

Successful and Sustainable Gardening in a Changing Climate

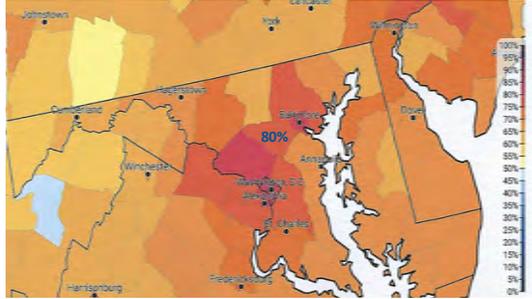


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99% of scientists: Climate change is real and it's here now



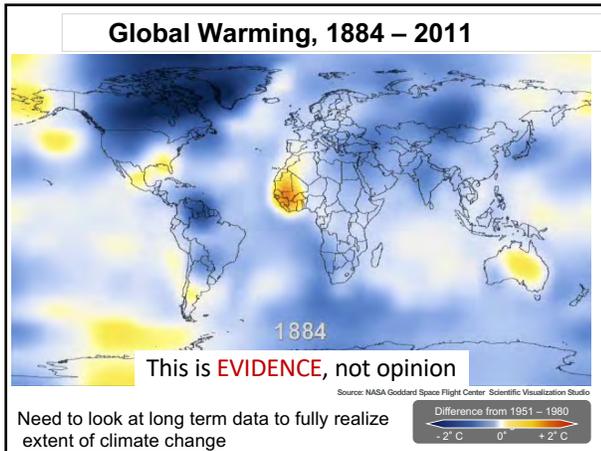
80%

75% of Marylanders accept that climate change is real, but only 57% think that scientists agree

