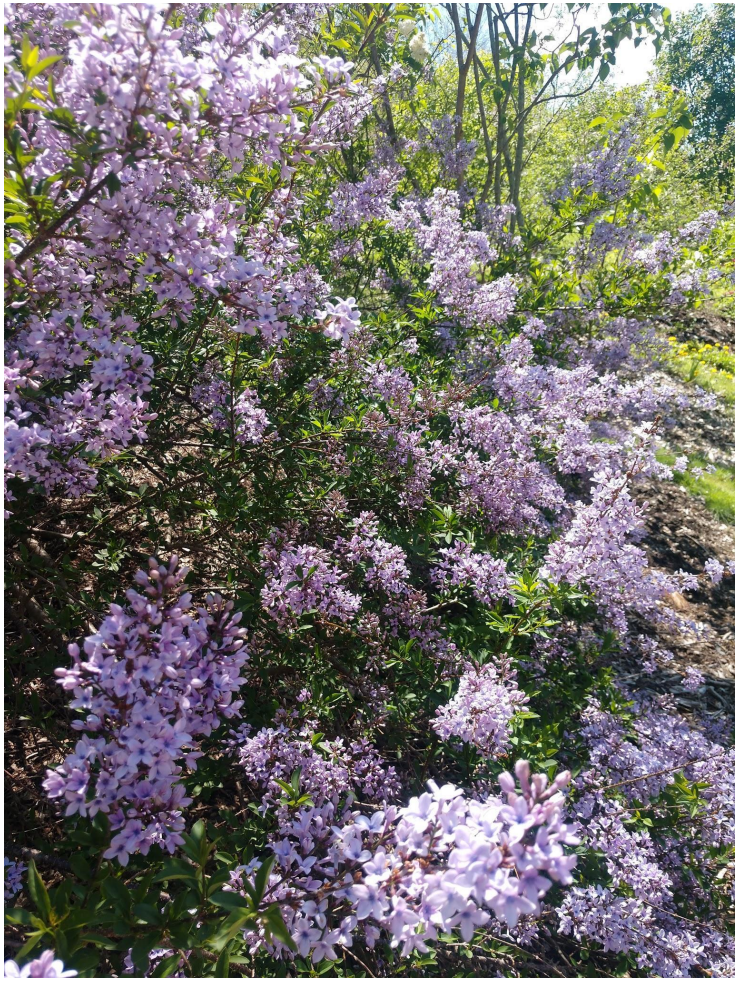
MWOBS

MOUNT WASHINGTON OBSERVATORY

Climate Change/Gardening/Veggies



Reviewing the past to understand the future

Dave Epstein

Meteorologist and Horticulturist

This Evening's talk

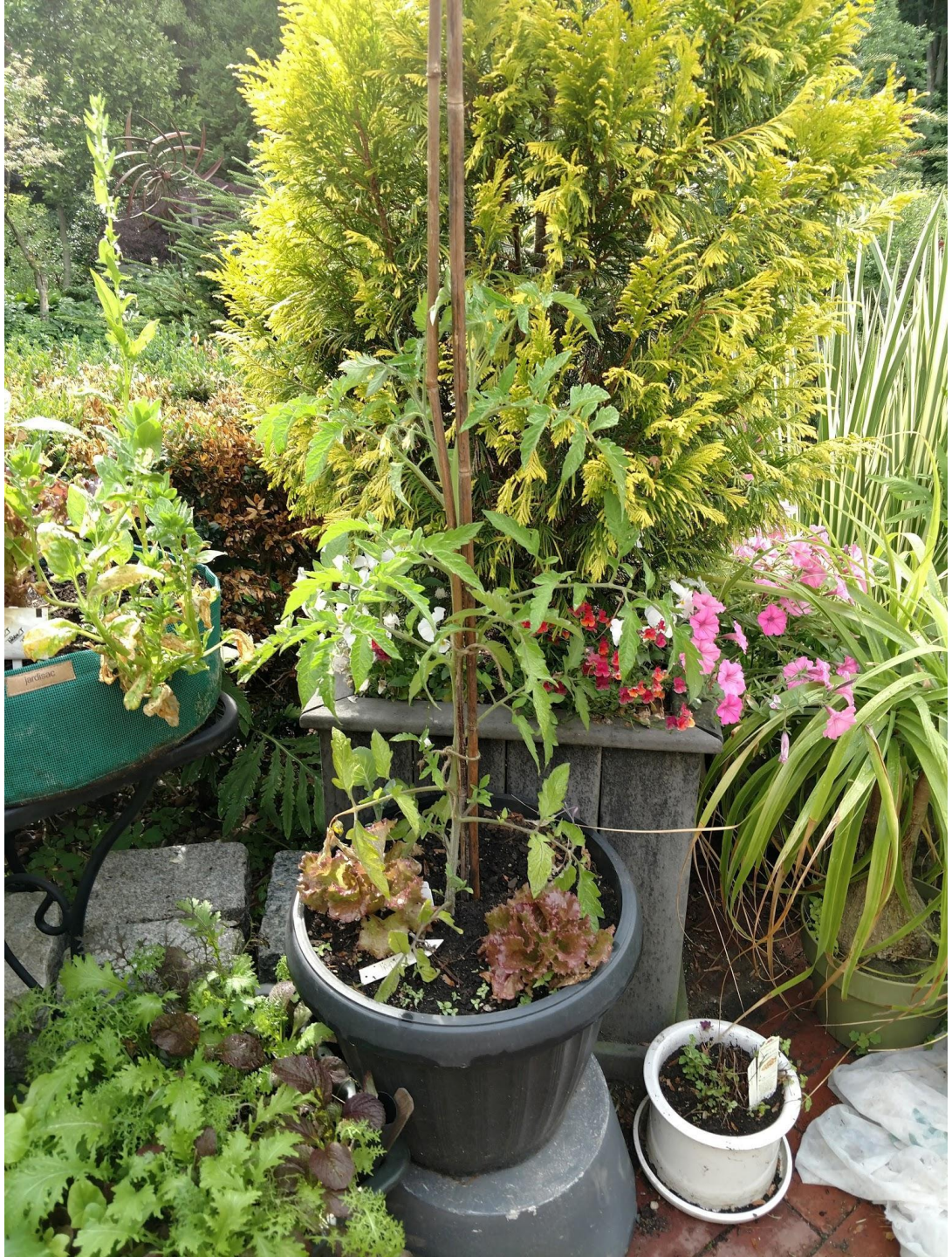
- Veggies
- Butterfly/Bees
- Design
- Climate Change
- Questions

Growing Veggies May 11th 2021

Cold Weather Crops

May 2021


May and July



Location, Location, Location

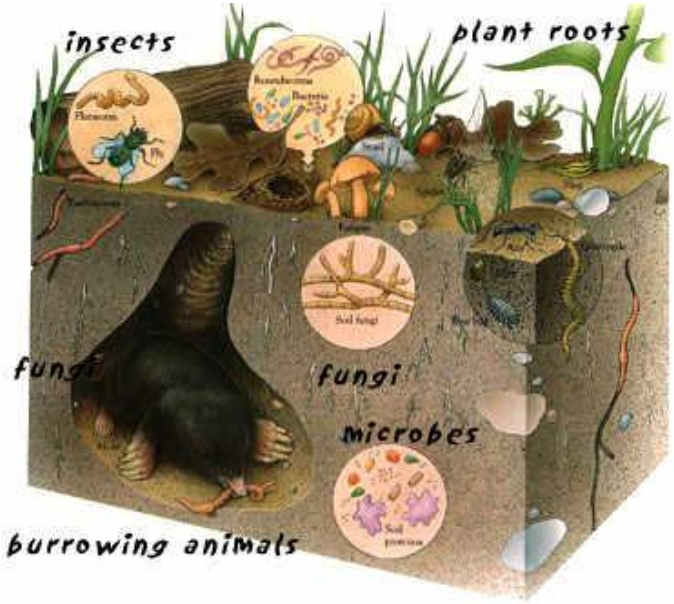
Sun

Water

Soil

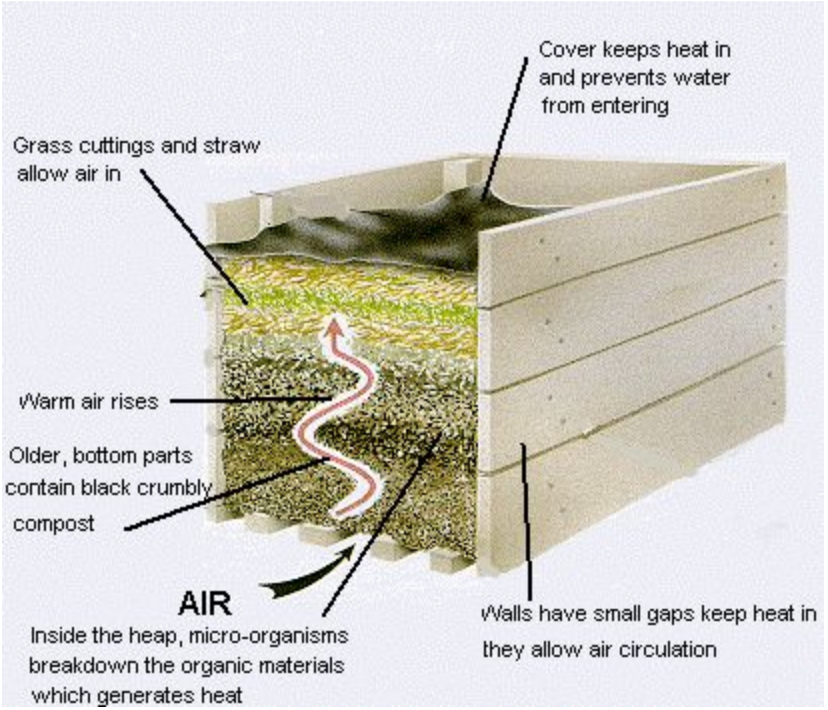
PH MATTERS, BUT ORGANIC MATTER MATTERS MORE.

- Low PH causes plants to not be able to uptake nutrients.
- Aluminum toxicity can occur
- Organic matter helps mitigate the PH issue.



Make Your Own Compost

- Grass clippings
- Leaves
- Garden Waster (from weeding, deadheading, pruning...)
- Vegetable Peels
- Sawdust
- Straw
- Paper



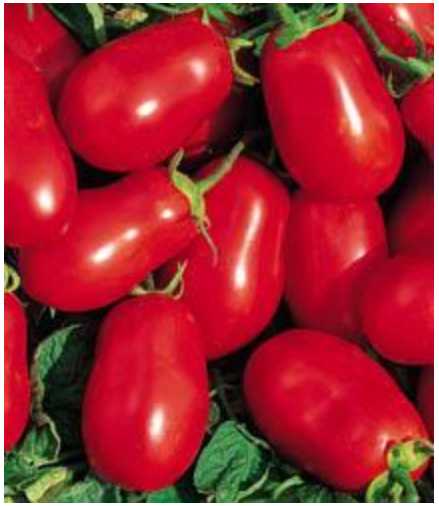
Start As Soon As Ground Workable

Mark Your Rows
Label Your Rows

WARM WEATHER CROPS

Disease Resistance

"VFN" indicates the variety is resistant to Verticillium wilt, Fusarium wilt (generally both races of the Fusarium wilt fungus), and root-knot nematodes. Varieties which carry a "T" designation are also resistant to tobacco mosaic virus, a disease which often causes problems for tomato gardeners. Some of the listed varieties are also resistant to other disease pests.



OTHER TIPS

- ALWAYS SEED DIRECT
  - Peas, Carrots, Mesculin, Radish, Beans, Garlic (bulbs), Corn,
- SETS
  - Onions, Chives, Leeks
- PLANTS
  - Tomatoes, Peppers, Eggplants,

CUCUMBERS

THE BIG ENEMY

- Striped Cucumber Beetle.
- Spreads Disease
- Use Row Cloth Through Early June
- Plant Late
- Use Traps

PEPPERS

- Loves Heat
- Needs Sunshine
- Keep Spaced apart 12-18”
- Be patient
- DO NOT FEED-Produces too much green, few peppers.

Zucchini

- Don’t Over Plant
- One Hill Is Enough For Family 4.

Squash Borer

Floating Row Covers

- Protects Against Insects
- Must Start Early
- Frost Protection
- Can Be $$$

Organic Controls

- Diatomaceous Earth-Insects
- Serenade-Fungus
- Soaps-Insects
- Nematodes-Insects
- Horticultural Oil-Insects
- Kneem Oil-Fungus/Insects

Applying Organics

- Apply ALL season long
- Start Early
- Set Expectations
- Read Labels
- Apply After Rain

Use Product Sparengly

Succession Planting

- Bare Ground Is Not Producing
- Mix In Manure After Harvest
- Add 2” to top soil and mix to 4”
- Plant Again
- Watch Light/Heights Of Plants Near New Ones.

Harvesting

- Harvest Early Morning
- Better Young
- Don’t Wait
- Use Sharp Knife

Fall: Preparing Low Tunnels

Winter Veggies

- Low Tunnels
- No Heat
- Plant Through Christmas
- Start Again February
- Harvest Mild Day/January

Indoors

September Color

OCTOBER COLOR

Early November

Cool and Darker Sept-November. No Direct Sunlight

50 degrees if possible. Basement window works well.

