		Means...	Could this trend be an effect of climate warming?	Could this trend also be contributing to more climate warming?	Could this trend also be contributing to less climate warming?	Other reasons for the trend?
Higher values of...	**Land surface temperature (daytime average)**	warmer daytime temperatures	Yes	Yes, due to (1) less snowpack and ice cover and hence less albedo (reflected shortwave radiation) or (2) greater respiration of carbon and other greenhouse gases such as methane out of the warmer soil and into the atmosphere. In high latitude regions especially, warmer temperatures lead to less frozen landscapes, most notably where permafrost has stored much carbon over the years. When permafrost melts, the carbon that has been stored in it can diffuse into the atmosphere. Yet, this release of carbon would be at least partially offest by removal of carbon in the atmosphere through photosynthesis in plants that would now be capable of thriving on the formerly frozen landscape. Studies are being done about how much carbon is being removed from the atmosphere through photosynthesis compared to how much is being released into the atmosphere from soil repiration due to permafrost melting and warmer land surface temperatures in general.	Unlikely	In urban areas, warming could be the result of "heat island" effects from black asphalt, air conditioners, motor vehicle exhaust and other products of human development. Another explanation could be that reduced numbers of plants through human destruction of plant life on the surface or prolonged drought would lead to less absorption of incoming solar radiation in plants through photosynthesis and more of it emitted on the land surface as heat.
Lower values of...	**Land surface temperature (daytime average)**	cooler daytime temperatures	Yes, because some areas could experience cloudier and rainier climates, bringing cooler daytime temperatures	Probably not unless perhaps the cooling was so intense that it was leading to extensive loss of plants, which store carbon	Unlikely	The cooling could be a product of (1) human efforts to reduce heat island effects over urban areas (2) human actions to grow more carbon storing plants (especially trees which can store more carbon than for example grasses and shrubs), or (3) greater amounts of irrigation on the surface, which keeps the surface moister and hence cooler during the day.

		Means...	Could this trend be an effect of climate warming?	Could this trend also be contributing to more climate warming?	Could this trend also be contributing to less climate warming?	Other reasons for the trend?
Higher values of...	**Land surface temperature (nighttime average)**	warmer nighttime temperatures	Yes, because some areas could experience cloudier and rainier climates, and this greater moisture could contribute to less cold temperatures at night than in the past due to the fact that the mositure in the air and on the land would cause greater retention of sensible heat during nighttime hours.	Unlikely, and for the same reason as with lower daytime land surface temperatures	Unlikely	The warming could be a product of urban heat island effects. These effects are revealed more by warmer nights than by warmer days because at night human-made surfaces such as asphalt do not absorb the heat from the day like natural ground surfaces would.
Lower values of...	**Land surface temperature (nighttime average)**	cooler nighttime temperatures	Yes, because some areas could experience drier climates, and this could contribute to colder temperatures at night than in the past due to the fact that there would be less mositure in the air to retain the heat	Unlikely, and for the same reason as with lower daytime land surface temperatures	Unlikely	
Higher values of...	**Near Surface Air Temperature**	warmer average temperatures over a 24 hour period	Yes, because long-term trends in warrmer temperatures are a product of more long wave radiation being trapped in the troposphere due to increased amounts of greenhouse gases in it	Unlikely, and for the same reason as with lower daytime land surface temperatures	Unlikely	Due to the fact that these data hide the differences between day and night temperatures, any of the reasons cited above could be factors.
Lower values of...	**Near Surface Air Temperature**	cooler average temperatures over a 24 hour period	Yes, because some areas could experience cloudier and cooler climates	Unlikely, and for the same reason as with lower daytime land surface temperatures	Unlikely	Due to the fact that these data hide the differences between day and night temperatures, any of the reasons cited above could be factors.

		Means...	Could this trend be an effect of climate warming?	Could this trend also be contributing to more climate warming?	Could this trend also be contributing to less climate warming?	Other reasons for the trend?
Higher values of...	**Near Surface Wind Magnitude**	increased windiness	Yes."General storminess around the world, as measured by wind speeds and ocean wave heights, has increased in recent years, with the increase particularly pronounced in winter months. This pattern cannot be explained by natural variability alone, and is consistent with model simulations of a warming climate." (http://climatecommunication.org/wp-content/uploads/2011/09/Extreme-Weather-and-Climate-Change.pdf)	Unlikely	Not by itself, yet changes in wind direction that lead to more or less windiness over a certain region of the world can contribute to seasonal climate cooling. This for example could in recent years be occurring in the Northern Hemisphere due to shifting direction of the wind vortex of the Arctic Oscillation, contributing to both less windy Arctic weather and to extremely cold and snowy weather in northern United States and Europe.	The regular wind and sea surface temperature oscillations of the world such as El Nino, La Nina and the Arctic oscillation continue to exert much year-to-year influence on regional climates and scientists have not yet established firm connections between these oscillations and global warming.
Lower values of...	**Near Surface Wind Magnitude**	decreased windiness	It depends on where. For example, less windiness in Arctic regions during the winter may be explained by a changes in the wind vortex of the Arctic oscillation. Specifically, the higher pressure that is resulting from sunnier warmer Arctic winter weather may be causing the winds to change course in the direction of the lower air pressure occurring in cloudier yet warmer winters in northern United States and Europe.	Unlikely	same as above	same as above

