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Comparison between classical and automatic measurements of solar radiation performed at the meteorological stations in Romania: preliminary results

A. Manea (1), C. Oprea (2), C. Boroneant (3)

(1-3) National Meteorological Administration Romania (ancuta.manea@meteo.inmh.ro, boroneant@meteo.inmh.ro)

Since august 2006 in the Romanian meteorological network the measurements of the global solar radiation and effective daily sunshine duration are simultaneously performed using two systems: For global solar radiation - the classical system - the Robitzch bimetallic actinographies network and the automatic system - the Kipp&Zonnen CM6B type thermo electrical piranometers. For effective daily sunshine duration - the classical system - the R. Fuess heliographers and the automatic system - automatic stations endowed with Vaisala piranometer CM 6B. The classical global solar radiation measuring system is a mechanical one, with a high inertia of the order of minutes. The automatic system is an electrical based one, with inertia of the order of seconds. Thus, the measured values of the global solar radiation with these two systems are different. The analysis of the daily averages showed that the classical system systematically provided higher values in comparison to the data provided by the automatic system. The differences between the values measured with these two systems proved to be higher when the values of the solar global radiation are smaller. Attempting to compare the global solar radiation data from these two systems, the monthly fraction automatic/classical of global solar radiation were computed. For this first evaluation we used the data from Timisoara and Galati meteorological stations. The analysis of the values of effective daily sunshine duration measured with the classical and automatic systems highlights some technical and methodological aspects of this evaluation, taking into account the latest developments of the measurement techniques. The present case study for effective daily solar duration is made with data from 2007 from Gura

Portitei meteorological station, one of the most representative stations in Romania for solar radiation.