MCCIP Marine Climate Change Impacts Partnership

Topic

Tourism

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Executive Summary

It has been known anecdotally for some time that tourism is controlled by climate, in terms of the climate of the source and destination countries of these tourists. It has also been well documented that at local, regional and global scales tourism is a significant industry for which forecasts show increasing growth. By use of the Tourism Climatic Index we can ascertain that the Mediterranean has, up until now, been the location with the most suitable climate for tourism (in terms of the TCI). As a result of climate change this is now changing. We are seeing an increase in the frequency of months where the TCI is more suitable in North West Europe than the Mediterranean. As a result of the increasing suitability of NW Europe for tourism it can be expected that there will be an increase in tourism activity around the coastal zone. Couple this to changing demographics and socio-economic conditions and it is increasingly likely that the marine environment will be subjected to enhanced pressure by tourism activity. This enhanced pressure will come in the form of: increased visitor numbers to the coastal zone; longer tourism season; increased tourism infrastructure (i.e. hotels, attractions, marinas); increased waste (i.e. sewage, solid waste); and increased environmental destruction.

Full review

It has been known anecdotally for some time that tourism is strongly influenced by climate, in terms of the climate of the source and destination countries of these tourists. It has also been well documented that at local, regional and global scales, tourism is a significant industry for which forecasts

show increasing growth. A large share of international tourism is determined by climate factors, such as temperature and sunshine, which often exhibit considerable seasonal variability. The 'triple-S' of sun, sea, and sand is widely viewed as an important success factor of destinations. Statistical analyses by e.g. Maddison (2001), Lise & Tol (2002), and Hamilton (2003), and simulation studies by e.g. Hamilton *et al.* (2005) and Bigano *et al.* (2006) show the relevance of climatic factors as determinants of tourist demand.

The climate and environment of a resort have been regarded (at least by the traditional tourism research community) as fixed. Increasingly, however, there is evidence to suggest that climate change will start to impact upon the suitability of tourist destinations, either through the direct impacts of climate change or by altering the perception of tourists. Amelung et al. (in press) report on the current state of knowledge as represented in the latest IPCC reports.

Agnew & Viner (2001) explored the impacts of climate change on a range of different destinations; this was the first definitive attempt to examine the multi-sectoral and global changes in tourism flows as a result of climate change. Mather & Viner (2005) examine the policy responses required to address the impacts of climate change on tourism, and tourism on the climate system, whereas Amelung *et al.* (2007) explore the impacts of climate change on tourism seasonality. The European heatwave of 2003 provided for the first time an indication of a climate event that can be attributable to climate change (Schar *et al.* 2004); there does need to be, however, a quantitative assessment to support anecdotal evidence that the tourism industry across Europe was impacted.

The predominant destination for UK tourists (and others from Northern Europe) is the Mediterranean. The majority of tourist resorts are located on the coastal fringes of this region, which are particularly vulnerable to climate change, through sea-level rise and changing temperatures. The systematic study of the effects of climate change on tourism patterns has started only recently, although a collection of more-or-less isolated studies existed beforehand. The effects of climate change on the Mediterranean area are among the most studied. Perry (2000) addressed the implications for the Mediterranean region; this concludes that increases in summer temperatures may produce an unsuitable climate, a situation aggravated by an increased risk of droughts.

By using Mieczkowski's (1985) Tourism Climatic Index (TCI), Amelung & Viner (2006) projected a decline in the suitability of the Mediterranean for tourism during the productive summer season, and a parallel increase in the suitability for tourism of the source countries in northern Europe. In most scenarios, changes were projected to be small or modest in the short and medium term, but potentially very significant in the long term (after 2040).

