EMS Annual Meeting Abstracts,
Vol. 6, EMS2009-571, 2009
9th EMS / 9th ECAM

9th EMS Annual Meeting
9th European Conference on Applications of Meteorology
High resolution meteorology
- applications and services

The future bioclimatic conditions in Austria under the aspect of climate change scenarios

E. Rudel (1), A. Matzarakis (2), R. Neumke (2), Ch, Endler (2), and E. Koch (1)

(1) ZAMG, Vienna, Austria, ernest.rudel@zamg.ac.at, +43 1 3602672, (2) Meteorological Institute, University of Freiburg, Germany

The IPCC quantifies Heat Stress as a combination of air temperature and air humidity. In order to describe the future bioclimatic conditions in a human-biometeorological manner the analysis a modern thermal index has been chosen. The PET (Physiologically Equivalent Temperature) allows the assessment of the effect of the thermal environment based on the energy balance of humans including thermo-physiological information. The data for the calculation of the PET came from climate models. The required data are for the climatic parameters air temperature, relative humidity, wind velocity and mean cloud cover as the necessary inputs for Physiologically Equivalents Temperature.

Regarding future climatic changes PET calculations for the time slices 1961 and 1990 and also 2070 and 2100 have been run in 0.5 ° resolution. By the use of statistical regression for the 0.5 ° resolution the results have been downscaled to 1 km resolution in order to identify and quantify the areas in Austria, which will be more affected bioclimatologically. The constructed maps present current and future climatic conditions and also differences for the different time slices and SRES-scenarios of the IPCC. Maps of the difference between the Physiological Equivalent temperature and air temperature have been constructed to show that the used thermal indices, which have been applied by the IPCC underestimate the expected thermal bioclimate conditions for future climate. The results offer fundamental information for tourism and recreation authorities for present and expected climatic and bioclimatic conditions.