



WeCENT – a prototype of climate service for tourism



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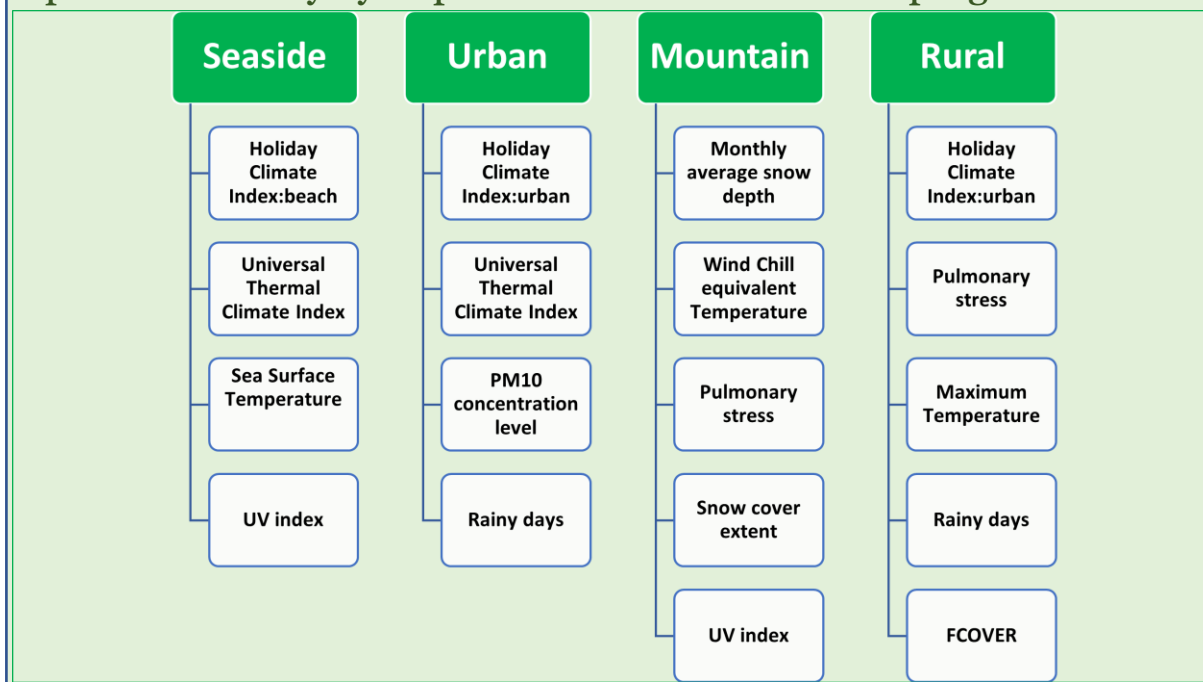
WHAT

WeCENT provides information on long-term weather and natural characteristics for 40 selected touristic destinations in Italy and Romania useful for planning your vacation.



HOW

The information is based on several **parameters and indices** derived from various datasets like global and regional climate reanalysis, satellite-based products and numerical forecasts, provided mainly by Copernicus Earth observation programme.



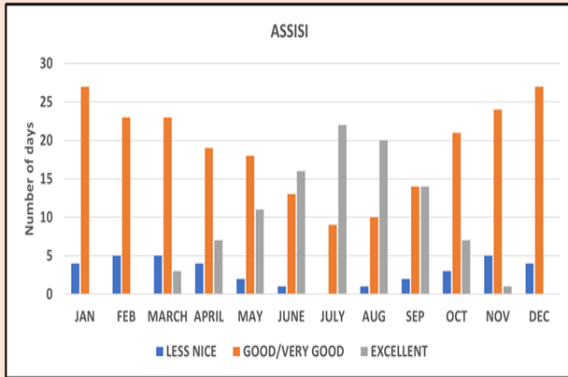
WHERE

Available through the project website <https://pric.unive.it/projects/wecent/home#c4213> and **ready-to-use** for any potential tourist, offering at the same time a 'preview' of an innovative use of scientific information on climate and environment.