		Means...	Could this trend be an effect of climate warming?	Could this trend also be contributing to more climate warming?	Could this trend also be contributing to less climate warming?	Other reasons for the trend?
Higher values of...	**Fractional Snow Cover** (average fraction of area covered by snow)	larger area covered by snow	Yes, as a product of (1) lakes becoming less frozen in winter, leading to more evaporation over the lakes and more condensation in the form of snow over adjacent areas of land, or (2) shifting in the wintertime direction of the Arctic vortex	Unlikely	Yes, by increasing albedo, causing more solar radiation to be reflected back into space than remain on land and in the troposphere as heat	same as above
Lower values of...	**Fractional Snow Cover** (average fraction of area covered by snow)	smaller area covered by snow	Yes, as a product of warmer temperatures over land leading to more precipitation falling as rain rather than snow	Unlikely	Unlikely	same as above

		Means...	Could this trend be an effect of climate warming?	Could this trend also be contributing to more climate warming?	Could this trend also be contributing to less climate warming?	Other reasons for the trend?
Higher values of...	**Snow Depth** (how deep the snow is on average over the area)	deeper snow over an area	Yes, as a product of (1) lakes becoming less frozen in winter, leading to more evaporation over the lakes and more condensation in the form of snow over adjacent areas of land, or (2) a shifting in the wintertime direction of the Arctic oscillation	Unlikely	Yes, but only in the sense that a deeper snowpack may lead to a longer lasting snowpack, and hence contribute to longer periods of albedo from snow cover	same as above
Lower values of...	**Snow Depth** (how deep the snow is on average over the area)	shallower snow over an area	Yes, as a product of warmer temperatures leading to more frequent snow melting during the winter months and less overall winter snow pack	Yes, because a shallower snowpack may lead to a shorter lasting snowpack, and hence contribute to shorter periods of albedo from snow cover	Unlikely	same as above
Higher values of...	**Snow Mass**	thicker wetter snow	Yes, because wetter snow falls at warmer temperatures than does dry fluffy snow	Unlikely	Unlikely	same as above
Lower values of...	**Snow Mass**	fluffier, drier snow	Unlikely	Unlikely	Yes, but only if the colder fluffier snowpack is accompanied by colder temperatures and longer lasting snow cover, all of which would contribute to more albedo	same as above

		Means...	Could this trend be an effect of climate warming?	Could this trend also be contributing to more climate warming?	Could this trend also be contributing to less climate warming?	Other reasons for the trend?
Higher values of...	**Soil Moisture**	more water in the soil	Yes, if the warming is bringing about a trend of wetter weather in an area with an already-wet climate	Yes. Wetter soils absorb and emit more heat (in the form of longwave radiation) than do dry soils, and also evaporate more water, making the air warmer, especially at night. Also the increased evaporation that occurs with wetter soils contributes to more cloudiness and precipitation. As a greenhouse gas, water vapor (which we feel as humidity) contributes to warming in the troposphere.	Yes. Clouds block solar radiation from hitting the ground by reflecting some incoming sunlight back to space, so in that way they lessen warming. Also, wetter soils are generally more supportive of plant life than are dry soils, and plants take in much carbon dioxide from the atmosphere.	Drainage patterns change when the shape of the land changes, and changes in drainage affect how much moisture is retained in the soil. For example, if an area with rolling hills is flattened out to make way for a housing development, leaving one large flat basin surrounded by hills, the average amount of soil moisture in this formerly hilly basin area is likely to increase. Also, plants influence how much moisture is retained in the soil. Soil covered by plants will usually retain more moisture than soil without plants (as less sunlight reaches the ground to heat it). For example, if an area that was formerly without plants gets re-stocked with plants such as crops, shrubs, grass, or trees, there is likely to be an increase in the average amount of soil moisture. Without plants, there is nothing to retain water, and it will more quickly run off or evaporate.
Lower values of...	**Soil Moisture**	less water in the soil	Yes, if the warming is bringing about a trend of drier weather in an area with an already-dry climate	Yes. Dry soils evaporate less water into the air, which keeps clouds from forming that would otherwise block solar radiation from hitting the ground. This can help increase temperatures, especially during the day time, which in turn causes more soil drying. Another impact on climate warming comes from the fact that drier soils usually support fewer plants, and plants take in carbon dioxide, thereby reducing the amount of carbon dioxide in the troposphere, where it is a greenhouse gas.	Yes. Drier soils reflect more heat than do wet soils, and reflected (i.e., shortwave) radiation does not produce heat like emitted (i.e., longwave) radiation does.	A long-term trend of increasingly dry soil may be a sign that people removed plants, or there was a natural fire that destroyed them. It may also be the sign of an effort to change flat surfaces to sloped ones, allowing more draining of runoff out of the soil.