Decembe r Color

CREATE INTEREST IN WINTER

Luna Parc, Montague, NJ


TOLERATES

Umbrella Pine

BEARBERRY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Mahonia

Can Be finicky

Protected Spot Is Best

Think Bark

The 'Sango Kaku' Japanese Maple makes a brilliant contrast plant for the winter garden.

Cornus sanguinea Midwinter Fire

Brilliant Yellow

Cornus stolonifera Flaviramea

More Sun

More Color

Stewartia

- Acer Griseum *(Paper Bark Maple)* is stunning in the winter.
- The Paper Bark Maple is a slow grower maturing to about 20 feet tall by 15 feet wide.
- It can be planted in full sun to partial shade and is adaptable to a wide range of soils, pHs, heat and drought.


gettyimages

Spring Will Be Here Soon

Last Fall's Work Pays Off

Iris

Cristata

Blue Primrose

Puschkinia libanotica

Chionodoxa forbesii

Crocus (in lawn)

Helpful Hints

- Plant in masses
- Add some each year
- Tulips in containers only
- Naturalize lawn space
- Deer/Rabbit resistant varieties

Hellebores

Next Spring

- Start slowly
- Put in shady area 2 days
- Morning sun 3 days
- Full Sun after 5-7 days.
- Watch watering

Agriculture, weather and climate

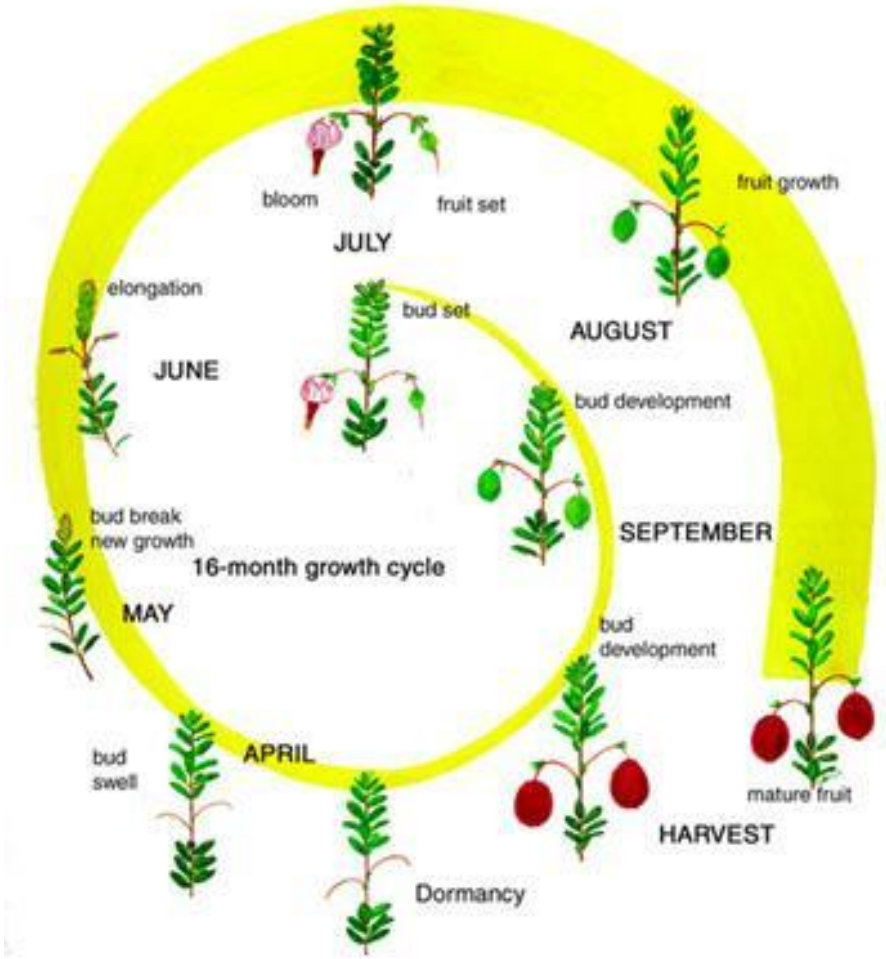
THE DURATION OF THE GROWING SEASON FOR 1898.

The Editor has extracted from the annual summaries of the Climate and Crop Service some details as to the length of the growing season, so far as it is controlled by temperature, during the year 1898. The following table gives a summary of the dates of the last spring and the first autumn frosts; it gives only the approximate mean date for a State or section of a State. The actual dates at any station may have been ten or fifteen days earlier or later, but the total length of the season at any point in the State will scarcely vary ten days from that here given.

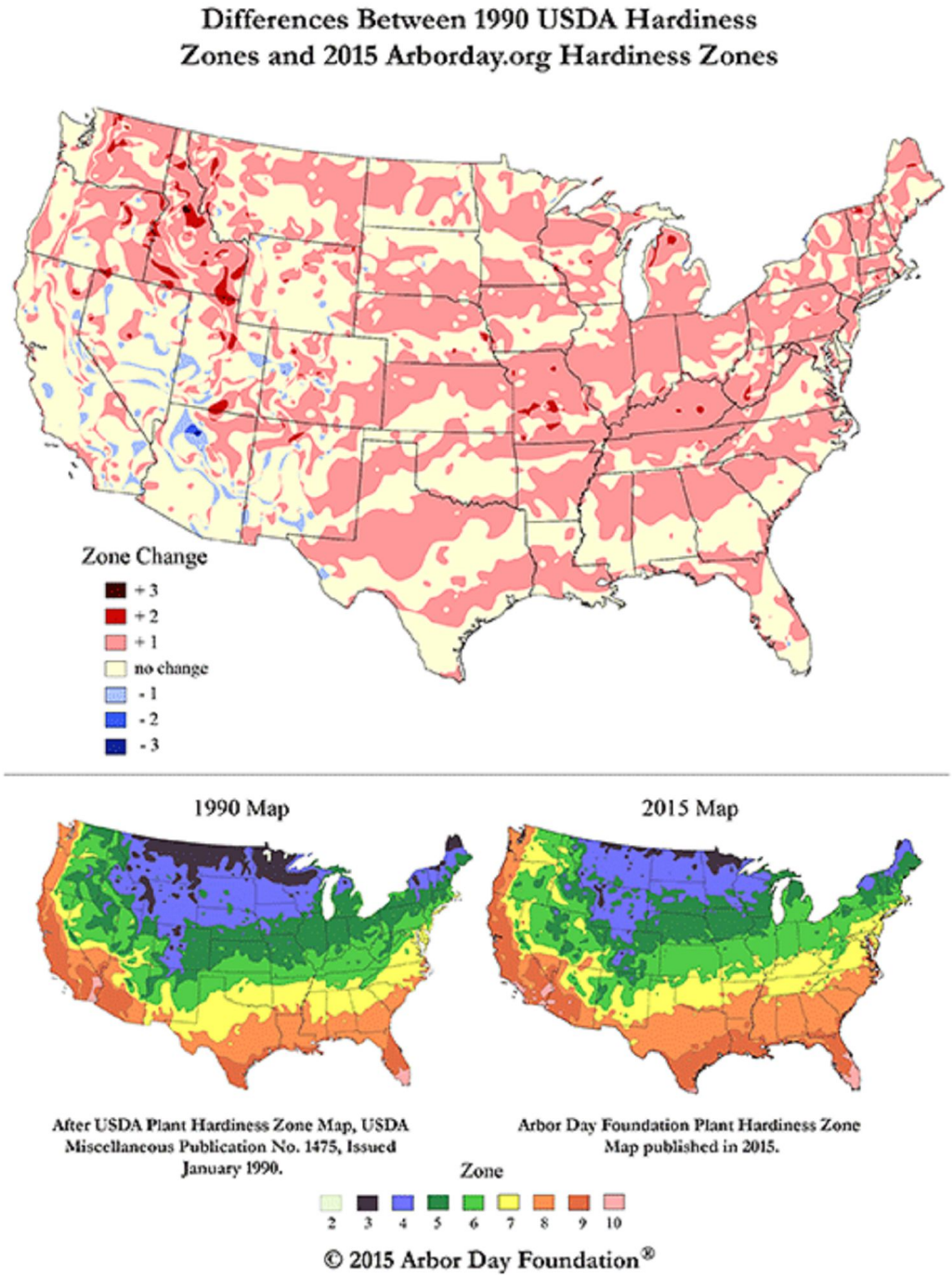
State.	Average date of frost.		Length of season.
	Last spring.	First autumn.	
			Days.
Georgia (southern)	March 15	October 26	226
Georgia (northern)	April 7	October 25	201
South Carolina (coast)	March 1	November 28	273
South Carolina (interior)	April 1	October 27	210
North Carolina	April 15	October 25	194
Maryland and Delaware	April 15	October 30	199
New Jersey	April 7	October 17	194
	May 10	October 28	172
West Virginia	April 10	October 20	180
Texas (coast)	none	December 10	345
Texas (northern)	April 1	October 24	207
Mississippi	March 20	October 30	225
Arkansas	April 1	October 25	208
Oklahoma	April 7	October 20	197
Missouri	April 11	October 20	193
Wisconsin	May 1	September 20	143
Minnesota (southern)	May 5	September 15	134
Minnesota (northern)	May 20	September 9	113
South Dakota	May 1	September 21	144
California (northern coast)	January 28	November 20	297
California (middle)	February 23	December 1	282
California (southern)	March 28	November 15	232
	April 7	November 15	222
California (special regions)	May 6	November 10	168
	May 23	October 1	132

