

## Interactive comment on "Ice melt, sea level rise and superstorms: evidence from paleoclimate data, climate modeling, and modern observations that 2 °C global warming is highly dangerous" by J. Hansen et al.

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Backradiation exists only in the formula to calculate the net potential driving force of energy flow from hot objects to cold objects. It does one exist in the real world and no one has ever measured backradiation from cold objects to hot objects. The same is true for Ohm's Law, Fick's Law, and hydraulics. They all have back-flow terms in the calculation formulas. In realty, there is no back electrical current, back diffusion flux, or back water flow. There is only a flow from high potential to a low potential whether it is

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radiation, electrical current, diffusion, or hydraulics.

For radiation from the surface to outer space, there is no backradiation term in the formula because outer space is at about zero absolute.

For the atmosphere, observation has not shown any backradiation. Infrared astronomers do not see it, engineers do not account for it in the calculations, and the lapse rate equation does not have any radiation terms. This equation is equality between enthalpy and potential energy of the atmosphere. No radiation terms exists in the formula. Only radiative forcing and greenhouse gas effect proponents have backradiation in their calculations. Why is the climate science so different from the rest of science and engineering disciplines? Air is the same is not so?

Heat transfers by conduction, convection, and radiation; radiative forcing is not one of them. This is what is in the books and the world goes by these basics. Practical applications indicate that radiation exists between two objects separated from each other. It flows from hot objects to cold objects. When these objects are in contact with each other, radiation ceases. Only conduction and convection can exist between two objects in contact with each other. Therefore, only convection can exist between atmospheric air layers and the surface for they are in intimate contact with one another. Radiative forcing from the atmospheric air layers to surface can only be a fiction, it is not in the books of science and engineering.

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