

Table 4. Example feedback mechanisms on a warming Earth. This is not an exhaustive list only a sample of possible feedbacks.

Example Feedbacks in Earth's Climate System		
Water Vapor	More evaporation on a warmer Earth leads to more water vapor in the atmosphere	
	Positive	Increase of atmospheric water vapor leads to a greater greenhouse effect.
Carbon Dioxide	Less CO ₂ absorption or CO ₂ expelled by warmer ocean water results in more accumulating in the atmosphere	
	Positive	CO ₂ increases in the atmosphere increasing the greenhouse effect.
Clouds	More water vapor on a warmer Earth leads to more cloud cover.	
	Negative	Increase of low clouds that efficiently reflect sunshine and result in a cooler the surface.
	Positive	Increase of high clouds that efficiently absorbs infrared radiation warming the high troposphere.
Ice - Albedo	Ice melts/accumulates on a warming/cooling Earth exposing/covering darker ground. More solar radiation is absorbed/reflected which warms/cool Earth's surface.	
	Positive	Greater/Less absorption of solar radiation by exposed/covered surfaces accelerates warming/cooling.
	Negative	Melt water dilutes dense salty water in the southern Ocean the Arctic Ocean and North Atlantic Ocean. Slowing of the oceanic conveyor circulation (thermohaline circulation) because the fresh water inflow lower the density of the water and less sinks driving the circulation resulting in less heat transport poleward and cooling of the far north.
Permafrost	Melting permafrost leads to increasing decomposition in the soil and release of CO ₂ and CH ₄ . Methane is released by anaerobic decomposition (decomposition without oxygen).	
	Positive	Atmospheric carbon dioxide and methane concentrations increase accelerating warming.
Northern Boreal Forest	Warming climates in Siberia and northern Canada result in the expansion of the vast boreal forests because of a longer growing season.	
	Negative	Increased forest growth due to a longer growing season leads to increased removal of carbon from the atmosphere through photosynthesis. This is the sink for what was called the "missing CO ₂ ".
Soil Processes	Mycorrhizal plants, plants having roots with a symbiotic relationship with mycorrhizae (a fungus) increase carbon uptake in warmer soil.	
	Negative	Symbiotic relationship leads to greater plant growth and greater storage of carbon in the soil, decreasing the amount of carbon in the atmosphere.
	Positive	Decomposition of organic matter by micro-organisms increases, leading to an increase of atmospheric CO ₂ (and methane where decomposition is anaerobic). Warmer soils lead to greater rates of decomposition and release of CO ₂ to the atmosphere.