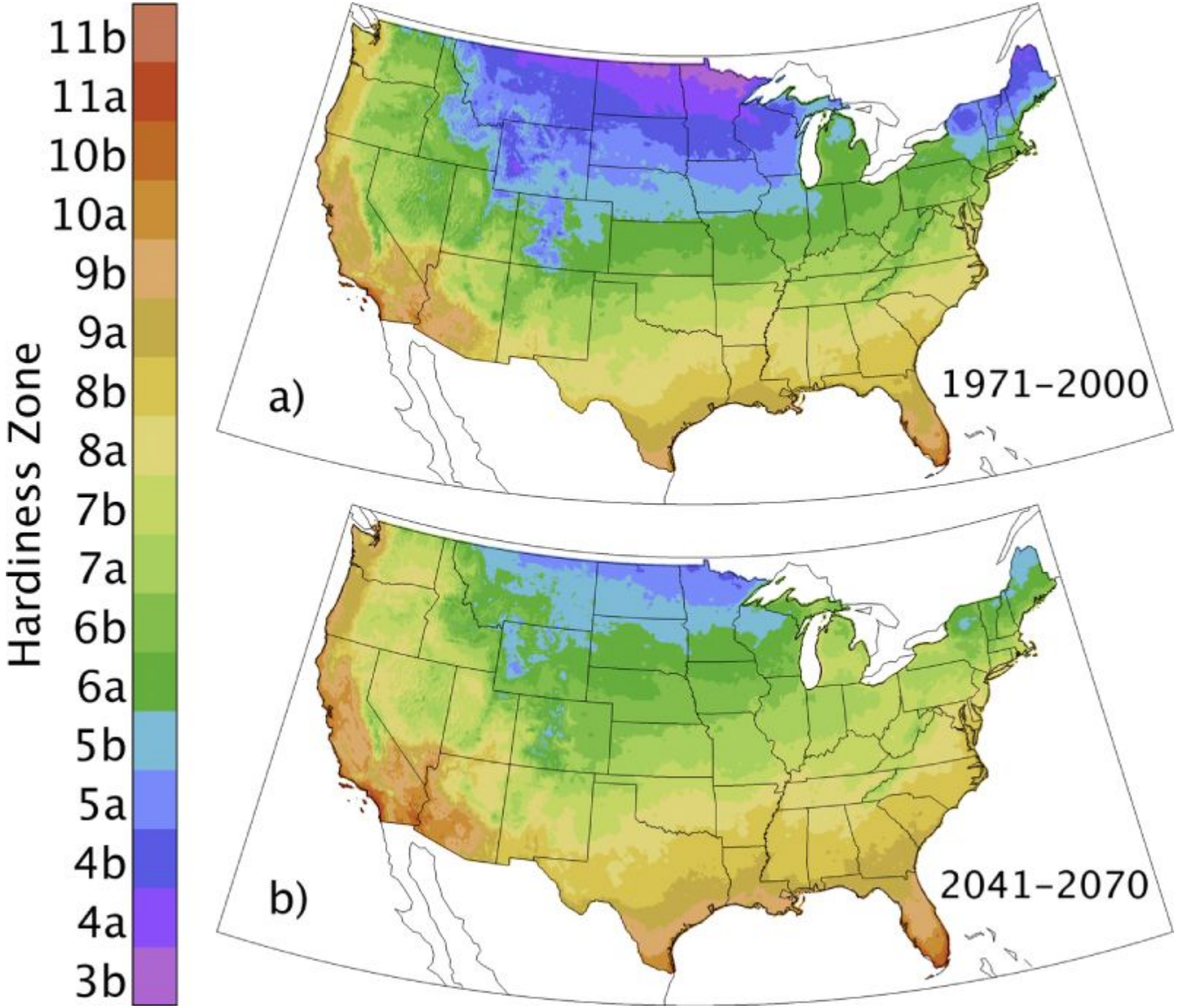
Weather/climate affects crops

Bees-Pollination
Freeze-Protection
Water-Harvest
Insect pressure-Damage

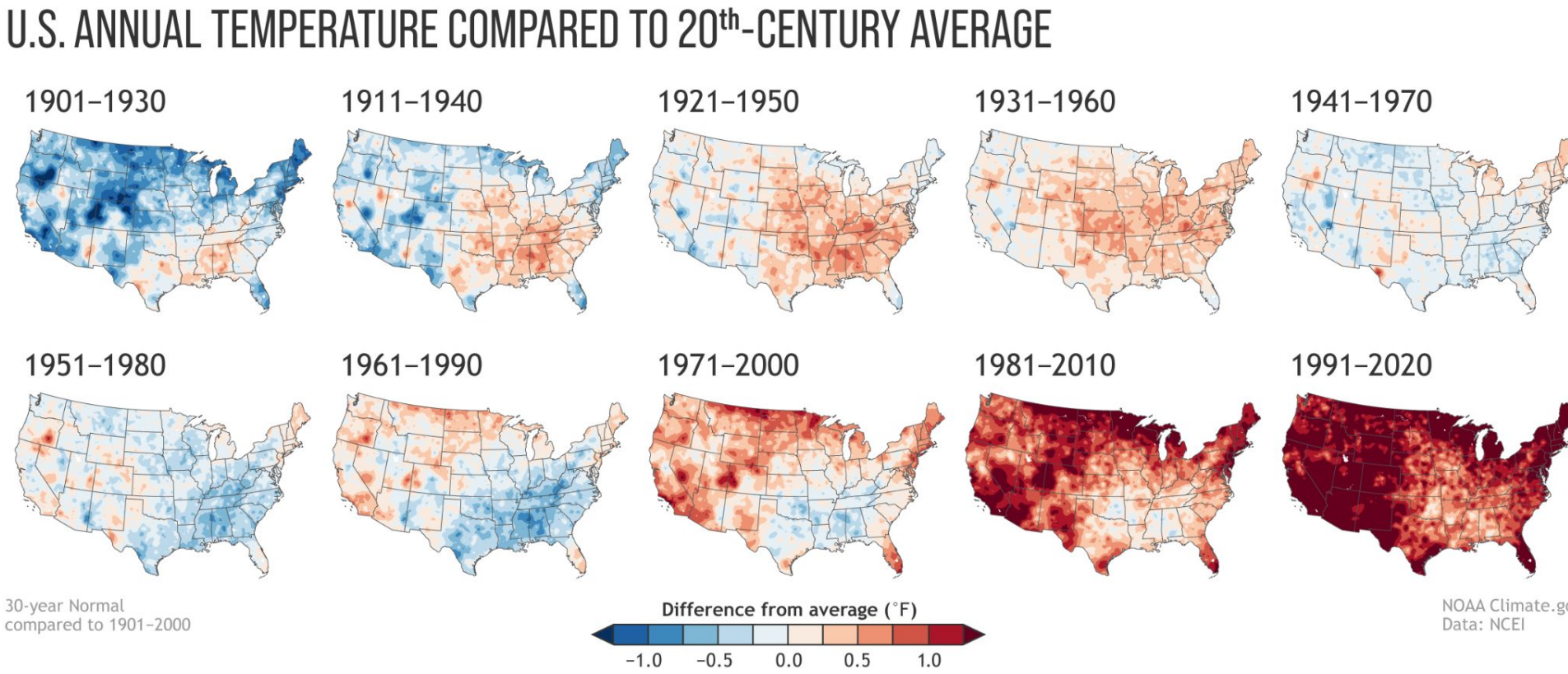


Change Is Here

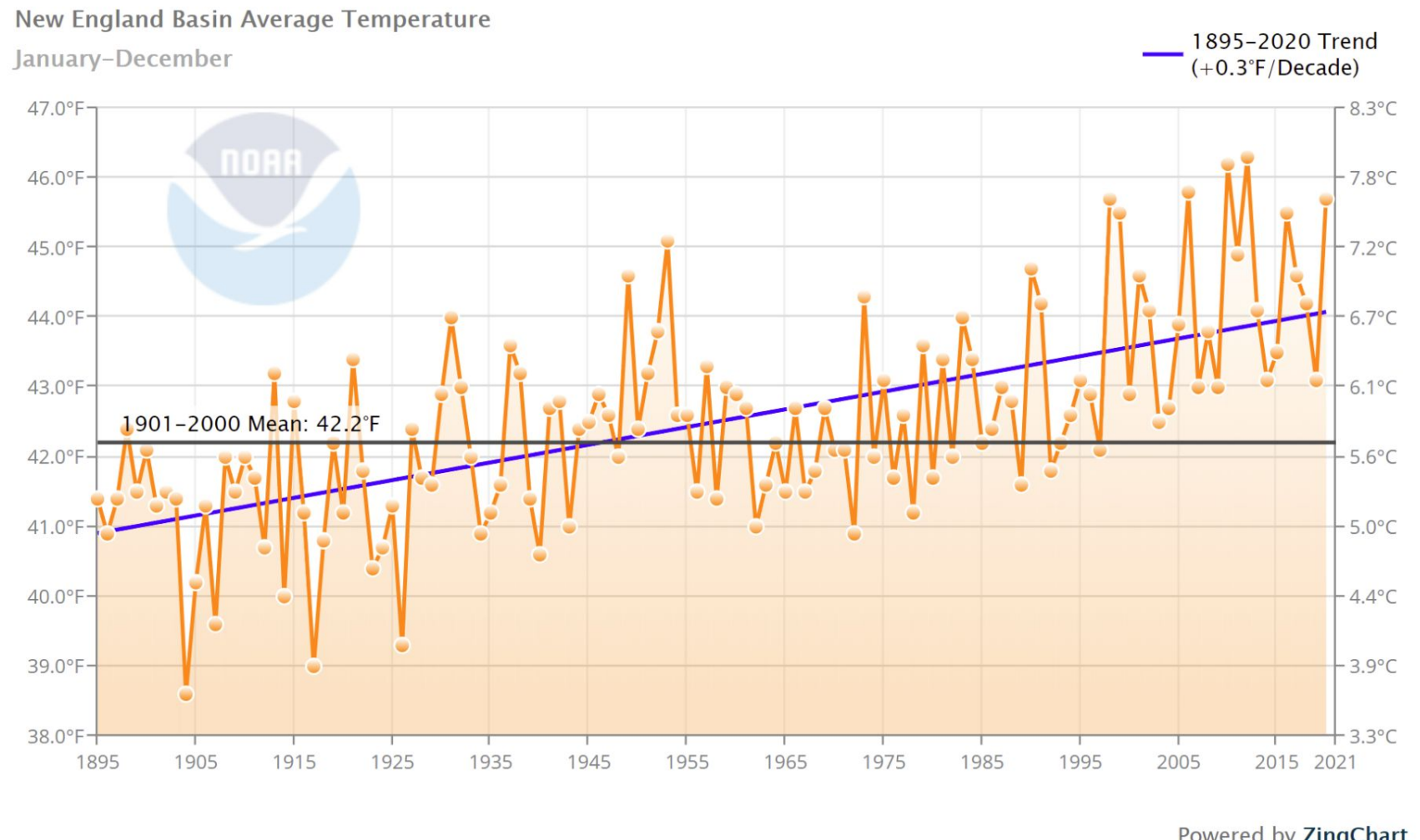



Hardiness Zone
11b
11a
10b
10a
9b
9a
8b
8a
7b
7a
6b
6a
5b
5a
4b
4a
3b
a)
1971–2000
b)
2041–2070

