

Using the CLEAN Collection to build three-dimensional lessons to teach the climate system

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The impacts of climate change are a critical societal challenge of the 21st century. However, the interdisciplinary nature of climate science challenges educators to identify resources that are scientifically accurate before weaving them together into units that teach about the climate system. The Climate Literacy and Energy Awareness Network (CLEAN) supports this work by providing over 700 peer-reviewed, classroom-ready resources on climate and energy topics.

The Next Generation Science Standards (NGSS) science standards encourage educators to teach science in a 3-dimensional approach that trains students in systems thinking. The CLEAN project strives to help educators design NGSS-style, three-dimensional climate system lessons through two modelled approaches. The first model, focused on developing NGSS-CLEAN units, follows a step-by-step process starting with the Disciplinary Core Idea and then interweaves the Cross-Cutting Concepts (CCC) and the Science and Engineering Practices (SEP) based on the teaching strategy chosen for the lesson or unit topic. The second model uses a climate topic as a starting place and the SEP as the guide through a four-step lesson sequence called “Earth Systems Investigations”. Both models use CLEAN reviewed lessons as core activities but provide the necessary framework for classroom implementation. Sample lessons using these approaches are on the CLEAN portal (cleanet.org).