

Climate impacts on tourism in Spain

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Objective

Tourism is an important sector of the Spanish economy and its development and sustainability are climate dependent. The present climate and its tendencies in Spain are evaluated from the point of view of tourists' demands. Tendencies in the observed hotel-occupation are compared with the expected tendencies based on known assessments of climate and climate change impacts on tourism.

Data and Methods

Observed climatic data of 71 stations, published by the Spanish Meteorological Agency ([ftp://ftpdatos.aemet.es/series_climatologicas/](http://ftpdatos.aemet.es/series_climatologicas/)) and hotel occupancy data (HN) in Spanish provinces (1999-2010, Spanish National Institute, Encuesta de Ocupación Hotelera) have been used. As the period of HN data is short, some simple examinations were applied only: the mean changes of HN between 1999 and 2010 and its seasonal and spatial distribution were studied, together with the analysis of climatic data. Climatic data were quality controlled, temperature data quality controlled and homogenised before their use for the present study.

Results and Discussion

Table 1 shows some climatic characteristics for sites of six different climatic regions of Spain. The climate in Spain is generally favourable for tourism (low number of rainy days, much sunshine and mostly pleasant temperatures). Exceptions occur mainly at the oceanic coast (A Coruña in Table 1) and in the high mountains, as well as summer temperatures are often too high. It has been reported that the high season of tourism at the Mediterranean would shift from July and August to spring and autumn due to the rising summer temperatures with the global warming (see e.g. Amelung and Moreno, 2012). Fig. 1 illustrates that summer temperature increased with 1°C or slightly more in all parts of Spain and the values are mostly higher than the thermal optimum (Lise and Tol, 2002) except at the oceanic coast and in the high mountains. However, the recent tendencies in HN (Fig. 2) do not prove any shift in the high season of tourism in the most intensively visited Mediterranean Provinces (Balearics and Barcelona). Moreover, the tourism in July and August has increased on the expense of tourism in other months of the year (it was found also for other Mediterranean provinces, not shown). By contrast, spring and autumn tourism increased faster than summer tourism in the hot interior area of Spain represented by Madrid in Fig. 2. However, the whole picture is even more complicated: spring and autumn tourism also increased faster than the summer tourism in A Coruña where the most pleasant climate is in summer.

The likely explanation of the reverse trend of the seasonal shift in the Mediterranean than in other geographical regions is that beach users like more warm weather and tolerate heat stress more than that surveys show. Spanish hotels are air-conditioned and beaches help to tolerate hot weather. This finding is important, because 90% of foreign tourists in Spain are beach users in the Mediterranean or Canaries (see also Gómez Martín, 2004). Note however that the examined period of HN is short and the tendencies of this particular period might differ substantially from long-term trends.

References

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Annual means	Tm	Tx	Pt	Pd	Sd	Wv
P. Mallorca	18.3	21.9	37.9	6.7	61.4	1.8
Malaga	18.8	23.3	44.9	5.1	64.4	3.8
Las Palmas	21.4	24.0	12.3	3.3	62.6	7.6
A Coruña	15.1	18.2	84.3	14.3	44.2	3.6
Madrid	15.1	20.1	34.9	7.4	60.7	2.2
Sevilla	19.4	25.5	45.1	5.5	64.7	2.9

July&August	Tm	Tx	Pt	Pd	Sd	Wv
P. Mallorca	26.0	29.6	14.0	2.5	75.3	2.0
Malaga	26.2	30.8	2.9	0.5	76.7	3.8
Las Palmas	24.6	27.1	0.3	0.3	72.3	11.1
A Coruña	19.6	22.8	35.8	9.7	53.3	3.3
Madrid	25.4	32.0	10.4	2.7	78.8	2.3
Sevilla	28.3	35.9	3.9	0.6	78.6	3.1

Table 1. Observed monthly climatic characteristics (1982-2011) in sites of various climatic regions in Spain. Tm: mean temperature (°C), Tx: (mean of) daily maximum temperature (°C), Pt: precipitation total (mm), Pd: number of days with precipitation, Sd: sunshine duration in percentage of the astronomical maximum, Wv: Wind speed (m/s). Upper panel: annual means, bottom: mean of July and August.

Conclusions

- Climate in Spain is generally very favourable for tourism.
- Beach users living in air-conditioned hotels tolerate well heat stress.
- Climate is not always a decisive factor in destination choice or its effect on the destination choice is more complex than what would follow from the bias from heat comfort.

Acknowledgements

The research was supported by the Spanish project "Tourism, Environment and Politics" ECO 2010-18158.

