

THE MELBOURNE SOLAR SYSTEM SELF GUIDED TRAIL

Step aboard Starship St Kilda!

Now you can navigate the Solar System from our glorious Sun to the outer planets simply by following the bike and walking trail on the foreshore of the City of Port Phillip.

In 2008 artists and scientists constructed a model of our Solar System to a scale of one to one billion between St Kilda and Port Melbourne. So instead of navigating 5.9 billion kilometres from the Sun to Pluto, you only walk 5.9 kilometres.

Start at the Sun

The Sun sculpture is near the white lighthouse in Marina Reserve at the south end of St Kilda Beach. From the Sun follow the foreshore trail north to visit the eight planets, accurately scaled to size and distance. You can walk to the first five planets i.e. as far as Jupiter within twenty minutes. The furthest planet of Pluto at Sandridge Beach can be reached within ninety minutes.

'This is absolutely amazing, for fifty years I have always wanted to understand how big the universe is. It's one thing to calculate or memorize that the earth is 150 million kilometers from the Sun, but it's quite another to walk and feel that distance in three-dimensional space. Just to get this glimpse of my place in the grand scheme of things has been one the most awe-inspiring realisations in my whole life. What an astonishing universe we live in.'

Simon Keily, teacher

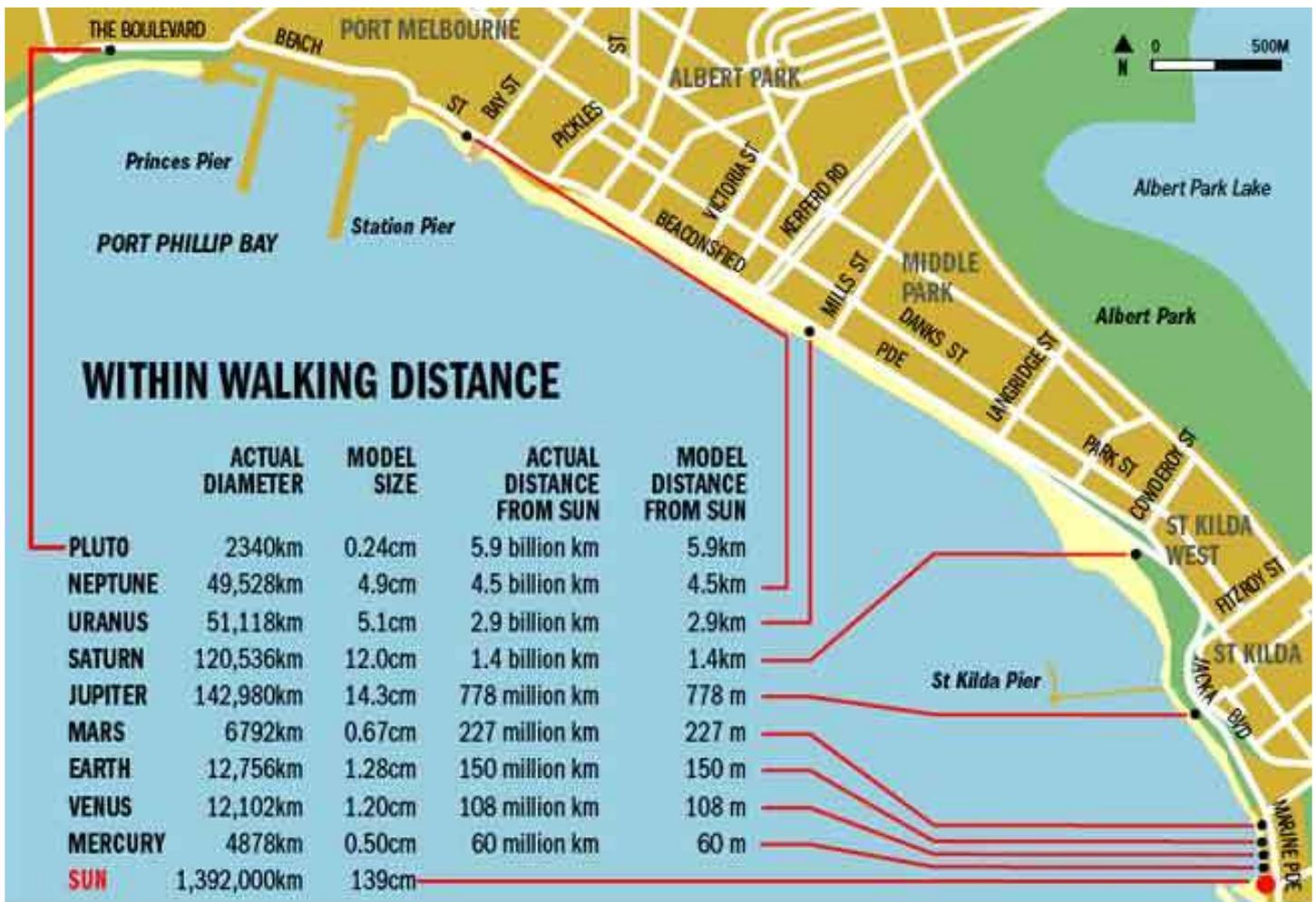
Why a Solar System?

