Evaluation of long Soil Moisture Data Series as Tool of Climate Change Detection

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The results of soil moisture data calculation were analysed to assess the degree of its spatial and temporal variation in Hungary. Long homogeneous series of monthly data of precipitation, temperature and water vapour pressure going back to 1881 were used for the calculation of soil moisture of upper one-meter-layer for 16 stations until the end of 2005. The results of calculation were compared with in situ measured soils moisture values and for the examined years a good correlation was found. The goal of the investigation was to detect any kind of systematic change in the soil moisture data series. The growing tendency of low soil moisture content - the more frequent occurrence of drought - as a disadvantageous signal of climate change could be accepted. Three statistical method were used to identify any systematic change. But the statistical analysis showed that the presence of low soil moisture content in the end of summer or dry summer is not an abnormal situation on the Great Hungarian Plain no significant growing or decreasing tendency of dry periods has been found until the end of 1990 but later some decreasing tendency was identified in correlation with the more frequent dry summer occurances.