OTAGO CENTRAL INTERPLANETARY CYCLE TRAIL

Explore your Solar System

Journey through a 100,000,000 : 1
(one hundred million to one)
accurate scale model
of our Solar System

$1.00

Donate to our trail
Purchase a Glow In The Dark
Wristband - $5

The idea of developing a scale model of our Solar System on the Otago Central Rail Trail came from Ian C Begg, the grandson of John C Begg, co-founder of Dunedin's Beverley-Begg Observatory.

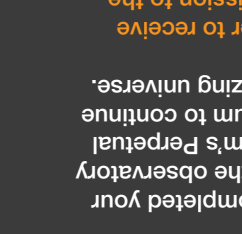
We gratefully acknowledge the assistance of Associate Professor Antoni Moore, University of Otago, School of Surveying.

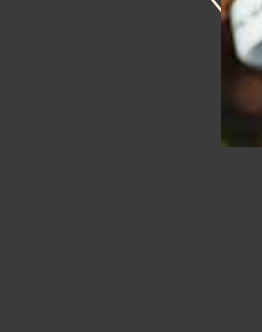
When you have completed your cycle journey, visit the observatory and Otago Museum's Perpetual Guardian Planetarium to continue exploring our amazing universe.

Present this flyer to receive
$2 off Adult admission to the
Perpetual Guardian Planetarium
and a 10% discount at the
Otago Museum Shop.

EQUINOX SPECIAL

Around the March and September equinoxes, between 0800 and 0900 hours, the shadows of the Earth and Moon will merge on our eclipse shadow board. This is the Interplanetary Cycle Trail's very own lunar eclipse!





WELCOME TO THE OTAGO CENTRAL INTERPLANETARY CYCLE TRAIL

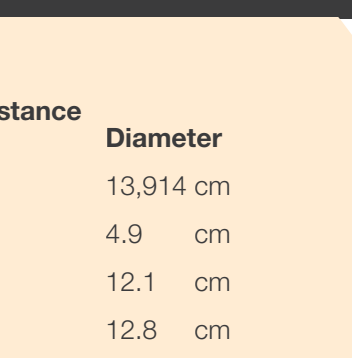
Explore the vastness of our Solar System as you journey through time and space!

We have shrunk our Solar System by a factor of one hundred million to one (100,000,000 or 1 x 10^8) and mapped it onto the trail.

The model accurately reflects the size of the Sun, planets and our Moon, and the distances between them.

The centre of our Solar System, the Sun, is located in Ranfurly and each planet's location is based on its average orbital (direct) distance from the Sun.

	Orbital Distance from Sun		Diameter	
Sun (Ranfurly)	0.0		13,914	cm
Mercury	0.58	km	4.9	cm
Venus	1.08	km	12.1	cm
Earth	1.50	km	12.8	cm
Moon	3.84	m (from Earth)	3.5	cm
Mars	2.28	km	6.8	cm
Jupiter	7.78	km	142.9	cm
Saturn	14.25	km	120.5	cm
Uranus	28.74	km	51.1	cm
Neptune	45.01	km	49.5	cm
Pluto (dwarf planet)	59.06	km	2.4	cm



0km
1,000km
2,000km
3,000km
4,000km
5,000km
10,000km
15,000km
20,000km

A SENSE OF SCALE

Contemplate the immensity of space as you enjoy your journey through this majestic landscape.

At this scale of one hundred million to one:

- 1 cm becomes 1000 km
- Each step you take is the same as travelling 75,000 km through the Solar System.
- Each revolution of your bike wheel will propel you over 200,000 km.
- The closest star to our Sun (Proxima Centauri) would still be 400,000 km away — more than the real-life distance from the Earth to the Moon.

THE RAIL TRAIL TIME WARP

We can also scale back time by the same amount. If we slow the speed of light (300,000,000 m/s) by a factor of one hundred million it becomes a leisurely 10.8 km/hr… so you may find yourself time-travelling into the future as you cycle along!

In this scaled time warp a single second equates to over three years of real time, so our average life span would be just 26 seconds — in fact *Homo sapiens* would have existed for less than 18 hours, and dinosaurs would have died out just eight months ago.

Even the speed of sound (340 m/s in air) slows in our shrink-wrapped Solar System. It would take nearly a year for your bike bell to be heard just 100 m away!

