

HEAT

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Austin Tx., 78701 jpcise@austincc.edu & New York Times , December 4, 2016 by Henry Fountain

News Report on Global Temperatures Is Wrong, Scientists Say



INTRODUCTION: The specific heat of soil(land) is just 0.2 cal./gm. C°. But, water specific heat is 1 cal./gm. C°. Take mass of total earth as m. Since earth land is 30 % of earth: mass of land = 0.3 m, water mass = 0.70 m.

QUESTIONS: (a) If temperature of earth's land increases 1 C° find heat(Q) gained by earth's land?, (b) If temperature of earth's oceans increases 1 C° find heat(Q) gained by earth's oceans?(continued below)

Scientists on Friday debunked a widely circulated news media report suggesting that recent record-high global temperatures were unrelated to [climate change](#). The report, which first appeared in the British tabloid [The Daily Mail](#) and was [summarized in Breitbart News](#), the right-wing opinion and news site, cited incomplete data and drew incorrect conclusions, the [scientists said](#). **Federal and international agencies have said that 2016 will likely be the hottest year on record, eclipsing the record set last year.** In its report, [The Daily Mail cited a recent decline in temperatures over land since the weather phenomenon known as El Niño ended this year, and said that El Niño, and not climate change, was responsible for the record heat.](#) But [scientists said that while the recent El Niño did contribute to the record warmth, climate change played a major role, too.](#) **“Nobody said the record temperatures were exclusively the result of climate change,”** said Mike Halpert, the deputy director of the [National Oceanic and Atmospheric Administration’s Climate Prediction Center](#). In an El Niño, water temperatures increase in the eastern equatorial Pacific, affecting air temperatures and weather worldwide. Sea surface temperatures have declined since their peak earlier this year, and now the opposite condition — La Niña, with water temperatures lower than normal — prevails. Scientists are not surprised that some global temperatures are falling and expect that temperatures next year will be below those of the past two years because of La Niña. “But it’s still likely to be quite a bit warmer than average,” Mr. Halpert said. **Scientists said the news media reports were also faulty in that they cited only temperatures over land, which account for about 30 percent of the earth’s surface. Temperatures over land are much more variable than those over water because land stores relatively little heat.** “If you’re going to be making global-scale assessments,” Dr. Arndt said, “you need to be looking at global-scale data.” Global data show a slower decline in temperatures than land-only data, scientists said. The House Committee on Science, Space and Technology posted about the Breitbart News report on Twitter on Thursday. The committee’s Republican chairman, Representative Lamar Smith of Texas, has accused the Obama administration of having a “suspect climate agenda.” The House committee’s Twitter post drew sharp rebukes from scientists and others, including Senator Bernie Sanders of Vermont, who wrote on Twitter referring to an academic expert cited in the article.

QUESTIONS(CON.): In questions (a) & (b) find amount of heat(Q) gained by land and oceans in terms of m. (c) Find total heat gained by land + oceans in terms of m?, (d) With a 1 C° temperature increase find % of heat Gained in oceans and land? **HINTS:** $Q = c m \Delta t$, **COMMENT:** Goal: Showing oceans gain most of the heat.

ANSWERS: (a) $\Delta Q_{\text{LAND}} = 0.06 m$ calories, (b) $\Delta Q_{\text{OCEANS}} = 0.7 m$ calories, (c) $\Delta Q_{\text{TOTAL}} = 0.76 m$ calories
(d) % gain by oceans = $(\Delta Q_{\text{OCEANS}}/\Delta Q_{\text{TOTAL}}) 100 = 92 \%$, % gain by land = $(\Delta Q_{\text{LAND}}/\Delta Q_{\text{TOTAL}}) 100 = 8\%$