

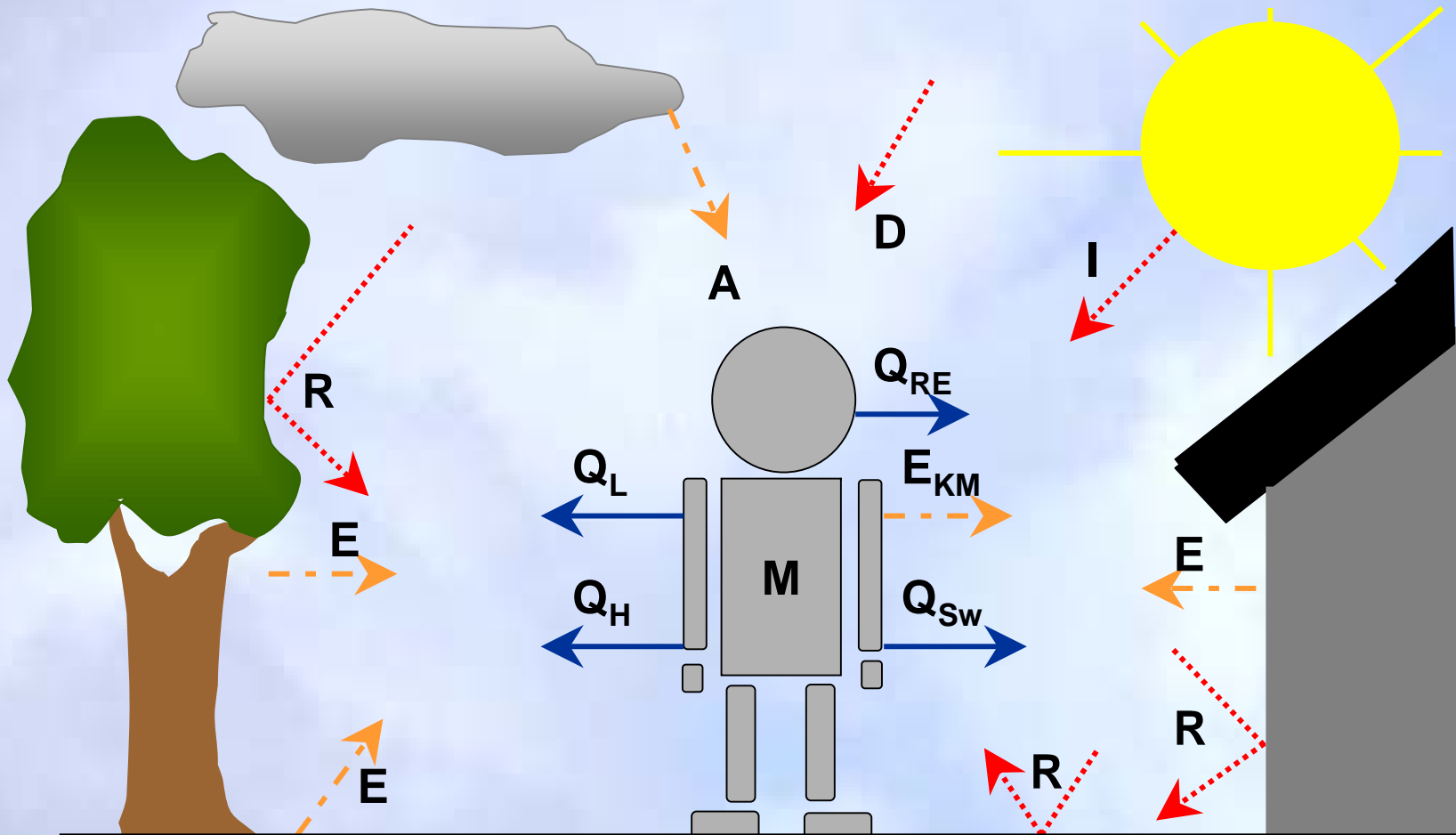
# **Selected examples showing the feasibility of the application of a (future) UTCI**

**Joint ISB Comm.6 and JAG/TI meeting  
Nov.2002 in Kansas City**

**Trouble-free applications possible of all heat budget  
models considering  $T_a$ ,  $e$ ,  $v$ ,  $T_{mrt}$ ,  $clo$ ,  $met$**