CURIOUS MINDS HE HIHIRI I TE MAHARA

otagomuseum

Department of Conservation Te Papa Atawhai

DODD-WALLS CENTRE for Photonic and Quantum Technologies

Otago Central Rail Trail Trust

OTAGO CENTRAL RAIL TRAIL

New Zealand's **original** Great Ride©

Map Key:

Otago Central Rail Trail

Intersection denotes planet location on trail

AU = Astronomical Unit
The distance from the Earth to the Sun (nearly 150 million km)

Sun
Age: 4.6 Billion Years
Type: Yellow Dwarf
Diameter: 1,392,684 km (109 x diameter of Earth)
Mass: 333,060 x Earth's
Surface Temperature: 5,500 °C

1 Mercury
Diameter: 4,879 km
Relative Mass: 5.5% of Earth
Moons: None
Orbit Distance: 57,909,227 km = 0.39 AU
Orbit Period: 88 days
Surface Temperature: -173 to 427°C

2 Venus
Diameter: 12,104 km
Mass: 81.5% of Earth
Moons: None
Orbit Distance: 108,209,475 km = 0.73 AU
Orbit Period: 225 days
Surface Temperature: 462°C

3 Earth and Moon

Earth
Diameter: 12,756 km (Equatorial); 12,714 km (Polar)
Relative Mass: 100%
Moons: 1 (our Moon)
Orbit Distance: 149,598,262 km = 1 AU
Orbit Period: 365.26 days
Surface Temperature: -88 to 58°C

Moon
Diameter: 3,475 km
Mass: 0.01% of Earth
Orbits: The Earth
Orbit Distance: 384,400 km
Orbit Period: 27.3 days
Surface Temperature: -233 to 123 °C

4 Mars
Diameter: 6,772 km
Mass: 10.7% of Earth
Moons: 2 (Phobos & Deimos)
Orbit Distance: 227,943,824 km = 1.52 AU
Orbit Period: 687 days (1.9 years)
Surface Temperature: -153 to 20 °C

5 Jupiter
Diameter: 142,984 km (Equatorial); 133,709 km (Polar)
Mass: 318 x mass of Earth
Moons: 67
Rings: 4
Orbit Distance: 778,340,821 km = 5.20 AU
Orbit Period: 4,333 days (11.9 years)
Effective Temperature: -148 °C

6 Saturn
Diameter: 120,536 km (Equatorial); 108,728 km (Polar)
Mass: 95 x mass of Earth
Moons: 62
Rings: 30+ (7 Groups)
Orbit Distance: 1,426,666,422 km = 9.54 AU
Orbit Period: 10,756 days (29.5 years)
Effective Temperature: -178 °C

7 Uranus
Diameter: 51,118 km (Equatorial); 49,946 km (Polar)
Mass: 15 x mass of Earth
Moons: 27
Rings: 13
Orbit Distance: 2,870,658,186 km = 19.19 AU
Orbit Period: 30,687 days (84.0 years)
Effective Temperature: -216 °C

8 Neptune
Diameter: 49,528 km (Equatorial); 48,682 km (Polar)
Mass: 17 x mass of Earth
Moons: 14
Rings: 5
Orbit Distance: 4,498,396,441 km = 30.10 AU
Orbit Period: 60,190 days (164.8 years)
Effective Temperature: -214 °C

9 Pluto (Dwarf Planet)
Diameter: 2,372 km
Mass: 0.17 x mass of our Moon
Moons: 5 (including Charon)
Orbit Distance: 5,874,000,000 km = 39.26 AU
Orbit Period: 246.0 years
Surface Temperature: -229°C

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Lake Dunstan
DUNSTAN
Lauder Creek
Manuherikia River
Becks
Matakanui
Thomsons Ck
Muddy Ck
Lauder
Omakau
Chatto Creek
Ophir
Chatto Creek
RAGGEDY RANGE
Poolburn
Poolburn Gorge Tunnels & Viaduct
Auripo
Ida Valley
Oturehua
Hayes Engineering
Golden Progress Mine
Oteake Conservation Park
Gorge Ck
IDA RANGE
Ida Burn
Idaburn Dam
NORTH ROUGH RIDGE
Wedderburn
Naseby
Kyeburn Diggings (Danseys Pass)
Wether Burn
Cross Eden Ck
Hog Burn
Kye Burn
Ranfurly
Kyeburn
Waipiata
Kokonga
Daisybank
Tiroiti
Prices Creek tunnel
Hyde
Patearoa
Taieri River
Moa Creek
Galloway
Lower Manor Burn Dam
Manor Burn
Clyde
Clyde railhead
Cromwell-Mata-Au River
Alexandra
Otago Museum Perpetual Guardian Planetarium
ROCK AND PILLAR RANGE
Scrub Burn
Six Mile Ck
Rock and Pillar
TAIERI RIDGE
Ngapuna
Middlemarch
Taieri Gorge Railway
Salt Lake
Sutton
Otago Museum Perpetual Guardian Planetarium
0 5 10km