

SOS Scales by Jeff Mucklin at the Nurture Nature Center

Given that when displaying the Earth the SOS is approx. 7,000,000 to 1 scale, we can easily figure out how large certain features would be if reduced by the same scale. The following is a list of fun scale size comparisons for the Science on a Sphere.

Geology

If the earth were the size of the Science on a Sphere...

The average thickness of the crust would be a little less than a quarter of an inch. (1)

The average thickness of the mantle would be about 1 foot 4 inches. (2)

The average thickness of the outer core would be about 1 foot. (3)

The inner core would be about 7 inches thick from its boundary with the outer core to the very center of the Sphere. It would be about the size a large beach ball with a diameter of around 14 inches nested in the center of the Sphere. (4)

Land features and surface topography

If the earth were the size of the Science on a Sphere...

Mount Everest would be about a 20th of an inch higher than sea level. This would be like having a bump on the Sphere slightly less high than the thickness of a dime. (5)

Challenger Deep is the deepest known point in the world's oceans. It would be about a 16th of an inch lower than sea level. This would be like having a crack on the Sphere slightly less deep than the thickness of a quarter. (6)

Humans

If the earth were the size of the Science on a Sphere...

A person would be about 8.57×10^{-7} feet tall. This is about .26 micrometers. The smallest known bacteria called Pelagibacter ubique about this big, so a human would be a little smaller than the smallest known bacteria on the Sphere. (7)

Atmosphere

If the earth were the size of the Science on a Sphere...

The Troposphere would be about a 14th of an inch thick. This is about the same as the thickness of a nickel. (8)

The Stratosphere would begin a 14th of an inch from the surface of the sphere where the Troposphere ended and extend to a little over a quarter of an inch above the surface. (9)

- (1) Assuming the actual thickness to be about 25 miles.
- (2) Assuming the actual thickness to be about 1,800 miles.
- (3) Assuming the actual thickness to be about 1,400 miles.
- (4) Assuming the actual thickness to center to be about 760 miles and the the diameter to be about 1,500 miles
- (5) Assuming the actual height to be 29,029 feet.
- (6) Assuming the actual depth to be about 36,000 feet.
- (7) Assuming a human to be 6 feet tall.
- (8) Assuming the average thickness to be about 8 miles.
- (9) Assuming the an average height to the stratopause to be about 32 miles.

Space

There is no precise boundary marking where the atmosphere ends and space begins, but it is generally agreed that the atmosphere extends to 62 miles above the surface of the earth. On this scale you would be in space just half an inch above the sphere. (10)

The international space station would be in an orbit about 2 and a quarter inches above the sphere. (11)

The moon would have a diameter of about 1 foot and 7 inches. It's average distance from the sphere would be about 174 feet away. (12)

The sun would be a ball with a diameter of about 650 feet which is around the same diameter as a professional football stadium and it would be over 13 miles away. (13)

- (10) Assuming the Karman line is the boundary between the earth and space at 62 miles above sea level.
- (11) Assuming an average altitude of about 250 miles above the surface.
- (12) Assuming a diameter of 2,159 miles and a distance of 230,100 miles away.
- (13) Assuming a diameter of 865,000 miles and a distance of 92,000,000 miles.

Satellites

If the Sun were the size of the sphere, the Earth would be the diameter of a dime and would be 609ft away.

If the Earth was the sphere, the satellite that took the images that make up the Blue Marble (polar orbiters) would be 4 inches away and NOAA GOES satellites that collect most of the IR images that go into the real-time weather datasets would be 15.8 feet away.

