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Homework Assignment 4

The Earth is blue

"The earth is blue.. it is amazing" this was said by Yuri Gagarin in 1961 when he became the first human to be in space and see the Earth from there (Gagarin, 1961). Seen from space, the Earth is the colour blue, and it has been for over 4 billion years. It is blue because of the oceans, with 70 percent, dominating our world's surface (Miall 1995). However, only in 1967, the first full-disk colour picture of Earth was made by the ATS-3 satellite to show everyone how we would see the Earth from space (Warnecke & Sunderlin, 1968). More impressively, in 1990, at a distance of 6 billion kilometres away, a picture of the Earth was taken as part of NASA's Family portrait series (Kosmann et al., 2020). This picture now-famously named the 'pale blue dot' by Carl Sagan shows a tiny blue dot appearing as the Earth in space. In my own opinion, this is a beautiful way to conclude that, looking from a distance, the Earth indeed looks blue.

The Earth's characteristic of appearing blue is due to the water cycle's interactions with plate tectonics, the greenhouse effect, and the solar system's configuration (Mail, 1995). The plate tectonics helps maintain Earth's surface temperature in the range that allows surface waters to be liquid. Greenhouse gases trap radiation within the Earth's atmosphere and avoid the evaporation of liquid water. Lastly, the giant impact between the young Earth and a meteored melted our planet's frozen surface (Morino, 2017). Furthermore, with our atmosphere, the light scatters when it passes through the air, reflecting the colour blue in the spectrum to us (Del Genio, 2003). With the oceans covering the planet's surface since its birth and creating an atmosphere in which we can breathe, the Earth will always be our blue planet.

References

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