

CONVECTION

Grades 6-8

A CURRENT EVENT



Repeating their contention that air flows like a fluid, the weather prognosticators said that in order for these strong winds to exist, the air somewhere nearby must have been heated unevenly, thus giving rise to flowing currents, otherwise known as wind.

Mount Convection Erupts

Lava flowed down the slopes of Mount Convection yesterday as the old volcano, previously thought to be relatively inactive, erupted in a spectacular display.

Fortunately for nearby residents, at latest report, the dramatic eruption had done no major damage to homes or agricultural

production in the area.

When pressed by reporters for the cause of the eruption and their failure to predict it, geologists admitted that there is still a long way to go in the science of prediction. They also stated that previously undetected convective currents in the magma under Mount Convection may have played a role.

Can This Submarine Be Saved?

Working against the clock, teams of young people from the student emergency rescue squad are seeking ways to rescue a stranded submarine trapped at the bottom of the Imaginary Ocean.

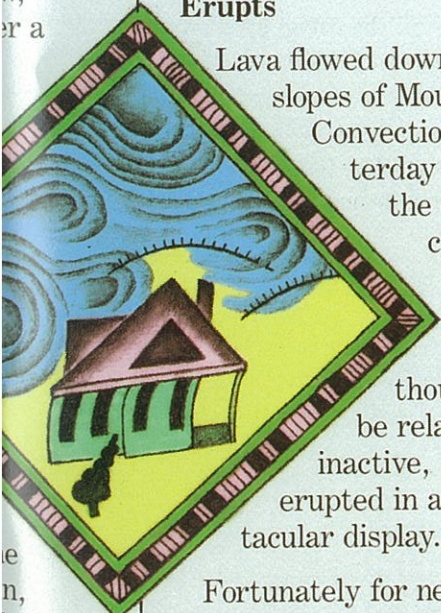
A spokesperson for the rescue mission noted that the submarine is stuck on the ocean bottom near a hot volcanic vent. She explained that it is hoped

that convection currents can be utilized to bring the submarine to the surface.

At latest report, rescue team members were expressing guarded optimism that the stranded sub will be brought to the surface soon.

Molten Magma Moves Mountains

A team of geologists and other earth scientists announced today that molten magma below the



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Session 1: Observing Convection in Water

What You Need

For the class:

- 4 pitchers, bottles, or jugs (at least 1 liter)
- 1 electric coffee maker, or another way to provide one gallon (4 liters) of hot water near the boiling point (hot tap water is usually not hot enough)
- paper towels
- 2 small squeeze bottles of blue or green food coloring, 1-oz. each
- chalk and chalkboard

For each group of 3–4 students:

- 1 6-oz. wide-mouthed cup (paper or plastic)
- 1 pan made of clear, thin plastic, about 8" diameter (often used under potted plants). Aluminum pie pans may be substituted if clear plastic pans are unavailable. Certain clear plastic fast food containers can also work.
- 1 medicine dropper
- 4 6-oz. styrofoam cups
- 2 sheets of white paper
- 1 cafeteria tray
- 1 deep basin, large bowl, or bucket (4–10 liter; 1–5 gal.) for collecting used water.

For each student:

- 1 pencil
- 3 "Convection Observations" data sheets (master included, page 11)

Session 3: Convection and Wind

What You Need

For the class:

- 1 bottle of flavored extract (strawberry, coconut, or lemon work well), 1 oz.
- a pyrex Petri dish or some other wide-mouthed heat-resistant container with low sides. No top needed.
- 1 hot plate
- 1 hot pad holder or tongs
- 1 candle (a short votive candle is ideal)
- 1 book of matches
- 1 box of baking soda (you will need only a tablespoonful)
- 1 tablespoon
- 1 small bottle of vinegar
- 1 peanut butter jar or 500 ml beaker
- a strip of heavy card stock (roughly 12" by 3")
- a white projection screen or a large sheet of white poster board or paper (at least 24" by 24")
- an overhead or slide projector to use as a strong light source

For each student:

- 1 copy of "Convection Worksheet A" and "Convection Worksheet B" (masters included, pages 24 and 25)
- a pencil