

1 Introduction – Coastal Tourism and Climate Change: Current Narratives and Discourse

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Background: From ‘Sun, Sea and Sand’ to the IPCC – Problem Recognition and Identification

This book focuses on the contemporary current strategic management issues that are critical to the growing complexity of relationships between global tourism, predicted climate change and policies for tourism coastal management.

The development of coastal tourism destinations forms a major part of our understanding of the notions and concepts regarding the growth and definitions of modern-day tourism. Indeed, within the context of symbiotic relationships the concept of tourism development along coastlines is one that has become synonymous with the three ‘S’s – ‘sun, sea and sand’. This relationship between climate and tourism growth has thus been one of the driving forces in the phenomenon of emerging global tourism markets. Such destinations now form a well-documented account of the historical development of modern-day tourism and our basic understanding of it. However, one of the key issues confronting coastal environments is the continued growth of tourism development and the impact of such on coastal zones. In the mid-1990s

organizations such as the United Nations began to highlight such issues, particularly in developing tourist regions such as the Caribbean (UNEP, 1997). Indeed, the European Commission in 1999 launched its own policy statements on integrated coastal zone management (ICZM) – *Integrated Coastal Zone Management: A Strategy for Europe* (European Commission, 1999), whilst in the USA there had been a longer policy framework for regional coastal zone management, for example, the 1972 Coastal Zone Management Act (Office of Ocean and Coastal Resource Management/OCRM, 2004).

This was followed by other assessments at the time, which framed both the narrative and discourse on predicted climate change and impacts of such on coastal zones and tourism destinations, for example, Environmental Scientist (1999, 2000), Lohmann (2002), Nature (2002) and Phillips and Jones (2006).

Indeed, the symbiotic relationship between coastal tourism destinations and amenable climates is one that in some respects has now become a paradox with climate now threatening to destroy the very nature of tourism that, in the past, it has so successfully encouraged. Predictions from Povh (2000) also

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provide some sobering thoughts. His assertions have predicted that three-quarters of the world's population will be living within 60 km of the shoreline by 2020, and as a consequence suggested that there will be increased tensions between coastal leisure and tourism developments and the unpredictable but growing threats from climate change.

Much debate has been coalesced over the last 15 years or so. In this respect it has been increasingly argued that some predictions, especially with respect to sea level rise, storm surges and rising temperatures, will have significant consequences for the future management of the coastal zone and coastal tourism destinations. Authors such as Granja and Carvalho (2000), Vilibic *et al.* (2000), Jensen *et al.* (2001), Hall and Higham (2005), Phillips and Jones (2006) and Jones (2009) have already highlighted such issues.

The Stern Review (HM Treasury – Cabinet Office, 2005) also concluded during this time that there was clear scientific evidence to show that emissions from economic activity, particularly the burning of fossil fuels for energy, were causing changes to the Earth's climate. The Intergovernmental Panel on Climate Change (IPCC, 2007) also provided stark warnings. The 2007 study predicted that global warming would happen faster and be more devastating than previously thought and concluded that climate change would be far more destructive and have earlier impact than was first estimated. Predictions suggested devastating storms will increase dramatically; sea levels will rise over the century by around half a metre; snow will disappear from all but the highest mountains; deserts will spread; oceans will become acidic, leading to the destruction of coral reefs and atolls; and deadly heat waves would become more prevalent. It is now widely accepted that the findings from both the IPCC Report (2007) and the Stern Review (HM Treasury – Cabinet Office, 2005) have provided the framework and initial evidence to confirm predicted changes to climate and consequences for the environment and economic well-being. These are now firmly recognized as affecting the planet in potentially adverse ways. It was seen, at the time, that such predictions would also ultimately adversely impact

on many coastal environments, particularly island destinations, and that impacts for coastal tourism destinations would, in turn, be far reaching. The most recent IPCC (2014) Fifth Assessment Report has also (with stark warnings) reconfirmed that the process of climate change is accelerating with profound impacts from rising temperatures and extreme weather (IPCC, 2014). In this context the report also highlighted that tourism economies across the world will not escape from such events and will in turn be severely affected.

