

# Sustainability at The Mosaic Company

## Phosphates Segment





**Mosaic<sup>®</sup>**



# Mosaic

- Incorporated March 2004, combination of IMC Global Inc. & Cargill fertilizer businesses
  - 100 years of phosphate mining history in U.S.
  - 50 years of potash mining history in Canada
- Fortune 500 company
- Approximately 21.6 million tonnes of operational capacity
- \$7.1 billion in sales in calendar 2016
- Customers in approximately 40 countries
- More than 8,000 employees\*



# Core Values

## Our Work

Mosaic (NYSE: MOS) is a single source supplier of phosphate- and potash-based crop nutrients and animal feed ingredients.

## Our Mission

We help the world grow the food it needs.

## Our Principles

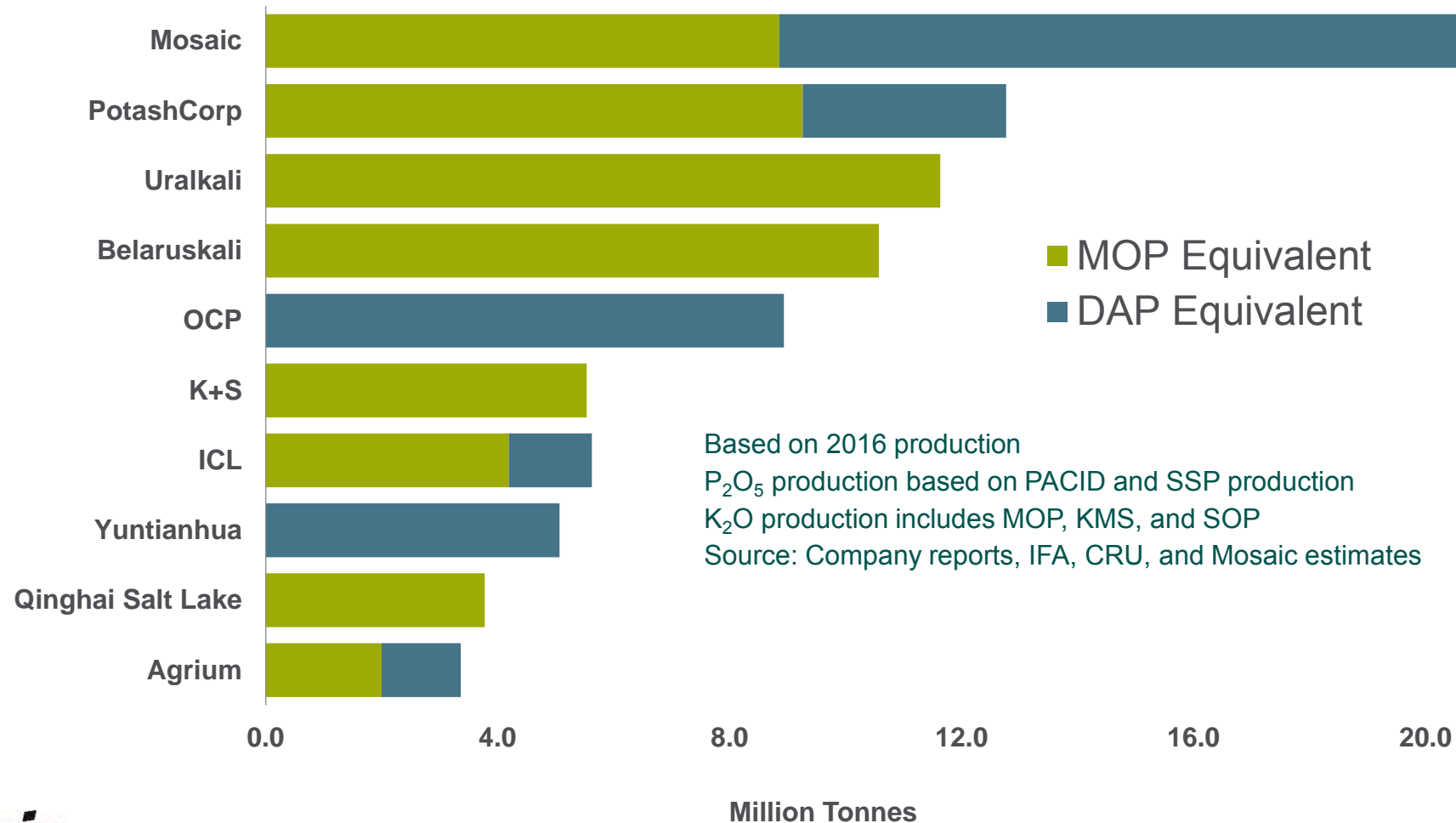
We are responsible, innovative, collaborative & driven.

## Our Priorities

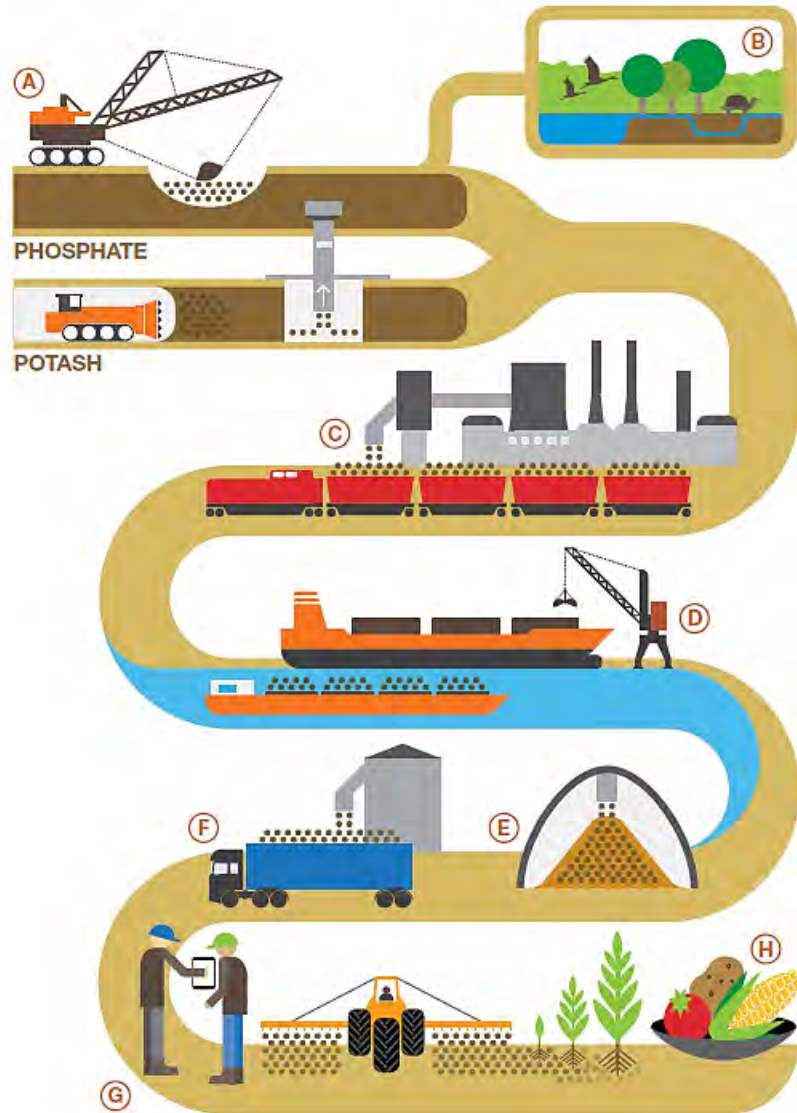
- Develop, engage and empower our people
- Grow and strengthen our business
- Create value for our stakeholders



# World's Largest Potash & Phosphate Producers



# Our Mine-to-Market Footprint



## **A MINING**

We work to safely extract phosphate and potash ore from the Earth's extensive reserves.