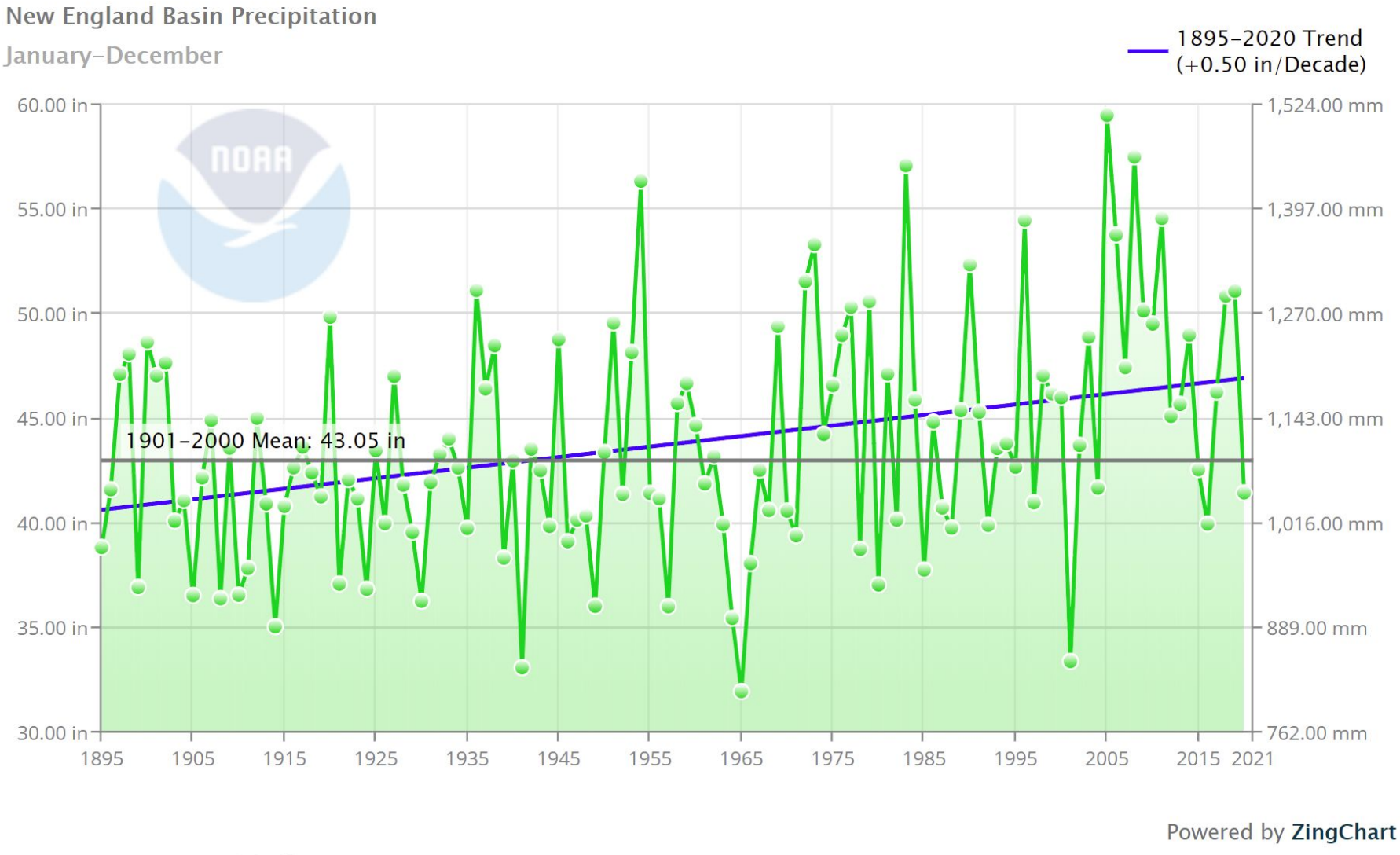
The Trend Is Clear



Warmer Temperatures



Wetter, But Different



Heavier Rain

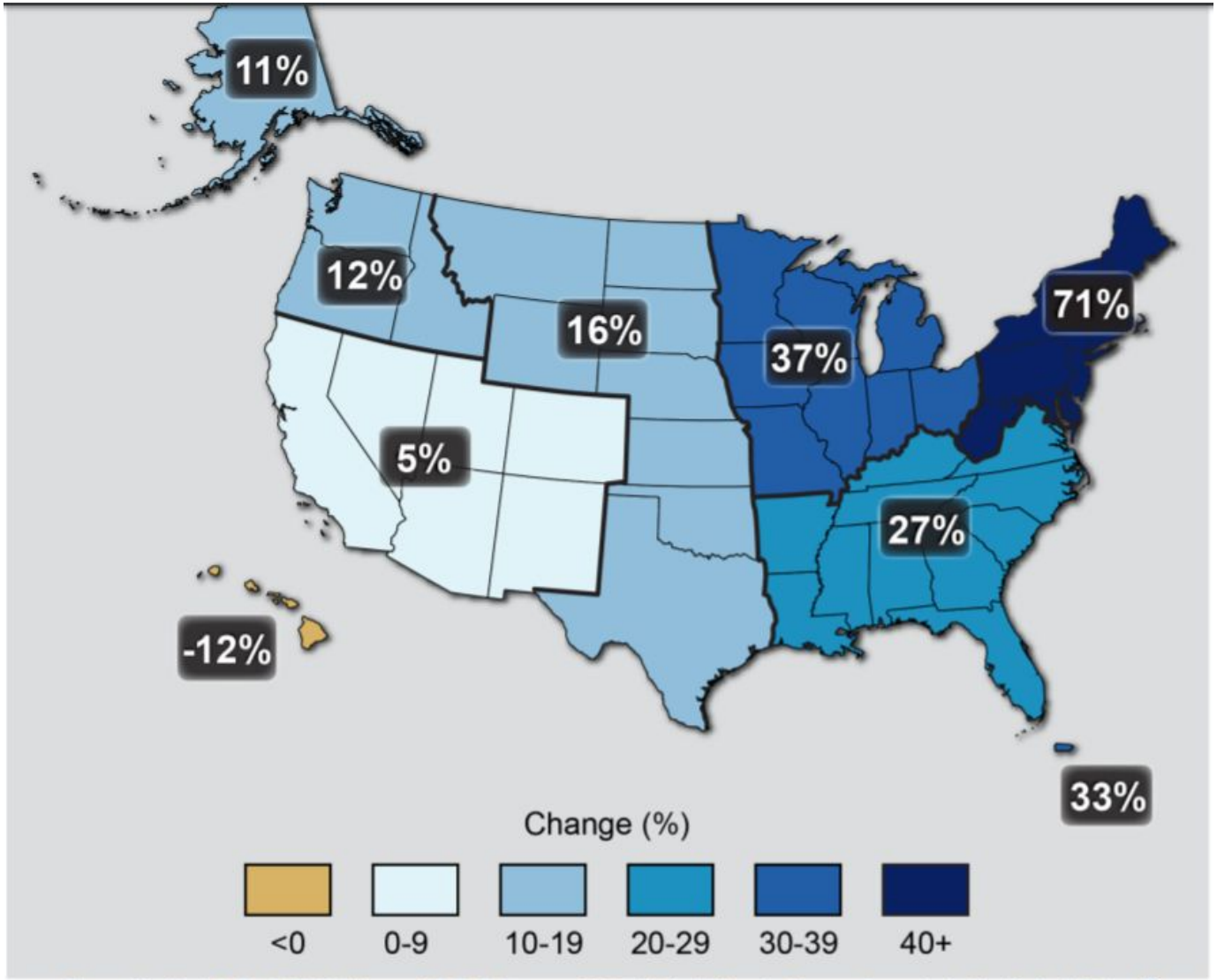
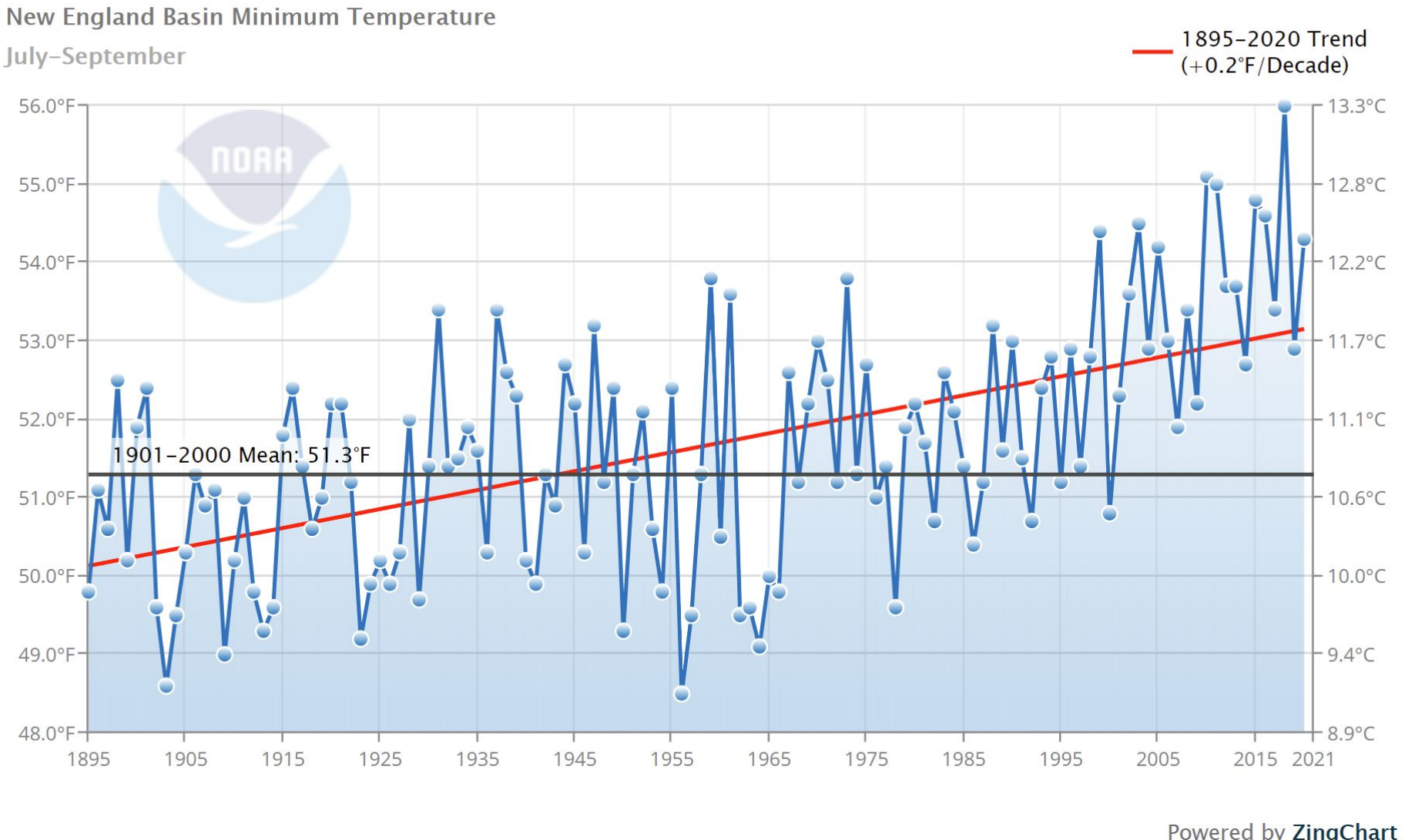
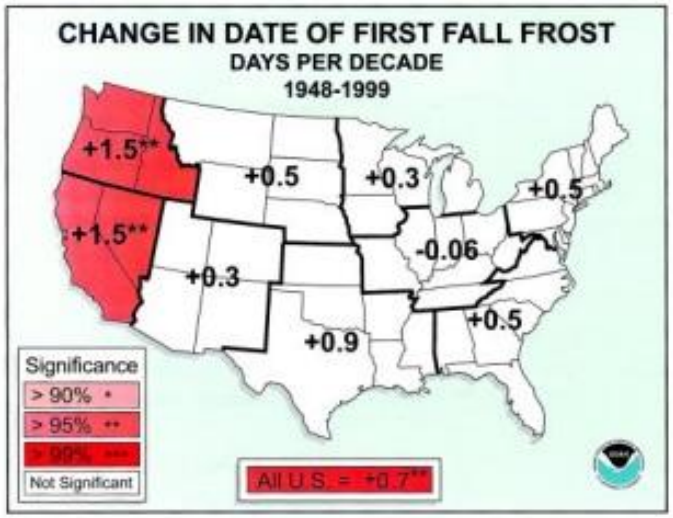


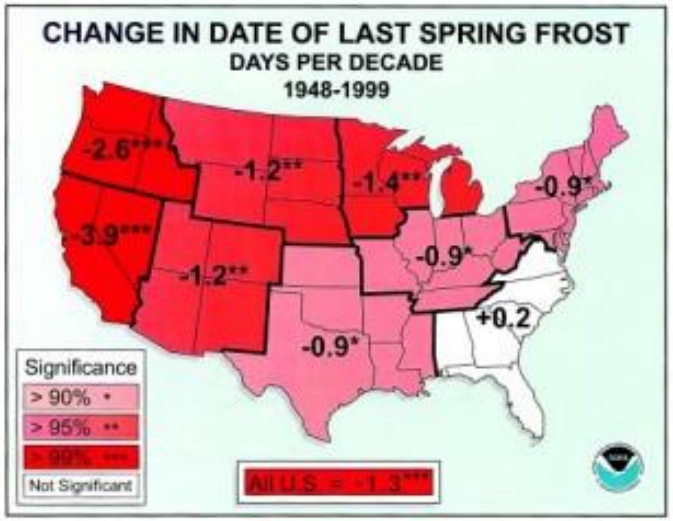
Figure 11: Karl, T. R., J. T. Melillo, and T. C. Peterson, 2009: *Global Climate Change Impacts in the United States.*[15]

Summer Heat?


New England Basin Minimum Temperature
July–September
1895–2020 Trend
(+0.2°F/Decade)
1901–2000 Mean: 51.3°F
56.0°F
55.0°F
54.0°F
53.0°F
52.0°F
51.0°F
50.0°F
49.0°F
48.0°F
13.3°C
12.8°C
12.2°C
11.7°C
11.1°C
10.6°C
10.0°C
9.4°C
8.9°C
1895
1905
1915
1925
1935
1945
1955
1965
1975
1985
1995
2005
2015
2021
Powered by ZingChart

More days of growing





c)

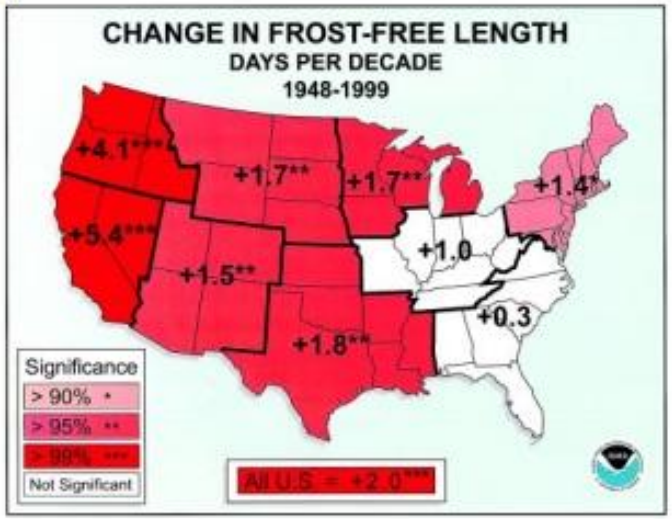


FIG. 2. Trends in the average date for the (a) first-fall frost (where min temperature was below 0°C), (b) last-spring frost, and (c) the frost-free season. Trends are in days decade^{-1}.

Notice greatest change to frost free period was over the western part of the USA in this period

Growers notice change

INCREASING LENGTH OF FROST-FREE PERIOD ON WISCONSIN CRANBERRY BOGS BY SANDING.

J. WARREN SMITH, Meteorologist.

While in charge of the Cranberry Experiment Station near Cranmoor, Wis., Mr. O. G. Malde made a very complete and extensive record of temperature on marsh soils. The period of observation was from 1906 to 1916, inclusive. In a recent statement of some of the results of a study of these records, Mr. Malde says:

> Temperature data recently compiled as a summary of 11 seasons of observations at the Cranberry Experiment Station (1906 to 1916, inclusive) show that there is an average of 58 days between the last spring and first fall frost (June 25 to August 22) over unsanded bog, as against 118 days between last spring and first fall frost over sanded bog. This represents a gain of 95 per cent in length of frost-free season on sanded bog over that on unsanded bog. The item of sanding, therefore, greatly reduces frost hazards and conserves the water supply by eliminating the need for the frequent flooding to protect against summer frosts. Sanding also permits and, in fact, requires deeper and better drainage, and is an insurance against fires on a bog in dry times. Sanding, together with thicker setting of plants, reduces labor and expense of weeding, besides insuring earlier cropping on the bog.

