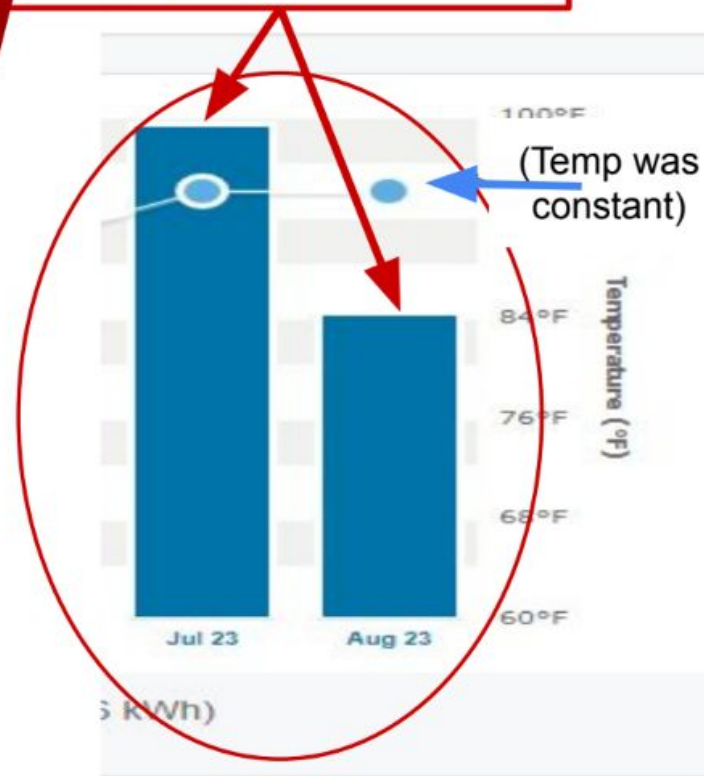
- Change air filters regularly
- **Set the thermostat to 75 degrees in summer and 67 degrees in winter.**
- Switch to LEDs
- Buy Energy Star appliances
- Use smart power strips when applicable.
- Use natural ventilation and lighting.
- **Elect to purchase renewable energy from your utility.**
- Turn off the ice maker if you do not use ice.
- Set ceiling fans to rotate clockwise when heat is on and counterclockwise at all other times.
- Wash laundry in cold water.
- Take shorter showers.
- Bike or walk instead of driving.

- Turn off the faucet when brushing teeth.
- Keep tires pumped up.
- Optimize driving routes and use each outing for multiple purposes;
- Drive calmly and use cruise control for long trips.
- Stop using bottled water.
- Reduce use of plastics where possible.
- Buy local produce.
- Reduce food waste. 1/3 of all food in the US is thrown out.
- Eat less meat.
- Buy clothing that will last multiple years.
- Pay attention to excessive packaging.
- Always consider repair before replacement.
- **Calculate your carbon footprint.** Try and reduce areas that are your major fossil fuel source.
- **Consider an EV for your car purchase.**
- When feasible, buy second hand rather than new.

I recently tried an experiment
(while Mac was in Sweden)

We changed our
Thermostat
from average 71^o
to constant 75^o

Cut our Elec
CO₂ by 40% !



Good Action encourages Good Action...



-
- **Fossil-Free Finance**
 - **Convince Financial Sector to Stop Financing Fossil Fuel Expansion**
 - **Democratizing Energy**
 - Increase Citizen Participation in Governments' Energy Decisions
 - **Uplift Democracy and Voting**
 - Promote a Thriving Democracy, Fair Elections, Informed Voters

Fossil Free Funding



- COSTCO: Clean up you Citi Credit Card
- Move Your Money!
- Condos for Clean Energy



Understanding Climate Future(s)

with Mac Lankford, Third Act Florida Climate Science Advisor

Reasons to Trust the Science and What it's Predicting

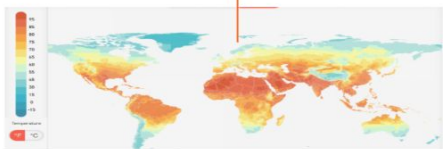


Figure SEQ Figure 1* ARABIC 1: Climate Lab Projections: Avg Summer Temperature, 2020-2035.

Century Village

West Palm Beach, FL

February 20, 2025 at 1:30 pm

Third Act Florida (TAF) is an organization of Elders who are concerned about Climate Change and Threats to our Democracy. THIRD ACT's three primary areas of concern:

- Fossil Fuel Financing
- Democratizing Energy
- Uplifting Democracy and Voting

Get more information about Third Act Florida by using this QR Code, or by visiting <https://thirdact.org/working-groups/florida/>

Contact us at ThirdActFL@gmail.com or visit our Facebook page



Use this QR Code for access to Today's Presentations →

You can reach Mac Lankford,

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Check out our Handout for Links to the Presentations and other Resources