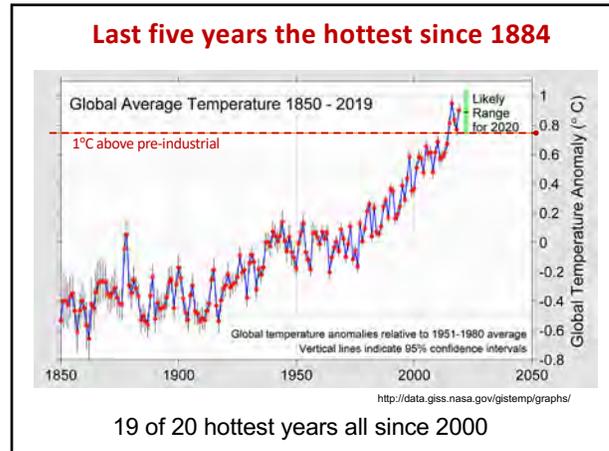
- over 50% acceptance in every county

UCSB
 International Climate Change Communication
 Yale Climate Opinion Maps

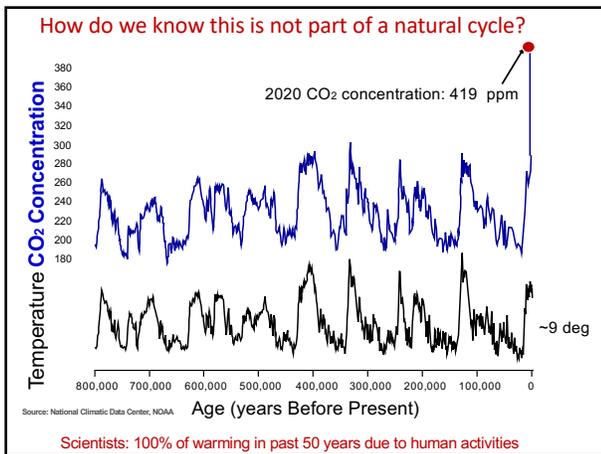
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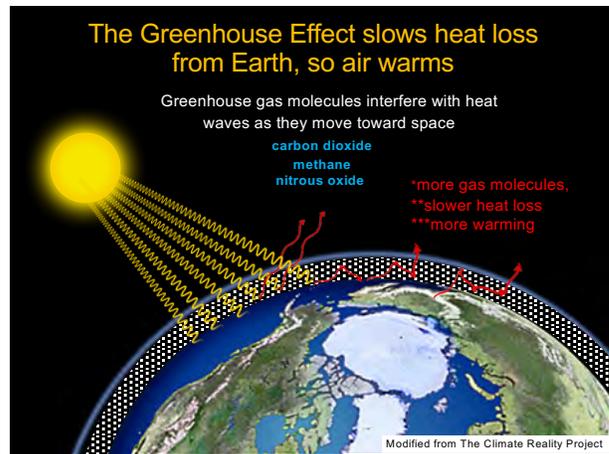
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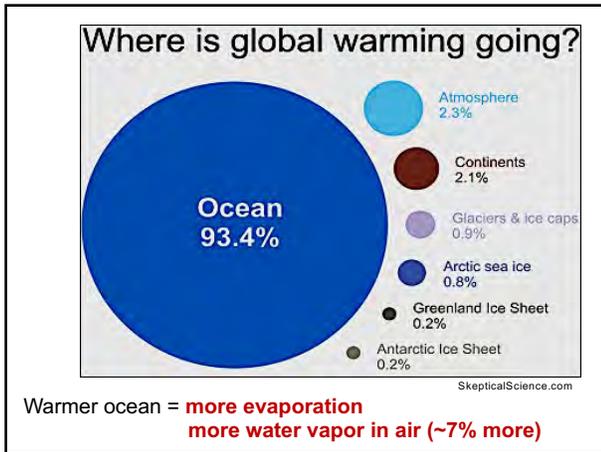
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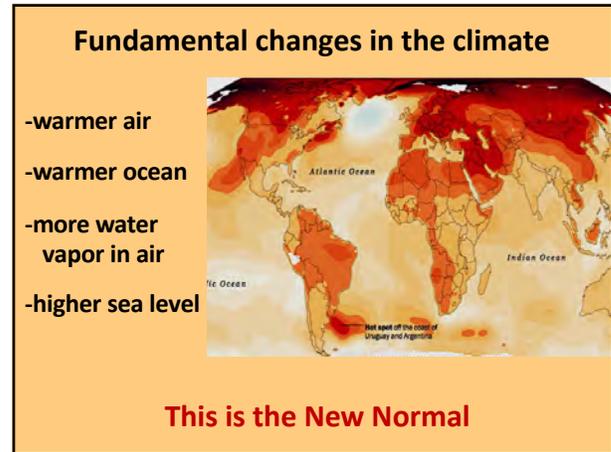
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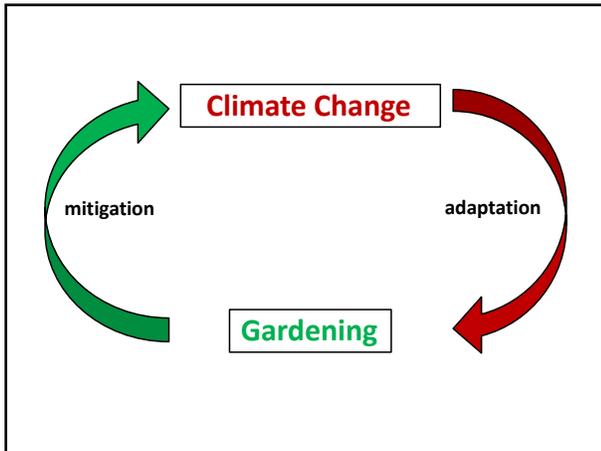
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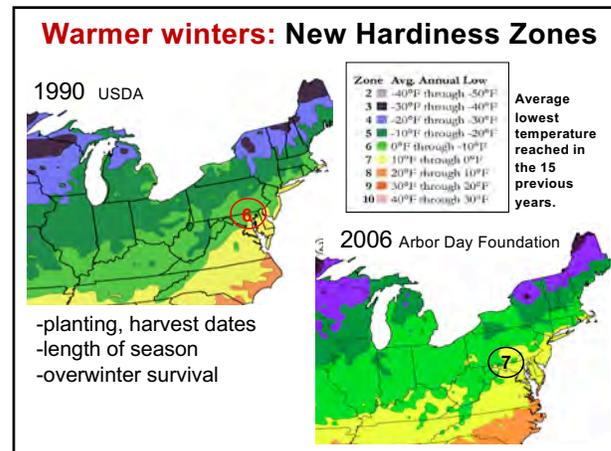
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- ### The New Normal in the Garden
- 1. Rising temperatures**
 - warmer winters, earlier springs
 - more extremely hot days, longer heat waves
 - fewer cool nights
 - increased temperature variability
 - 2. Heavier downpours**
 - 3. More possibility of drought**

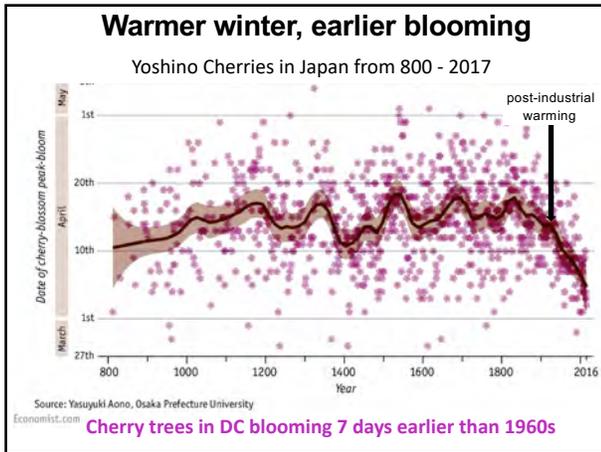
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Effects of warmer winters: weeds



- Weeds benefit more than native plants or crops**
 - better overwinter survival
 - earlier flowering time
- Weeds have a competitive edge**
- Mulch in fall or plant cover crops to reduce overwintering weeds**

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Adapting to increasing weed pressure

- Mulch!
- Stop tilling
- Weed early
- Weed often
- Get them when they're small!