## **B LAND RECLAMATION**

We reclaim every acre of phosphate-mined land, creating high-quality habitats and wildlife corridors for fish, birds and other animals, and land suitable for agriculture and other diverse uses.

## **C MANUFACTURING**

We refine, process, and blend phosphate and potash minerals to create crop nutrition products, then prepare goods for shipment.

## **D TRANSPORTATION**

We move raw materials, phosphate, potash and finished crop nutrition products across the supply chain using pipelines, trains, trucks, river barges and ships.

## **E STORAGE & DISTRIBUTION**

We have port terminals, warehouses and storage capacity in key geographies, with global distribution.

## **F CUSTOMERS**

We sell to retail customers and regional distributors, as well as large international growers.

## **G FARMERS**

We provide large and smallholder farmers with the vital crop nutrients and micronutrients they need to help grow healthy plants, achieve better yields and grow food, feed, fuel and fiber more sustainably.

## **H CONSUMERS**

Our crop nutrients play a key role in growing crop yields and providing people with the healthy, affordable food they need to thrive.

# What We Do





# Phosphates Operations Overview

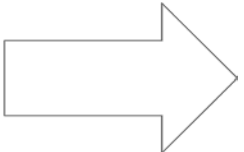
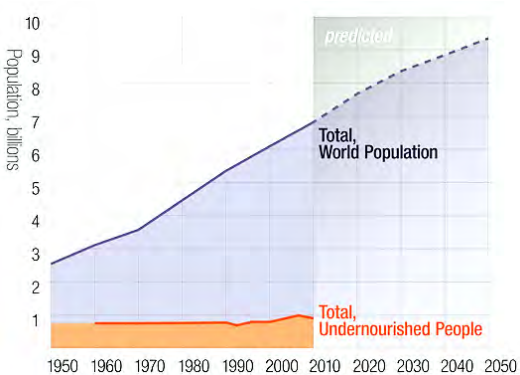
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- Mosaic operates four phosphate mines in Central Florida and six production facilities in Central Florida and Louisiana
- Production volume capacity of 11.7 million tonnes
- Mosaic phosphate accounts for approximately 14% of global production and 75% of North American production of concentrated phosphate crop nutrients

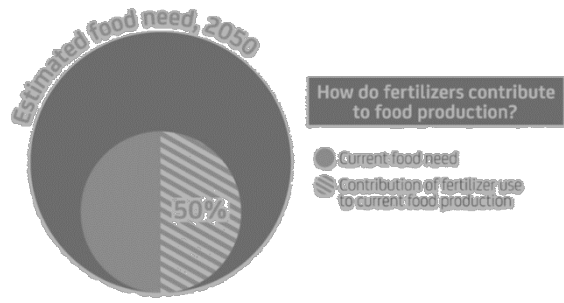
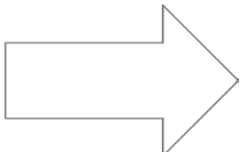


# Fertilizers Help Sustainably Produce Crops

Increased demand for more food as our world population grows



Fertilizers help produce half of all crop yields



# Our Global Impact

- Our products contribute to global food security by increasing crop yields
- No other company has the ability to deliver two critical crop nutrients on such a massive scale to the global market



# Our Commitment to Operating Responsibly



# What is Sustainability?



# Sustainability at Mosaic

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## FOOD

- Food Security
- Balanced Crop Nutrition
- Product Innovation
- The Mosaic Villages Project

## ENVIRONMENT



- Land, Water, Energy, Air
- Nutrient Stewardship

## COMMUNITY



- Community Investment
- Stakeholder Engagement
- Employee Involvement



## PEOPLE

- Safety
- Employment Practices
- Employee Development
- Supply Chain & Contractors
- Diversity and Inclusion
- Sourcing



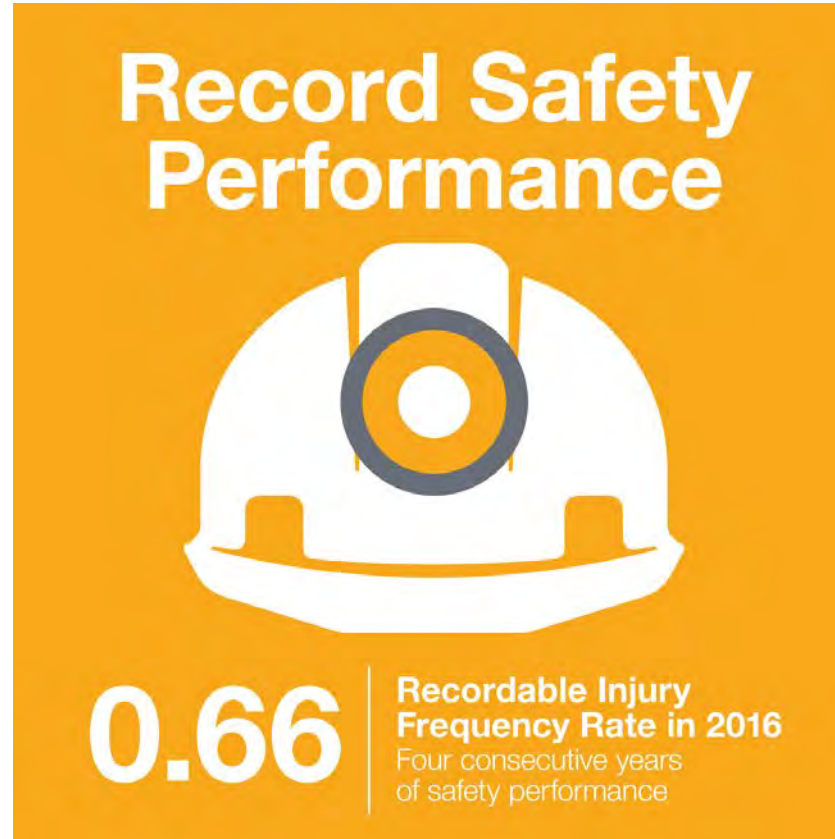
## COMPANY

- Governance
- Partnerships
- Management Structure
- Management Systems


# Environment, Health and Safety

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- Driving toward incident- and injury-free performance
- Sustainability begins with the health and safety of our employees, contractors and visitors



**Record Safety Performance**



**0.66** | **Recordable Injury Frequency Rate in 2016**  
Four consecutive years of safety performance

# Community Investment

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- In 2016, we invested nearly \$5 million into communities in Florida
- We support organizations where we operate

**WE AIM TO INVEST 1% OF PROFITS**  
on a 3-year rolling average

 **food**       **communities**       **water**

The Mosaic Company,  
The Mosaic Company Foundation  
& The Mosaic Institute in Brazil



# Advocacy and Research

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We Support & Promote

## 4R

### Nutrient Stewardship

**RIGHT SOURCE**  
**RIGHT RATE**  
**RIGHT TIME**  
**RIGHT PLACE**



## CROP NUTRITION R&D

### 1,400+ Trials

conducted with researchers, universities, customers and growers in United States, Canada, Brazil, China, India, Northern Latin America (Mexico to Peru), Argentina, Chile, Europe

# Measuring our Efforts



# Our Targets

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## Mosaic Sustainability Targets

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**WATER**



**ENERGY**



**GREENHOUSE GAS**

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By 2020, reduce by 10% per product tonne



# Our Progress

## Sustainability Targets Progress

Target: By 2020, reduce by 10% per product tonne



### WATER

4.2% reduction from 2012 baseline



### ENERGY

1.9% reduction from 2012 baseline



### GREENHOUSE GAS

2.7% reduction from 2012 baseline

Target: By 2020, reduce RIFR to 0.6



### SAFETY

25% improvement over 2015

Target: Reduce waste by increasing reuse and recycling of resources



### WASTE

Recycled more than 65,000 tonnes of waste in 2016

Recycled more than  
**65,000 TONNES**  
of waste

**8**  
CONSECUTIVE YEARS  
*Corporate Responsibility Magazine's 100 Best Corporate Citizens List*

**CDP Score 100**



Mosaic was one of 193 companies named to CDP's "Climate A List" for actions to reduce greenhouse gas emissions.