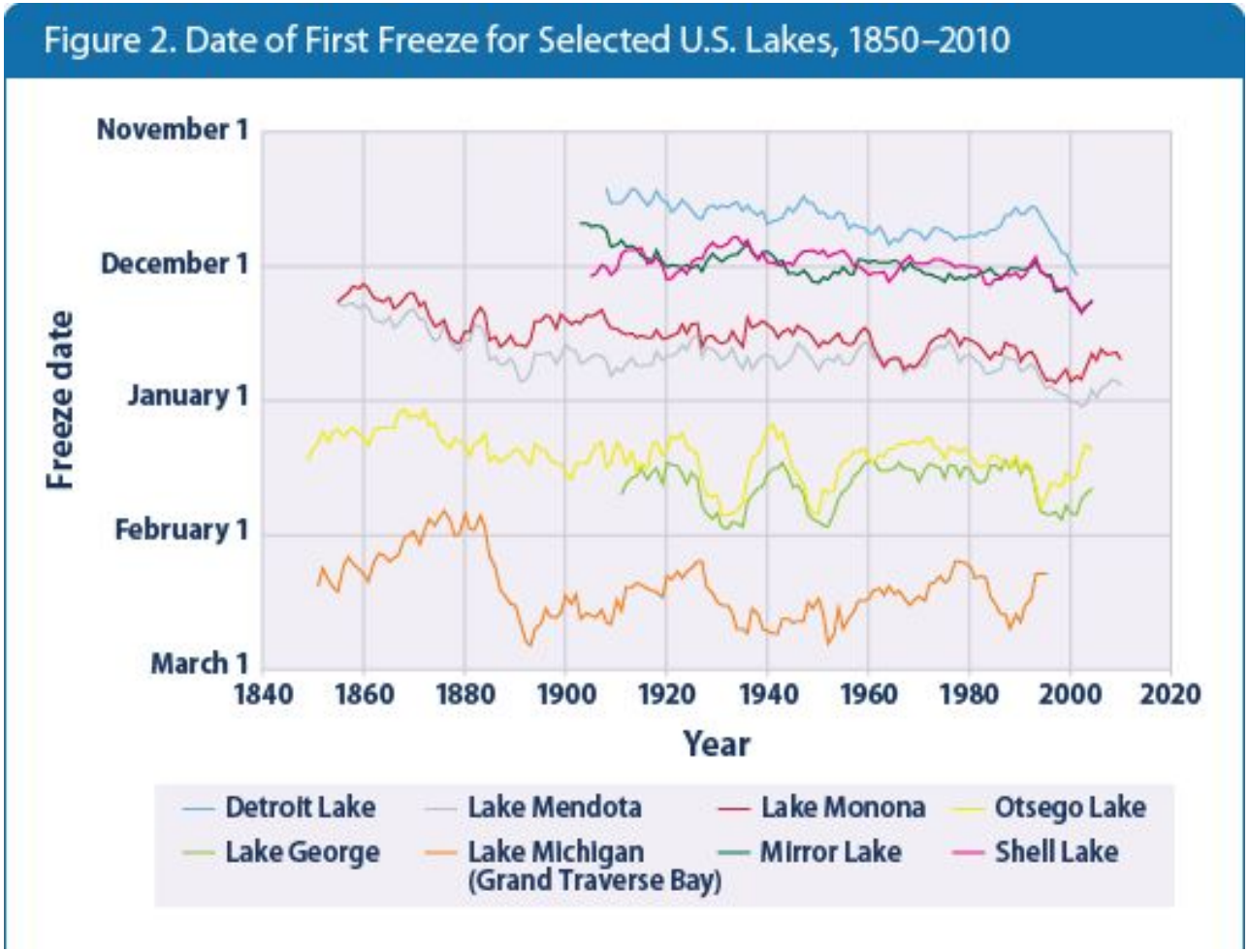
These statements are in harmony with the observations made by Prof. H. J. Cox of the Weather Bureau, as published in Bulletin T., U. S. Weather Bureau, "Frost and Temperature Conditions in the Cranberry Marshes of Wisconsin," published in 1910.

Frost free longer

TABLE 1. Decadal means and standard deviations in days for eastern Massachusetts frost dates.

Decade	00s	10s	20s	30s	40s	50s	60s	70s	80s	90s	Century
18th Century											
Mean	—	—	—	126	156	160	137	145	138	148	144
Standard deviation	—	—	—	28	36	30	31	27	22	17	27
19th Century											
Mean	169	164	162	148	142	121	152	195	195	177	154
Standard deviation	22	42	27	34	31	22	42	15	8	21	26
20th Century											
Mean	144	141	148	148	150	167	175	177	—	—	156
Standard deviation	19	16	14	15	18	18	17	16	—	—	17