The relationship between climate change and tourism is now generally well documented. Over the last few years, the relationship between climate change and tourism has generated much debate and discourse which has stemmed from initial research by, for example, Agnew and Viner (2001), Lohmann (2002), Smithers (2006) and Viner (2006). In this context, Smithers highlighted the fact that some of the world's most famous tourist destinations could be closed to visitors by 2020 and beyond because of worries about climate change. Areas particularly highlighted in, for example, the Mediterranean included tourist areas such as Pueta de Marrozon and the Murcian coastline of Spain, the island of Crete, the Amalfi coast of Italy and Athens including the Attica region of Greece. Again, such sentiments have more recently been supported and evaluated by authors such as Becken and Hay (2007), Gössling (2011), Hall (2011), Jones and Phillips (2011), Ranade (2012), Scott *et al.* (2012), Singh (2012), Prideaux and McKercher (2014), Flannery (2015), Hall and Gössling (2015) and Romm (2015) and organizations such as UNEP (2009), UNEP/OECD (2010) in their current assessments.

From such evidence, it seems that there is still a growing concern that pressures from climate change set against continued tourism growth is placing unprecedented socio-economic strains on coastal tourism destinations. Authors such as Booker (2009), Hulme (2009), Dessler and Parson (2010), Giddens (2011), Henson (2011) and Romm (2015) continue to claim that the future predictions of climate change are not an exact science. However, current assessments of extreme impacts, together with implications for socio-economic

and physical disruption continue, none the less, to provide evidence of growing threats. In this context the well-being of many tourism destinations will remain at best uncertain and in the longer term may be severely compromised with perhaps critical consequences for future sustainability.

To date, it is probably true to claim that climate and environmental change is increasingly seen as one of the major long-term threats facing global economies both in the developed and developing world. As such, tourism does not escape, especially those regions that are reliant on tourism-based economies. In this respect, many low-lying coastal regions are specifically at risk from adverse climate change. Evidence of this process is already underway with many examples of coastal tourism destinations experiencing at least early signs of stress or significant signs of negative impact. Ridderstaat *et al.*'s (2014) work on the island of Aruba in the Caribbean, Meyer-Arendt's (2011) work on the Gulf coastline of Louisiana, USA, Wilson and Turton's (2011) work on the Queensland coast and Great Barrier Reef in Australia or Jones's review of coastal destination issues in the UK (Jones, 2011) together with Jones and Phillips' broader strategic assessments on coastal tourism issues (2011) are good illustrations in this respect. Authors such as Prats (2011), Scott *et al.* (2012) and Singh (2012) also provide other contemporary assessments.

Earlier examples have also provided both lessons and evidence. The Townsend and Harris (2004) review of the potential fatal outcomes from inaction are pertinent in this respect. In a similar light, research by Epaedia (2005) also suggested that the biggest driver of development in the European coastal zone in recent years has been the demand for tourism and the growing concern on the need for more sustainable management strategies to offset continued growth demands and adverse climate threats.

Evidence from Epaedia's research in 2005 showed that the Mediterranean coasts of France, Spain and Italy were receiving in excess of 75 million, 59 million and 40 million visitors, respectively. Obvious concerns are raised regarding such growth and further

concerns are raised on future growth predictions along the Mediterranean coastlines (Epaedia, 2005). Using another Mediterranean example, the agency's research suggested that in French coastal regions alone tourism provided approximately 50% of jobs, generating more revenue than fishing or shipping and that peak population densities on the Mediterranean coasts of France and Spain reached 2300 people per square kilometre, more than double the winter populations. It estimated a further 40% increase in peak populations for the future, thus emphasizing the critical economic, social and environment interrelationships at play within such destinations. Benoit and Comeau (2005) have also highlighted some of the key pressures on the coastal fringe. From their research for 'Plan Bleu', a UNEP/EU initiative, key pressures are identified with tourism being highlighted as one of the key coastal environment protagonists.

In the USA, Houston (2002) reported that travel and tourism had become the largest US industry, employer and earner of foreign exchange and that beaches were the major factor in this tourism market. He further identified beach erosion as the number one concern of Americans who visit beaches. Research by the US Army Corps of Engineers (1994) illustrated that 33,000 km of shoreline within the USA were experiencing some kind of erosion and that 4300 km were critical. Their findings considered this a serious threat to tourism and therefore a major threat to the national economy. Work by authors such as Dharmaratne and Braithwaite (1998) whose research in the Caribbean, and Williams and Micallef's (2009) work on beach tourism, has also stressed the importance of beaches to national economies.

In this context climate models suggest a future warming of 0.2–0.3°C per decade with sea levels expected to rise at a rate of 4–10 cm per decade. An increase in extreme weather events such as floods and storms is also expected. A rise of 4–10 cm per decade does not seem like a rise that will adversely affect destinations but, as the IPCC predict this will potentially cause major problems, particularly for coastal areas (IPCC, 2007, 2014).

