



About the Clouds and Climate Change

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Clouds influence climate change, but this influence is much less quantified and understood than, for example, that of greenhouse gases. Changes in temperature may affect the extent and type of clouds; in turn, this change would have a warming or cooling effect. Therefore, the relationship between local cloud cover fraction (cloudiness) and temperature is an important subject of study. The analysis of cloudiness and how temperature influences it is the aim of this work. In addition, the locally clouds' radiative forcing is used to assess the range of warming and cooling effects. The study of cloud types, cloud cover fraction (total cloudiness) and temperature was performed at Măgurele, Romania, during 1st December 2008 - 31 December 2011. Ground-observed cloudiness measurements were included in this study, using Ceilometer CL-31 together coincident satellite data. The satellite data are products of MODIS06, a key system for Earth's Observational System (EOS). The data set contains the hourly cloud fraction, cloud types and some optical properties of clouds. The results showed: (i) a much better description of the cloud field configuration from the combination of ground-based and satellite observations; (ii) the influence of temperature is better emphasized in diurnal variation of cloudiness; (iii) generally, the clouds' radiative forcing values showed a cooling at local scale.