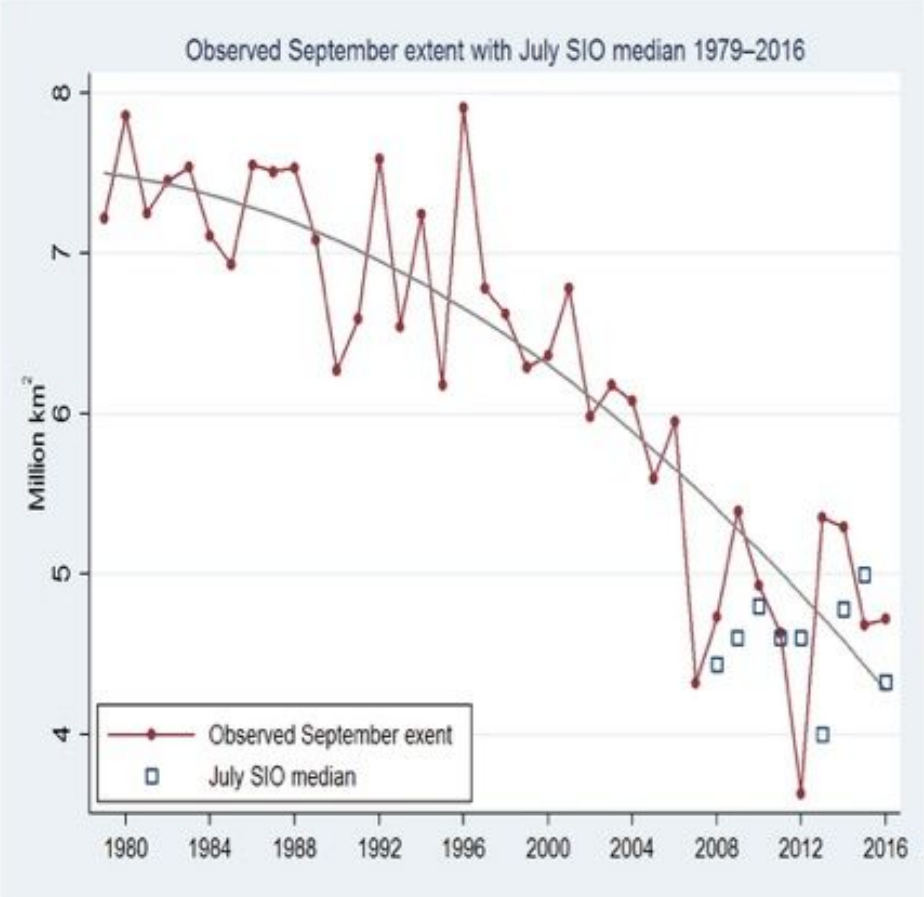
First freeze later



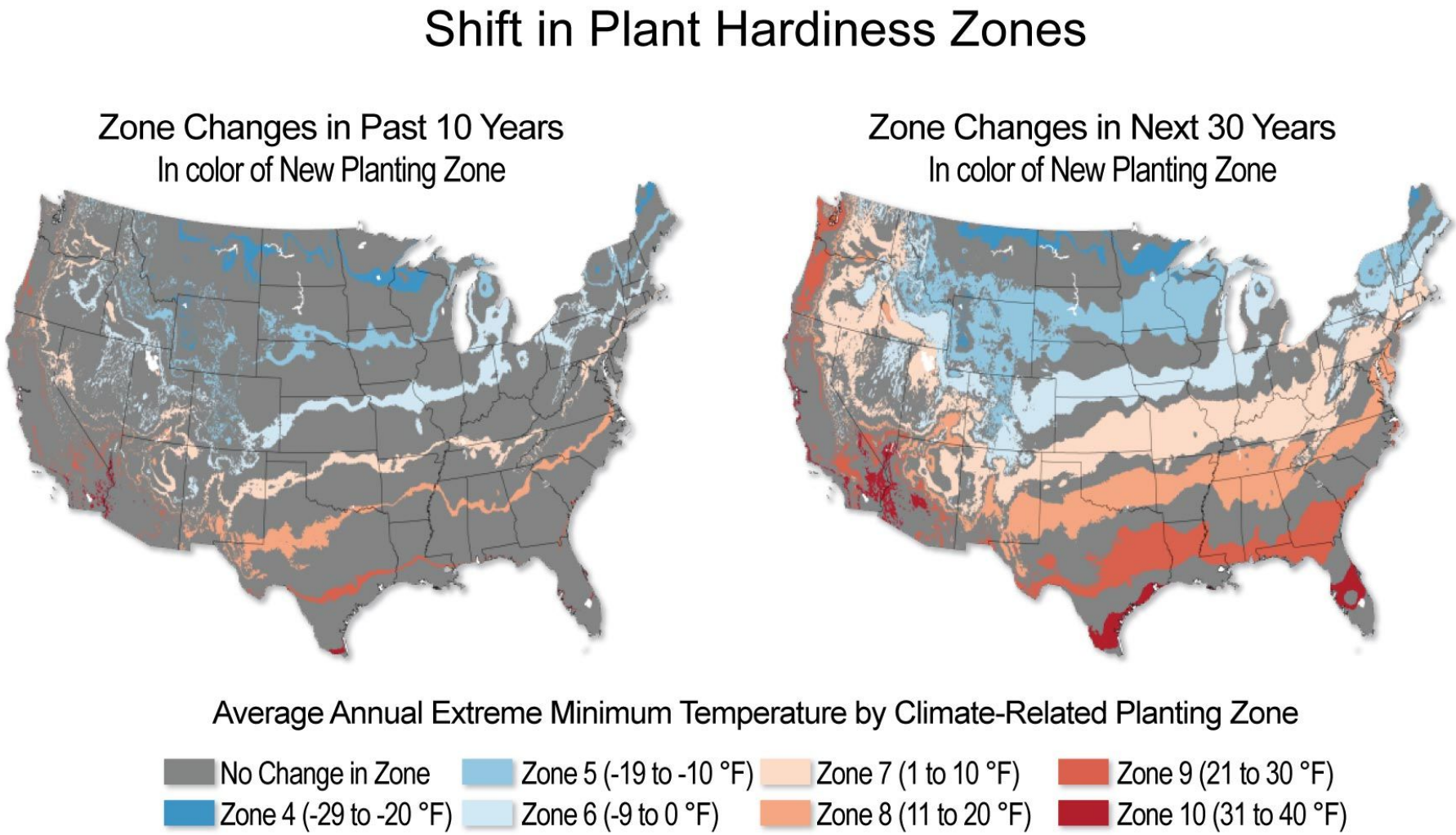
Less ice in the Arctic

Observed September sea ice extent, with median SIO predictions over 2008–2016

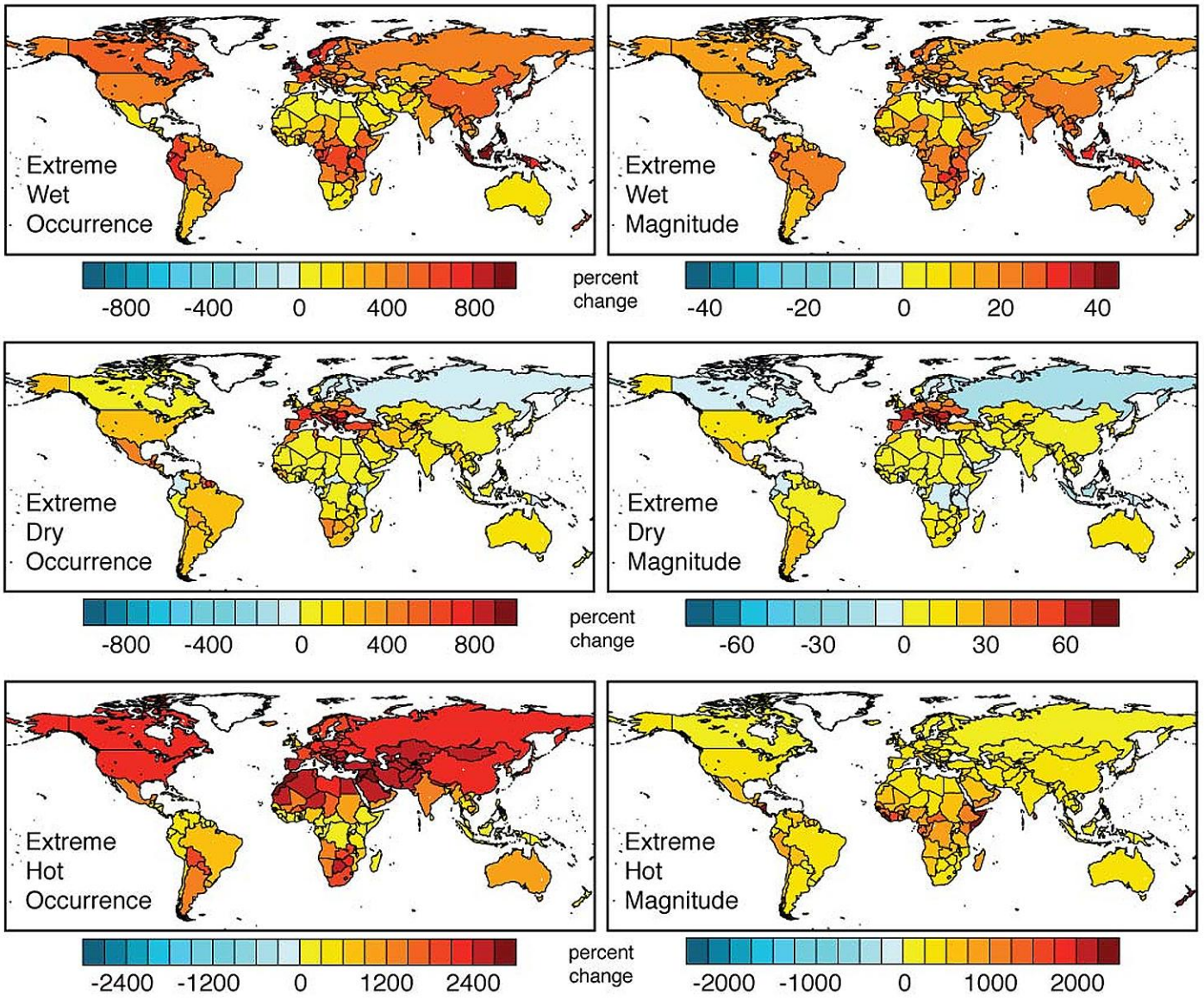
updated from Hamilton and Stroeve 2016



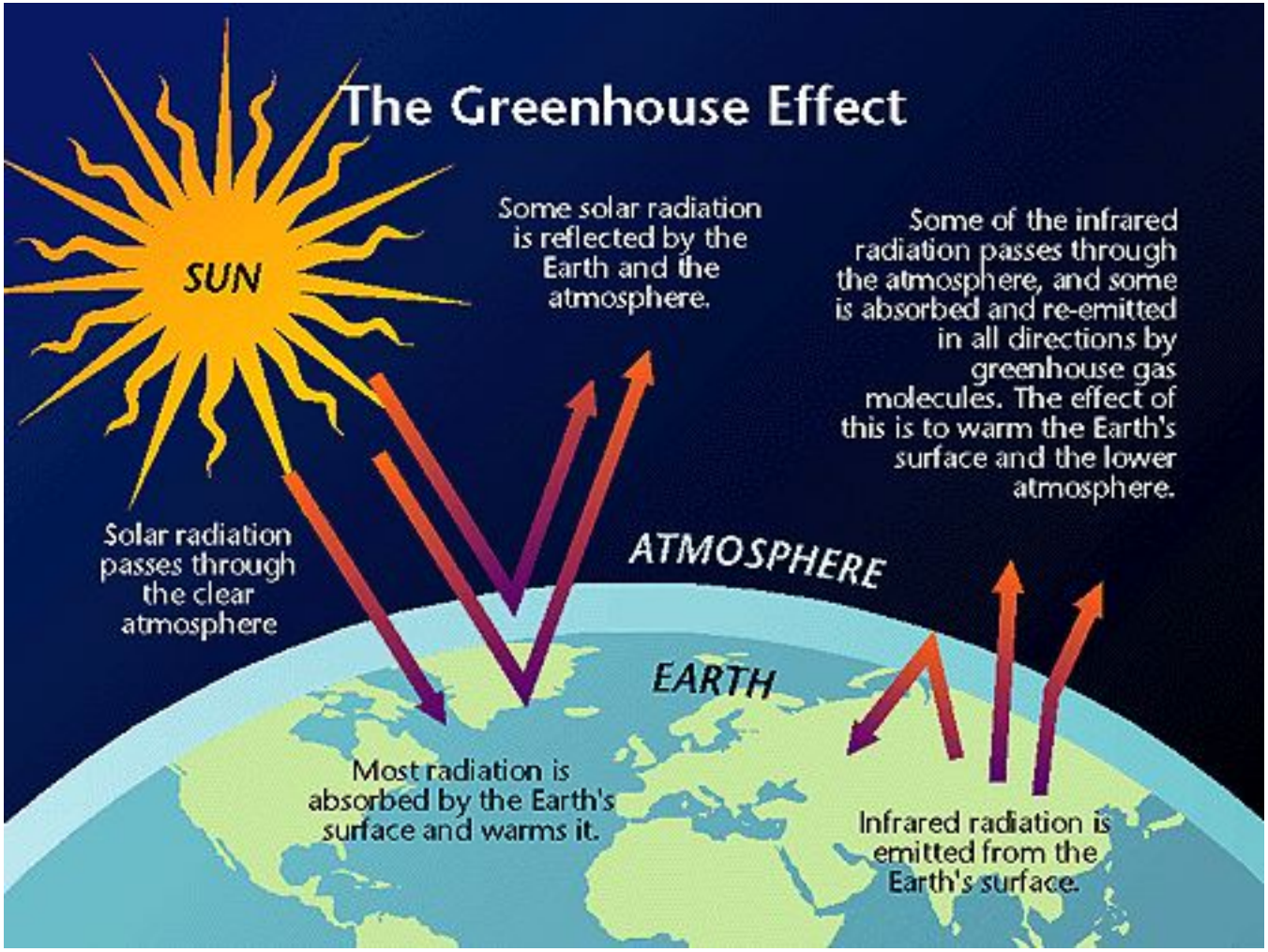
30 Years From Now



Future predictions

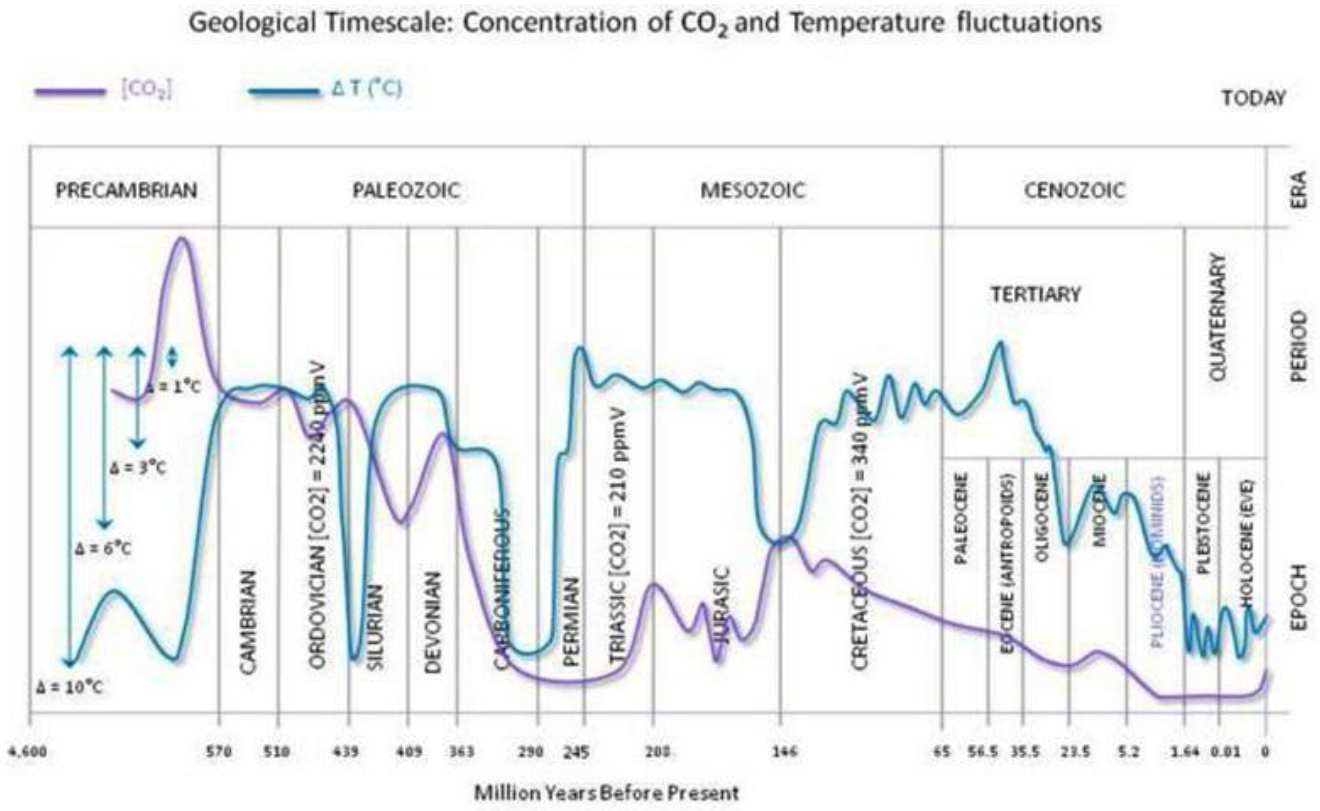


Climate Change



Science isn’t something you settle

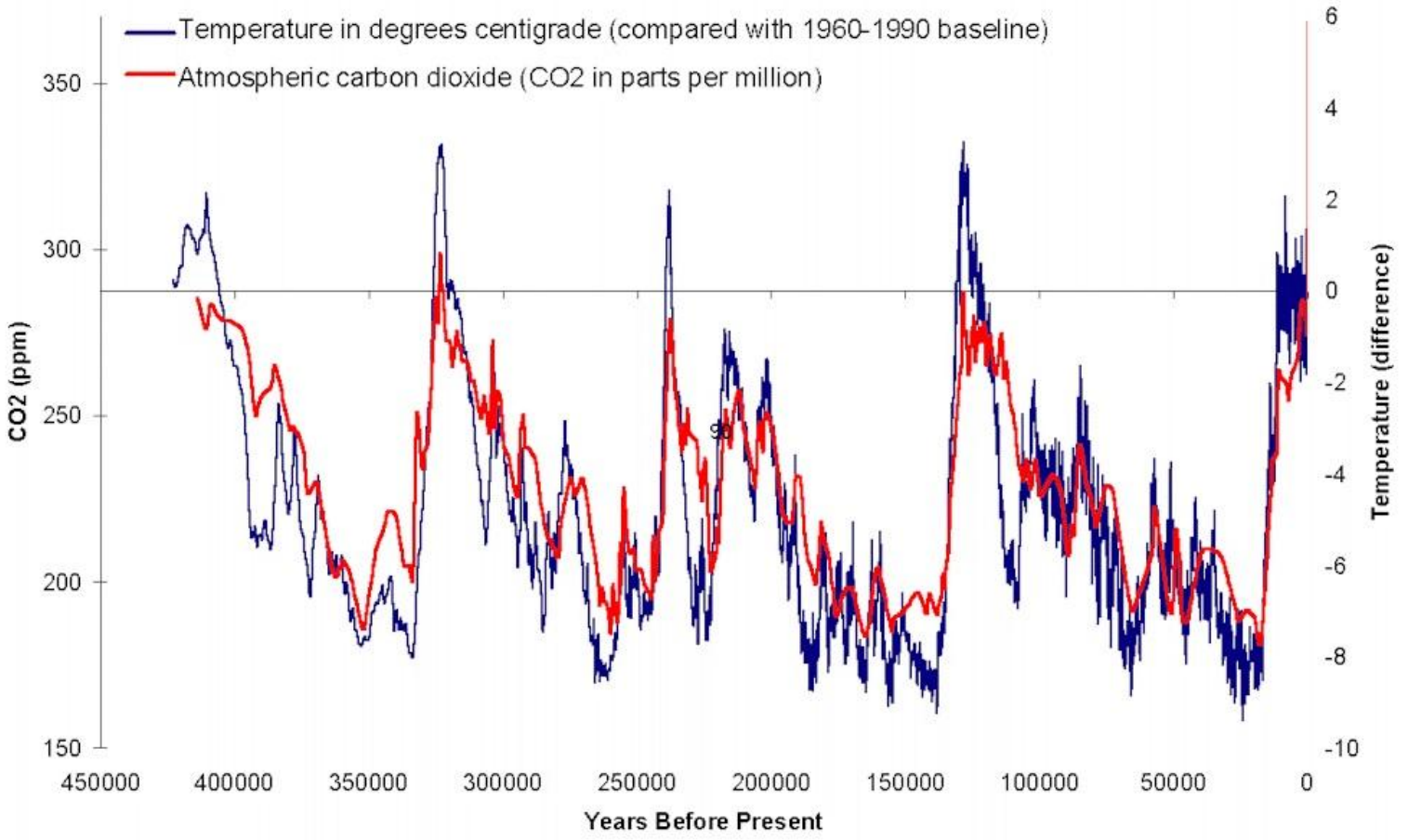
Change is inevitable



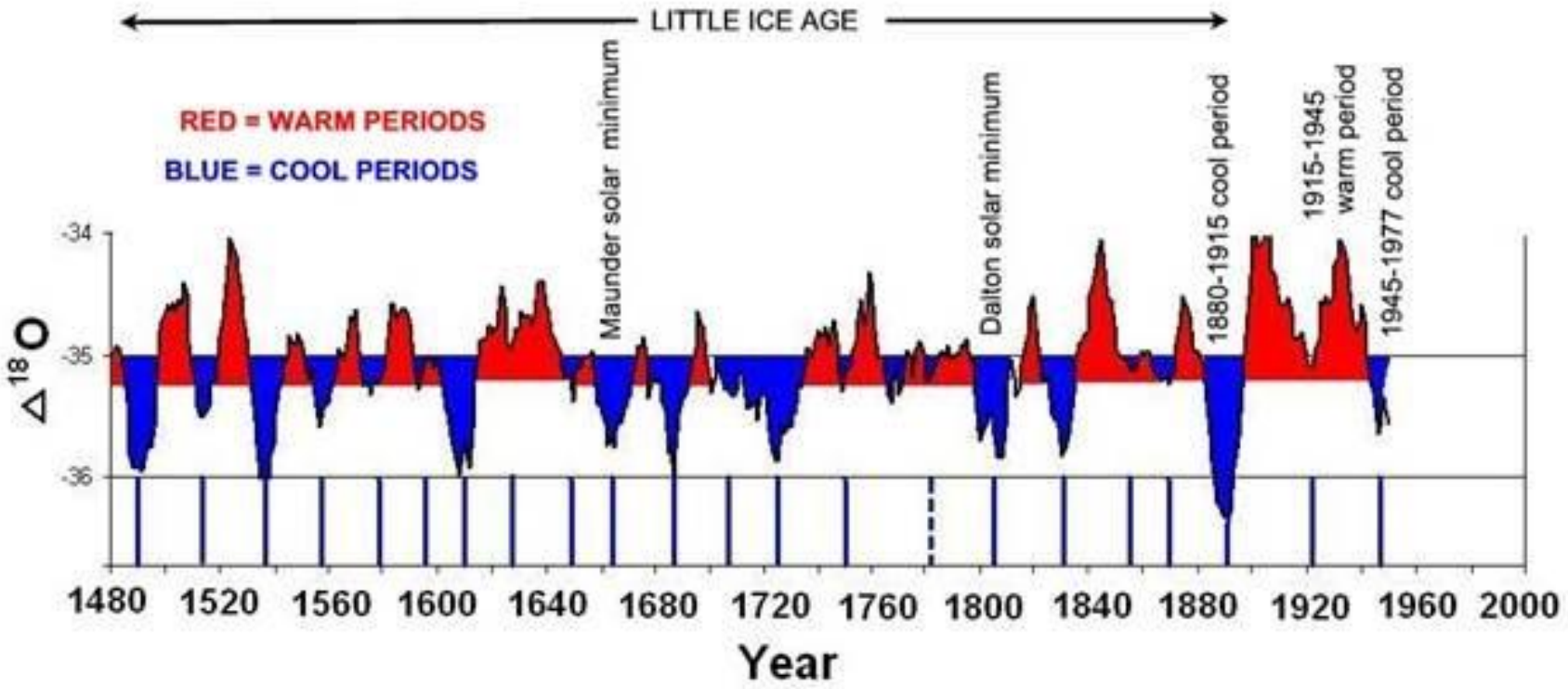
1- *Analysis of the Temperature Oscillations in Geological Eras* by Dr. C. R. Scotese © 2002. 