



High resolution false-color image obtained at a frequency of 4.7 GHz (0.06 meters) or 5.0 gigaHertz (5.0×10^9 Hz) by the Very Large Array radio telescope (VLA) of the 'quiet sun' at a resolution of 12 arcseconds, from plasma emitting at 30,000 K. The brightest features (red) in this false-color image have temperatures of about 100,000 degrees K and coincide with sunspots. The green features are cooler and show where the Sun's atmosphere is very dense. At this frequency the radio-emitting surface of the Sun has an average temperature of 30,000 K, and the dark blue features are cooler yet. (Courtesy: Stephen White, University of Maryland, and NRAO/AUI).

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Answer: The sun disk is about 115 millimeters in diameter so the scale is 1,300,000 km/115 mm = 11,300 km/mm. The smallest features are the dark blue 'freckles' which have about 1-2 millimeters across, corresponding to a physical size of 11,000 to 23,000 kilometers. This is about **1 to 2 times the size of Earth**.

The brightness of the sun at this wavelength varies from

$$F = 2 \times 10^{-21} \text{ watts/meter}^2$$

to

$$F = 1 \times 10^{-19} \text{ watts/meter}^2$$

depending on the level of solar 'sunspot' activity.