**Examples based on Perceived Temperature  $P_T$**

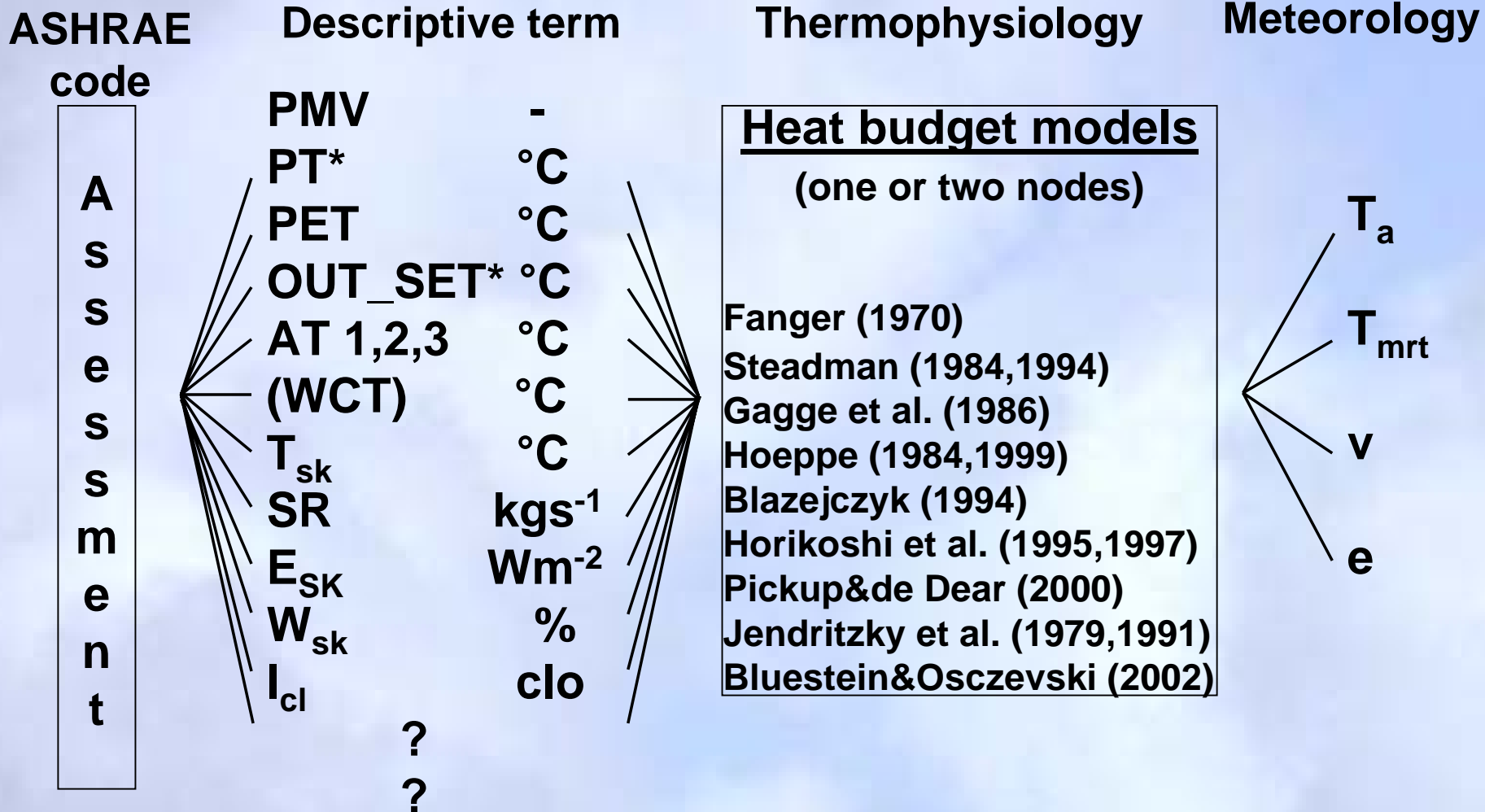
# The Thermal Environment



# Why UTCI?

- **Assessment of the thermal environment:  
Key issue in human biometeorology**
- **History: >100 simple thermal indices**
- **Last 30 years: heat budget modeling**
- **Integration of new knowledge and concerns**
- **Need: global harmonization → UTCI (ISB Comm.)**

