Atmosphere Course Solo Project Reflection

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Through preparation and presentation of my topic, I learned a lot about sky colour, light scattering and the atmosphere in general. A few key points that I took home are the following. First, the physical definition of light scattering was very interesting to me. I never knew that charged particles would actually begin to oscillate at the same frequency as the light hitting them and become polarized emitters of that light. Contrary to this, I had always thought sunlight just bounced off of particles in the atmosphere like when light hits a mirror. Second, the idea of "blue hours" before sunrise and after sunset were very new to me. I had sometimes noticed that the sky turned blue again right after sunset but didn't really think anything of it, so learning about the physical process of Chappuis absorption behind this was quite neat. Finally, just being able to gain an intuition about sky colour from atmospheric makeup and incident sun position was very valuable. I can apply this to both our sky and other planets.

During Luke's talk about gravity waves in the atmosphere, i learned a lot about fluid dynamics concepts such as hydro-static equilibrium. I've never taken a course on fluid dynamics so a lot of the concepts he was discussing were new to me. I enjoyed how he tied in his concept to the clouds we saw in the sky on the first day of class as it gave me a reference from my personal experience to help understand these concepts.

Kasia's presentation was an interesting one, as parts of her talk related to Callum's talk (eg. when discussing the Chapman Function) while other parts related to my talk (eg. when discussing the ionosphere). The charged particles in the ionosphere were some great examples for the charged particles I was discussing that sunlight would scatter off of.

When Callum did his talk on the Chapman function, I thought he did a great job explaining a complex mathematical topic with pictures and words instead of just equations. Callum clearly understood the purpose and use of the Chapman function for atmospheric absorption modelling as he outlined these very well. Finally, I liked how he took a concept I was familiar with (secant functions and their asymptotic nature) and showed how it's presence in the function effects the atmospheric model.

I found Vassura's presentation on the greenhouse effect useful, as this is something we hear about frequently in the news or in popular culture because of it's role in global warming and climate change. I found it eye opening when he showed the temperature calculation for Earth vs Venus as it made me realize our atmospheric volume is only 2 orders of magnitude off of Venus'. We are really not that far away from a 460 degree celsius planet, so it really put into perspective the extreme effect the atmosphere has on climate.

Finally, in Victoria's presentation I learned about how clouds and subsequent raindrops form. I have always wondered what clouds really were and what they were made of, and this presentation certainly taught me about that. Everything really clicked for me when I heard that the water still needs a certain particulate like dust to condense on and form the cloud. Also, I thought using pictures to help explain raindrop formation was a great idea as it really makes the process seem simple.

Overall, I enjoyed presenting and learning about our atmosphere and it's various physical processes.