

Scientists say cold air rises

9th May, 2020



Most of us learn at school that warm air rises and cool air sinks. This has always appeared to be a fundamental principle of science. However, a study from the University of California, Davis found that there are circumstances in which cool air rises.

Researchers discovered that in tropical atmospheres, cold air rises because of the lightness of water vapour. Apparently, in warmer and more humid climates, water particles become more buoyant and can help cooler air rise. Lead researcher Dr Da Yang said: "Water vapour has a buoyancy effect which helps release the heat of the atmosphere to space and reduce the degree of warming. Without this lightness of water vapour, the climate warming would be even worse."

The scientists said humid air is lighter than dry air at the same temperatures and pressure. This is called the vapour buoyancy effect. It allows cooler air containing water droplets to rise, which then forms clouds and thunderstorms. The resulting rain has a cooling effect in tropical areas. Another researcher, Seth Seidel, said more research is needed to find out the effects rising cool air has on climate change, and on its impact on curbing the effects of global warming. Seth Seidel said: "Now that we understand how the lightness of water regulates tropical climate, we plan to study whether global climate models accurately represent this effect." The study is published in the journal "Science Advances".

Sources: sciencedaily.com / phys.org / sciencemag.com

Writing

Cold air is better than warm air. Discuss.

Chat

Talk about these words from the article.

learn / warm air / fundamental / cool air / tropical / water vapour / buoyancy / climate scientists / temperature / pressure / clouds / thunderstorm / global warming / journal

True / False

- a) Few of us learn at school that warm air rises. T / F
- b) There is a study from the University of Davis, California. T / F
- c) Cold air rises because of the lightness of water vapour. T / F
- d) Climate change could be worse if cool air didn't rise. T / F
- e) Dry air is lighter than humid air. T / F
- f) Rising cool air helps to form thunderstorms and clouds. T / F
- g) A researcher said more research is needed on warm and hot air. T / F
- h) The research is published in the journal "Advances Science". T / F

Synonym Match

(The words in **bold** are from the news article.)

- | | |
|-------------------------|----------------|
| 1. sinks | a. including |
| 2. circumstances | b. evidently |
| 3. apparently | c. outcome |
| 4. vapour | d. precisely |
| 5. release | e. moisture |
| 6. effect | f. descends |
| 7. containing | g. controls |
| 8. curbing | h. set free |
| 9. regulates | i. situations |
| 10. accurately | j. restraining |

Discussion – Student A

- a) What do you think of cold air?
- b) What did you learn about air at school?
- c) What did you think of science at school?
- d) What do you know about tropical areas?
- e) What are the good and bad things about the tropics?
- f) What do you think of humidity?
- g) What kind of weather do you love?
- h) What do you know about global warming?

Phrase Match

- | | |
|---|-----------------------------|
| 1. Most of us learn at school that warm air | a. and pressure |
| 2. a fundamental principle | b. which cool air rises |
| 3. there are circumstances in | c. the effects |
| 4. Water vapour has a buoyancy | d. worse |
| 5. climate warming would be even | e. and thunderstorms |
| 6. dry air at the same temperatures | f. of science |
| 7. forms clouds | g. in tropical areas |
| 8. The resulting rain has a cooling effect | h. effect |
| 9. its impact on curbing | i. the journal |
| 10. The study is published in | j. rises and cool air sinks |

Discussion – Student B

- What do you think about what you read?
- What is your favourite outside temperature and why?
- What do you think the vapour buoyancy effect is?
- What do you think of thunderstorms?
- How could we curb the effects of global warming?
- How much do you like science?
- What would it be like to be a scientist?
- What questions would you like to ask the researchers?

Spelling

- a fundamental ripnipcel of science
- there are acussemrtcni
- in tropical eoephssrmat
- water particles become more notaybu
- reduce the geedr of warming
- Without this lightness of water opuavr
- hdimu air is lighter
- at the same temperatures and esrrspue
- water strledop
- ngbicur the effects of global warming
- water teugersal tropical climate
- published in the anjrlou "Science Advances"

Answers – Synonym Match

1. f	2. i	3. b	4. e	5. h
6. c	7. a	8. j	9. g	10. d

Role Play

Role A – Science

You think science is the best subject to study at school. Tell the others three reasons why. Tell them what is wrong with their subjects. Also, tell the others which is the least interesting of these (and why): literature, art or maths.

Role B – Literature

You think literature is the best subject to study at school. Tell the others three reasons why. Tell them what is wrong with their subjects. Also, tell the others which is the least interesting of these (and why): science, art or maths.

Role C – Art

You think art is the best subject to study at school. Tell the others three reasons why. Tell them what is wrong with their subjects. Also, tell the others which is the least interesting of these (and why): literature, science or maths.

Role D – Maths

You think maths is the best subject to study at school. Tell the others three reasons why. Tell them what is wrong with their subjects. Also, tell the others which is the least interesting of these (and why): literature, art or science.

Speaking – School

Rank these with your partner. Put the best school subjects at the top. Change partners often and share your rankings.

- | | |
|-----------|--------------|
| • English | • Science |
| • Sports | • Religion |
| • Maths | • Literature |
| • Art | • History |

Answers – True False

a	F	b	F	c	T	d	T	e	F	f	T	g	F	h	F
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Answers to Phrase Match and Spelling are in the text.