## Thermophysiological Assessment of the Thermal Environment



# Deutscher Wetterdienst

## Business Unit Human Biometeorology

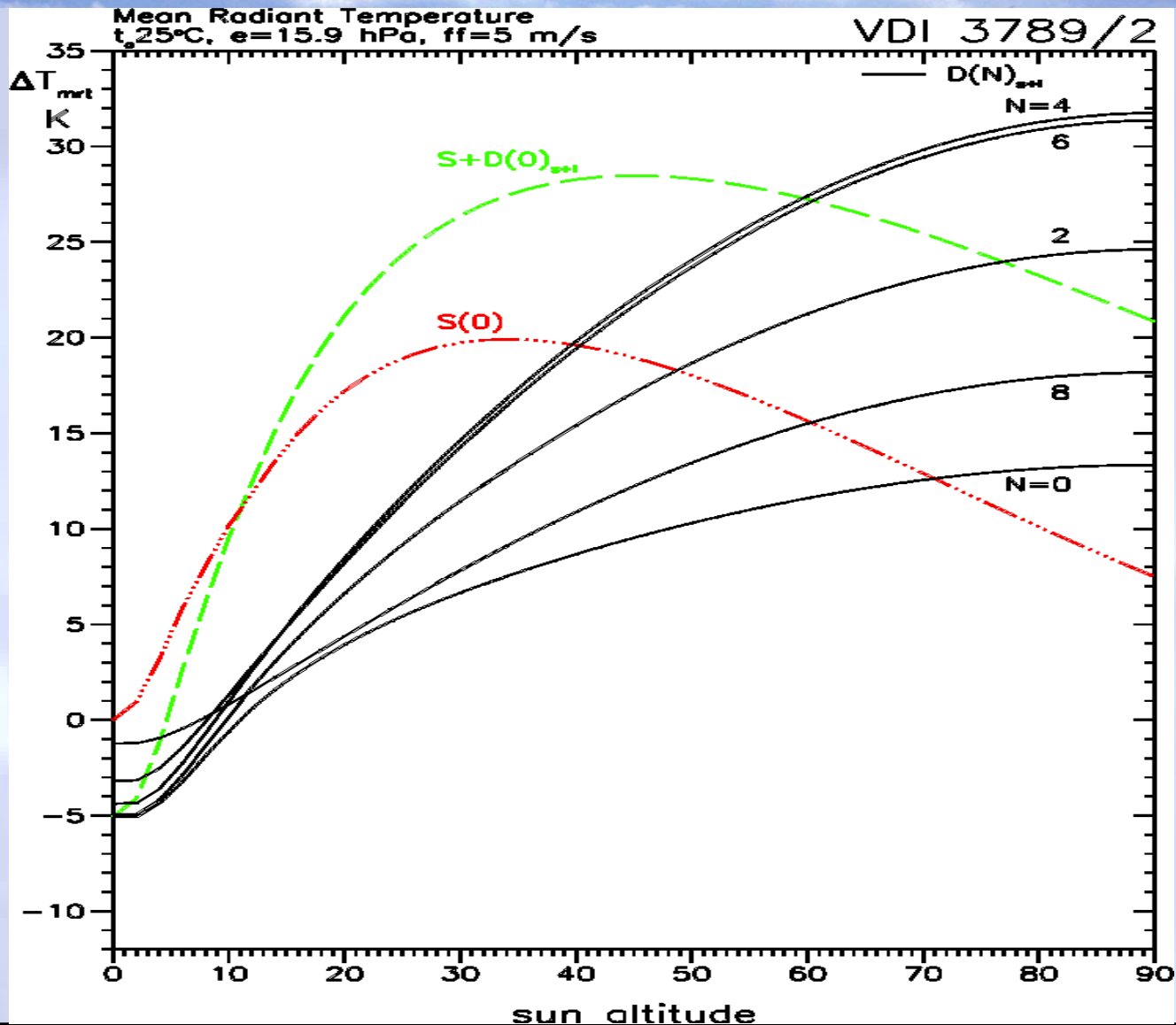


Azimuth	Elevation			
	0°	30°	63°	90°
0°				
90°				



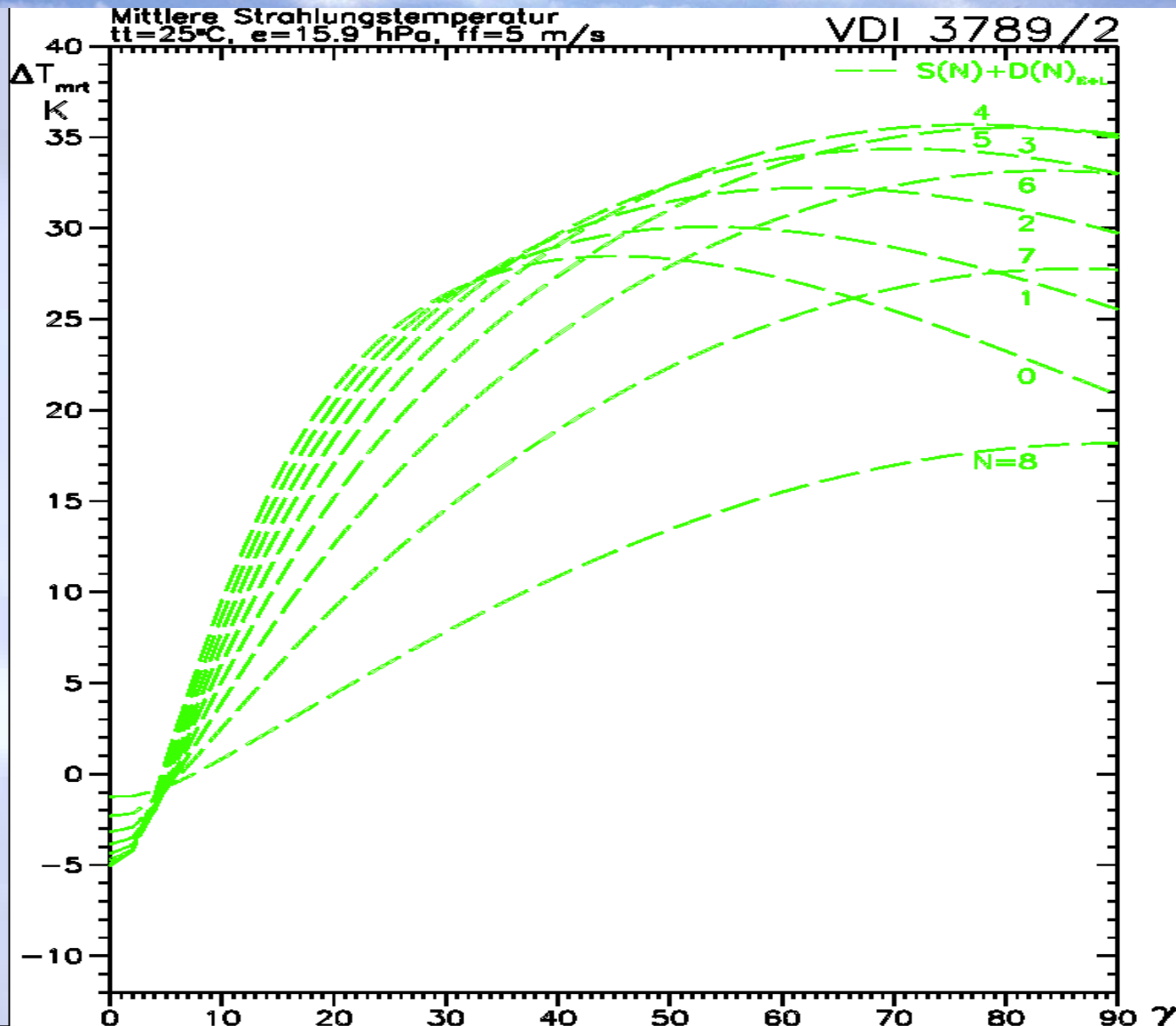
# Deutscher Wetterdienst

## Business Unit Human Biometeorology



# Deutscher Wetterdienst

## Business Unit Human Biometeorology



# Basic features of UTCI

- Thermophysiologicaly significant  
in the whole range of heat exchange conditions
- Valid in all climates, seasons and scales
- Useful for key applications in human biometeorology
- Steady-state conditions → practically useful results
- Independent of individual characteristics
- Prediction of whole body and local thermal effects
- Based on the most advanced multi-node models
- Temperature scale index

