Linking urban micro scale models for quantification of UHI - The models RayMan, and SkyHelios

A. Matzarakis

University of Freiburg, Chair of Meteorology and Climatology, Freiburg, Germany
(andreas.matzarakis@meteo.uni-freiburg.de)

In order to analyse urban bioclimate and climate several input and output parameters are required. For the quantification of thermal bioclimate assessment methods based on the human energy balance builds the basis of all the known thermal indices. RayMan model can calculate mean radiant temperature and thermal indices (PMV, PET, SET*, UTCI and PT). For the calculation of mean radiant temperature, which in one of the most influencing parameters of thermal comfort on human, especially during summer conditions, many information about the radiation fluxes (short and long wave) and modifying factors (Sky View Factor, surface temperature, . . .) are required. This information in combination with shade and sunshine duration in simple and complex environments can be derived by RayMan and SkyHelios model. For the visualization of climate and urban climate information the possibilities of grid data and vector data can be processed and visualized. In addition the Climate Mapping Tool can visualize most of the demanded urban climate data and data formats.

In addition all three models are linked together and can exchange relevant inputs and information.

For a comprehensive transfer of climate and bioclimate data in a user or planer appropriate way the CTIS (Climate-Tourism/Transfer-Information-Scheme) can be applied based on thresholds and frequencies.