



Water vapor anomaly during the 2003 and 2007 heat waves in Switzerland and Bulgaria

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Globally, the column-integrated water vapor is expected to increase by about 7% for every 1° K increase of temperature in agreement with the Clausius-Clapeyron (C-C) equation. In August 2003, the temperature in Europe was on average 3° K higher than the 2001-2006 mean. The column-integrated water vapor increased by 7%, which is a factor of 3 less than the expected from C-C equation. This weak response of water vapor to temperature forcing is found to be due to the rainfall deficit in the 2003 spring. An increase in evapotranspiration in June 2003 facilitated the soil moisture depletion and further heating went into raising temperature hence the heat wave in August 2003. The reported about water vapour anomaly will be tested for the 2007 heat wave in Bulgaria.