# By the Numbers in 2016

- Recycled more than **60,000** tonnes of waste (segment-wide)
- Generated over **1.8** million MWh of electricity through cogeneration – equivalent to powering more than 150,000 homes for a year
- Planted more than **800,000** trees as part of our reclamation efforts
- Received reclaimed water from six municipal wastewater treatment plants in 2016 at an average rate of **6.7** million gallons/day



# Reporting our Performance

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[www.Mosaicco.com/2016stateofthebusinessreport](http://www.Mosaicco.com/2016stateofthebusinessreport)

- Our annual sustainability disclosure includes over 130 indicators from the Global Reporting Initiative framework
- We participate in other voluntary reporting initiatives, including:
  - CDP Climate Change
  - CDP Water
  - IW Financial
  - Trucost
  - Vigeo

# Recognition for our Efforts

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# Our Strategy in Action





# Cutting Waste and Costs



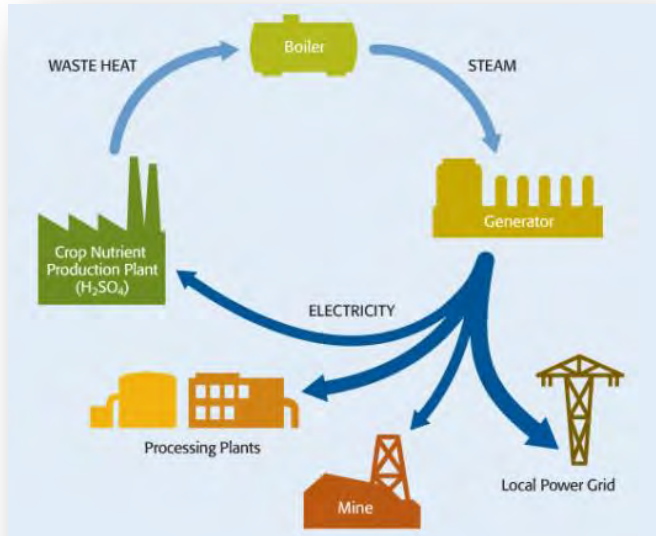
- Mining crews identified a way to repurpose dragline ropes
- The arrangement extends the life of ropes from 6 million to 9 million cubic yards
- Avoids 60,000 pounds of waste a year and saves more than \$125,000
- More progress in the works: we signed a contract with a single waste vendor in 2016 that will enable better waste tracking and improved landfill diversion

# Converting Draglines to LED Lights



- Conversion from halogen to efficient LED lights on draglines reduces energy use at mining operations
- In 2016, the last of seven draglines at Four Corners was converted to LEDs. Additional LED conversions at other mines are underway
- Each conversion results in 150,000 KWh in annual energy savings and significant reductions in maintenance costs

# Investment in Cogeneration



- In 2016, Mosaic installed a new power line that connects a manufacturing facility to a mine, delivering an additional 21 MW of virtually greenhouse gas emissions-free power
- Equivalent to powering more than 15,000 homes for a year
- Phosphates operations generated 1.8 million MWh of cogenerated power in 2016, approx. 85% of which was used by plants and mines

# Changing Behaviors Saves Fuel



- Minerals and concentrates employees initiated a program to run bulldozers in “ECO” mode, resulting in fuel and GHG emissions reductions
- Requires no capital investment; relies solely on employees to succeed
- Saved more than 850 tonnes CO<sub>2</sub>e in 2016

# Industrial Collaboration



- Adjacent Wastewater Treatment Plant needs cool water
- Mosaic needs warm water to raise the temperature of ammonia from  $-28^{\circ}\text{F}$
- 2.2 million gallons a day recirculated
- This agreement reduces fresh water, energy and GHG emissions by both organizations

# Managing Emissions in our Supply Chain



- Mosaic contracts a fleet of 50+ compressed natural gas trucks
- Benefits include fewer emissions and improved efficiency (fewer trucks on the road)
- Saved more than 150,000 tonnes of CO<sub>2</sub>e in 2016

# Implementing 4Rs of Nutrient Stewardship



- Mosaic partners with UF's IFAS, Florida Farm Bureau and The Nature Conservancy in Florida to support the 4Rs of Nutrient Stewardship in Desoto, Hardee, Hillsborough, Manatee and Polk counties
- Focus on producer outreach and education on 4Rs and agricultural best management practices to help reduce nutrient runoff and improve water quality



#### RIGHT SOURCE

Matches fertilizer type to crop needs.



#### RIGHT RATE

Matches amount of fertilizer to crop needs.



#### RIGHT TIME

Makes nutrients available when crops need them.



#### RIGHT PLACE

Keeps nutrients where crops can use them.

# Investing in the Future





# External Engagement

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# Local Community Investment

- Feeding Florida
- Goals for Food
- Audubon Society
- The Nature Conservancy
- Tampa Bay Watch
- Florida State Fair Authority
- United Way



# Employee Volunteerism

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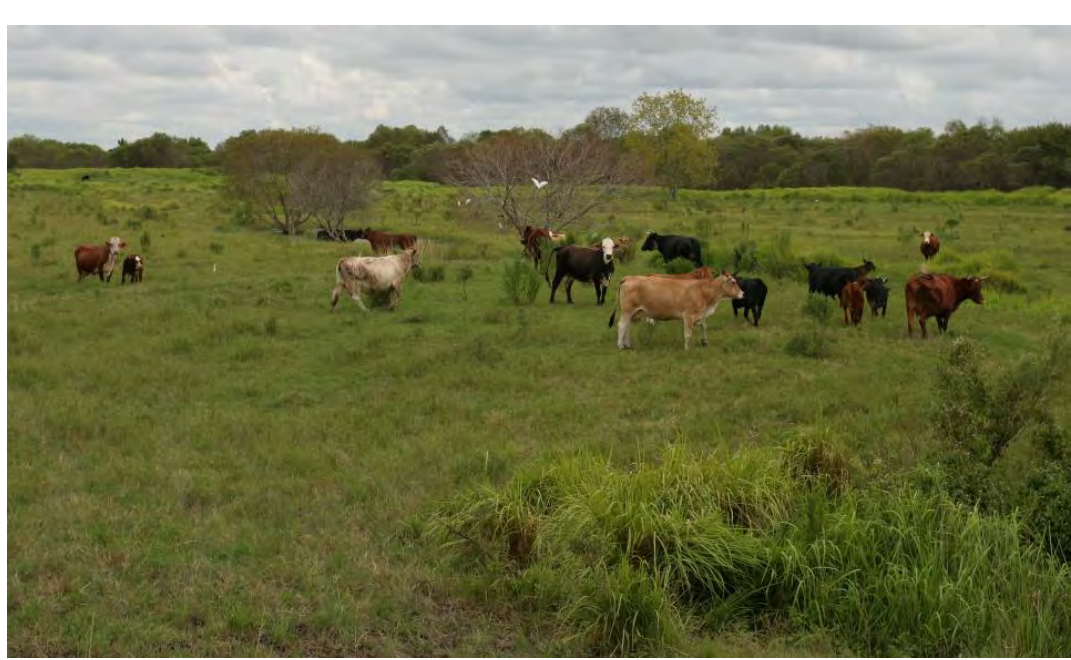




**Reclaimed Land**



**Unmined Land**



# Post Reclamation Land Use



Lakeland – Target; Publix; Residential Communities on Mined Land

THE RECLAMATION COMPONENT OF  
MOSAIC'S FERTILIZER MANUFACTURE  
ENSURES OPTIMIZED LAND USE WITH  
SUSTAINED FAUNA AND FLORA  
POPULATION...



