

## Re: Storing the summer heat

**Source:** <http://sci.tech-archive.net/Archive/sci.physics/2004-12/0307.html>

---

**From:** Michael Moroney (*moroney\_at\_world.std.spaamtrap.com*)

**Date:** 11/22/04

Date: Mon, 22 Nov 2004 17:22:40 +0000 (UTC)

The Ghost In The Machine <ewill@sirius.athghost7038suus.net> writes:

>In *sci.physics*, *habshi*

><*habshi@anony.com*>

> wrote

>on Sun, 21 Nov 2004 01:42:03 GMT

><*419ff198.1014588@news.clara.net*>:

>> *What is wrong with the idea of storing summer heat*

>> *underground?*

>*So let's assume SimplePlanet has 180 days hot weather (30 C),  
>and 180 days freezing cold weather (-10C). Dig an underground  
>thermos vault 10m x 10m x 10m and fill it with 1,000 metric tonnes  
>of 30C water. Total usable heat storage capacity would be 10^10 cal  
>or 41.80 teraJoules, since we want 20 degrees C water at least  
>to come out.*

>*The walls here would be 600 m^2 total. This means K for this vessel  
>would be on the order of 10^-5 \* 10000 / 10^9 = 10^-10, and  
>assuming the Simpletons didn't touch this nice heat vesicle,  
>the temperature of the water just before summer starts again  
>would be*

> $-10 + 40 * \exp(-180 * 86400 * 10^{-10}) = 29.938$

Out of curiosity, what would the necessary R value be for the theoretical insulation needed to insulate this heat storage unit?

--  
-Mike