Fostering Community Appreciation of Science

SCIENCE IS FUN

In the Lab of Shakhashiri

Public sentiment is everything. With public sentiment, nothing can fail; without it nothing can succeed.

>> Abraham Lincoln

Science literacy enlightens and enables people to make informed choices, to be skeptical, and to reject shams, quackery, unproven conjecture, and to avoid being bamboozled into making foolish decisions where matters of science and technology are concerned. Science literacy is for everyone—scientists, artists, humanists, all professionals, the general public, youth and adults alike.

>> Bassam Z. Shakhashiri

GLOBAL WARMING IS UNEQUIVOCAL

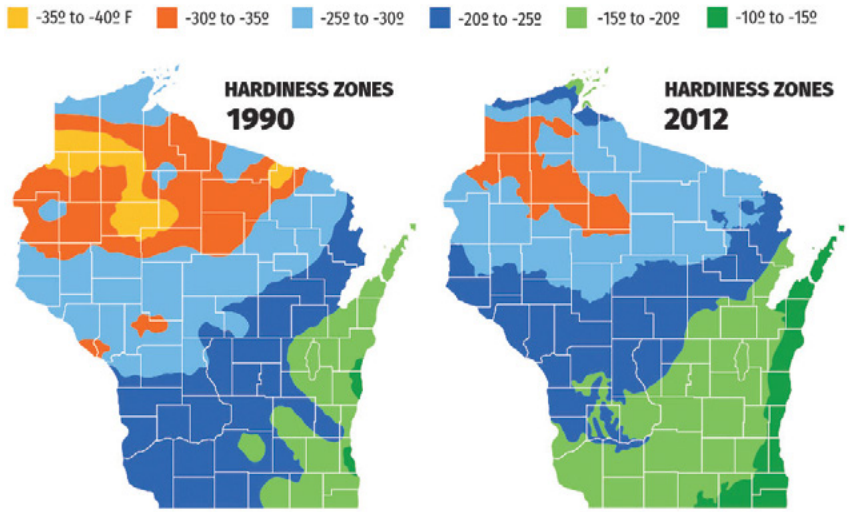
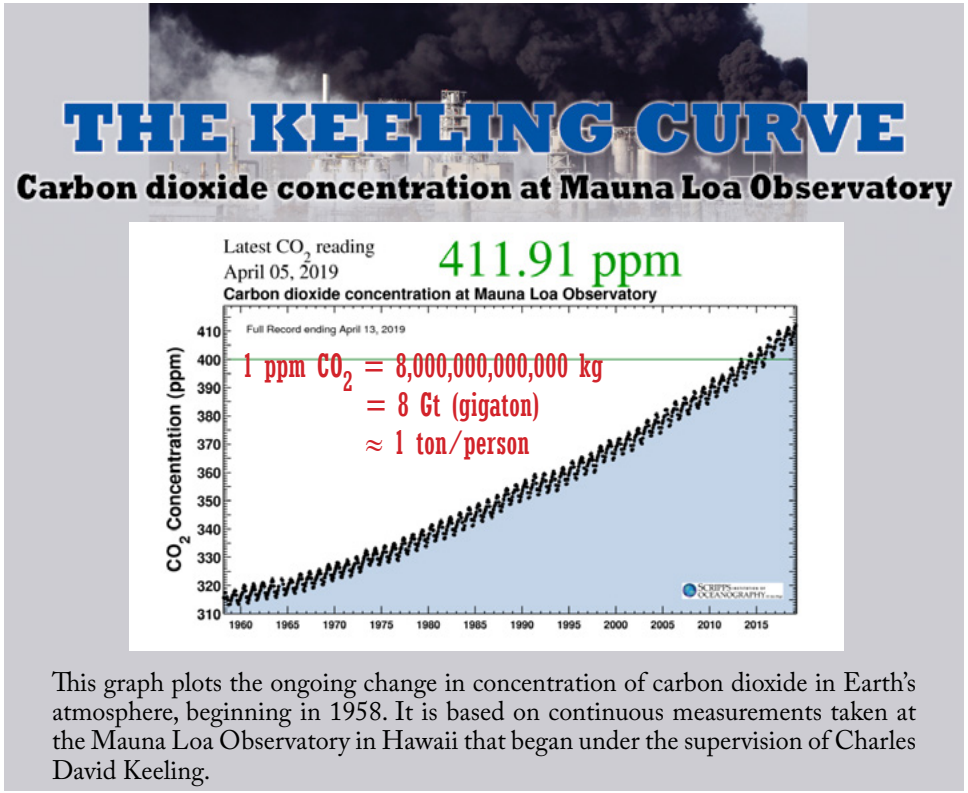


Illustration by Brandon Raygo, The Capital Times / Data Source: U.S. Dept. of Agriculture, PRISM Climate Group, Oregon State University

The zone color key shows the lowest observed winter temperatures in that area.



This graph plots the ongoing change in concentration of carbon dioxide in Earth's atmosphere, beginning in 1958. It is based on continuous measurements taken at the Mauna Loa Observatory in Hawaii that began under the supervision of Charles David Keeling.

SCIENCE & SOCIETY

We must help sustain Earth and its people in the face of:

- The denial of basic human rights—*especially the right to benefit from scientific and technological advances.*
- Population Growth
- Finite Resources
- Malnutrition
- Spreading Disease
- Deadly Violence
- War
- Climate Change

Science and society have a social contract that enables great intellectual achievements but comes with mutual expectations of benefiting the human condition and protecting our planet.

In a free and civil society, people must be virtuous as well as skilled. Scientific knowledge, proficiency, and technical skills must be harnessed to ensure responsibility and stewardship.

>> Bassam Z. Shakhashiri

Experiments You Can Do at Home

For this experiment you will need:

- A can of colorless soda (e.g., 7-Up, Sprite)
- A tall, clear glass or plastic cup
- Several raisins (fresh ones work the best)

Carbon dioxide gas dissolved in soft drinks gives them their fizz.
You can use the carbon dioxide fizz from a soft drink to make raisins dance.

Pour the can of soda into the tall glass. Notice the bubbles coming up from the bottom of the glass. The bubbles are carbon dioxide gas released from the liquid.

Drop 6 or 7 raisins into the glass. Watch the raisins for a few seconds. Describe what is happening to the raisins. Do they sink or float? Keep watching; what happens in the next several minutes?

Raisins are denser than the liquid in the soda, so initially they sink to the bottom of the glass. The carbonated soft drink releases carbon dioxide bubbles. When these bubbles stick to the rough surface of a raisin, the raisin is lifted because of the increase in buoyancy. When the raisin reaches the surface, the bubbles pop, and the carbon dioxide gas escapes into the air. This causes the raisin to lose buoyancy and sink. This rising and sinking of the raisins continues until most of the carbon dioxide has escaped, and the soda goes flat. Furthermore, with time the raisin gets soggy and becomes too heavy to rise to the surface.

You might want to try other objects to see if they exhibit this behavior. Any object whose density is just slightly greater than water's and has a rough surface to which the gas bubbles can attach should be able to dance in the carbonated water. Some of the more common dancing substances are mothballs and pieces of uncooked pasta. Try putting other objects in the carbonated water. Can you find other substances that dance?