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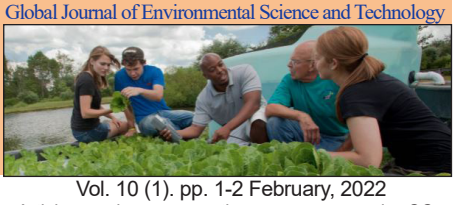

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Greenhouse gases effect on earth's energy and climate

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DESCRIPTION

The sun is the principal source of energy for the earth's atmosphere. Some of the incoming sunlight is reflected back into space, particularly by brilliant sur-faces like ice and clouds, while the rest is absorbed by the surface and atmosphere. Most of this absorbed solar energy is released back into heat (long wave or infrared radiation). The atmosphere gradually ab-sorbs and returns heat, some of which escapes into space. Any disturbance to this balance of incoming and outgoing energy will have an impact on the atmo-sphere. For example, small changes in energy pro-duction from the sun directly affect this balance. If all the thermal energy released from the surface were to travel directly through space, increaese the average surface temperature. Atmospheric greenhouse gases, including atmospheric water vapor, carbon diox-ide, methane, and nitrous oxide, absorb and release heat energy from all directions (including downward) to keep the Earth's surface and bottom atmosphere warm. Without this greenhouse effect, the life we know would not have evolved on our planet. Adding more greenhouse gases to the atmosphere makes it more effective at preventing heat from going into space. When the energy release is less than the en-ergy entering, the earth warms up until a new equilib-rium is formed.

GREENHOUSE GASES EFFECT ON EARTH

Greenhouse gases released by human activity change the Earth's energy balance and thus its atmosphere.Humans also affect the environment by changing the nature of the earth's surface (e.g. deforestation for ag-riculture)and emissions of pollutants that affect the size and type of particles in the atmosphere. Scientists have concluded that when all human and natural fac-tors are taken into account, the Earth's climate balance shifts toward warming, with the largest contributor be-ing CO_2.

Although the greenhouse effect is necessary to main-tain global warming, as we know it, if more greenhouse gases enter the atmosphere, the delicate equilibrium formed by the energy budget will be damaged. For ex-ample, when more carbon dioxide is added to the at-mosphere, the amount of energy absorbed and re-leased by the atmosphere increases. Since any offset difference in the Earth's energy balance must lead to a temperature change to take into account, once again the Earth's temperature rises to create equilibrium. The addition of carbon dioxide to the atmosphere enhances the effect of the greenhouse effect and raises the tem-perature, thus destabilizing the Earth's temperature, so it is called climate forcing.

Carbon dioxide poses such a risk in terms of damag-ing the balance of the Earth's energy budget because it absorbs a significant amount of thermal energy. By adding more carbon dioxide to the atmosphere, the atmosphere is more "closed" to the energy passing through it, absorbing more. Therefore, instead of the thermal energy the energy will allowed to escape into space, it is absorbed by carbon dioxide and used to heat the earth.

The changes that have taken place so far in the atmosphere continue to occur as the energy imbalance increases with the release of greenhouse gases into the atmosphere. Surface temperatures have risen be-tween 0.6 and 0.9 degrees Celsius and estimates sug-gest that temperatures are likely to rise by at least 0.6 degrees in response to the ongoing energy imbalance. Reducing greenhouse gas emissions is important be-cause it helps to reduce this imbalance, ensuring that it has the sole impact that the greenhouse effect has on the energy budget.

CONCLUSION

Greenhouse gases absorb infrared radiation, thereby trapping energy in the atmosphere. The atmosphere radiates energy on the surface at an average rate above the incoming solar radiation rate. The atmospheric lifetime and global warming potential of each greenhouse gas will be measured.