



Use of the Soil Moisture Index for drought monitoring

J. Noskova (1), M. Mozny (1), M. Trnka (2), Z. Zalud (2), P. Hlavinka (2), and M. Virag (3)

(1) Czech Hydrometeorological Institute, Doksany, Czech Republic (jana.noskova@seznam.cz), (2) Institute of Agrosystems and Bioclimatology, Mendel University in Brno, Zemedelska 1, 61300 Brno, Czech Republic, (3) AS&Consulting, METEO systems, 27601 Melnik, Czech Republic

Since 2000, the network of stations that make up the Czech Hydrometeorological Institute (CHMI) has measured the soil moisture content at the 0-0.9-m layer using sensors placed within the natural soil profile under closely-cropped grass cover. Using information from eight years of continuous observation at seven stations throughout the Czech Republic, we verified the usefulness of the Soil Moisture Index (SMI). The SMI is a potentially useful index for calculating water stress in the Czech Republic and elsewhere. During this period, a statistically significant decrease in moisture content was found, and negative SMI values predominated. There were frequent occurrences of flash drought, characterised by a very rapid decline in soil moisture during a three-week period. SMI values below -3 could be used by CHMI in the Integrated Warning Service System (IWSS). The routine calculation of SMI values could alert agricultural producers to developing flash drought conditions and provide them with information regarding the effectiveness of recent rainfall events.