

Confronting the Challenges of Climate Literacy

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Funders: [National Science Foundation](#)

Website: <http://cleanet.org/>

This project is designing, developing, and testing a climate science curriculum and professional development model for high school students and their teachers. Project researchers will study and evaluate primary challenges to student understanding of change on multiple and embedded temporal scales and how to overcome those challenges. The project staff will create capstone materials which will contribute to a collection of modules that will eventually allow teachers to teach various kinds of Earth and space science courses at the high school capstone level. These course topics might include—as examples—climate science and climate change; environmental science; Earth system science; weather; and/or geology.

Project staff will develop three online, inquiry-based and lab-focused EarthLabs curriculum modules to accompany four existing modules (on hurricanes; corals; fisheries; and droughts) and another module under development on Earth system science. The module content will be organized around large data sets; models and visualizations; different scientific analyses; hands-on activities, and the sociopolitical ramifications of changing dynamics in the atmosphere, hydrosphere, lithosphere, biosphere, and cryosphere. Each module will contain 6-9 conceptually-linked activities and will be organized around varying and overlapping time scales. The first module will focus on the daily, seasonal, interannual, and decadal cycles of circulation in the Earth system. The second module will focus on the seasonal-to-century time scales of energy and natural and anthropogenic climate change. The third module will focus on seasonal-to-ice-age time scales in the cryosphere. The modules will be designed with embedded with instructional goals and assessment approaches for teachers. The effectiveness of PD resources will be examined with educators and students in Texas and Mississippi.

Collaborative Partners include Mississippi State University and the University of Texas-Austin Institute of Geophysics. Other Partners include Michigan State University Teachers and schools in Texas and Mississippi; SERC, Carleton College; and CIRES, University of Colorado-Boulder.