

THE UNIVERSAL THERMAL CLIMATE INDEX UTCI

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One of the fundamental issues in human biometeorology is the assessment and forecast of the thermal environment in a sound, effective and practical way. This is due to the need for human beings to adapt their heat budget to the thermal environment in order to optimise comfort, performance and health. However, none of the more than 100 available assessment procedures can be taken as sufficient considering thermo-physiology and heat exchange theory and the vast majority of them show unacceptable shortcomings. Some years ago the International Society on Biometeorology ISB recognised this issue and established a Commission "On the development of a Universal Thermal Climate Index UTCI" (Working title). Since 2005 these efforts could be reinforced by the COST Action 730 (Cooperation in Science and Technical Development) of the European Science Foundation ESF that provides the basis that at least European scientists from 19 countries plus experts from Australia, Canada and New Zealand can join together on a regular basis in order to achieve significant progress in deriving such an index (www.utci.org). Aim is an international standard based on scientific progress in human response related thermo-physiological modelling of the last four decades including the acclimatisation issue. After model comparisons it became consensus to base UTCI on Fiala's multi-node model which meanwhile was evaluated to a never before possible extent based on experimental data from numerous groups. The term "universal" must be understood in terms of appropriate for all assessments of the outdoor thermal conditions in the major human biometeorological fields such as public weather service, public health system, precautionary planning, and climate impact research in the health sector. The work is done under the umbrella of WMO- Commission on Climatology CCI and will finally be made available in a WMO "Guideline on the Thermal Environment" probably by 2009 so that everybody dealing with human biometeorological assessments, in particular NMHSs (National Meteorological and Hydrological Services), but also universities, public health agencies, epidemiologists, environmental agencies, city authorities, planners etc. can then easily apply the state-of-the-art procedure for their specific purposes. The international and interdisciplinary UTCI development is close to its successful end. The (almost) final procedure including consensus based detail solutions will be presented.