**Mosaic's Sustainability  
is a Comprehensive  
Quantitative and Qualitative  
Holistic  
Approach...**

**Thank you**







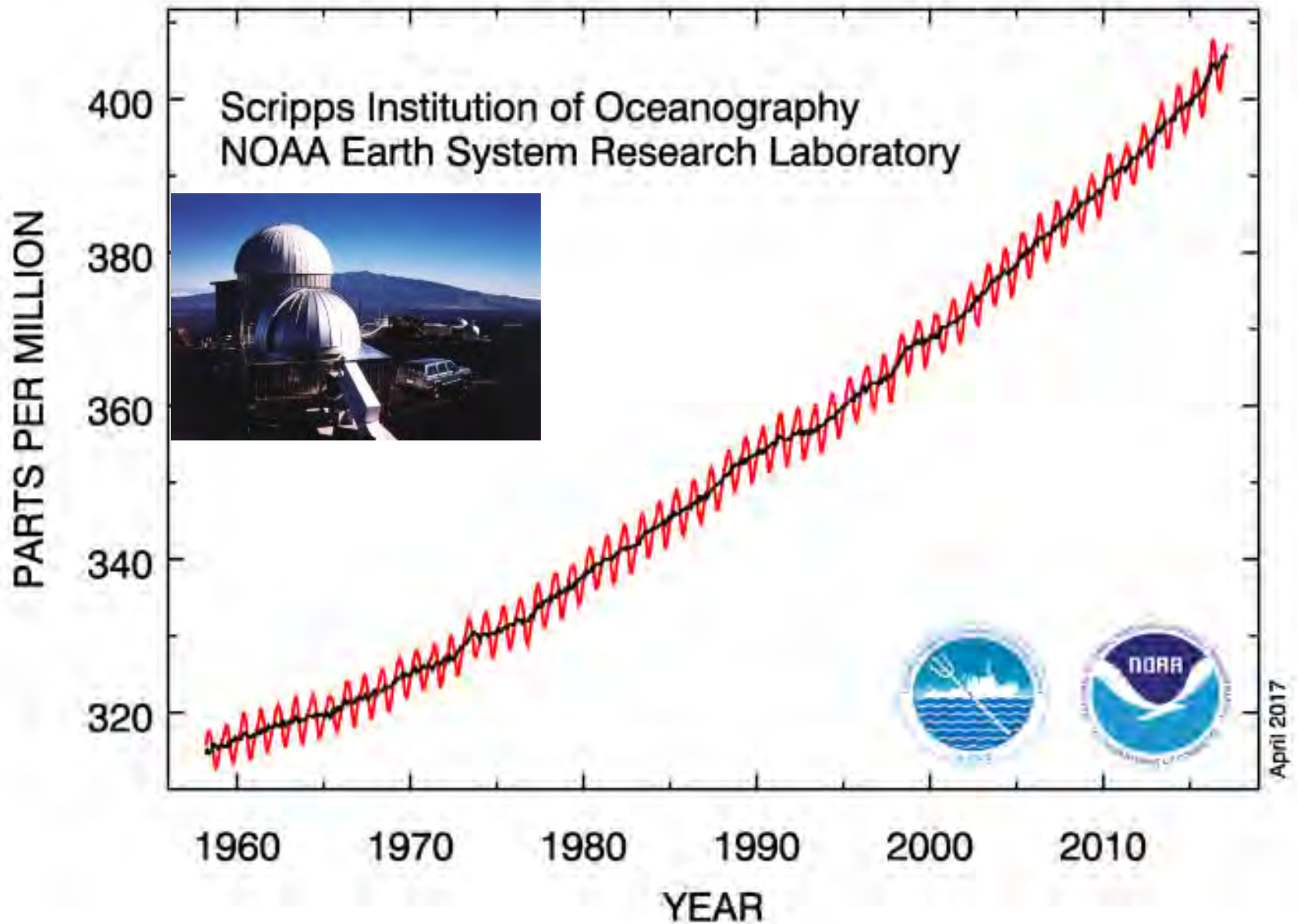
**Climate Change**  
**Is it happening?**  
**Are we causing it?**  
**The long-term outlook**  
**The short-term challenge**

**Gary T. Mitchum**

**Professor and Assoc. Dean**  
**College of Marine Science**  
**University of South Florida**



# Atmospheric CO<sub>2</sub> at Mauna Loa Observatory





So why do you put a blanket on your baby?

The blanket captures some of your baby's heat radiation and re-emits in all directions, some back towards your baby!

So what makes for a good blanket for the atmosphere?

Greenhouse gases!

Is the Greenhouse Effect new?

Some people on the internet call it an  
“Unproven Theory”

First paper by Fourier in ... ????

Arrhenius computes the Earth's average  
surface temperature from the CO<sub>2</sub>  
concentration in ... ????

Is the Greenhouse Effect new?

First paper by Fourier in ...1827

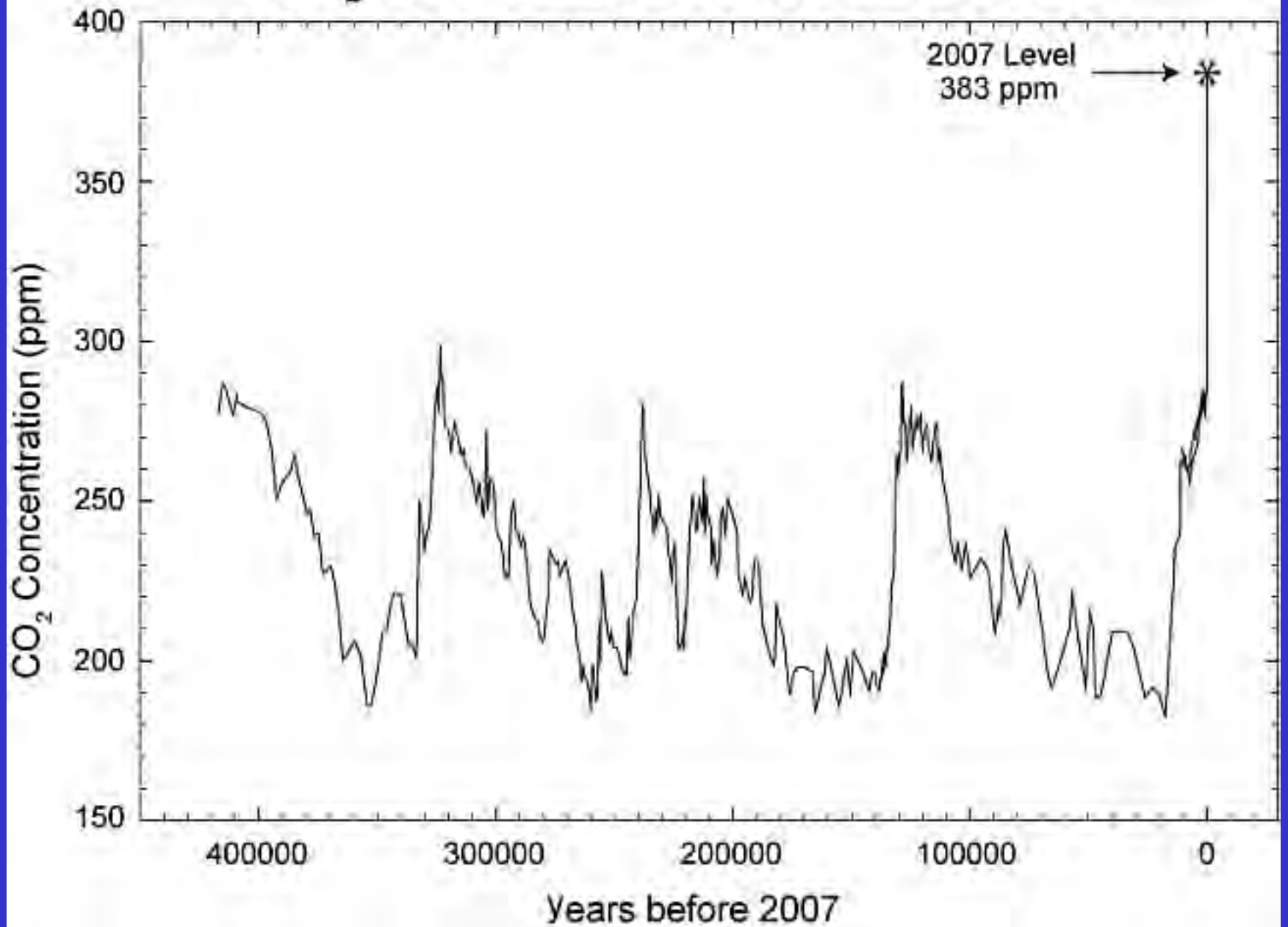
Arrhenius computes the Earth's average surface temperature from the CO<sub>2</sub> concentration in ...1896

Unproven?