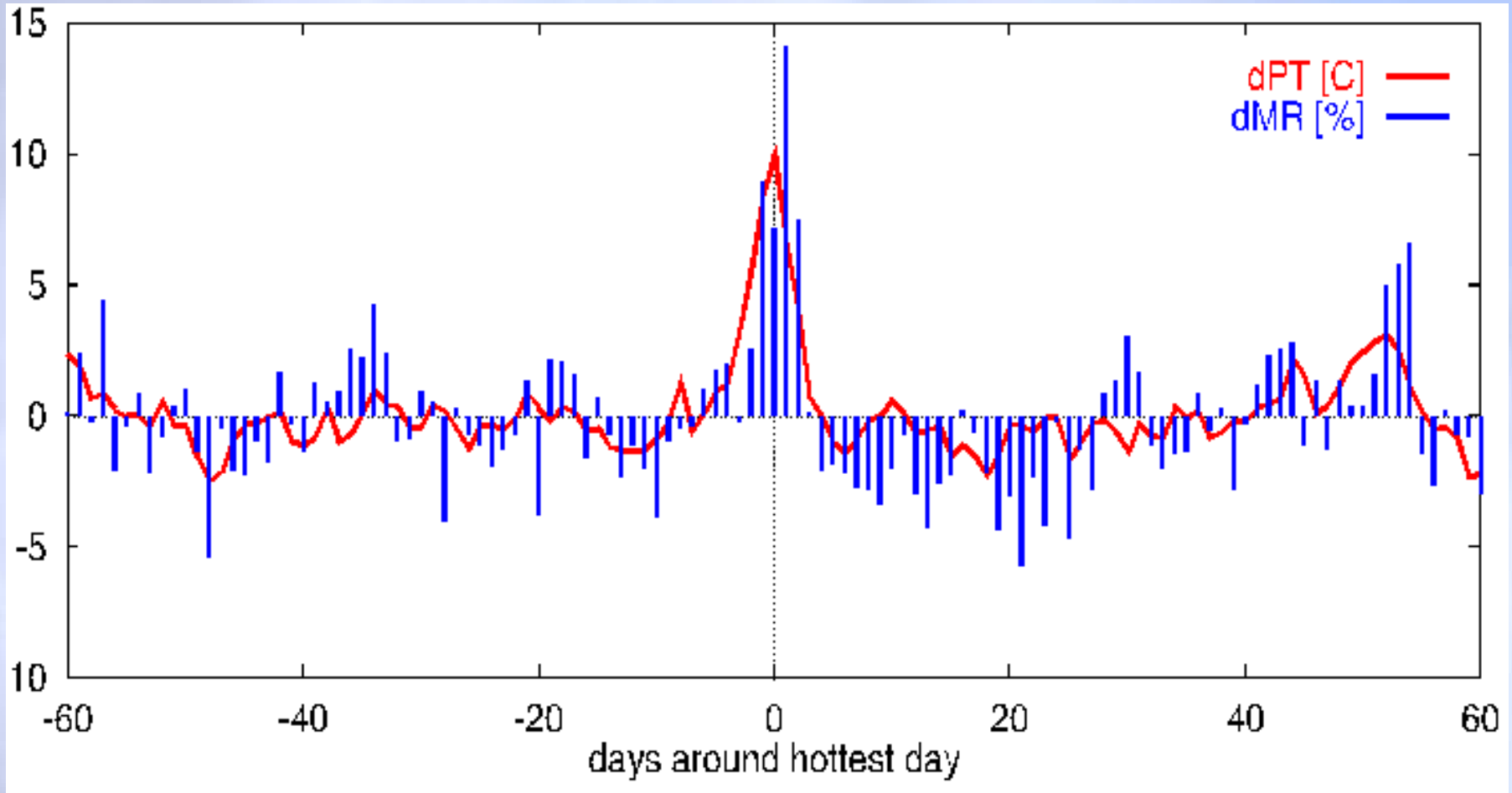


# Key applications

- Daily forecasts**
- Public weather service
  - Warnings (windchill, heat load)
  - Advice (clothing, outdoor activities)

- Climate**
- Bioclimatological assessments
  - Bioclimate maps in all scales (micro - macro)
  - Urban design, engineering of outdoor spaces
  - Consultancy for residence
  - Outdoor recreation and climatotherapy
  - Epidemiology
  - Climate impact research

