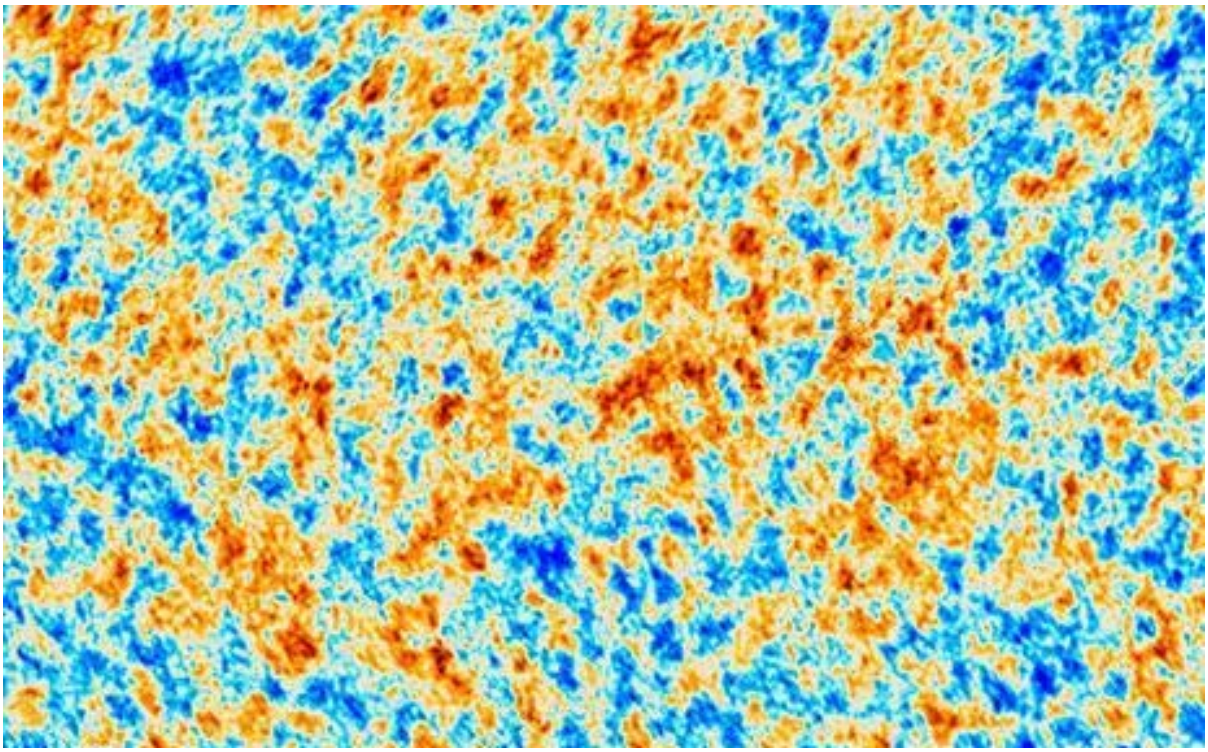

The Planck Mission, like the COBE and WMAP missions before it, has created this even-clearer image of the cosmic fireball radiation (cosmic background radiation). This image shows the minute temperature differences in the cosmic fireball radiation at a time about 370,000 years after the Big Bang. The differences are caused by the lumpiness of matter that was present by this time." At this time, the average temperature of matter was about 3,000^{o} Celsius. The image spans a portion of the sky 45^{o} wide.

Problem 1 – How many degrees wide are the smallest red flecks in the image?

Problem 2 – The full moon is 0.5 degrees wide. How large are the red flecks that you measured in Problem 1 in terms of the full moon diameter?

Problem 3 - At the distance that this 'surface' is located from Earth, the scale is 62 parsecs/arcsecond. If 1 degree = 3600 arcseconds, how many parsecs wide is the smallest clump?

Problem 4 – The Milky Way has a diameter of about 35,000 parsecs. How large are the features in the Planck image compared to the Milky Way?

Problem 1 – How many degrees wide are the smallest red flecks in the image?

Answer: ½ mm = about 0.14 degrees

Problem 2 – The full moon is 0.5 degrees wide. How large are the red flecks that you measured in Problem 1 in terms of the full moon diameter?

Answer: 0.5/0.14 = about 1/3 the diameter of the full moon.

Problem 3 - At the distance that this 'surface' is located from Earth, the scale is 62 parsecs/arcsecond. If 1 degree = 3600 arcseconds, how many parsecs wide is the smallest clump?

Answer: 0.14 degrees x 3600 x 62 parsecs = 31,200 parsecs.

Problem 4 – The Milky Way has a diameter of about 35,000 parsecs. How large are the features in the Planck image compared to the Milky Way?

Answer: The Milky Way is about the same size as one of the smaller spots in the image!