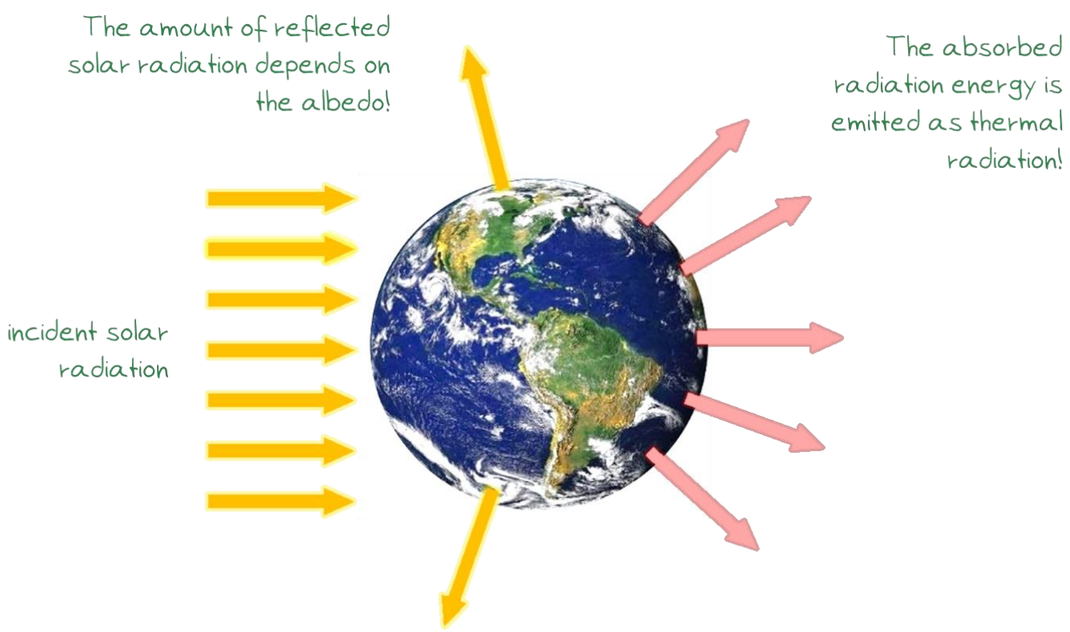
2. The Earth is irradiated

Why is the Earth not getting hotter and hotter?



Sources of illustration: Earth globe: NASA modified by Strähle; Athabasca glacier: Pixabay; Albedo diagram: Hannes Grobe, Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany

Backround:

The higher the temperature of a body, the more energy it emits in the form of thermal radiation (compare, for example, cold and blazing iron). If a body is irradiated, it becomes progressively warmer and thus also radiates more. If the absorbed and radiated energy are equal in a certain period of time, it is in radiation equilibrium and has reached an equilibrium temperature. The earth as well as all planets are in radiation equilibrium.

What role do ice surfaces play in the temperature of the Earth?

Backround:

Bright surfaces on the Earth, such as ice and snow, reflect the incident light of the Sun more strongly than, for example, water or the ground. This reflectivity of a surface is called albedo α (lat. "white"). For the Earth applies α=0,3. This means that 30 % of the incident radiation energy is reflected and does not contribute to heating. The loss of white space due to global warming has devastating effects on the Earth's climate.

If ice melts, it becomes water - this is obvious, but has serious consequences, because water barely reflects sunlight!!!