College of Education
College of Earth and Mineral Sciences

CSATS Center for Science and the Schools

Exploring Aquatic Environments using Real-World Data

A one-day teacher professional development workshop

Photo credit: Dr. Jill Arriola

Target audience: Secondary biology, earth science, environmental science, computer science, and mathematics teachers.

Estuaries are dynamic ecosystems located where rivers meet the sea and are therefore hotspots of global biogeochemical cycling. Researchers at Penn State University in the Department of Meteorology and Atmospheric Science study spatial and temporal trends in estuarine carbon and oxygen fluxes using publicly available data collected by National Estuarine Research Reserves around the United States. Participants of this free, in-person workshop will learn about processes affecting water column oxygen levels, where and how to download water quality data, and how these data can be used in a classroom setting. Former Research Experience for Teachers participant, Austin Gee, will be present to share his experience implementing this work with his students. With the support of Drs. Najjar and Arriola, Mr. Gee, and CSATS, teachers will leave the workshop with skills to retrieve and analyze real estuarine water quality data to facilitate an authentic learning experience about carbon and oxygen cycling in aquatic environments.

APPLY NOW

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Photo credit: Russel C. Mick; The Nature Conservancy

June 17, 2023
9 a.m. - 3:30 p.m.

119 Chambers Building
University Park, PA 16802

Participant Benefits:

- Free one-day professional development with follow-up support for classroom implementation
- Act 48 credit is available upon request
- Lunch provided by Penn State Center for Science and the Schools

Exploring Aquatic Environments using Real-World Data

Next Generation Science Standards

MS-LS1-6 Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

MS-LS2-3 Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

MS-ESS2-1 Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.

HS-LS2-4 Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem.

HS-LS2-5 Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.

HS-ESS2-6 Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.

PA STEELS Standards

3.1.6-8.F Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

3.1.6-8.K Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

3.1.9-12.K Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.

3.1.9-12.H Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem.

3.1.9-12.K Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.

3.3.6-8.F Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.

3.3.9-12.L Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.