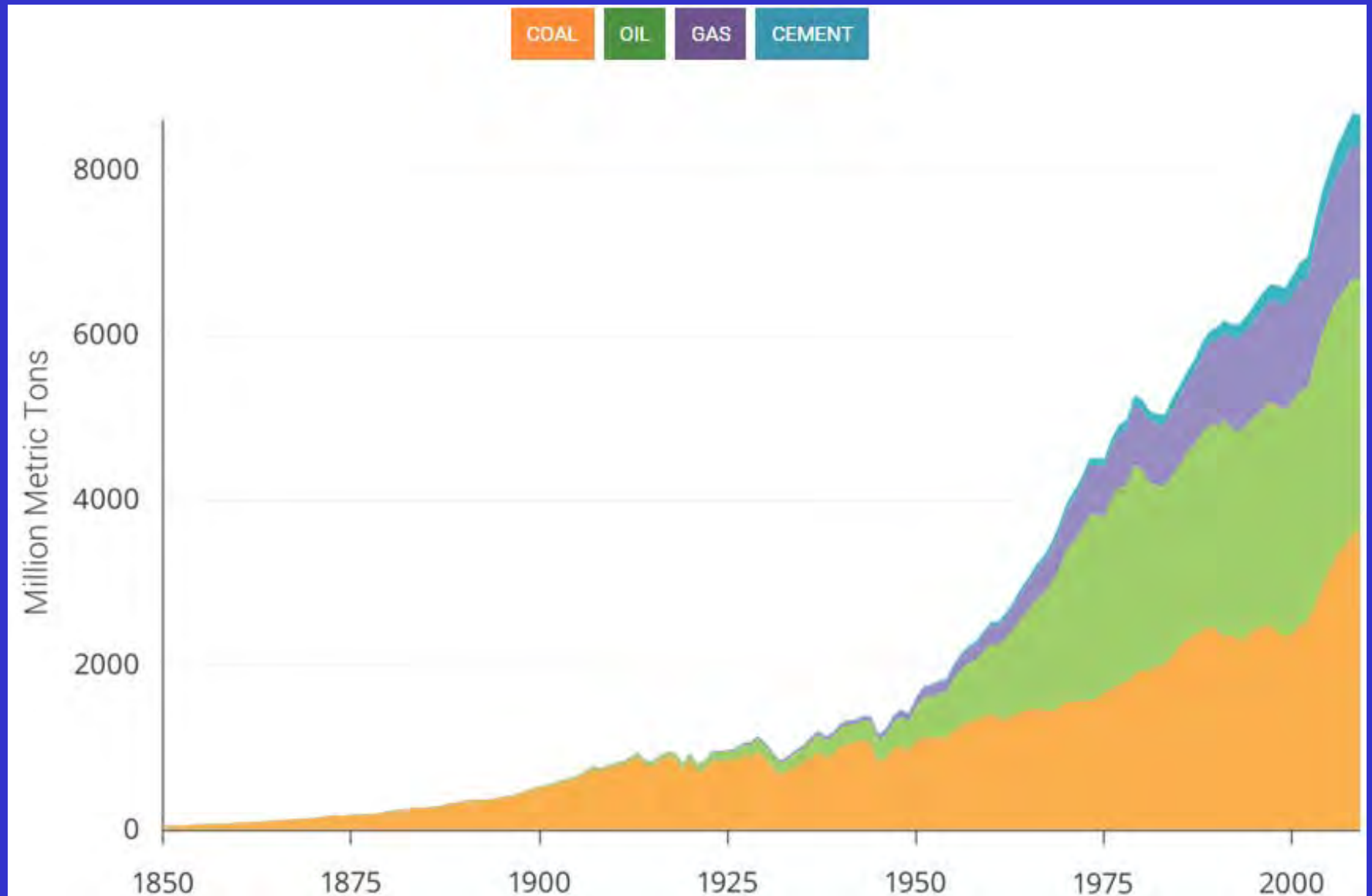
NO, this is 19<sup>th</sup> century physics.

Are the Greenhouse Gas  
concentrations changes natural?

