

QUANTIFICATION OF THE THERMAL BIOCLIMATE BASED ON PHYSIOLOGICALLY EQUIVALENT TEMPERATURE (PET) IN THE RUSSIAN FAR EAST

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Goal

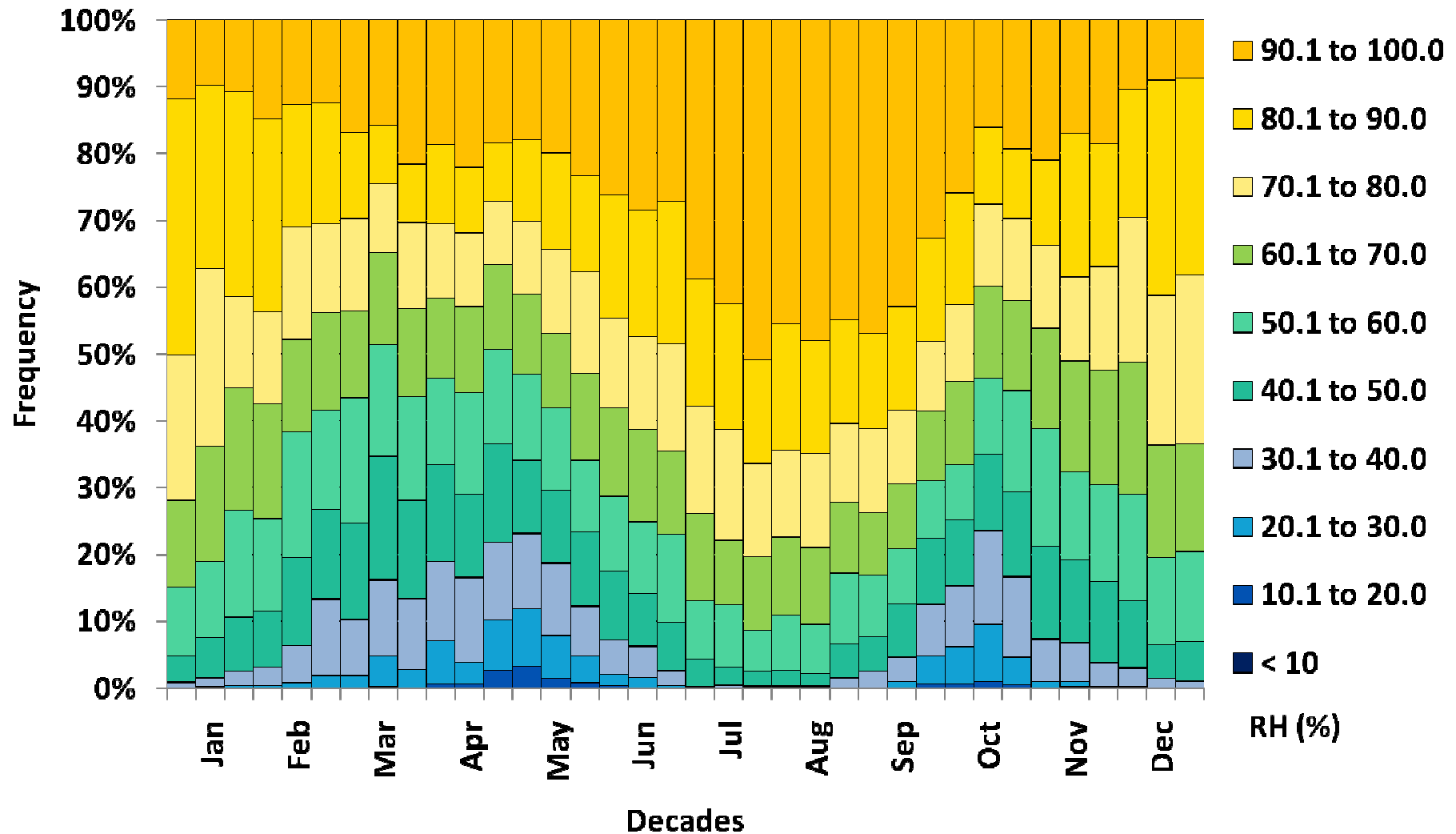
The Goal of this presentation is to show the influence of climate factors beyond the air temperature on the thermal human bioclimate.

Data

Location:	Birobidzhan 48° 44' N, 231° 57' E, 76 m a.sl.
Period:	2000 – 2010
Recording-Interval:	3 Hours
Display-Interval:	10 Days
Factors:	Air temperature T_a (°C) Relative humidity RH (%), Wind velocity v (m/s) 1.1 m a.gr. cloud cover c (octas)

Results Relative Humidity

Birobidzhan, 2000 - 2010



Comparison

Mean number of days with:

	< -30 (°C)	< -20 (°C)	< -10 (°C)	< 0 (°C)	15≤ X ≤30 (°C)	18≤ X ≤27 (°C)	> 29 (°C)	> 35 (°C)	> 41 (°C)
Ta	6.01	41.64	96.16	147.97	92.23	57.31	3.00	0.06	0.00
PET	21.02	68.27	117.19	170.06	65.40	37.03	21.35	7.78	2.78
Difference	15.01	26.64	21.03	22.09	-26.83	-20.27	18.35	7.73	2.78

Calculated for an 11-Year Period (2000 – 2010) with 3-hour-intervals

Conclusions

- Humidity, wind speed, and irradiance have a major impact on the thermal human bioclimate
- PET shows this impact which makes it very useful for the quantification of thermal bioclimatic conditions
- Birobidzhan is a region with very extreme climate conditions and extreme climate stress for the human body (PET of 20 °C is considered the state of maximal thermal comfort).
- There is a very high gradient in PET as well as Ta between Summer and Winter
- It is of great importance to take these factors into consideration when planning outdoor activities, tourist - attractions or - programs as well as city structures.



Thank you for your kind
attention!