THERMAL COMFORT DIFFERENCES IN RUSSIAN CITIES

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CHANGE IN CLIMATE PROCESSES

URBAN ENVIRONMENT IMPACT ON CLIMATE





RayMan model

- air temperature
- Humidity
- wind speed
- cloudiness

also: time zone, geographic coordinates, time, altitude

Calculations of biometeorological indexes: mPET, WCI, UTCI with reference to the urban surface

RESULTS



THE AVERAGE NUMBER OF DAYS WITH STRONG HEAT STRESS PER YEAR TRENDS OF DAYS WITH STRONG HEAT STRESS (FOR THE YEAR)

RESULTS



THE AVERAGE NUMBER OF «TROPICAL NIGHTS» PER YEAR

TRENDS OF «TROPICAL NIGHTS» (FOR THE YEAR)

RESULTS





THE AVERAGE NUMBER OF DAYS WITH EXTREME COLD STRESS PER YEAR

TRENDS OF DAYS WITH EXTREME COLD STRESS (FOR THE YEAR)

CONCLUSIONS

01

Thermal comfort changes occur both in warm and cold period

02

Various climatic processes explain the contrast between cities of different physicalgeographical regions.

03

The reason why 2006-2015 period is not always the warmest is slowdown of warming processes in the end of XXI century

04

The most intensive growth of heat stress is detected in Moscow, and this is because of it's large size and «heat island» phenomena

The most discomfort cities with strong deterioration of thermal comfort are Moscow, Nizhny Novgorod, Voronezh, Kazan, Ufa. At the same time winter season in these cities is getting soft for the citizens. Other cities, which are situated in Asian part of Russia, don't characterize by high growth of heat stress.