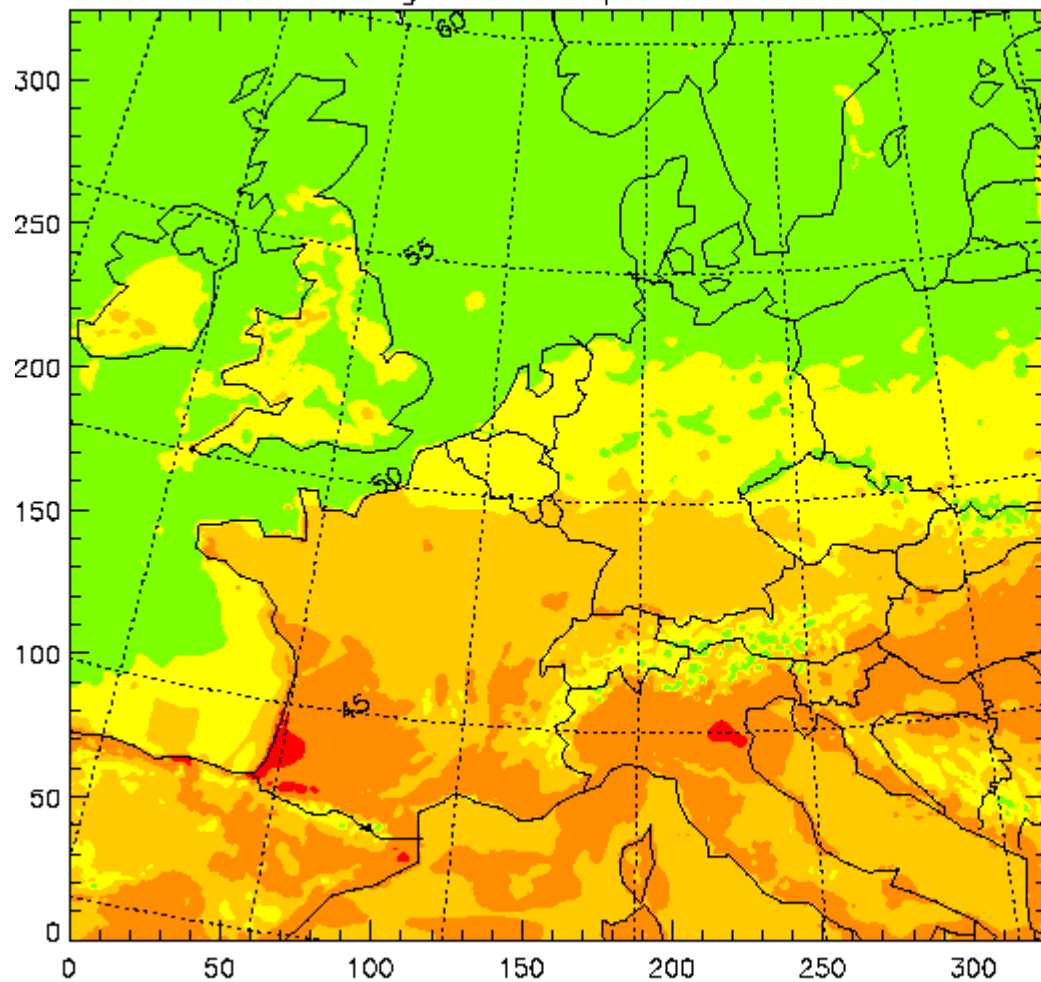
## Mean Heatwave 1968 - 1997 (16 heatwaves)



