

800187

Weather Water Tanks: Fronts and Thermoclines Lab Activity

Aligned with All Published National Standards



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Email sciencehelp@vwr.com

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framework for K-12 science education © 2012

* The Dimension I practices listed below are called out as **bold** words throughout the activity.

DIMENSION 1 Science and Engineering Practices	×	Asking questions (for science) and defining problems (for engineering)		Use mathematics and computational thinking
	×	Developing and using models	×	Constructing explanations (for science) and designing solutions (for engineering)
	×	Planning and carrying out investigations	×	Engaging in argument from evidence
	×	Analyzing and interpreting data	×	Obtaining, evaluating, and communicating information
DIMENSION 2 Cross Cutting Concepts		Patterns		Energy and matter: Flows, cycles, and conservation
	×	Cause and effect: Mechanism and explanation		Structure and function
	×	Scale, proportion, and quantity		Stability and change
	×	Systems and system models		
DIMENSION 3 Core Concepts	Discipline		Core Idea Focus	
	Earth and Space Science		ESS2: Earth's Systems	

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NGSS STANDARDS	Middle School Standards Covered	High School Standards Covered
	MS.ESS2-1: Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.	HS.ESS2-5: Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface properties.
	MS.ESS2-4: Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.	
	MS.ESS2-5: Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions.	
	MS.ESS2-6: Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.	

× Indicates standards covered in activity

standards and learning objectives

national science education standards © 1996

Content Standards (K-12)			
×	Systems, order, and organization		Evolution and equilibrium
×	Evidence, models, and explanation		Form and Function
×	Constancy, change, and measurement		
Earth and Space Science Standards Middle School		Earth and Space Science Standards High School	
×	Structure of the Earth System	×	Energy in the Earth System

benchmarks for science literacy (AAAS, © 1993)

1. The Nature of Science	1A: The Scientific World View
4. The Physical Setting	4B: The Earth
	4C: Processes That Shape The Earth
11. Common Themes	11A: Systems
	11B: Models

activity objectives:

- Identify that temperature affects the density of fluids (liquids and gases).
- Observe how fluids with different densities interact with each other.

time requirement:

45 minutes