



Cosmoclimate

In 1996 a surprising discovery was announced that the intensity of cosmic rays incident on the earth's atmosphere correlates closely with variations of global cloud cover [Svensmark and FriisChristensen 1996]. Clouds both reflect incoming and trap outgoing radiation thus they play an important role in the Earth's radiation budget.

A connection between solar activity and Earth's cloud cover could have immense implications in our understanding of climate and the relevance of processes in space. The evidence from observations warrants a scientific investigation into a possible link between solar activity and Earth's cloud cover. The reported variation of cloud cover was approximately 2 % over the course of a sunspot cycle. This may appear to be quite small, however, the possible consequences on the global radiation (energy) budget are not. Simple estimates indicate that the resultant global warming could be comparable to that presently attributed to greenhouse gases from the burning of fossil fuels. The hypothesis is that solar variability is linked to climate variability by a chain that involves the solar wind, cosmic rays and clouds. The weak link is the connection between cosmic rays and clouds. Recent work has directed attention to a mechanism involving aerosol production and the effects on low clouds. This idea suggests that ions and radicals produced in the atmosphere by cosmic rays could influence aerosol production and thereby cloud properties.

Cosmoclimate is the term coined to this research that involves a range of disciplines from space physics to atmospheric science to cloud microphysics.

- A brief summary of cosmoclimate

