

The sun, the forgotten factor

All the energy that warms our planet and keeps it alive comes from the sun. Nevertheless, most climate researchers are still convinced that the sun has no influence whatsoever on changes in the climate. There is a simple, but very short-sighted explanation for this: The fluctuations in the total energy measured from the sun arriving in the outer atmosphere are extraordinarily small, fractions of a percent over several decades. **This has led IPCC climate researchers to assume that the influence of the sun on climate development is at most 0.2%, recently 0.05%, which is negligibly low.**

The total radiated energy is not the whole truth. Looking at the different components of the entire spectrum and particle streams, the picture changes dramatically. In the UV range the variations over a solar cycle of 11 years are 10 times greater, i.e. already in the percentage range, and during solar flairs there are changes over several orders of magnitude.

The various factors influencing the sun are summarized in this film:

Sun, clouds and cosmic rays

The interactions of sun, clouds and cosmic rays are very complex. Simplified this can be described as follows:

- The magnetic flux from the sun interacts with the Earth's magnetic field.
- With strong solar magnetic flux, cosmic rays are deflected towards the poles and are less able to penetrate into the atmosphere; with weak magnetic flux, more cosmic rays penetrate into the atmosphere.
- Cosmic radiation, consisting of charged particles, together with aerosols supports the formation of

droplets of water – the elements of clouds – from water vapour, similar to a cloud chamber.

- Increased cloud formation, especially low cumulus clouds reflect sunlight, which causes a reduction in solar radiation on the earth, resulting in relative cooling. Conversely, lower cloud formation increases solar radiation on the Earth.

Although the climate effect of the clouds is much more complicated than sketched here (e.g. at night the clouds reduce the cooling), this corresponds to the subjective impression that it is cooler (during the warmer seasons) with clouds than with clear sky.

The interaction of these effects results in reduced cloud formation with strong magnetic flux and thus more heating than with low magnetic flux.

[Prof. Henrik Svensmark and Prof Nir Shaviv have investigated these phenomena for many years.](#) Their work is very nicely described in the film „The Cloud Mystery“ by the scientists themselves and their colleagues with whom they discovered and explored these phenomena actively: