

Space 2108, Background (Revised)

Earth

- By 2108 Earth's atmosphere is becoming increasingly uninhabitable.
- Climate change has left vast areas too hot to inhabit, and led to mass extinctions.
- It has also created vast deserts where little life grows.
- Tech nations (US, Europe, India and China) have developed farming modules to grow food, but there was not enough to support all the nations.
- Those too poor were left to their own devices.
- Civil war, mass migration, and the rise of far-right governments led to mass migration, and mass killings.
- Only Russia and Canada really benefited from climate change.

Into Space

- China has become the dominant super power and has reached out to the galaxy to try and find a sustainable new planet.
- The US is also exploring space, but is now behind the curve.
- The European Space Agency is exploring and is the third power in space.
- The UK has a limited deep space capability.
- The Russian space program has collapsed, but they don't care because climate change has made northern Russia a pretty fertile place.

Distances – The Solar System

- The Earth is 93 million miles from the Sun on average (1AU¹).
- Mars is 34.4 million miles from Earth (0.37AU).
- The solar frost line (beyond which gas giants form) for a G Type star of the Sun's size is at 5AU.
- The Inner Solar System is : Mercury (0.45AU), Venus (0.72AU), Earth (1AU) and Mars (1.37AU).
- The Outer Solar System is : Jupiter (5.2AU), Saturn (9.6AU), Uranus (19.2AU) and Neptune (30.2AU).
- Titan is a moon of Saturn made of rock and ice with a dense nitrogen atmosphere and 0.138g of gravity.
- The Trans-Neptune Region is the third (outer) region of the solar system, made up of large numbers of small planets, most about one fifth the size of the earth or smaller.
- This region extends between 30 and 50 AU from the Sun.
- Beyond the Trans-Neptune Region is the Oort Cloud, which contains a number of rogue planets.

Solar System Bases & Colonies

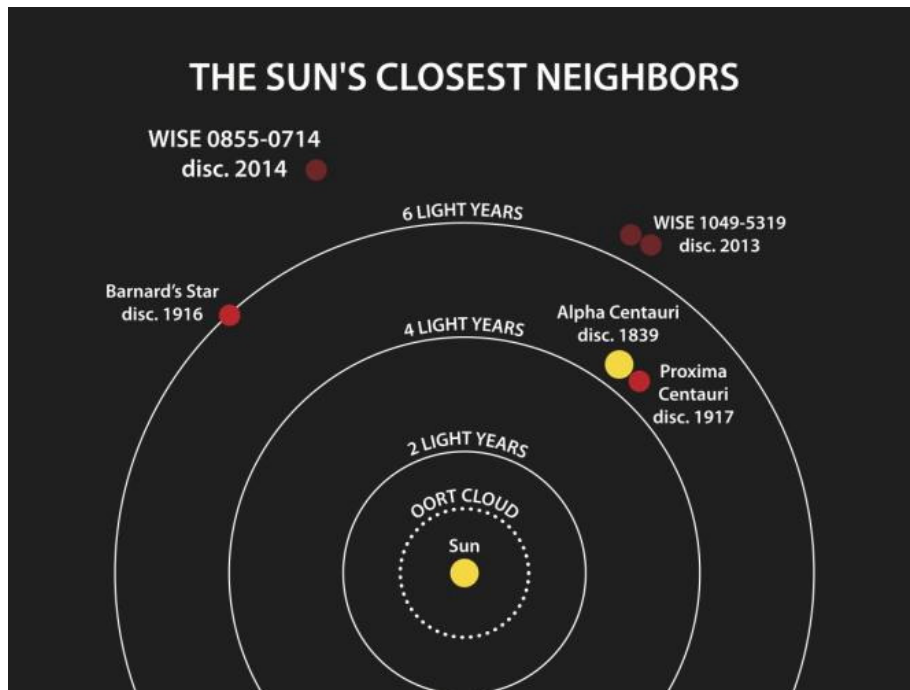
- Earth is home Chinese, US, European and UK surface spaceports² (Class V), plus orbital spaceports (Class IV)
- Mars (0.37AU from Earth) has been settled by all the major players, and a few of the minor ones. It was the first place to be colonised and was the prototype for artificial habitation. It is divided into national regions, each with a Class III spaceport. There is a multinational freight spaceport (Class III) in orbit.
- Titan (~8.6AU from Earth) has been settled with two surface re-supply and habitable spaceports (Class II). One is Chinese, the other is an Anglo-Euro-American military base with connected trade port.
- Sedna (506AU) is a dwarf planet (approximately 625 miles in diameter) located in the Inner Oort Cloud. It is home to a Chinese military spaceport (Class IV) used as a launching point for deep space operations. It is also home to an international spaceport (Class II).
- ISS ATLANTIC (550AU) is a major orbital spaceport (Class IV) in the Inner Oort Cloud and used by the US, Europe and the UK for deep space missions and supply.
- ISS PACIFIC (4,000AU) is another major orbital spaceport (Class III). This orbits in the central Oort Cloud. It is a fully US venture, although UK and European vessels do use it as a stopping point.

¹ 1 AU is the distance from the earth to the sun, 93m miles

² Sp171

Distances – The Sun's Neighbours

- The nearest stars are the Alpha Centauri stars (Rigel Kentaurus [A], Toliman [B] & Proxima Centauri [C]).
- Rigel Kentaurus (Alpha Centauri A) and Toliman (Alpha Centauri B) are binary stars 1.1 times the size of the Sun and 4.344 Light Years (274,719 AU) away from it.
- Proxima Centauri (Alpha Centauri C) is a Red Dwarf (only 12.5% of the Sun's mass) located 4.25 Light Years (268,775AU) from the Sun.
- Proxima Centauri orbits Alpha Centauri AB every 550,000 years.



Caerilium

- Formerly known as Proxima B.
- The planet is mostly habitable, although the temperatures are much lower than earth due to Proxima Centauri being a Red Dwarf.
- It is 1.3 times the size of Earth, has 1g, and is located 4.27 Light Years away (270,039AU).
- Travel Times (at subluminal (STL) speeds)
 - Navy Corvette (0.14g) – 11 Years, 7 Months
 - Small Ferry (0.1954g) – 9 Years, 1 Month
 - Small Cargo Ship, Loaded (0.0181g) – 30 Years, 11 Months
- The unassisted time to orbit for a space vessel is multiplied by 1.3.
- It has plenty of water and is approximately the same size as earth, but is further from it's sun.
- The summer temperature at the equator is -5°C (23°F), whilst the winter temperature is about $-40^{\circ}\text{C}/\text{F}$.
- At the poles the temperature range is -60°C (-76°F) to -120°C (-184°F).
- The planet's surface was uninhabited and there is little sign of surface life due to the constantly freezing temperatures.
- A number of creatures have been found living in the deep oceans.
- The planet was first landed on in 2068 and has been named *Caerilium*.
- By 2085 China, the US, Europe and the UK had all established colonies on the land masses within 22.5° either side of the equator (a band approximately 5,000 miles wide).
- The population of *Caerilium* is fairly small as all food has to be grown in insulated farming modules – although there are now deep robotic subs fishing as well.
- All the colonising powers have started building giant biomes powered with nuclear fusion and geothermal energy.
- Those producing crops are already underway, but others have been established to provide parks.
- Two orbital space stations have also been established (Class IV spaceports) for military and freight. One run by the Chinese, and the other is a joint venture between the other three powers.
- Each power also has a Class IV spaceport located on the surface for vessels capable of re-entry.