

Climate index for tourism in Croatia

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Keywords: Climate index for tourism, Beach tourism, Cycling tourism

Target Groups

- Travel agencies
- Local tourist offices
- Hotels

Relevance to the Case-Study Requirements

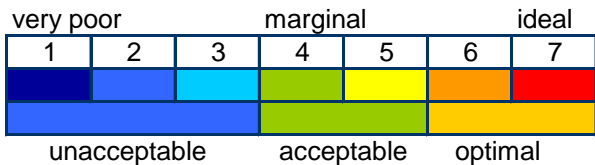
Complex influence of climate variables on tourism can be expressed by quantitative estimate (or an index) of suitability of climate for a wide range of tourist activities and leisure. Such an index would enable the assessment of climate attractiveness in order to choose a destination and time for different types of tourism.

The Approach

De Freitas (2008) defined the climate index for tourism (CIT) that integrates thermal (T), aesthetic (A) and physical (P) facets of atmospheric environment important for tourism:

$$CIT = f [(T, A) * P]$$

T is a measure of the body-atmosphere energy balance expressed by some modern biometeorological indices that integrate environmental and physiological thermal variables and is expressed as thermal sensation (e.g. from very cold to very hot) rather than an energy value. Here the thermal perception is analyzed using biometeorological index physiologically equivalent temperature (PET). The aesthetic component includes sky condition, ranging from clear to overcast. The physical components are wind and rain which can have an overriding effect when certain values are exceeded. Thermal and aesthetic states are combined in a weather typology matrix and produce the rating class ranging from 1 (very poor) to 7 (ideal). If any physical threshold (wind and rain) is exceeded, than P overrides T and A.



CIT is considered to be a descriptor of the quality of climate conditions for the tourism activity for which the index is specifically designed as indicated for the two examples below.

Thermal perception	Cloudiness		Rain	Wind
	(≤4/10)	(≥5/10)	(>3 mm)	(≥6 m/s)
very hot	4	3	2	3
hot	6	5	2	4
warm	7	5	2	4
sligh. warm	6	4	1	4
comfortable	5	3	1	2
sligh. cool	4	3	1	2
cool	1	1	1	1
cold	1	1	1	1
very cold	1	1	1	1

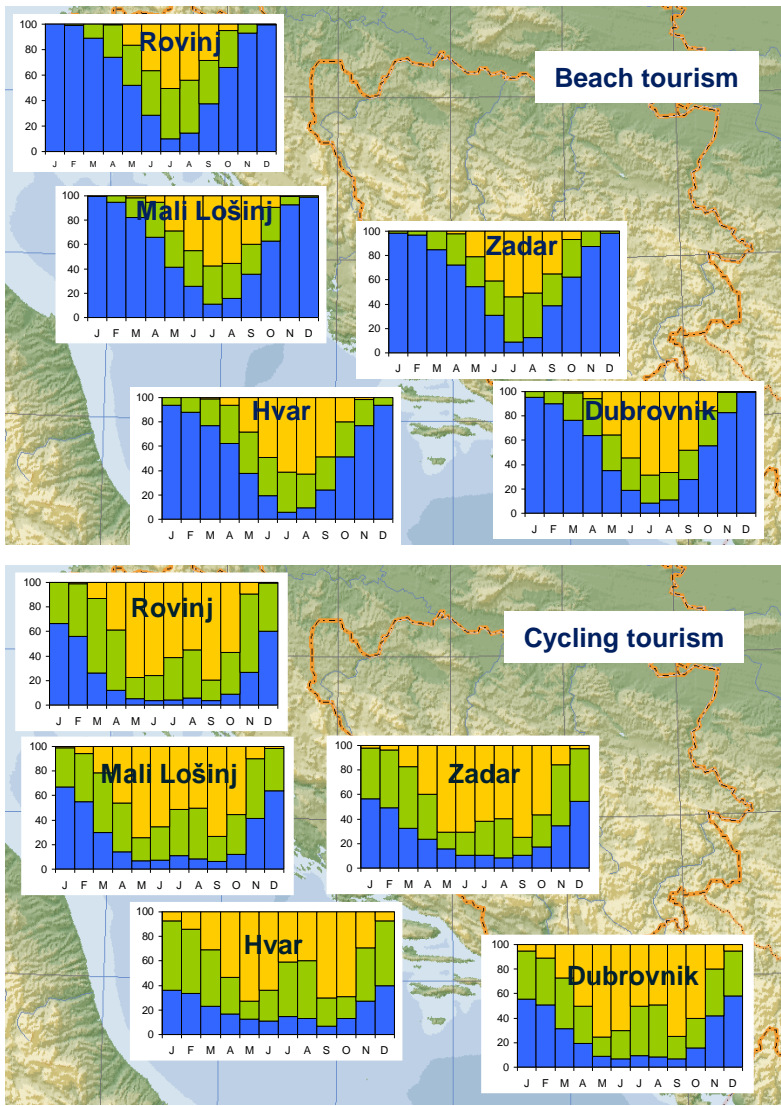
Thermal perception	Cloudiness		Rain	Wind
	(≤4/10)	(≥5/10)	>10 mm	(≥8 m/s)
very hot	3	2	3	2
hot	4	3	3	2
warm	6	5	4	2
sligh. warm	7	7	4	3
comfortable	7	6	4	2
sligh. cool	6	5	3	2
cool	6	4	3	1
cold	4	3	2	1
very cold	3	2	1	1

Weather typology matrices for climate index for tourism (CIT) for beach tourism (left) and cycling (right) (according to de Freitas, 2008, Bafaluy et al, 2013)

References

De Freitas et al, 2008: A second generation climate index for tourism (CIT) specification and verification, Int. J. Biometeorol, 52: 399-407
Bafaluy D., Amengual A., Romero R., Homar V., 2013: Present and future climate resources for various types of tourism in the Bay of Palma, Spain, Reg Environ Change, DOI 10.1007/s10113-013-0450-6

The Product Example



Annual course of probabilities for suitability of climate conditions for beach and cycling tourism at 2 p.m. period 1981-2010. (stations' data)

The suitability for different types of tourism based on CIT differs along the Adriatic coast. For example, more favourable (ideal and acceptable) conditions for beach tourism are to be found in more southern locations; for cycling tourism, the differences among various locations are small.

Acceptable or ideal conditions for beach tourism ($\geq 50\%$ of all days) prevail from June to September in the northern Adriatic, but are extended from May to October in the southern part.

The acceptable period for cycling tourism lasts longer along the whole coast. The conditions for cycling are characterised as unacceptable only during the winter (DJF) and the most suitable period is from May until October. In July and August conditions for cycling are a little less optimal because of the unfavourable thermal effect.

Making the Product Usable

The climate index for tourism gives the information on the suitability of climate for different types of tourism. It enables tourists to choose the best period for holidays depending on their interest. This information can be included in touristic leaflets which can be made available on internet, touristic information desks, distributed among tourists, or as posters placed in hotels, tourist offices or at other public places. this provides a baseline for assessing potential future changes. Combination of meteorological parameters for different types of tourism have been developed after consulting experts and practitioners. Well defined questionnaires with more practitioners as well as an empirical validation of the thermal, aesthetic and physical thresholds to the overall climate ratings would provide better tailoring of thresholds.

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