# CO<sub>2</sub> Over Past 420 Thousand Years



# Carbon Emissions have been increasing

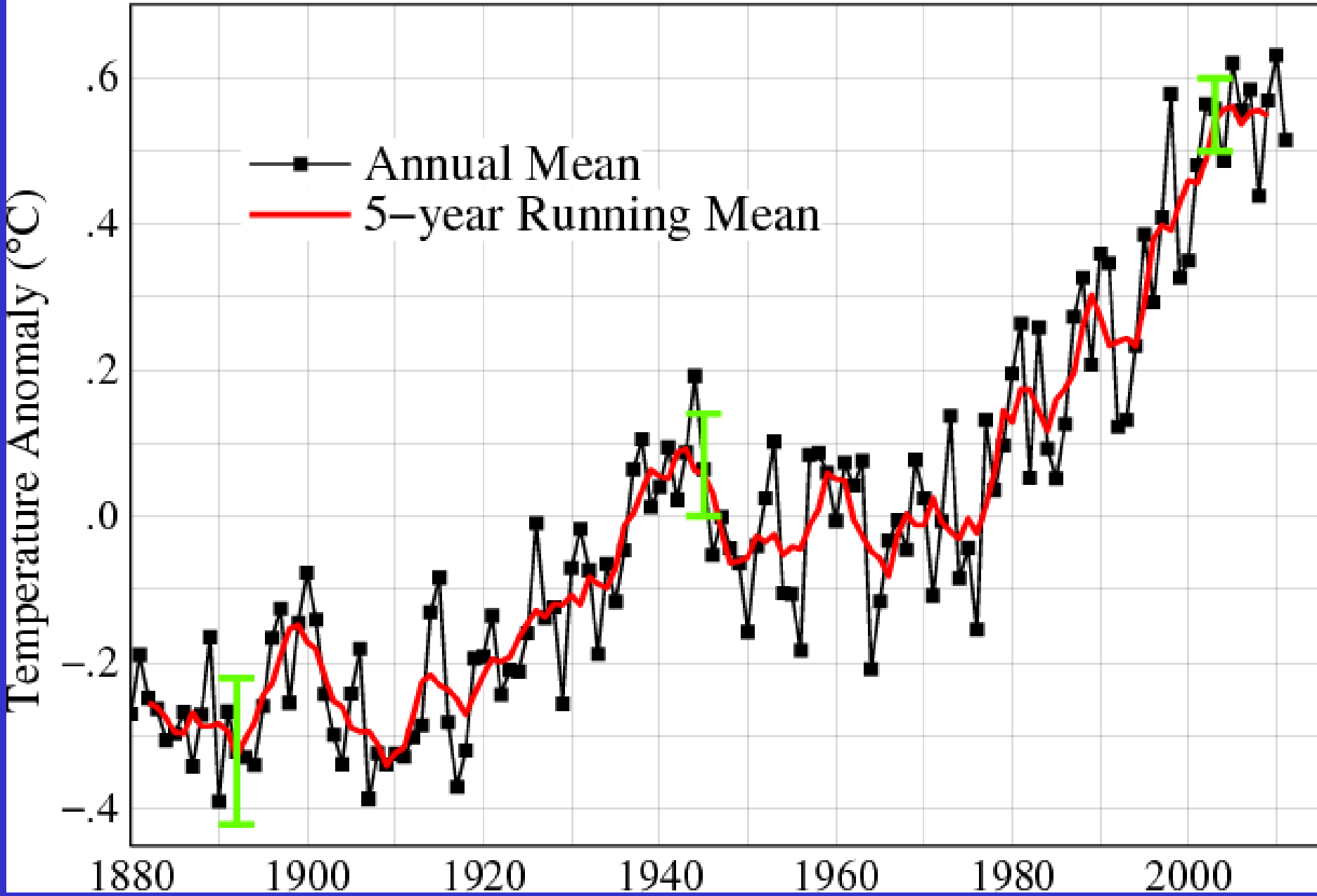




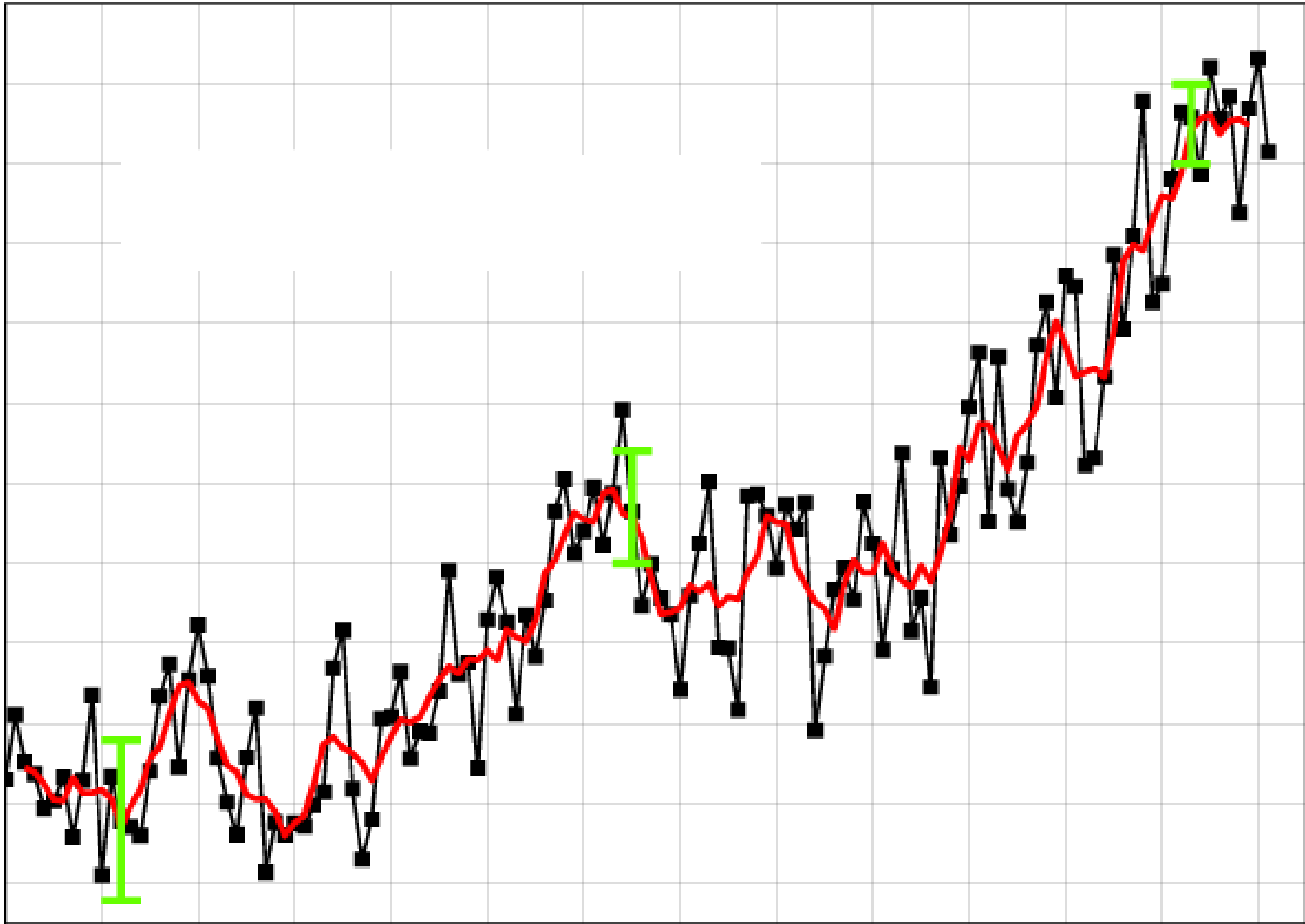
Are the Greenhouse Gas  
concentrations changes natural?

No ...

