What science photos are hard to believe but are indeed real?



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The most amazing photo in science ever taken, and the one so hard to believe, is this one:



Many of you will recognize it as the Hubble Ultra Deep Field telescope view of a small section of dark night sky. It took weeks of exposure to capture the light from these small dots. What is so mind-blowing about it is the fact that every dot of light in this photo (except two), are not stars. They are

entire galaxies of stars, over 10,000 separate galaxies in all. The dimmest of the dots actually represents galaxies that are over 12 billion light years from Earth. Because light travels at finite speed, it takes time for that light to traverse the incredible distances between those tiny dim dots and the camera on the Hubble telescope. Over 12 BILLION YEARS ago, the light from those galaxies left them on their journey across the cosmos. Only now have they arrived at Earth. Stare at the photo for a bit and realize what it represents!

OK, so the sky has lots of galaxies. Surely that is neat, but not hard to believe. Well, to understand better what is so mind-blowing about the above photo, consider this image below:



So, how much of the sky did the Hubble telescope photograph, to capture over 10,000 galaxies in one shot? It is the answer that is impossible to believe. Look at the image above. See that tiny faint yellow square in the upper right center? THAT is the area of sky the Hubble photographed. All of those 10,000 galaxies in the first image, stretching back in time almost to the beginning of the universe, came from inside that tiny yellow box. WHATTTTTT????? In fact, the space occupied by that image would fit into an area smaller than a grain of rice, held up to the night sky at arm's length. Move it a millimeter to the right, left, up or down, and it will block 10,000 more galaxies. Imagine how many galaxies you can cover if you contemplate the entire night sky? WHOA!

Well, was this some kind of fluke? Perhaps Astronomers pointed the Hubble at a section of sky known to have lots of galaxies. In response, the Hubble took three other long-exposure photos of different parts of the sky, also spanning no more distance than that tiny box above.

Here was the result of one such exposure:



This one, taken from a completely different part of the sky and called the "Extreme Ultra Deep Field", zoomed in even more (only 80% of the tiny area represented by photo 1) and again found that this tiny tiny section of night sky also contained thousands of galaxies. Only two or three of the dots above represent individual stars in our Milky Way.

Here was another exposure from yet a third part of the night sky, named simply the "Hubble Deep Field" (it was in fact, the first photo taken of the four):



As you can see, it is filled with over 3,000 galaxies.

In short, everywhere Hubble looked, it saw galaxies of stars ... thousands upon thousands of them. No one knew the night sky had that many islands of stars. When you look out at the night sky, the darkness you see is not dark. It is FILLED with thousands upon millions upon billions of galaxies of stars, each containing hundreds of billions of suns and possibly trillions of planets of their own. In fact, latest surveys estimate that our visible universe contains over 2 TRILLION galaxies. That is an almost impossible number to contemplate. That is why the Hubble photos of these galaxies have been voted by many scientists as the most amazing photos ever taken in science. I totally agree!