2- Ruddiman, W. F. 2001. *Earth's Climate: past and future*. W. H. Freeman & Sons. New York, NY. 3- Mark Pagani *et all*. *Marked Decline in Atmospheric Carbon Dioxide Concentrations During the Paleocene*. Science; Vol. 309, No. 5734; pp. 600-603. 22 July 2005.

Corrected on 07 July 2008 (CO2: Ordovician Period).

CO2 and Temperature



Temperature history



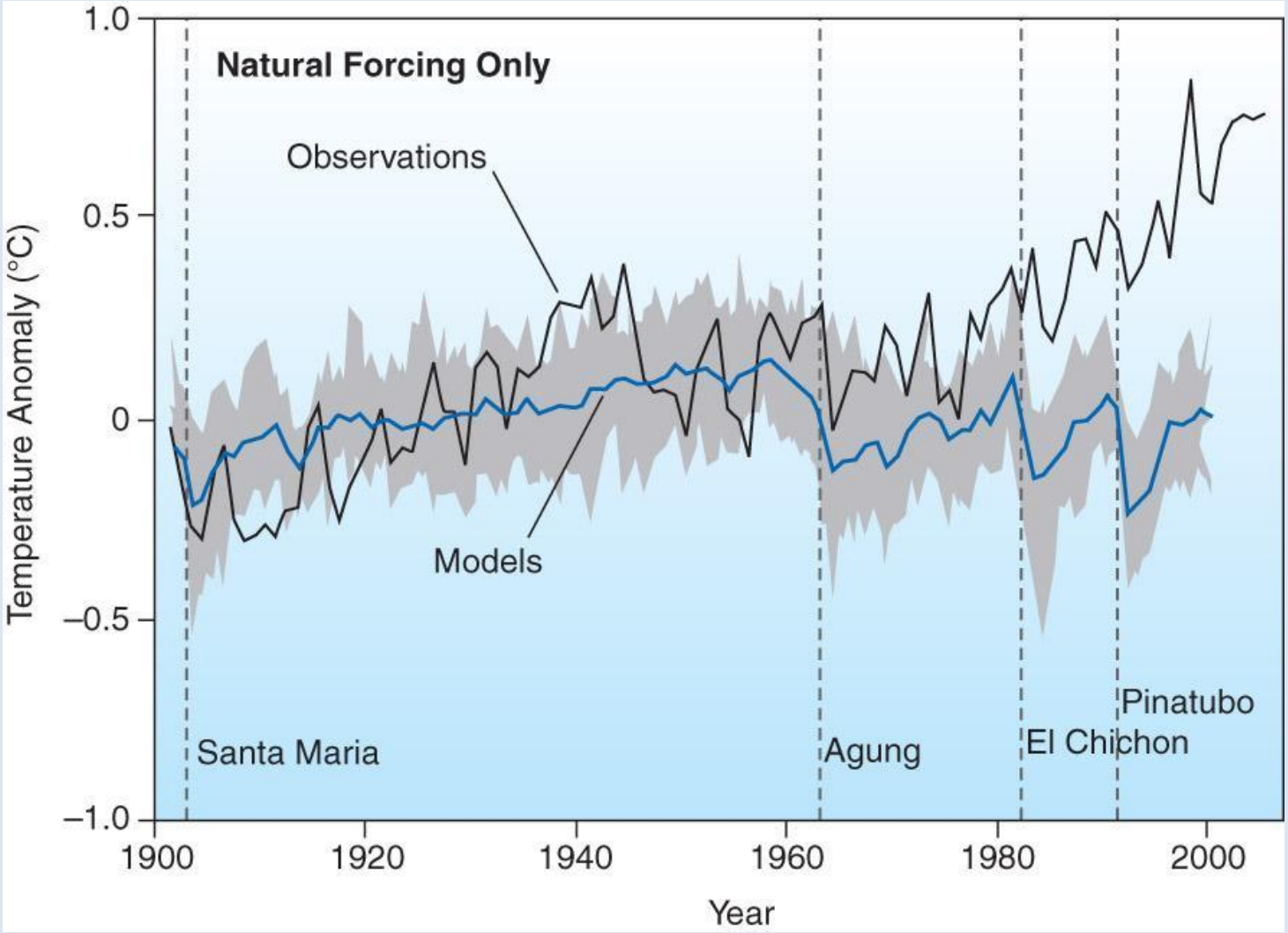


Figure 16-5: Observed changes in global temperature over the past century

Modified from Intergovernmental Panel on Climate Change, "Climate Change 2007," *The Fourth Assessment Report,* Working Group 1, Figure TS23.

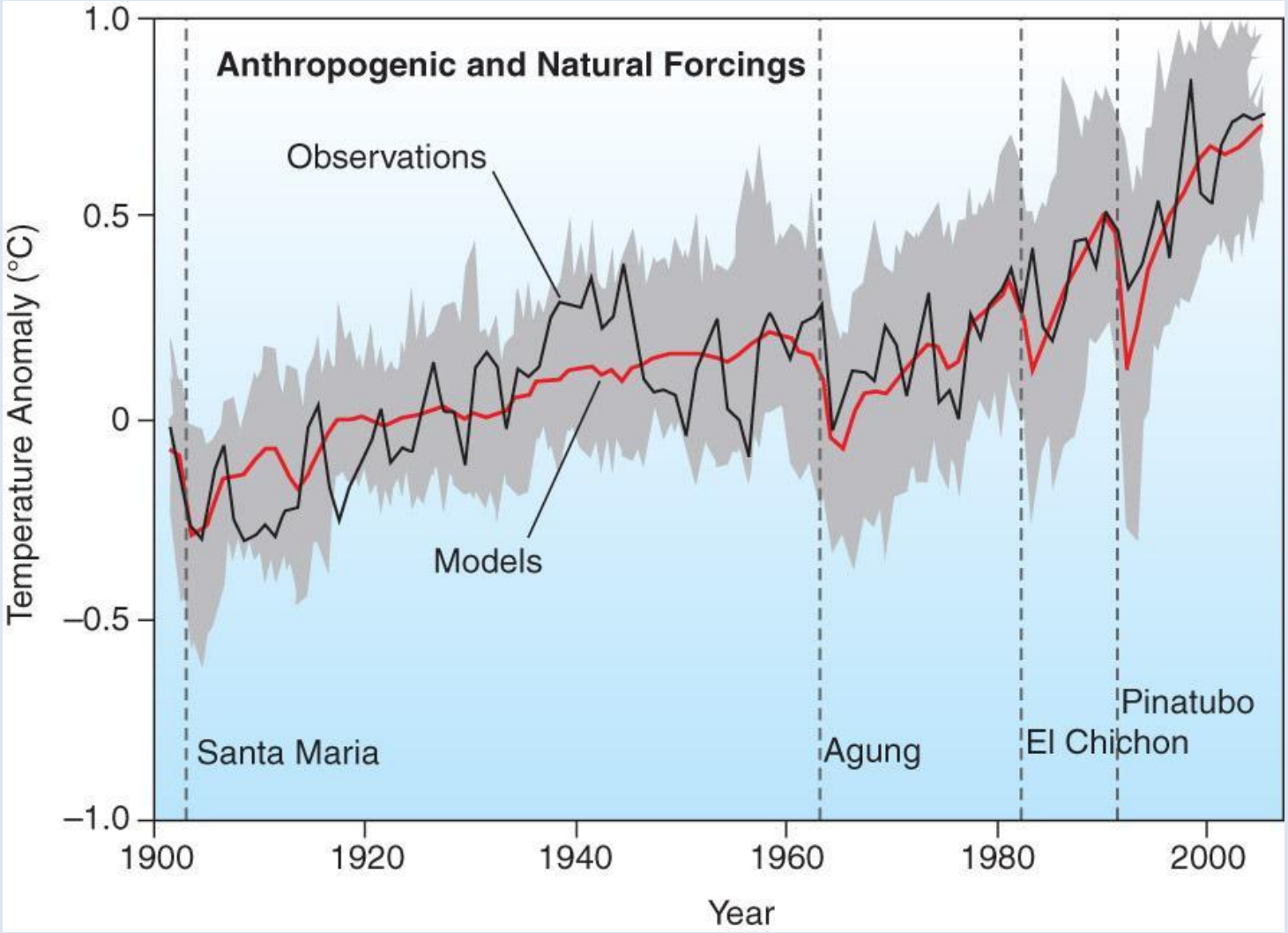
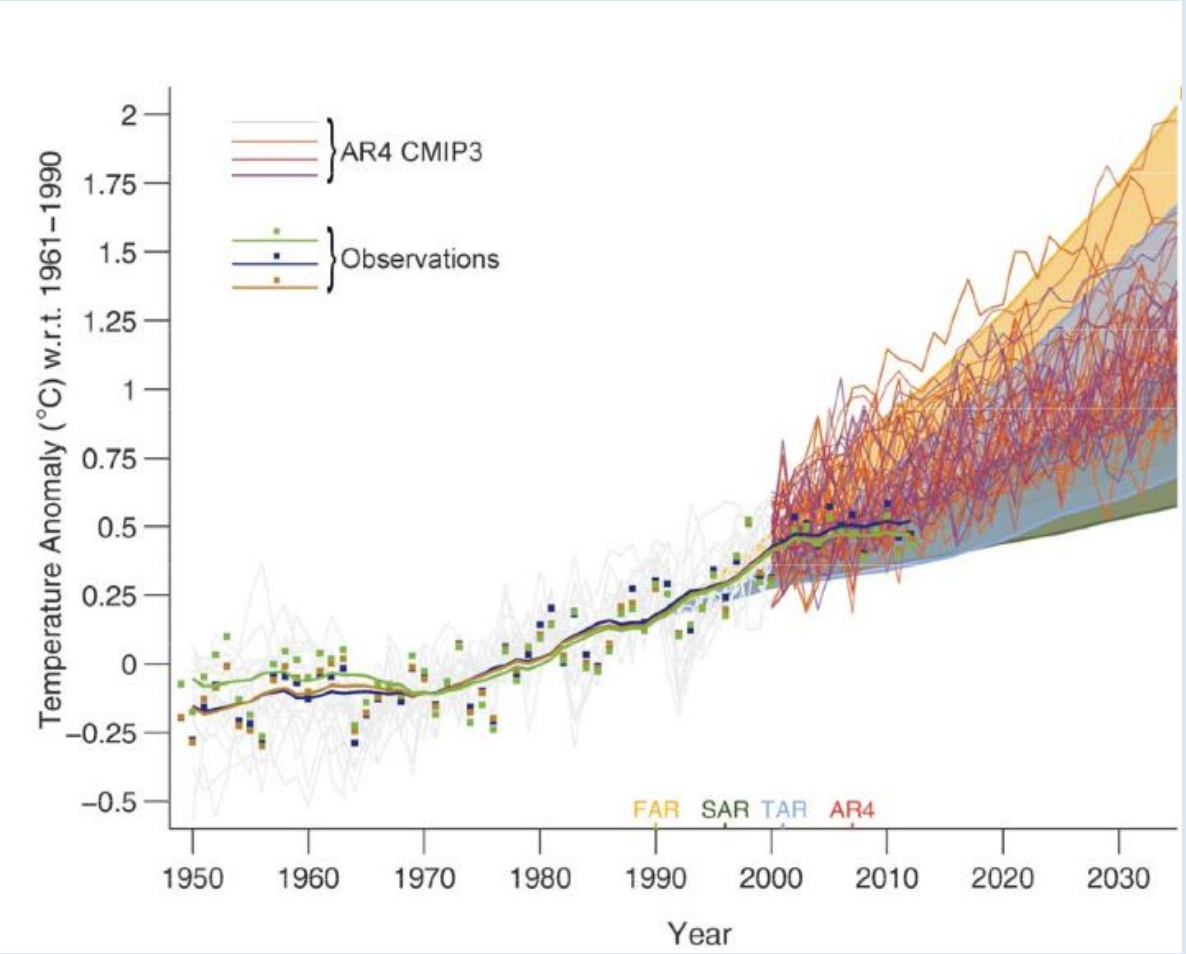


