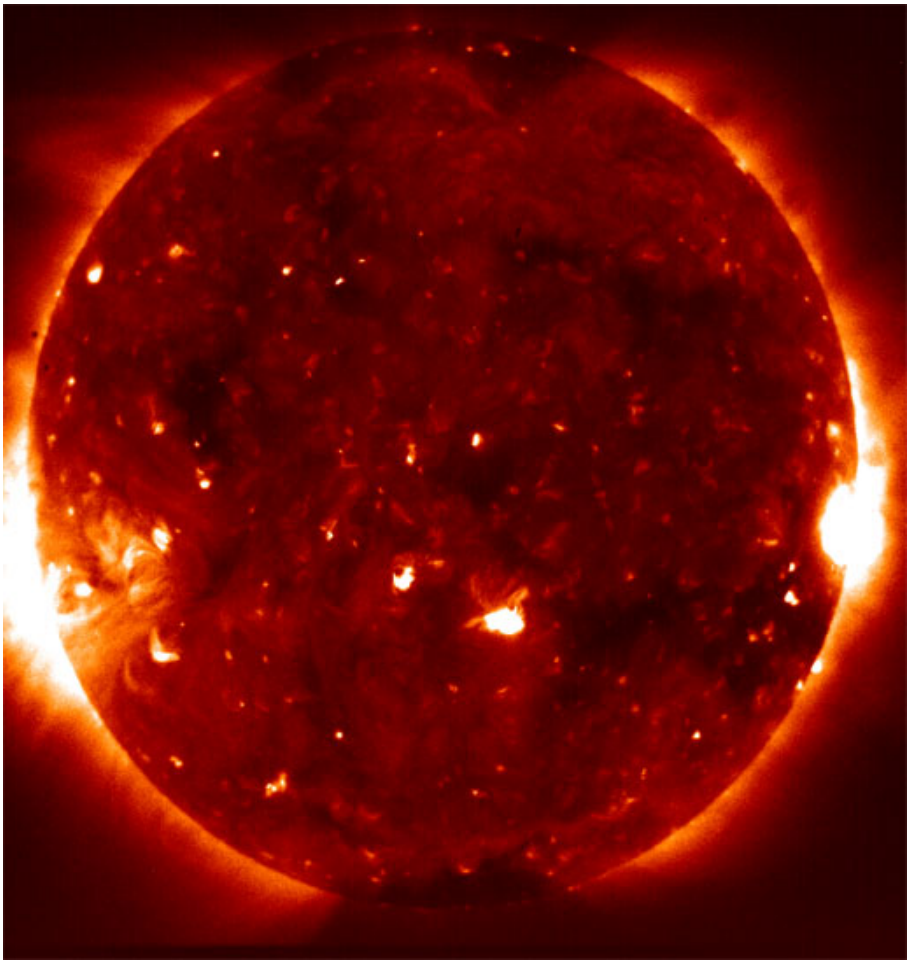

Image taken by the Hinode satellite's X-ray Telescope (XRT) using x-rays emitted by the sun at energies between 1,000 to 10,000 electron volts (1 to 10 keV).The resolution is 2 arcseconds. At these energies, only plasma heated to over 100,000 degrees K produce enough electromagnetic energy to be visible. The solar surface, called the photosphere, at a temperature of 6,000 K is too cold to produce x-ray light, and so in X-ray pictures it appears black.

The Hinode image shows for the first time that the typically dark areas of the sun can contain numerous bright 'micro-flares' that speckle the surface, releasing energy into the corona.

Problem 1 - How big are the micro-flares compared to Earth? (Sun diameter = 1,300,000 km; Earth diameter = 12,500 km).

Problem 2 - About how many micro-flares can you see on this hemisphere of the Sun, and how many would you estimate exist at this time for the entire solar surface?

Problem 1 - How big are the micro-flares compared to Earth? (Sun diameter = 1,300,000 km; Earth diameter = 12,500 km).

Answer: The disk of the Sun measures about 110 millimeters in diameter, so the scale is 1,300,000 km/110 mm = 12,000 km/mm. The micro-flares are just over 1 millimeter in diameter or 12,000 kilometers, which is **similar to the diameter of Earth.**

Problem 2 - About how many micro-flares can you see on this hemisphere of the Sun, and how many would you estimate exist at this time for the entire solar surface?

Answer: A careful count should find **about 200** of these 'spots' some bright and some faint. Over the entire solar surface there would be **about 400.**