**ESM803 – Climate Change Impact and Adaptation in the Pacific**

**Assignment 2 – Due 14 October**

**Essays – You are to choose 3 topics from the list given below, and write 3 essays. Each essay should be about ¾ -page to 1 page ~500 words. Your essay should include explanations of the terms we use in climate science, which we have been discussing in class.**

Use the Reference text ‘Sustainability – Comprehensive Foundation’, By Tom Theis and Jonathan Tomkin, plus lectures and videos in Moodle)

**Essay Topics:**

1. ‘Albedo positive feedback’ – Describe the mechanism whereby the high albedo of snow would produce the phenomenon known as the ‘albedo positive feedback (Refer uploaded pdf ‘Causes of Climate change – slides 19- 20).

2. Mars is colder than the Earth. Venus, on the other hand is much hotter with average surface temperatures of around 450oC. Venus is closer to the Sun than the earth, and so receives about twice as much solar radiation. Venus’s atmosphere is also different than the Earth’s, as it is much thicker and mainly consists of carbon dioxide.

Using the terms **insolation** and **greenhouse gases**, can you suggest reasons why Venus is so hot?

3. Explain how deforestation can lead to both a warming effect and a cooling effect for global temperatures?

4. Oxygen makes up over 20% of the Earth’s atmosphere, while carbon dioxide makes up less than 0.04%. Oxygen is largely transparent to both visible and infrared light. Explain why carbon dioxide is a much more important greenhouse gas in the Earth’s atmosphere than oxygen, even though there is much more oxygen than carbon dioxide.

5. The ‘Milankovitch Cycles, the volcanic eruptions do affect the climate of the earth. Explain how these two factors affect the climate.