Examples of climate products available from WeCENT

WEATHER FOR OUTDOOR LEISURE ACTIVITIES



GOOD -> sunny, calm wind, not too humid, not too hot, no precipitation.

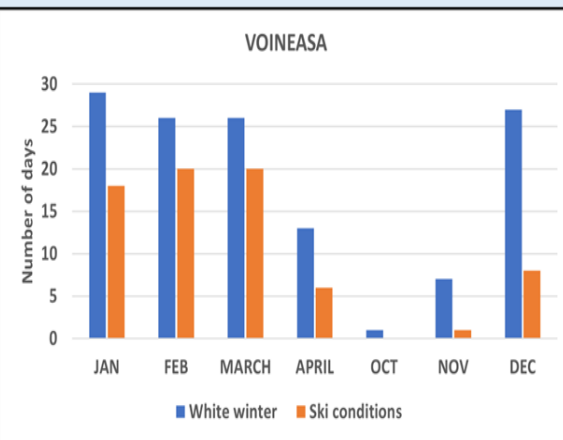
FAIR -> sunny or low/moderate cloud cover, calm/moderate wind, possibly quite low/high temperatures or with high humidity, little or no precipitation.

UNFAVORABLE -> possibly sunny, moderate or stronger wind, probably low/high temperatures, moderate or strong precipitation.

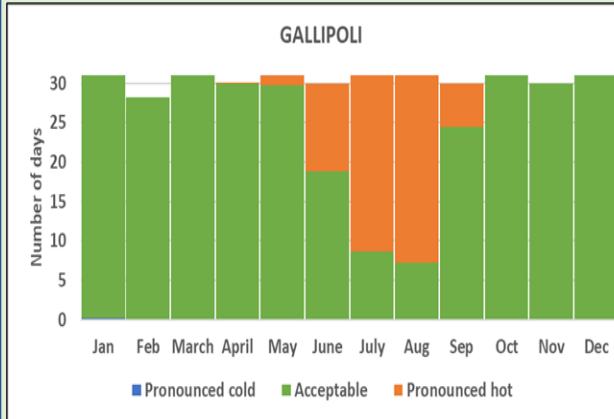
DEPTH OF SNOW LAYER

WHITE WINTER -> the natural snow layer has a depth of at least 5cm. Although there might not be conditions for winter sports, it is considered that the presence of snow with at least 5cm depth contributes favorably to the impression of 'white winter' landscape.

SKI CONDITIONS -> the natural snow layer has a depth of at least 30cm. These are considered good conditions for ski.



THERMAL STRESS



Pronounced hot (stress) -> Potentially harmful to health (e.g., paleness and sweating, rapid heart rate, muscle cramps, headaches, nausea, dizziness or fainting, heat stroke).

Acceptable (stress) -> Mild thermal discomfort possible, but no health risk.

Pronounced cold (stress) -> Potential negative health effects, through lowering body temperature and the risk of hypothermia.

RESPIRATORY STRESS

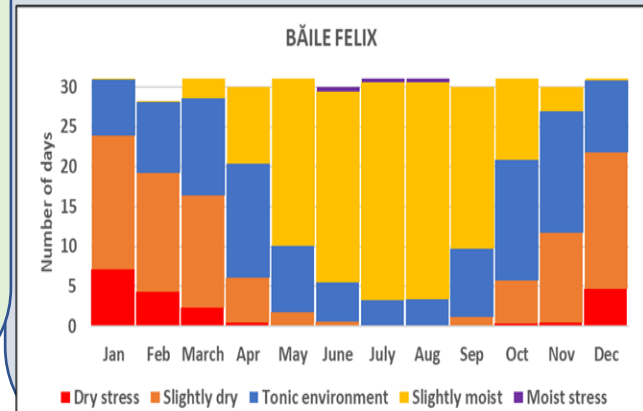
Dry (respiratory) stress -> Manifested during cold months, it could lead to worsening asthma symptoms, also, cold-induced asthma may appear, which usually disappear after getting to a warmer (and more humid) environment.