The City of Port Phillip's foreshore has always been a superb location to view the Sun setting on the western horizon. The bay's crescent shape is perfect for a model where the 'Sun' can be viewed from every one of the nine 'planet' locations.

In December 2005 a temporary model of the Solar System was placed on the St Kilda foreshore. The response was overwhelming. The public flocked from all over Melbourne and there was great enthusiasm for a permanent display. A vision developed for a project combining educational, environmental and artistic themes.



The City of Port Phillip, Lonely Planet Foundation, Chris Lansell of Monash University, artist Cameron Robbins



and Scienceworks collaborated to bring that vision to reality in 2008. Education and Science The Melbourne Solar System is the largest educational resource in scale in Australia, a way to communicate scientific knowledge about the Solar System and the Universe for the general public and for schools. Seeing the Earth in its true dimensions highlights its immense isolation and vulnerability. We have no alternative choice in the vastness of space but to care for the rare and precious environment of our only home.

Sand in Space

The beach is a clue to the immensity of the universe. Pick up a handful of sand as you walk. It contains about 10,000 grains. Imagine that each grain is one star like our sun. Reflect that there are about 10 times as many stars as grains of sand on all the world's beaches and deserts combined. Wow! There are an estimated 70,000 million million million stars (seven followed by twenty-two zeros) in the observable universe. Our Sun is just one star out of over 300 billion stars in the Milky Way galaxy. Our galaxy is just one of over 100 billion galaxies in the observable universe which is probably a minuscule fraction of the actual number.

Outer Neckarboo

On our local one-to-one-billion scale, the nearest star would be 35,950 kilometres away. To reach Alpha Centauri, another nearby star, you must travel right around the world once, through Melbourne again and 645 km further north to Neckarboo in central NSW. The Melbourne Solar System model will be the largest in the world when it adds a model to Neckarboo. Perhaps other places in Australia and even the world will join our expanding universe by adding more models to their celestial towns!

Remember:

Every millimetre you walk is 1000 kilometres!
 Every centimetre you walk is 10,000 kilometres!
 Every metre you walk is 1,000,000 kilometres!
 When you walk 5.9 kilometres from the Sun (Marina Reserve) to Pluto (Port Melbourne), you have travelled 5.9 billion kilometres!

The Sun is a star one of 300 billion in the Milky Way galaxy and is about five billion years old. All life on Earth depends on the light and heat from the Sun. It is 110 times the



Earth's diameter. It has an estimated surface temperature of 5,800C and a core temperature of 20,000,000C. It is a middle-aged star, at least 4.6 billion years old but has an expected lifespan of 10-12 billion years. The Sun contains 99.86% of the total mass of the solar system and its gravity holds all of the planets in orbit.

Mercury is the closest planet to the Sun. Like the Earth's moon it is a grey barren world covered in a thick layer of dust and heavily scarred with impact craters.

Venus is similar in size to Earth. It is a hellish world with crushing pressures, scorching temperatures and sulfuric acid rain. Venus passes or 'transits' between the Earth and the Sun; next in 2012.

Earth is very special, the only place we know of that supports life. It lies within the Sun's 'habitable zone', has liquid water on its surface with life-supporting concentrations of chemicals. Continents and oceans float on the thin outer crust of solid rock. The Moon is about one quarter the diameter of the Earth.

Mars has inspired imagination of advanced civilisations. Its famous red colour is due to iron oxide on the surface.

Jupiter contains more than twice as much material as all the other planets combined. The atmosphere is thousands of kilometers deep with hydrogen helium, methane and ammonia. It has over seventy moons. **Saturn**, one of the four gas giants, is famous for its spectacular system of rings made from billions of icy rocks, sized from small grains to kilometres wide. It has about sixty moons.

Uranus, its equator has been tilted more than ninety degrees to its orbit. Perhaps early in its history it collided with a huge unknown object. In 1781 it was the first new planet to be discovered since antiquity.

Neptune is a distant gas giant. It is bluer than Uranus because it has more methane. It has eleven moons

Pluto, discovered in 1930, is a tiny world, smaller than Earth. Charon, one of its three moons, is half the size of Pluto.

The New Horizons spacecraft on the way to Pluto will reach the planet in 2015, after a nine year voyage. It will study Pluto, Charon and other 'Kuiper Belt' Objects.

For more information go to: www.melbournesolarsystem.com.au

| Planets | Walking Distance From 'Sun' | Diameter |
|--------------|-----------------------------|----------|
| Sun | 0 metres | 139 cm. |
| Mercury | 60 meters | 0.5 cm. |
| Venus | 108 meters | 1.2 cm. |
| Earth | 150 meters | 1.28 cm. |
| Earth's moon | 38 centimeters from earth | .34 cm. |
| Mars | 227 meters | 0.67 cm. |
| Jupiter | 778 meters | 14.3 cm. |
| Saturn | 1.4 kilometers | 12.0 cm. |
| Uranus | 2.9 kilometers | 5.1 cm. |
| Neptune | 4.5 kilometers | 4.9 cm. |
| Pluto | 5.9 kilometers | 0.24 cm. |