# Vorhersage für den

01.08.01

gefühlte Temperatur



UTC

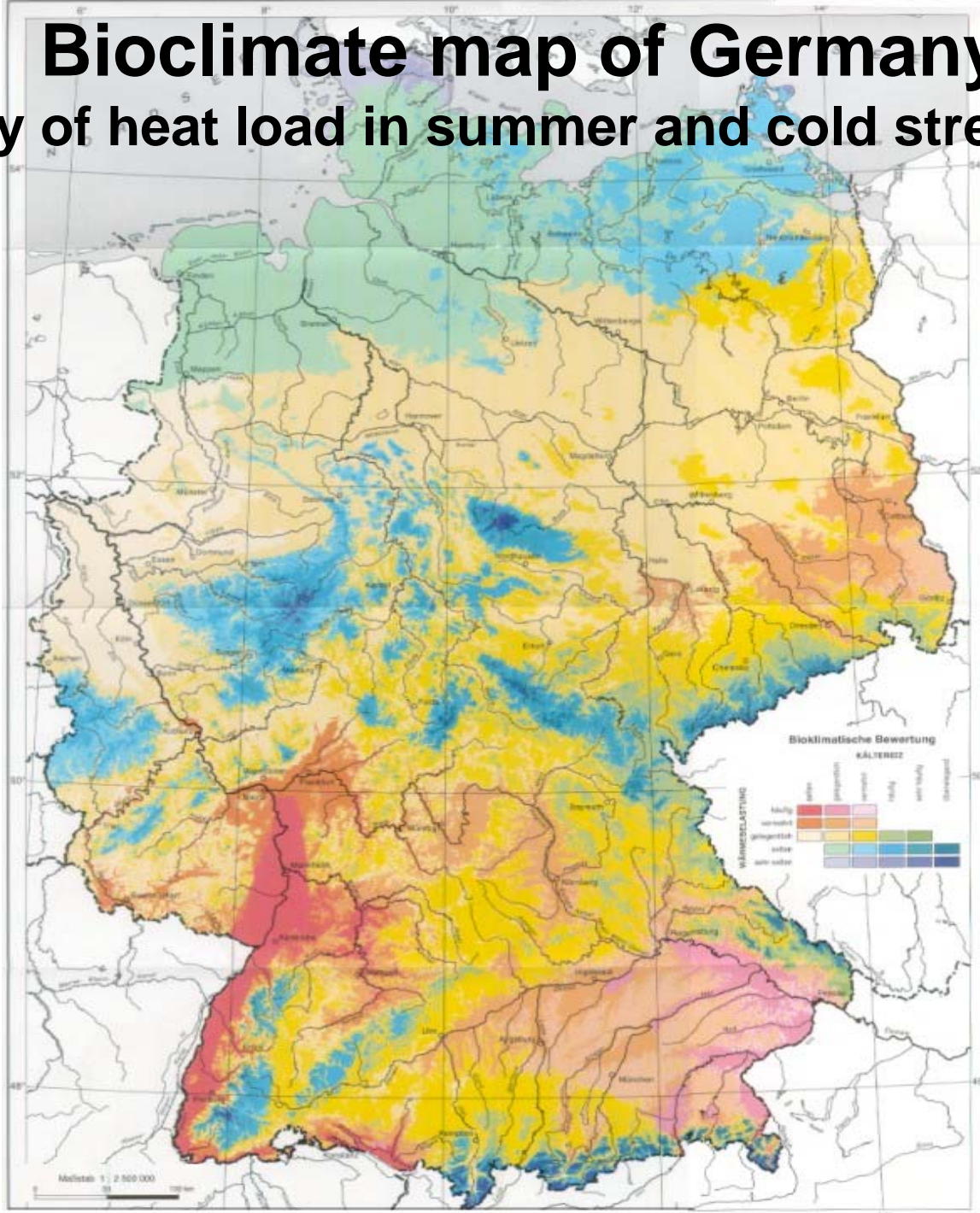
14

ausgegeben am

31.07.01

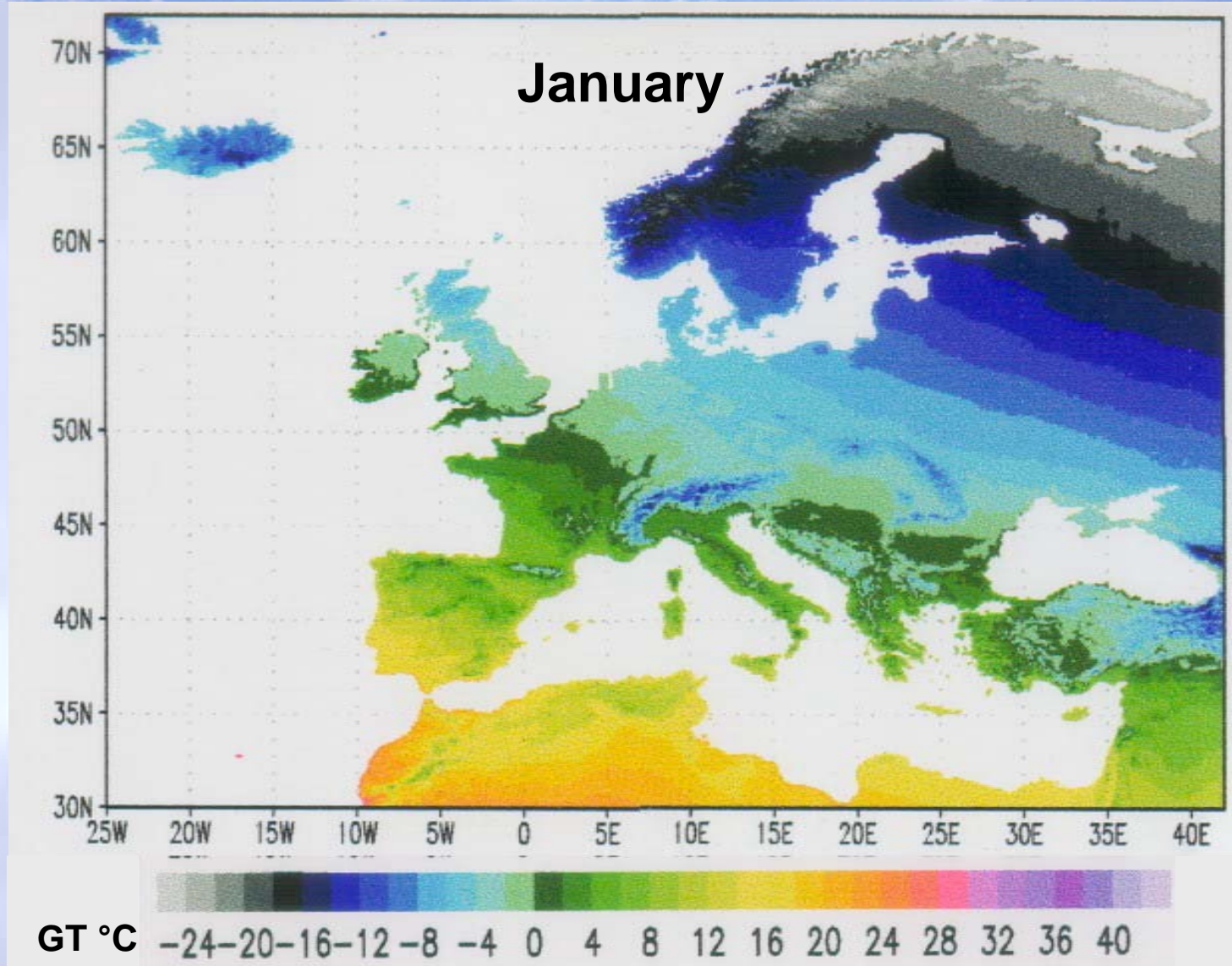
# Bioclimate map of Germany

