

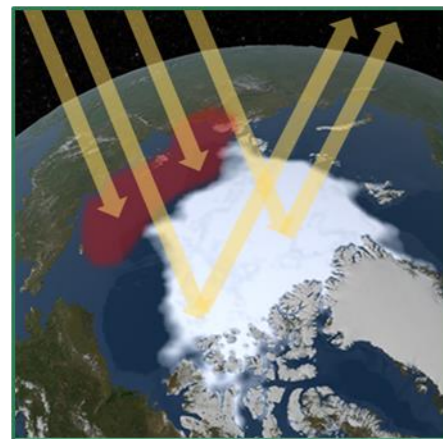
Feedback processes and vicious cycles

Hintergrund:

When "tilting" with a chair, you can get yourself into a tilted position by pushing yourself against a table - the more you push, the more you can tilt. If you stop pressing against the table, you return to your starting position. But woe betide you if you push yourself off just a little too much... Unfortunately, the Earth's climate system behaves in a similar way and could irrevocably collapse in the near future if even one gigaton too many greenhouse gases are emitted.



Melting ice surfaces



Dark and thus highly absorbent surfaces such as water or rock appear under melting ice.

Permafrost



Thousands of years of carbon and methane deposits are frozen in it.

Methane hydrates in the oceans



Up to several thousand gigatons in ocean sediments on the seafloor.

Water vapor



Warmer air can hold more water vapor than cold air and water vapor is a powerful greenhouse gas

Tipping points are crucial to the catastrophic dynamics of climate change: When a tipping point is triggered, it is not immediately noticeable in reality, but a process is set in motion that is no longer reversible! An example: The ice on the Arctic Ocean reflects sunlight. If parts of the ice melt, more solar energy can warm the sea because of the lower reflection. The remaining ice then melts more quickly. At some point, the vicious circle can no longer be stopped. As in the game of dominoes, there is a cascade of tipping points in the Earth's climate system. One can trigger the next one at a time, making the temperature increase incalculable.