WebSights features announcements and reviews of select sites of interest to physics teachers. All sites are copyrighted by their authors. This column is available as a web page at PhysicsEd.BuffaloState. Edu/pubs/WebSights/. If you have successfully used a physics website that you feel is outstanding and appropriate for WebSights, please email me the URL and describe how you use it to teach or learn physics—macisadl@buffalostate.edu.

• A Global Warming Primer

https://www.globalwarmingprimer.com/ https://www.amazon.com/Global-Warming-Primer-Answering-Consequences/dp/1937548783

Astrophysicist Dr. Jeffrey Bennett was an invited keynote speaker at the AAPT National Meeting this past summer. He has produced a website and a downloadable/print book (forthcoming second edition) of a Global Warming Primer including a friendly summary of the basic science appropriate for instruction to children, and refuting common arguments of climate change skeptics, and other merchants of doubt. Bennett discusses expected global warming consequences and helpfully details a hopeful agenda about how we are going to science our way out of this problem in which we have largely unintentionally enmeshed ourselves. He closes with a "letter to our grandchildren" where the letter writer describes which actions we promise to undertake to communicate to our future generations. Physics teachers have told me of "eco-anxiety" where grade school children are upset and fearful and feel powerless, particularly with most recent extraordinary drop in air quality due to the Canadian forest fire smoke of summer 2023. I am also reading of widely reported "greenlash"-anti-environmental contrarian disinformation, often on a politically or publicity-driven agenda. Such disinformation is highly problematic, since the most important single thing we can do as individuals is hold our political representatives' feet to the fire and vote for environmentally progressive policies. Bennet presents strong suggestions for how to address the sense of powerlessness and lists resources appropriate for physics teachers, the general public and even books specifically written for children, like his own The Wizard Who Saved the World.

• More on Summer 2023 US Air Quality: Local Actions for a Physicist

http://www2.Purpleair.com

https://gispub.epa.gov/airnow/

www.fire.airnow.gov

https://berkeleyearth.org/air-pollution-and-cigarette-equivalence/

https://cleanaircrew.org/the-corsi-rosenthal-box-hall-of-fame/ https://ntmoore.github.io/notes/strib_PM2.5.html

Physics blogger Nathan Moore writes: "As you've all probably noticed, air quality has been terrible in the US this summer. If you have spare department funds, purchasing and installing a "Purple Air" air quality meter might be a useful public service for your school's community. The meters cost about \$250 and send data to a continually updated map. The EPA maintains a "gispub airnow" official map using their own sensors, but their fire.airnow.gov map pulls PM2.5 AQI data from the Purple Air dataset. Is PM2.5 really that bad? Yes. Elizabeth and Richard Muller have an (epidemiology-based) memo detailing that breathing air at PM2.5 levels about 22ug/m³ for a day is equivalent to smoking a cigarette, so one summer morning's air in Winona at 167ug/m³ was the cardiac/pulmonary equivalent of 7-8 cigarettes.

What can you do to mitigate this risk? Short-term, build a Corsi-Rosenthal fan box for your living space and wear an N95 while outside. [Ed: Put your pandemic supplies and experience to work. Then protest, loudly—feel free to steal Moore's arguments in letters to your local paper. Summer 2024 and another fire season are coming and our politicians need to hear from we physicist voters about their need to address our displeasure with this "new normal" due to climate change.] *Submitted to Modeling-L by Nathan Moore of Winona State University Physics*

• Astrophysics Lessons for High School Physics Students

http://phy.sites.mtu.edu/RETlessonplans/

"This website contains the ongoing work created by high school teachers during their time at a Research Experience for Teachers (RET) within the Physics Department at Michigan Technological University. During their RET, teachers worked with the astrophysicists and graduate students of the Michigan Tech group of the High-Altitude Water Cherenkov Gamma-Ray Observatory (HAWC) project. Their task was to create lessons and activities that take the work being done in the HAWC group and make it accessible to students, particularly at the high school level. The lessons introduce students to high-energy particle astrophysics through activities ranging in complexity from introductory general science topics to more specific and advanced (astro) physics topics, all while incorporating how important it is to understanding the universe around us. The discovery of the micro-quasar SS 433 is used to illustrate how the scientific method was used to explain and understand the observations astronomers were making. Students learn how to deal with large sets of data while determining if there had been a high-energy gamma ray burst on their birthday. Other lessons include (but not limited to) celestial navigation and coordinate systems, multi-wavelength astronomy, star life cycles, and the photoelectric effect, with plans to develop and post more content in the future. This collection of lesson plans provides teachers with materials that will add interest to existing lessons or can be used as stand-alone lessons to enhance any science curriculum, all while having students engage with authentic, relevant, real-world data from an international astrophysics research project spanning more than a decade. Submitted by Tamala Sebring of MTU Physics tamala.sebring@gmail.com