Abstract

The work deals relations among sunshine, global radiation, cloudiness and day longitude. The main purpose of this work is to utilize indirect calculation methods for determination of some basic characteristics of global solar radiation from data of the bright sunshine duration, cloudiness and day longitude. The work is based on such methods, which were used by Karel Vaníček and the others from the Solar and ozone observatory in Hradec Králové. Their aim was to apply them in the utilization of solar renewable energy sources. The work solves this topic by other statistical methods and approaches. It was used data from the Solar and ozone observatory CHMI (The Czech Hydrometeorological Institute) in Hradec Králové, which has dealed with problems of the solar radiation for a long time. It was applied a period of complete daily sums of the solar radiation, cloudiness and the sunshine duration from the year 1999 to 2008. The second part of this work is concerned with a definition of the winter period of the bright sunshine duration in the Giant Mountains and compares it with Prague. It was used data from two meteorological stations. The first one is located in the Giant mountains - the Labská Bouda station and the second station in Prague - the Praha - Libuš station to make a comparison between higher altitudes (mountain regime) and lower altitudes. Daily sums of the sunshine duration were mainly from last 20 - 30 years, but not always complete. It was used the method of cumulative series.

Key words

global solar radiation, sunshine duration, cloudiness, day longitude, solar renewable energy sources, Solar and ozone observatory in Hradec Králové, Labská bouda - Krkonoše, Praha - Libuš, method of cumulative series