# Global Land-Ocean Temperature Index

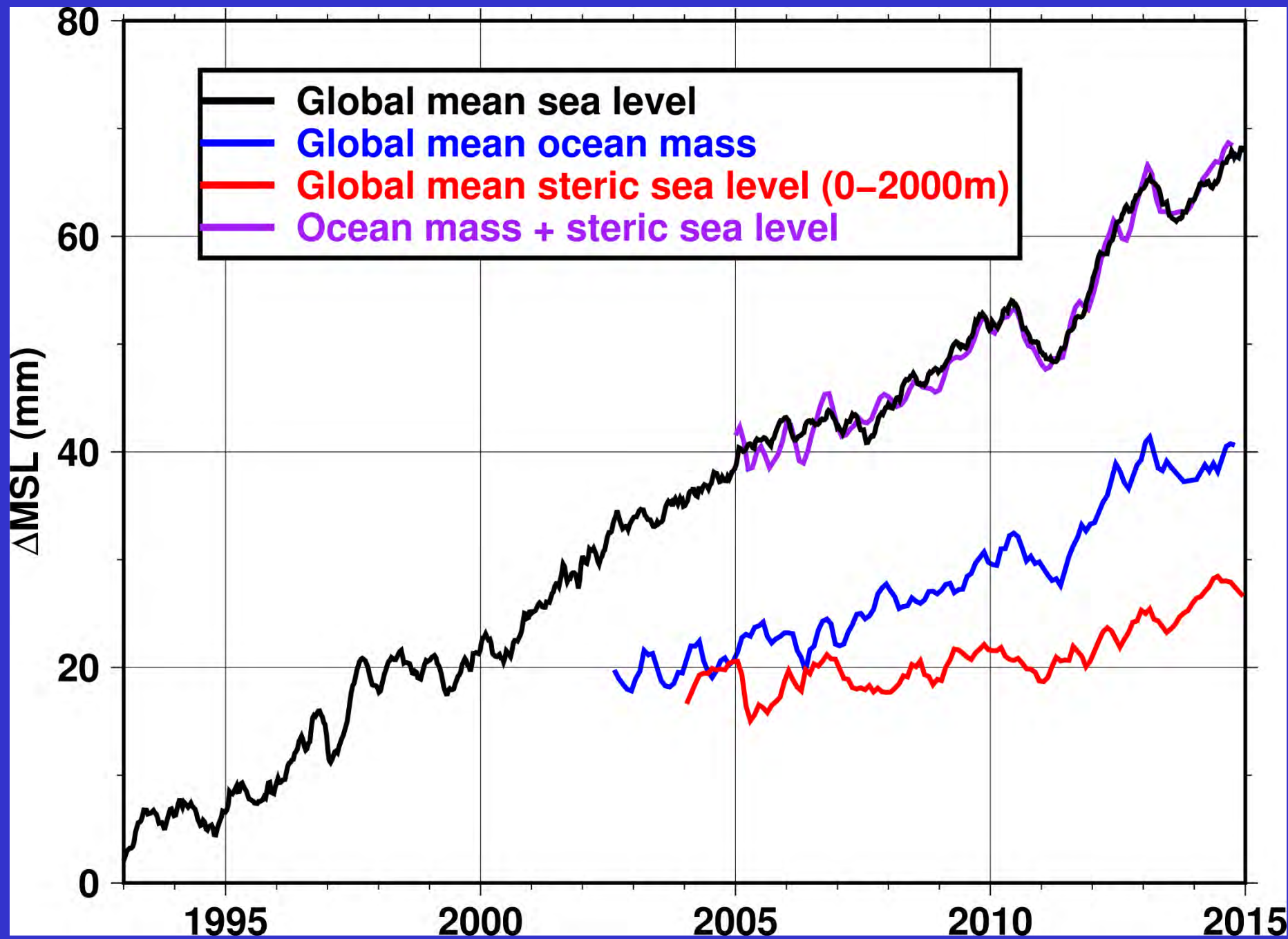


# Stock Market Index



So what?

Why do we care?



But it's not just rising, it's accelerating.

According to the data ...

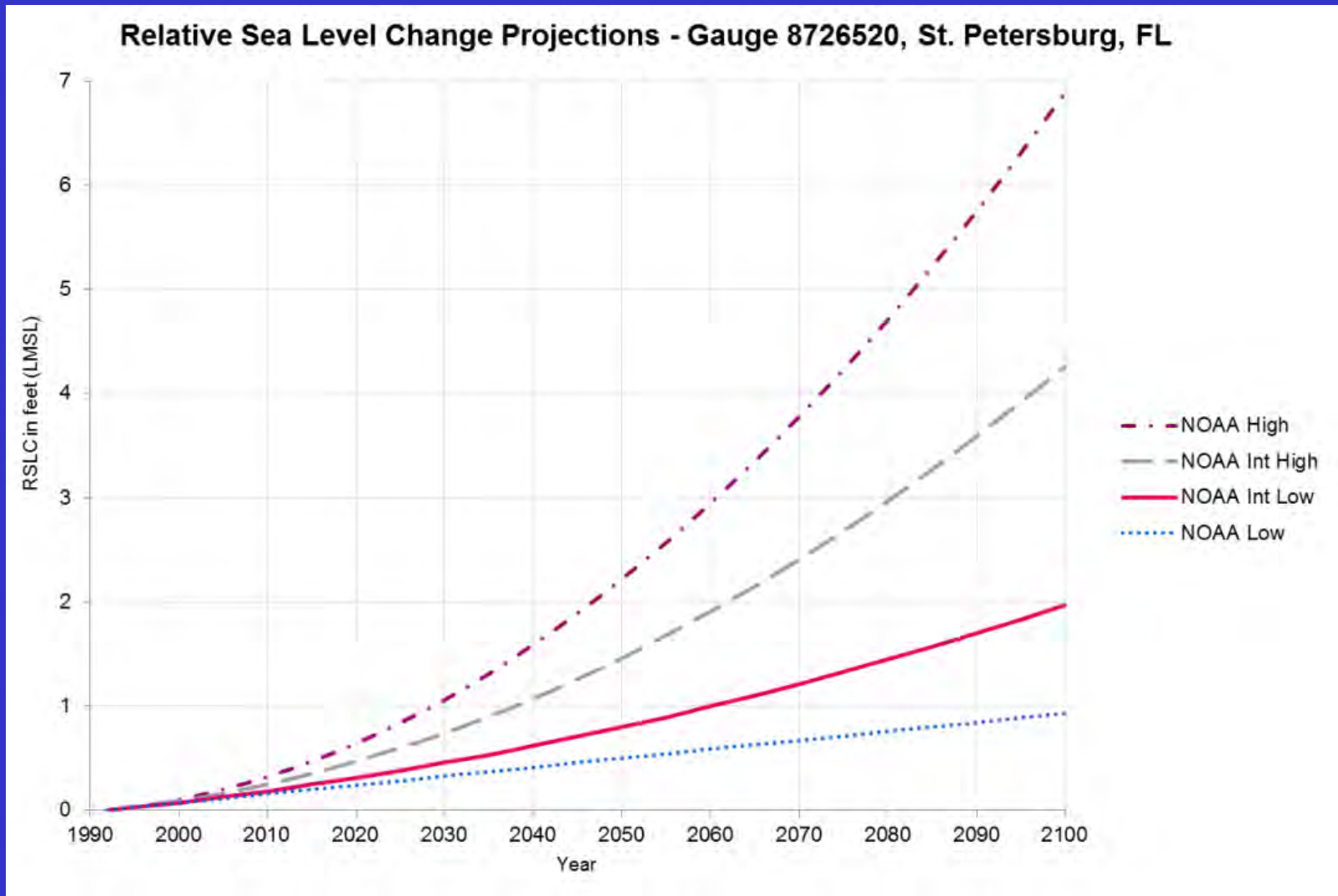
**Climate Change Driven Accelerated Sea Level Rise Detected In The Altimeter Era**

**R. S. Nerem, B. D. Beckley, J. Fasullo, B. D. Hamlington, D. Masters, and G. T. Mitchum.**

**Abstract.** Using a 25-year time series of precision satellite altimeter data from TOPEX/Poseidon, Jason-1, Jason-2, and Jason-3, we estimate the climate change driven acceleration of global mean sea level over the last 25-years to be  $0.084 \pm 0.025$  mm/yr<sup>2</sup>. Coupled with the average climate-driven rate of sea level rise over these same 25 years of 2.9 mm/yr, simple extrapolation of the quadratic implies global mean sea level could rise  $65 \pm 12$  cm by 2100 compared to 2005, roughly in agreement with the IPCC AR5 model projections.

Submitted two weeks ago to PNAS.

