Principles of Planetary Climate

EC2213

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1 Day 1 Assignments

1.1 Solution 3

1.1.1 Atmospheric CO_2 concertrations

This can increase due to volcanic activities

1.1.2 Planetary Albedo

- Melting of ice will cause the albedo to decrese
- Increase in greenhouse gases particularly Co_2(volcanic activities) will cause the ice to melt hence lower albedo
- Due to higher albedo of ice the earth will keep on cooling generating more ice and higher albedo

1.2 Solution 4

It would increase which can be quantified by.

- Volume of atmosphere is approx 4.2 billion km^3 vs the quantity of water which is 1.3 billion km^3. Since water expands 1600 times when turned into vapour, the approx increase in volume of atmosphere would be 1000%, thus increased pressure
- The decresed water will increase temperature because it has almost half the specific heat as that of water. Thus increase pressure
- The broken ocean heat transport system cannot be replaced by the transport of heat by water vapour as it cant carry enough heat due to lesser specific heat. Thus areas closer to the equator will experience an even higher temperature thus higher pressure.

Assumption 1.1. None of the evaporation causes air to escape into space.

Assumption 1.2. None of the water vapour condenses