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Effects of warmer winters: animals

- Deer: **more food available during winter**
 - healthier populations
 - higher overwinter survival
 - increase in # offspring
- **White-footed mouse** also benefits, so more Lyme disease



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Effects of warmer winters: animals

Pest insects & disease

- better overwinter survival
- earlier appearance
- more generations/yr
- range expansion

What to do??



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Pests appear earlier, reproduce more quickly and may differ year to year.

- Be vigilant (learn signs of damage!)
- Consider row covers
- Decide on control strategy before pests arrive

Consult the experts at Home & Garden Info Center
<https://extension.umd.edu/hgic>



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Call in the cavalry: Natural enemies!

Attract insect predators and parasitoids with flowers & native plants!

- Native flowers provide nectar, pollen, and protection
- Mulch your beds to provide cover & winter protection

Karan A Rawlins, bugwood.org
Richard Orr

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Biocontrol: Encourage parasitoid wasps or flies

What's a parasitoid?

Entomology Today
Pea aphid
Corn earworm egg
Adam Martinez
Tomato hornworm
Pathogenic fungus

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The New Normal: Hotter Summers

Heat stress reduces pollination, fruit set & quality

Combination of Pollination Failure and Kernel Abortion
Tomato Pollination and Excessive Heat
July 12, 2012 Jerry Brust, IPM Vegetable Specialist, University of Maryland; jbrust@umd.edu

Peppers drop flowers and fruit when
Day temp > 90
Nite temp > 75
Source: TAMU

Take care of yourself too!

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Adapting to increased temperature

- Plant earlier in spring, later in fall (last/first frost dates are changing)
- Mulch (plant material, white or reflective)
- Try heat tolerant varieties
- Build shade or use row cover for heat sensitive crops

Reflective mulch, shade cloth save GA peppers (Carlos Diaz-Perez UGA)

HEAT TOLERANT CROPS
BEAT THE HEAT

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Drought is more likely with climate change

Warmer & longer summers but no increase in rain

California:
extreme case with prolonged drought expected.

Maryland will not escape
Flash drought in 2019
Oct 1: "Abnormally Dry" to "Moderate Drought"

Watering wisely is crucial

US Drought Monitor
<https://droughtmonitor.unl.edu/>

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Use water wisely

- Mulch!!
- Use drip irrigation, soaker hoses or water breakers
- No nozzles or sprinklers
- Water deeply every few days

Drip irrigation
Plants
Drip emitter
Plastic mulch
Row cover edge
Water breaker & full-flow cutoff
Soaker hoses under paper

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Heavy Downpours Increasing

By 2012 in the amount of precipitation falling in very heavy events, is defined as the heaviest 1% of all-daily events from 1958-2012.

Center for Urban Agriculture

May delay planting, wash out or contaminate fields, stunt or kill plants, increase disease, cause soil compaction (healthy soil helps!)

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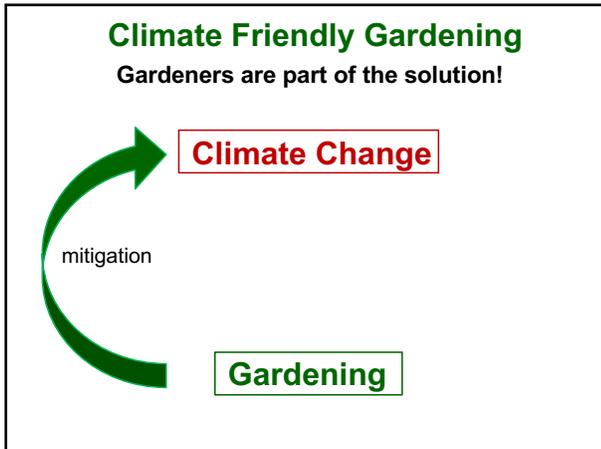
What's a gardener to do?

Too much water?

- Improve drainage
- Monitor food safety
 - throw produce that has touched floodwater away
 - many foods can't be washed
 - fruits off the ground may be OK
- Try raised beds

https://ohioline.osu.edu/factsheet/hyg-1154

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Start with climate-friendly transplants

Garden Center transplants: Usually in disposable plastic pots, may have been sprayed, potted in peat-based mix

Growing your own transplants is easy!

- need a few shop lights (preferably LED)
- 4' wide shelving unit, timer
- reusable pots or plug flats

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Start with climate-friendly transplants

Sustainable potting mix means reduced peat moss

Alternatives:

- coconut coir
- rice hulls
- paper (Pittmoss)
- sand
- compost

Possibilities:

- 50% regular seed starting mix & 50% coir
- 20-25% each: regular mix, coir, sand, compost, paper or rice hulls

Watch out for water retention, & fertility since these will differ from regular mix

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Regenerative Gardening

Build soil health!

- Don't till!
- Use organic material for mulch-- holds water, yet drains, decomposes to feed soil
- Add compost – food scraps, and compost your leaves this year!
- Plant cover crops
 - add organic material
 - can add nitrogen
 - feed soil microbes
- Control erosion by keeping soil covered

Oldworldgardens.com

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