Frequency of heat load in summer and cold stress in winter

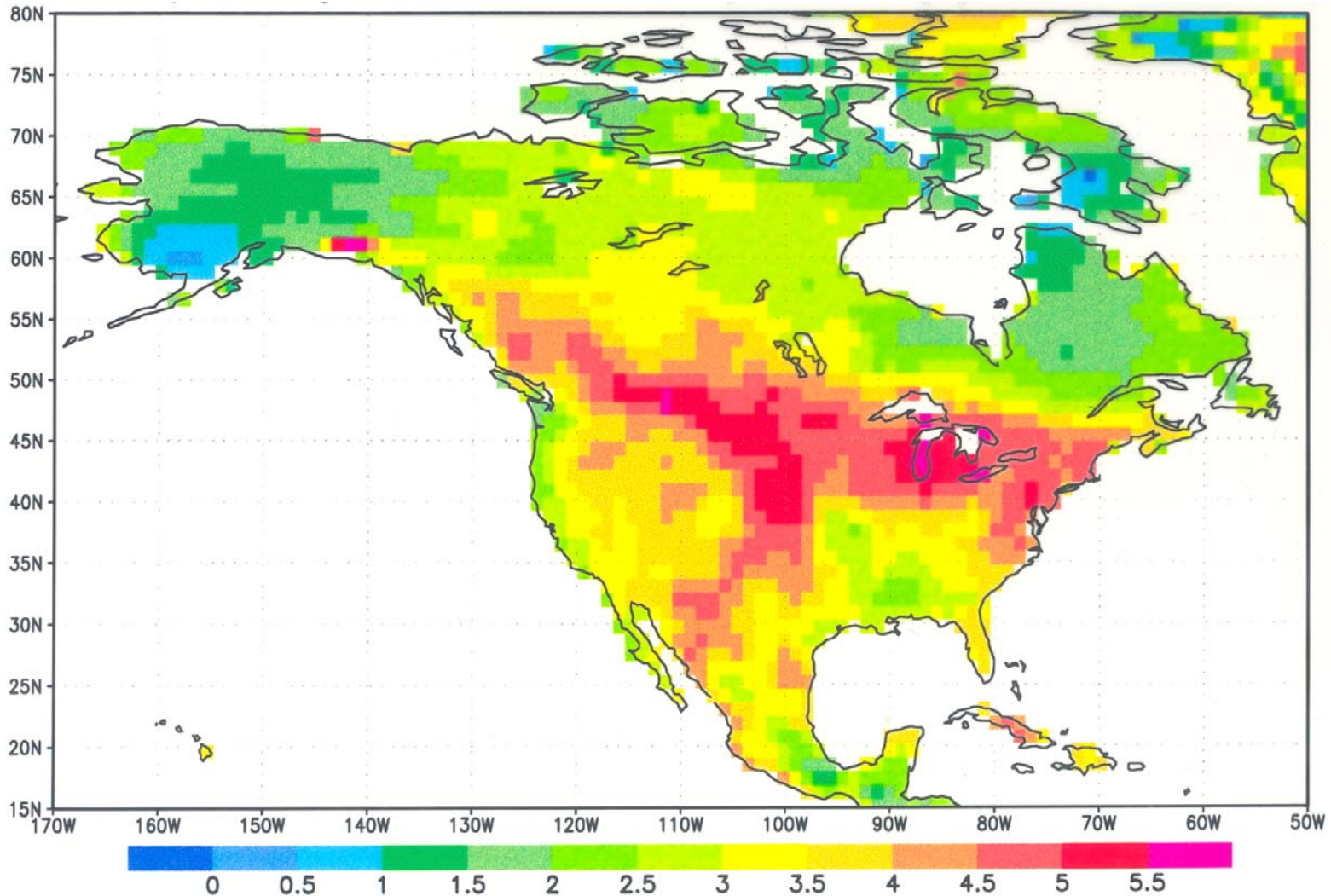


1971-2000



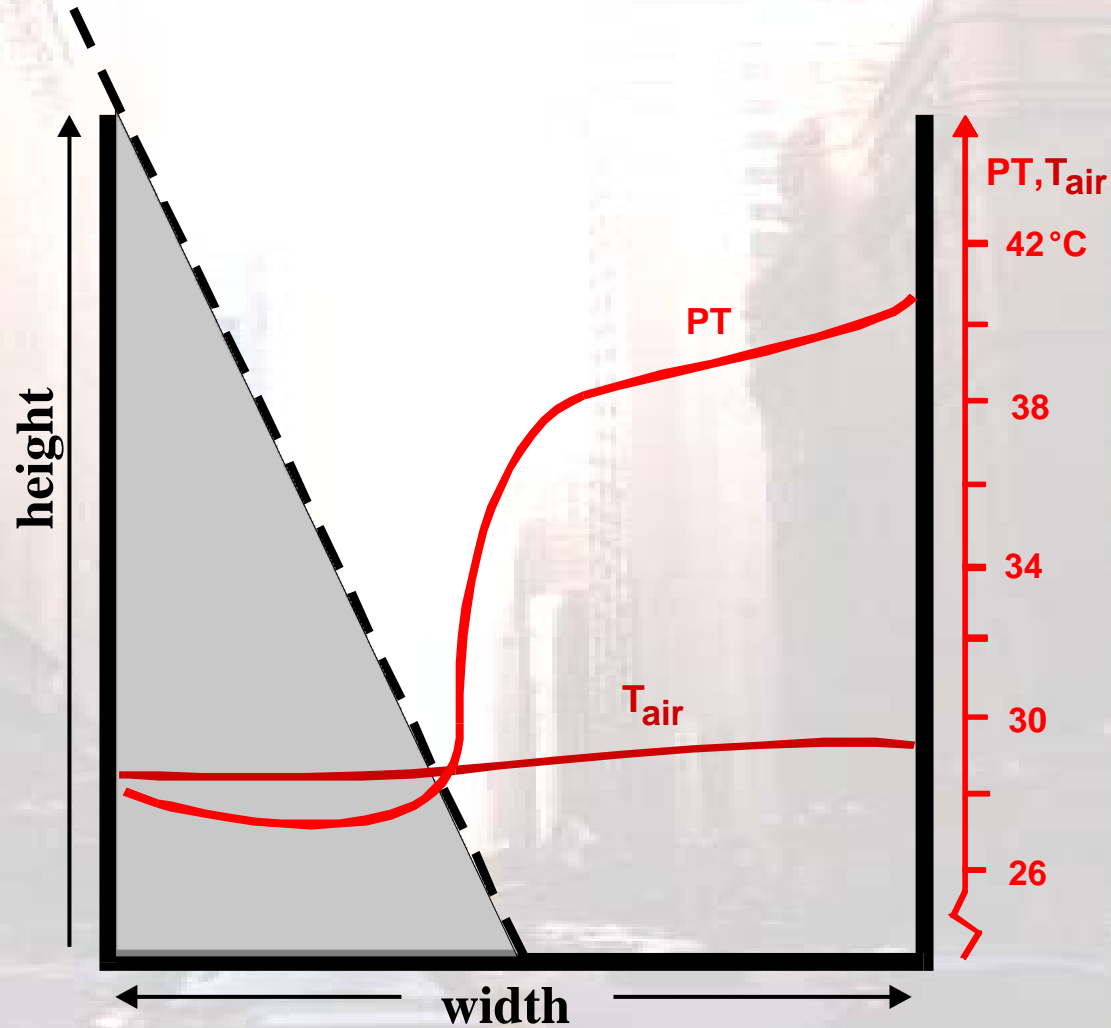


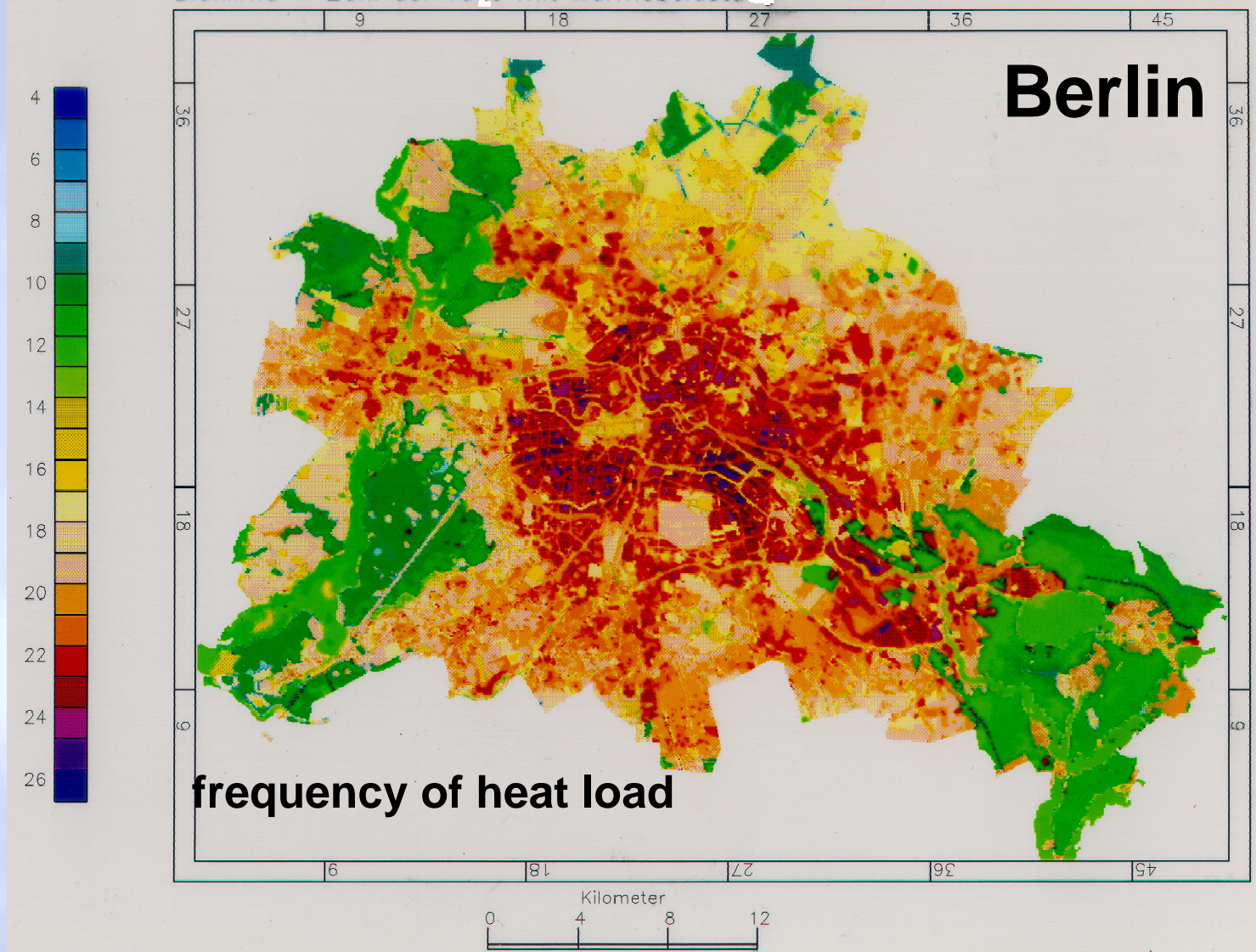
### July Change in Perceived Temperature (K), IS92a-CTRL



data: Deutsches Klimarechenzentrum Hamburg; ECHAM4/T106









# Bioklima - Sommer -

 Naturpark  
Südschwarzwald

Auftreten von  
Wärmebelastung

