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Investigation of FAO Penman-Monteith Reference Evapotranspiration over the Territory of Bulgaria

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Since many years evapotranspiration has been estimated in Bulgaria by Delibaltov-Hristov-Tzonev equation. Its estimates bear the impact of only one meteorological factor – the temperature. Recently, it has been found that this method gives from 20 to 50% error. Since 1998, FAO recommended only FAO Penman-Monteith method for calculation the evapotranspiration as the most accurate and exhausting all climatologic and meteorological aspects of the environmental impact on crop evapotranspiration. Validation of this method in Bulgaria has not been done yet. The problem is that availability of the meteorological data is a matter of some difficulty. Therefore, other mathematical models that take into account smaller number of meteorological factors have been validated up to now. The paper presents an investigation of FAO Penman-Monteith reference evapotranspiration all over the territory of the country. Data from 21 agro-meteorological stations of the period 1971-2000 have been processed. The spatial distribution of the reference evapotranspiration is illustrated in figures and zoning maps. Some conclusions about the impact of the regional climate change are derived.