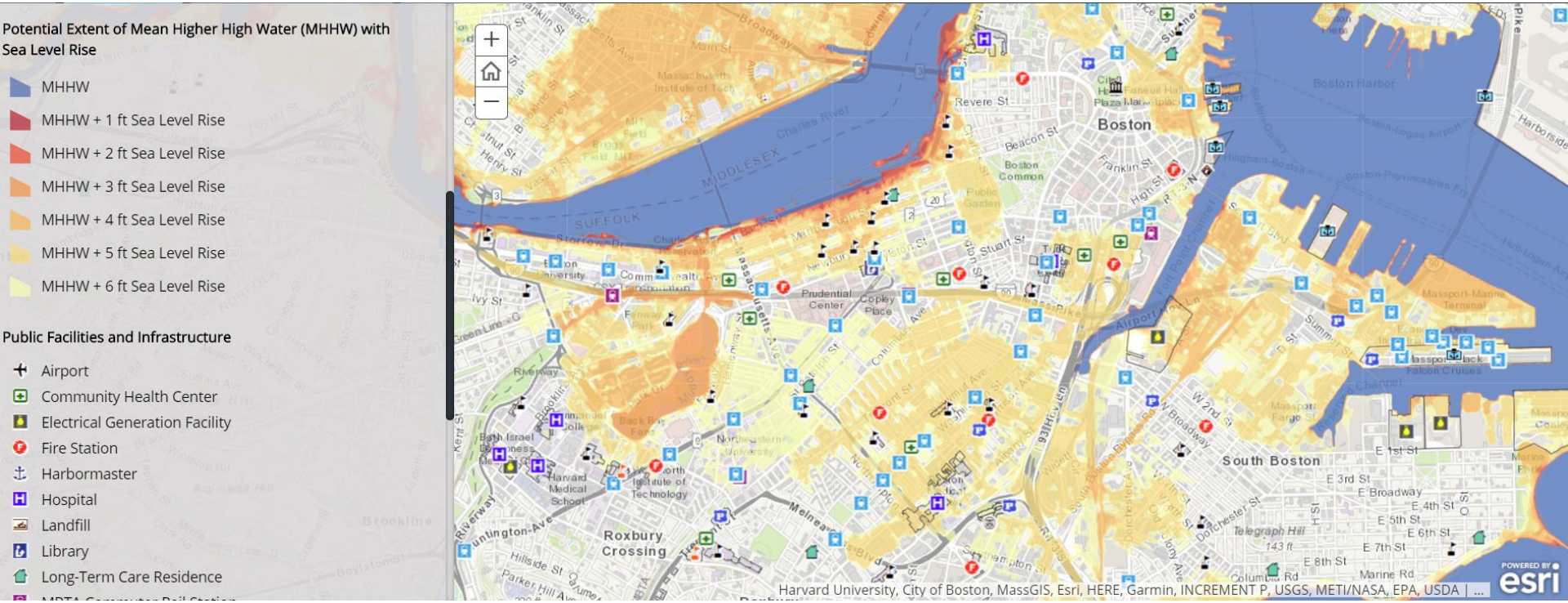
Figure 16-6: 20th century climate simulated with natural and anthropogenic climate change

Modified from Intergovernmental Panel on Climate Change, "Climate Change 2007," *The Fourth Assessment Report,* Working Group 1, Figure TS23.



Solid lines and squares represent measured average global surface temperature changes by NASA (blue), NOAA (yellow), and the UK Hadley Centre (green). The colored shading shows the projected range of surface warming in the IPCC First Assessment Report (FAR; yellow), Second (SAR; green), Third (TAR; blue), and Fourth (AR4; red).

Flooding Ahead



CLIMATE CHANGE SKEPTICS

- Smaller Group Of Scientists
- Range Of Thinking
- Tend To Be Marginalized
- Important Group
- Challenges Status Quo
- Not Wrong

Skeptics

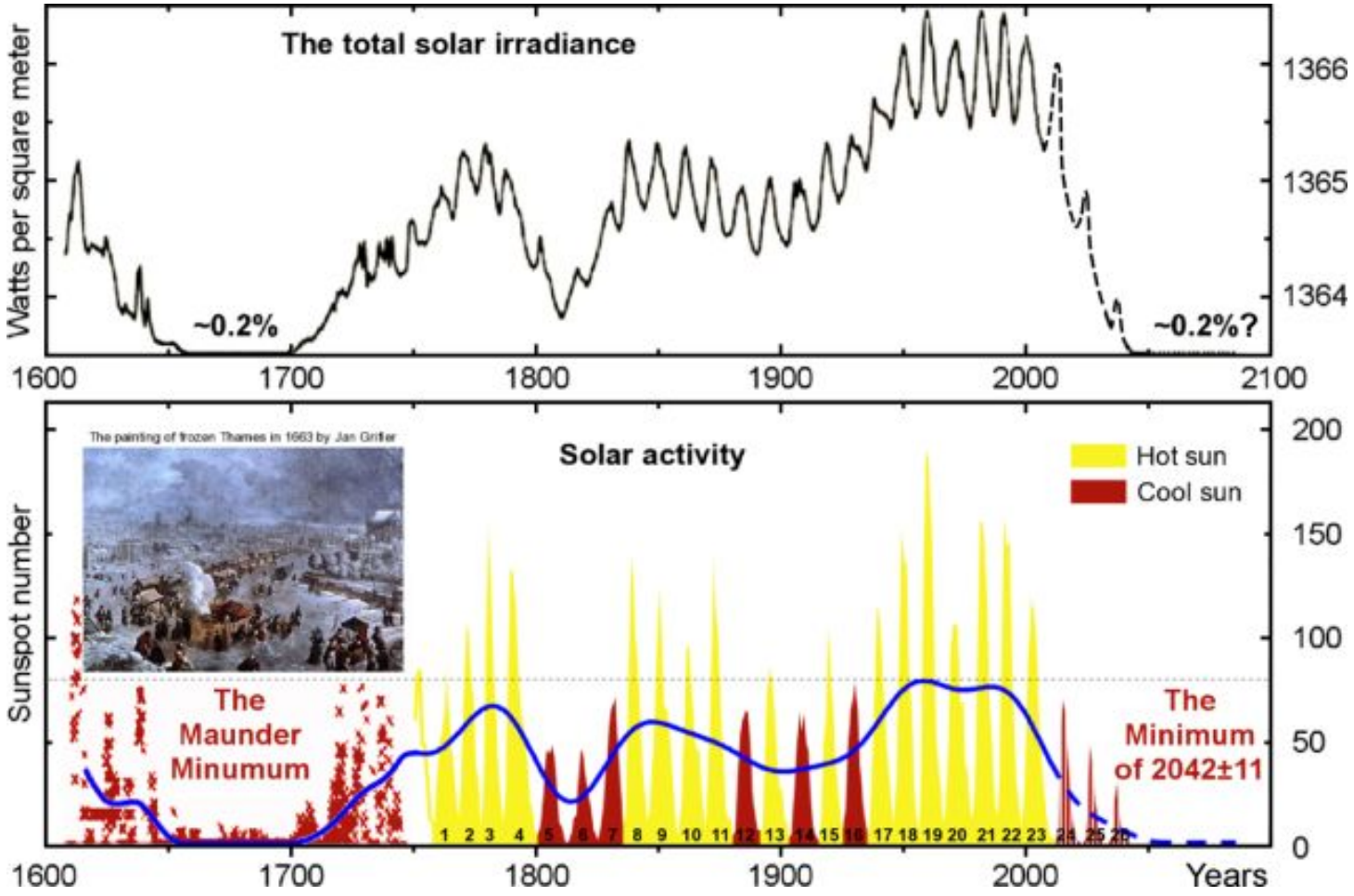
MODERN ENVIRONMENTALISM: A LONGER TERM THREAT TO WESTERN CIVILIZATION

Alan Carlin
Carlin Economics and Science, Fairfax, VA 22031, USA; E-Mail: carlineconomics@gmail.com

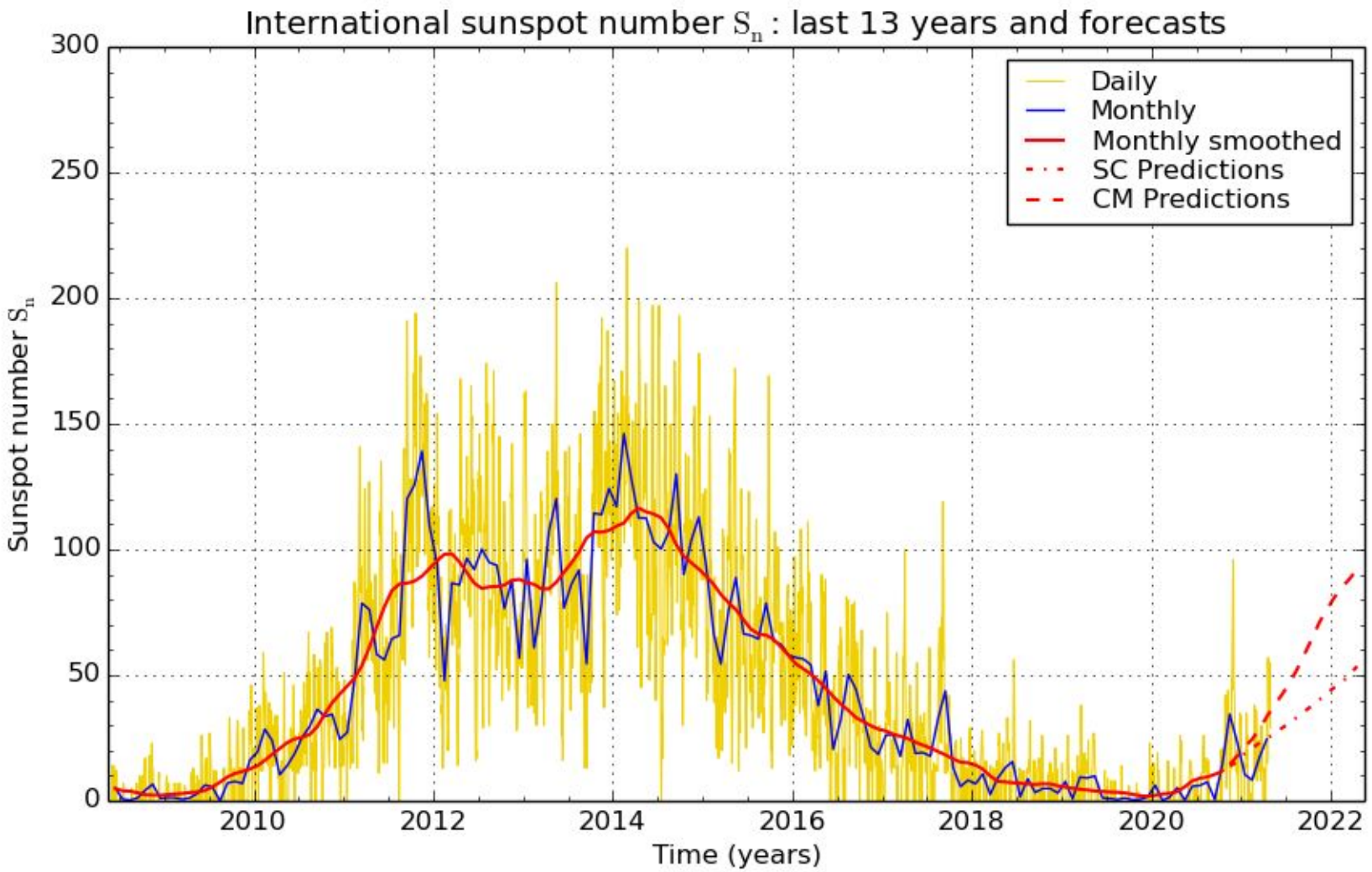
ABSTRACT

Modern environmentalists and particularly their academic supporters are attempting to change a number of economic and scientific ideas and principles fundamental to Western Civilization that have helped humans to achieve much of our dramatic progress in living standards in recent centuries, and, as a result, in environmental protection more recently. In the longer run this may well do more damage than even the wasted investments in inefficient and soon-to-be abandoned solar and wind farms. Even limited application of their ideology on energy would result in decreased consumer choice, economic growth, and living standards. Without an economic and scientific basis, modern environmentalism cannot rationally claim that its proposed climate policies would make the world better off. It is just another ideology trying to pretend that it has a scientific and economic basis; these pretensions lead to many of the problems discussed here. Objective scientific and economic analysis is needed of past and present policy proposals by modern environmentalists to correct errors and avoid future ones.

Sun Is A Climate Factor



Cooler sun
Smaller Peak



Two Podcasts For You

Thank you!

What Questions Do You Have?