

SRI International

		Means...	Which could in turn be a sign of...	Could this trend be an effect of climate warming?	Could this trend also be contributing to more climate warming in the region?	Could this trend also be contributing to less climate warming in the region?	Other reasons for the trend?
Higher values of...	<b>Net Longwave Radiation</b> (a measure of the difference between outgoing longwave radiation radiating upward from the earth surface and atmospheric longwave counter-radiation radiating downward toward the earth surface, expressed in absolute values rather than percentages)	Of the amounts of infrared radiation/heat that are emitting in all directions from the Earth's surface, large amounts are returning to space and small amounts are remaining in the troposphere due their being blocked from escaping by greenhouse gases.	Cooling trend	Unlikely, unless global warming is causing a greater presence in the region of certain types of clouds that block radiation from entering the troposphere. Greater cloud cover would come from greater retention of water vapor in the atmosphere.	Unlikely	Yes, if the cooling is leading to more water retention at the surface, which could be good for regional plants, which absorb much more carbon out of the atmosphere than they emit. Yet, too much cooling could be bad for regional plants as well. It all depends on how much cooling is occurring and what type of biome exists in the region.	Depending on the times and places being examined, the presence of large amounts escaping could simply be a sign of more hitting the surface rather than a sign of a stronger greenhouse effect. For example, when comparing longwave radiation during winter months in Alaska and Mexico, one is likely to find larger amounts returning to space in Mexico than in Alaska but that is simply because in the Arctic during the winter, there is very little solar radiation hitting the surface.
Lower values of...	<b>Net Longwave Radiation</b> (a measure of the difference between outgoing longwave radiation radiating upward from the earth surface and atmospheric longwave counter-radiation radiating downward toward the earth surface, expressed in absolute values rather than percentages)	Of the amounts of infrared radiation/heat that are emitting in all directions from the Earth's surface, small amounts are returning to space and large amounts are remaining in the troposphere due their being blocked from escaping by greenhouse gases.	Warming trend	Yes, it could be evidence of greater amounts of greenhouse gases in the troposphere, keeping greater amounts of heat from escaping.	Yes, because larger quantities of greenhouse gases contribute to other natural phenomena such as melting of ice caps and permafrost, which then contribute to even more warming and more CO2 greenhouse gases in the troposphere.	Perhaps in some regions. For example, in a temperate area such as the Northeastern U.S., with its Great Lakes, global warming could in the winter cause increased clouds, due to less lake water freezing and consequently more evaporation. Greater cloudiness could lessen the impact of global warming in the region and actually contribute to a temporary cooling.	Depending on the times and places being examined, the presence of small amounts escaping could simply be a sign of less hitting the surface rather than a sign of a stronger greenhouse effect. For example, in the Arctic, winter time will show small amounts returning to space than in winter but that is simply because in the Arctic during the winter, there is very little solar radiation hitting the surface. It would not be a sign of more greenhouse gases in the summer than in the winter.

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Higher values of...	<b>Net Shortwave Radiation</b> (a measure of the difference between the amount of incoming short wave ultraviolet radiation being absorbed at the Earth surface and the amount reflected back into space - expressed in absolute values)	More of the incoming ultraviolet radiation is being absorbed and re-emitted by the land as heat (i.e., infrared radiation) than is being reflected back into space.	Less albedo, hence increasing the amount of heat in the troposphere	Yes because global warming is contributing to the melting of ice and snow surfaces the reflect solar radiation	Yes, because the greater heat that comes from less albedo would in turn contribute to even more melting of snow and ice and even more decreases in albedo - a "positive feedback."	Only if a greater abundance of plant life resulted from the melting of the snow and ice, since plants remove much carbon from the troposphere via photosynthesis.	More of the short wave radiation may be reaching the ground due to fewer clouds in the atmosphere blocking it, hence increasing both the amount of it reaching the ground and the amount of it being reflected back up into space (and thus increasing the absolute value of the difference).
Lower values of...	<b>Net Shortwave Radiation</b> (a measure of the difference between the amount of incoming short wave ultraviolet radiation being absorbed at the Earth surface and the amount reflected back into space - expressed in absolute values)	Less of the incoming ultraviolet radiation is being absorbed and re-emitted by the land as heat (i.e., infrared radiation) than is being reflected back into space.	More albedo, hence decreasing the amount of heat in the troposphere	Unlikely.	Unlikely.	Yes, because more reflection back into space means less being re-emitted as heat into the troposphere.	Less of the short wave radiation may be reaching the ground due to greater numbers of clouds in the atmosphere blocking it, hence lowering both the amount of it reaching the ground and the amount of it being reflected back up into space (and thus decreasing the absolute value of the difference).

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Higher values of...	<b>Photosynthetically Available Radiation (gathered over oceans only)</b>	more solar radiation available for phytoplankton and other ocean plants for photosynthesis	sunnier weather	Possibly, provided that global warming is warming the sea surface temperatures and the warmer sea surface temperatures are making the climate over those ocean areas less cloudy from more evaporation and less condensation	Unlikely	More radiation for photosynthesis means more plant productivity which means greater intake by plants of tropospheric carbon dioxide through photosynthesis, and less carbon dioxide in the troposphere would help to mitigate global warming	
Lower values of...	<b>Photosynthetically Available Radiation (gathered over oceans only)</b>	less solar radiation available for phytoplankton and other ocean plants for photosynthesis	cloudier weather	Possibly, if this trend is over parts of the ocean that are already inclined to be frequently covered by clouds, due to the fact that there is some evidence that global warming may be making dry sunny places even drier and sunnier and wet places wetter	Less radiation for photosynthesis means less plant productivity, hence less absorption by plants of carbon dioxide from the atmosphere, and more retainment of carbon dioxide in the atmosphere, contributing to more global warming.	Unlikely	