Regina Brinker's Recommended Climate Change Resources

Teacher Opportunity

PolarTREC is an NSF-funded program that puts teachers in the field with a scientist in a polar region. The site have many climate-related lessons for teachers to use. Also, the public may follow a teacher during an expedition, read journal postings, email questions, and join live webinars.

Classroom Resources/Programs

- GLOBE (Global Learning and Observations to Benefit the Environment) connects classrooms and scientists around the world for data collection projects.

- Project BudBurst is a citizen science program that collects data on observations of plants' first bud break. Track this phenology data to watch for changes in natural cycles.

- EarthWeek, a diary of the planet, lists notable environmental events across (relevant to many science specialties) each week.

- Use the Climate Time Machine to simulate the effects of climate change over decades.

- The TED-Ed video *Phenology and Nature's Shifting Rhythms* explains phenology and how data tracks seasonal changes.

- Monthly global temperature anomaly maps may be used to track current weather conditions and compare to climate norms.

- World Water Monitoring Challenge is an international education and outreach program. Classes may conduct water quality tests, upload data to the site, and compare results from around the world. Easy to use, reasonably priced test kits available for use if needed.

- The Green Ninja Project provides engaging resources that compel students examine use of natural resources, find connections between energy use and climate change, and take positive actions to reduce greenhouse gas emissions. Developed by the Department of Meteorology and Climate Science at San Jose State University, the Department of Television, Radio, Film, Theater, Animation and Illustration, and the Spartan Film Studios, the materials work well with middle school students.

- iNaturalist invites citizens to explore the natural world around them, record observations of living things, and upload pictures for identification. Groups may organize a *Bioblitz* and identify as many species as possible within a given time span. Also available as an app.

- NetLogo is a free, open-source computer simulation program. The simulations are student-friendly and provide a way to increase understanding of concepts, observe relationships, and manipulate variables to quantify results. Simulations may be found in the *Modeling Library* and *Modeling Commons* sections for a wide variety of science, math, health, economics, and art topics. No computer coding experience is needed for use.
  Teachers may train to use NetLogo at Lawrence Livermore National Laboratory's
  Teacher Research Academy summer program.