Slightly dry (respiratory stress) -> Possible mild discomfort for people with asthma or other respiratory issues, but no health risk.

Tonic environment -> The air moisture-related conditions are optimum.

Slightly moist (respiratory stress) -> Possible mild discomfort for people with asthma or other respiratory issues, but no health risk.

Moist (respiratory) stress -> Conditions not recommended for little children or for people with respiratory insufficiency issues.



Survey results of tourists' interest for climate and environmental information customized for tourism

MOTIVATION

No	Climate and environmental (CEnv) feature	Number of answers with marks 4 and 5	Percent from the total number of answers
1	○ Thermal comfort/discomfort	96	75.59
2	○ Air Quality	95	74.80
3	○ Clarity of the sea water	88	69.29
4	○ Average Sea Surface Temperature	87	68.50
5	○ Presence of green vegetation in the surrounding of the touristic destination	86	67.72
6	○ Monthly number of days with weather appropriate for outdoor activities	84	66.14
7	○ Sunburn risk	79	62.20
8	○ Frostbite risk	78	61.42
9	○ Pulmonary stress	76	59.84
10	○ Snow cover	69	54.33
11	Average depth of snow layer	56	44.09
12	Pollen concentration level	50	39.37
13	Season start for flowering of certain species of trees	46	36.22

Not available for tourists

Available from WeCENT

Not easily available for usual tourist

Available from WeCENT

Available as forecast during certain season

Not available for tourists Available from WeCENT

Replaced by Maximum Temperature for rural destinations

Replaced by Rainy days for rural and urban destinations

INDICES and DATA

No	Index/Parameter	Reference	Data type	Dataset	Available from
1	Holiday Climate Index:urban	Scott et al, 2016	Reanalysis	UERRA-HARMONIE ERA5-Land	https://cds.climate.copernicus.eu/
2	Holiday Climate Index:beach	Rutty et al, 2020	Reanalysis	UERRA-HARMONIE ERA5-Land	https://cds.climate.copernicus.eu/
3	Universal Thermal Climate Index	Bröde et al, 2012	Reanalysis	UERRA-HARMONIE	https://cds.climate.copernicus.eu/
4	Wind Chill equivalent Temperature	Osczevski and Bluestein, 2005	Reanalysis	UERRA-HARMONIE	https://cds.climate.copernicus.eu/
5	Pulmonary stress	Besancenot, 1974	Reanalysis	UERRA-HARMONIE	https://cds.climate.copernicus.eu/
6	Monthly average snow depth		Reanalysis	ERA5-Land	https://cds.climate.copernicus.eu/
7	Snow cover extent		Reanalysis	ERA5-Land	https://cds.climate.copernicus.eu/
8	UV index	Van Geffen et al, 2017 Zempila et al, 2017	Satellite-based	Tropospheric Emission Monitoring Internet Service (TEMIS)	https://www.temis.nl/
9	PM10 concentration level		Analysis		https://atmosphere.copernicus.eu/configurations-daily-analyses-and-forecasts
10	Maximum temperature		Observation-based	E-OBS	https://www.ecad.eu/
11	Rainy days		Observation-based	E-OBS	https://www.ecad.eu/
12	Sea Surface Temperature		Satellite-based	Sea surface temperature daily data from 1981 to present derived from satellite observations	https://cds.climate.copernicus.eu/
13	FCOVER		Satellite-based		https://land.copernicus.eu/global/products/fcover

WeCENT as a climate service

Prototype

- 13 products, all at climate scale
- Delivered through an website
- Languages: English
- Accuracy limitations due (among other) to data spatial sampling

Full service (proposals)

- Some products may be of more interest in NRT mode
- Delivered through a mobile app
- Availability in other languages
- Finer scale data used to develop the products
- Additional products in forecast mode.

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