Nicholls and Amelung (in press) reported on the changes in the average annual number of months with very good conditions (TCI>70) in northwestern Europe (see Annex). Currently, England experiences one to three months of very good conditions, with Ireland, Scotland and Wales experiencing no good months. Little change is projected for medium term, but by the middle of the century, the majority of central and southern England are expected to enjoy up to four or five very good months, and Wales up to two months. In a scenario of rapid climate change (SRES A1F), southern England may experience five or six very good months towards the end of the century, whereas Wales may enjoy three to four such months, and Scotland and Northern Ireland two to three. The use of the TCI may be subject to argument, but it does, however, provide a unique indicator for the assessment of climate change impacts on tourism at a regional scale.

It is likely that the simultaneous changes in demand and supply will open up new possibilities for tourism development in some areas and seasons and close down options in others. The adaptation strategies chosen by tourists will determine much of the net effects for individual destinations (Amelung *et al.* 2007). If tourists stick to the summer as the main holiday season, large geographical shifts are likely, with the Mediterranean countries among the 'losers' and the UK and other northern European countries among the 'winners'. Such a shift would have profound economic, social and ecological impacts. For example, an estimated 100 million tourists visit the Mediterranean region on an annual basis, spending close to 100 billion dollars (Viner & Nicholls, 2006), employing millions of people, and using a lot of water and energy. If many tourists respond by vacationing in another season, however, the impacts on individual destinations may be milder. Prognoses for the shoulder seasons of spring and autumn in the Mediterranean, for example, are much more favourable. The strategy chosen by tourists is influenced by many factors, such as the planning of school holidays, societal developments such as ageing and changing holiday cultures, and the marketing efforts of the tourism industry.

The broad impacts of the decline in suitability of the Mediterranean during the 21st Century and the increasing suitability of Northern European zones for tourism, were summarised in Pinnegar *et al.* (2006):

- Decline in the numbers of UK outbound tourists visiting the Mediterranean during the summer months;
- Increase in domestic tourism within the UK;
- Increase in overseas tourists visiting Britain during the summer months for coastal (sun, sea, sand) tourism;
- Increasing pressures on the coastal zones and waters of the UK.

Associated with the direct impacts of increased visitor numbers, there will also be a range of indirect impacts:

- Increased tourism infrastructure;
- Increase used of the coastal waters for recreation and tourism;
- Increased use of inland water resources and waste, which will add pressures on the marine environment.

Other key impacts associated with climate change might include:

- **Coastal squeeze** of beaches behind hard defences as sea level rises causing erosion and removing the beaches that tourists want to visit;
- Loss of infrastructure for tourism due to sea level rise or a high replacement/maintenance cost if storminess increases;
- Changing rainfall patterns (not very predictable as yet) that could lead to water supply issues (if it becomes very dry in summer).

In order to adapt, some of the tourism industry may need to refocus in the future. Overall the potentially rapid expansion of tourism is likely to produce increasing pressures on the marine environment.

Confidence assessments

'What is already happening' – High

'What could happen in the future' - Low

We have a high level of confidence (much evidence, high level of agreement) that the climatic conditions for tourism (e.g. expressed by the TCI) are changing and producing more favourable conditions for tourism in North West Europe and decreasingly favourable conditions in southern Europe during the summer months. The change in conditions (TCI) in both cases is predominantly driven by increasing temperatures.

There are low levels of confidence (little evidence, little agreement) in changes in tourism patterns that will result from an increasingly favourable climate for tourism.

Knowledge gaps

- Detailed knowledge about the climate preference of tourists and the climate conditions required for specific types of tourism activities;
- Adaptation strategies that tourists, tour operators, local hotel owners and other actors may adopt;
- Possible influences of climate policies (e.g. resulting in higher transport costs) for tourism patterns.

Commercial impacts

- Decline in the numbers of UK outbound tourists visiting the Mediterranean during the summer months;
- Increase in domestic tourism within the UK;
- Increase in overseas tourists visiting Britain during the summer months for coastal (sun, sea, sand) tourism;
- Loss of infrastructure for tourism due to sea level rise or a high replacement/maintenance cost if storminess increases.

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