Heading into Space

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What We Have Learned by Heading into Space?

Read any debate about space exploration, and this question will invariably come up.

"Why should we be spending money exploring space when there are so many problems here on Earth that we need to solve first?"
It's a tricky one.

One answer is that reaching for new heights often creates new solutions, new opportunities and elevates hope back on the ground.

We have learned so much about our own planet and the expanding universe by exploring space. If mankind had not explored space and used telescopes then we would not have found out the following about:

The Earth

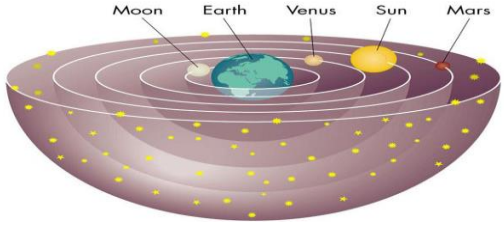
- A greater understanding about the rotation of the Earth, the orbit of the Earth around the Sun and how this affects time on earth. e.g. one rotation of the Earth is one day, one orbit of the Sun by the Earth is one year etc.
- It has allowed meteorologists to predict and monitor of the weather. Satellites have been put into orbit to monitor the Earth's weather systems and allows us to predict natural disasters e.g. tsunamis and hurricanes
- Allowed the monitoring of the polar ice caps and enabled a plan to be put in place to minimise their erosion and prepare for the consequences of the erosion i.e. rising water levels and the destruction of natural habitats for polar animals.

The Universe

- Greater understanding of the origin of the Universe
- The Universe is still expanding
- Estimate the age of the universe

Through exploration our understanding of the Universe has changed. There were a few misconceptions before our understanding shaped our belief of the expanding universe and the model of it we have today. Scientists at certain times thought:

- The Earth was thought to be flat - it's round.
- The Earth was thought to be the centre of the Universe (see diagram below) - it's not.
- The Sun was thought to be the centre of the Universe - it's not.
- The Milky Way was thought to be the centre of the Universe - It's not.
- The centre of the Universe was thought to have a definite location - it doesn't.



N5

Evidence to Support our Understanding of the Universe

From an earlier section titled 'The Big Bang Theory', it is stated that Physicists thought that at one second old, stable particles called protons and neutrons started to form. These particles form our model of the nucleus of the atom. However, something was missing from that model called the Higgs Boson. Professor Higgs, a British physicist wrote in 1969 that the Higgs Boson's role is to give the particles that make up atoms their mass. Without this mass, they would zip around the cosmos, unable to bind together to form the atoms that make stars and planets – and people.

On 4th July 2012, Physicists working at CERN at the world's largest particle accelerator – The Large Hadron Collider – announced the discovery of the Higgs Boson – further evidence to support our understanding of the universe.

Some Physicists relate this finding to other landmarks in Scientific history e.g. Neil Armstrong walking on the moon.