# Relative Sea Level Change Scenarios St. Petersburg, FL



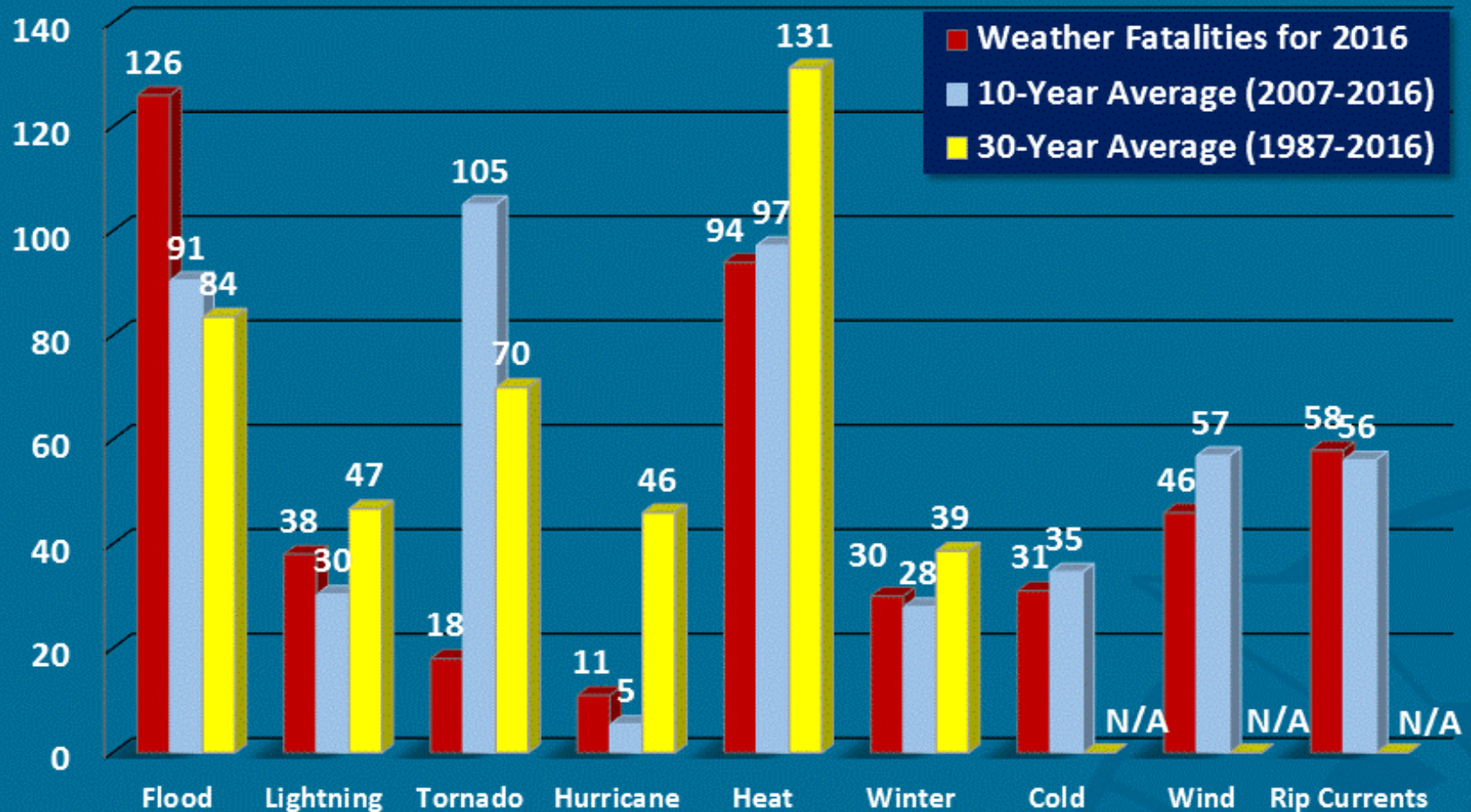
Climate change is NOT just sea level rise!

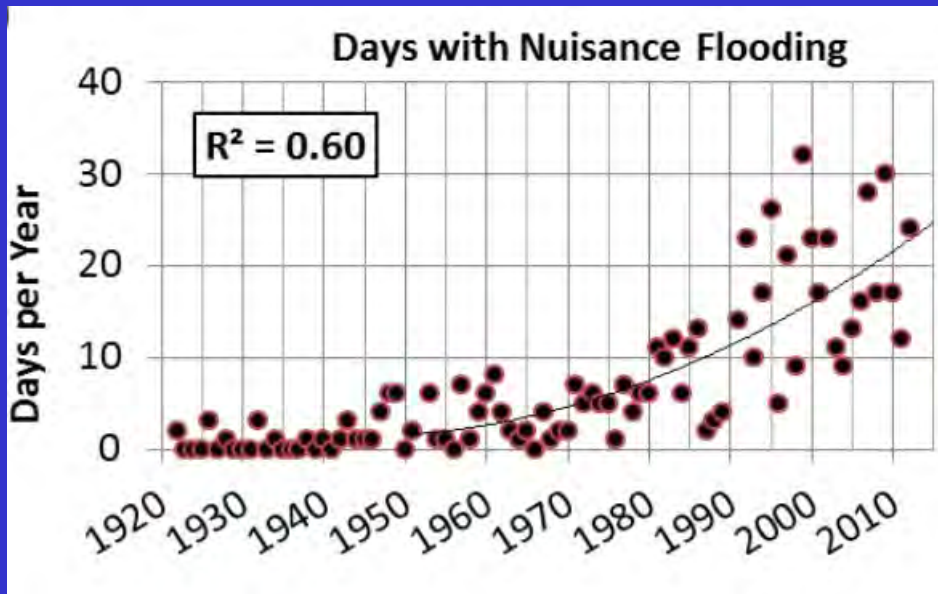
Let's end with a few thoughts about that.



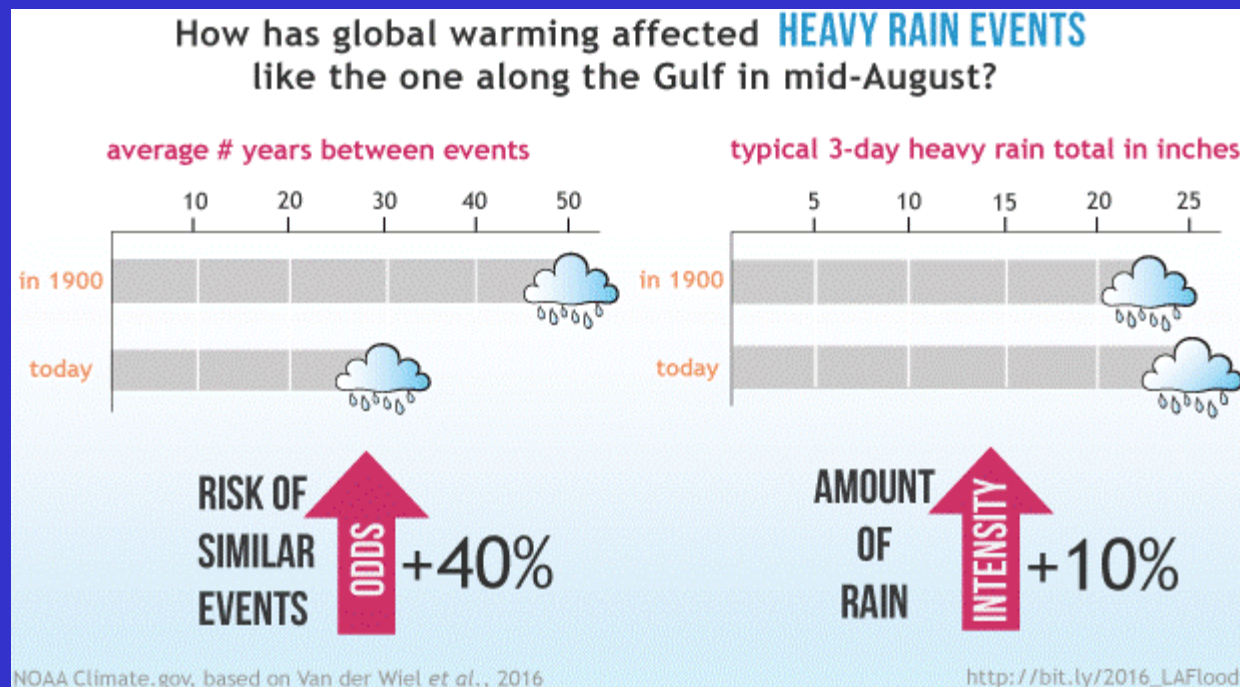


# Weather Fatalities 2016





Flooding events are having large impacts on our cities, and are occurring more frequently. They are asking for guidance, which presents a challenge to our data networks and systems.



# An example from where we live ...



Charlie Frago, Times Staff Writer ▼

Wednesday, June 7, 2017 1:04pm





# CONTINENTAL UNITED STATES LANDFALLING HURRICANES 1950-2004



There were no landfalling hurricanes in the U.S. for the period 2000-2001.

Saffir-Simpson Category of Landfalling Hurricanes	
Sustained Winds (MPH)	
74-95	Category 1
96-110	Category 2
111-130	Category 3
131-155	Category 4
>155	Category 5



NOAA'S NATIONAL CLIMATIC DATA CENTER, ASHEVILLE, NORTH CAROLINA

*Protecting the Past... Revealing the Future*

# Invasive species



# Invasive species