Similarly, Greenpeace (2007) issued controversial warnings by predicting a hypothetical

future ‘post climate change’ Spanish coastline at La Manga: using computer modelling a ‘virtual’ visual analysis illustrated the consequences of severe flooding if steps were not taken to stop the effects of severe environmental damage caused by climate change. In this respect, Greenpeace advocated a much more strategic approach to offset such threats by promoting a much more vigorous approach to problem recognition and stakeholder engagement and in turn encouraging wider impact adaptation and amelioration measures. However, such predictions, as well as proposed actions, still remain controversial. Others, such as The World Wildlife Fund report (WWF, 2007), suggested that the tourism industry’s heavy reliance on the local environment and climate to sell holidays means that it could face serious challenges as a result of climate change. UNESCO’s (2007) assessment of impacts on world heritage sites has already illustrated and predicted that many of the world’s tourist sites may be under threat from climate change particularly through rising sea levels, increased flooding risks and depleted marine and land biodiversity. Such predictions claimed that this could have disastrous effects on over 830 designated UNESCO world heritage sites. The UNWTO (2007) *Climate Change and Tourism: Responding to Global Challenges* report – a response to the UN Davos climate change conference – highlighted a number of regional threats across the globe where significant impact of climate on tourism destinations was predicted. This included North America, Northern Europe, the Mediterranean, Caribbean, Indian Ocean, Africa, Asia and Australasia, with no region escaping predicted threats (see Chapter 5 for further details).

More recent reports from both industry and governmental organizations such as the ‘Tourism 2023’ report by Forum for the Future (2009) or UNEP (2009) and UNEP/OECD (2010) have reinforced such concerns. Together with these global assessments more local evidence assessing coastal destinations and national tourist economies has been reviewed by Williams and Micallef (2009) and Mushi (2011) who highlight the key economic and social impacts from climate change on coastal tourist communities.

The European Union Environmental Agency (2012) has also explicitly predicted adverse climate impact upon European economies, particularly those that are heavily dependent on tourism in Southern Europe (EEA, 2012).

Such predictions are still not an exact science and there still remains a gap in measurable empirical research on the subject. None the less, a report by Quiret (2011) has suggested that decaying ecosystems can account significantly for a decline in tourism GDP. Despite, however, the lack of empirical data, there has been much other discourse. For example, in 2009, the consulting firm KPMG claimed that tourism is one of the global industries least prepared and one of the most vulnerable to environmental and climate change. It suggested that the tourism industry has yet to come to terms with the associated risks and costs it is facing as threats from heat-waves, droughts and rising sea levels are just some of the factors that will continue to adversely impact upon the industry, especially in terms of social conflict and continued economic viability (KPMG, 2009). In the same year a review by the United Nations Environment Programme (UNEP) (2009) in association with the French Government and World Tourism Organisation (UNWTO) highlighted growing concerns between the need for better integrated coastal management and the need to adapt tourism destinations for climate change (UNEP, 2009). In this context, Jones and Phillips’ (2011) review of *Disappearing Destinations* also highlighted the need for a much more coordinated and strategic approach; an approach that promotes a three-‘pronged’ management push to ensure: (i) problem recognition; (ii) meeting stakeholder expectations; and (iii) delivering sustainable solutions. Their review of specific global cases illustrated current practices and challenges and provided a platform from which to determine new ideas and concepts for future policy directions.

Problem Responses and Contemporary Policy Frameworks

However, despite much rhetoric on proposed and potential solutions the discussions tend to raise more questions than provide answers.

Despite such negatives and political inertia in some quarters, there have been some positives as well, with some concerted effort from, for example, the travel and tourism industry to address the challenges from climate change. The World Travel and Tourism Council (WTTC) (2009, 2014) and Responsible Travel (2014) have been at the forefront of this push by promoting accountability and responsibility by endorsing travel and tourism development awards that recognize good practice in sustainable tourism and carbon management. Other travel conglomerates such as TUI (2014) have followed suit, advocating environmental and social responsibility.

Such developments and predictions should, however, also be considered within the context of the continued growth of broader global tourism markets. Despite the current economic gloom, forecasts for global tourism remain buoyant and predictions, however conservative, show that world tourism statistics are set for further growth over the next decade (UNWTO, 2014). These figures present quite a conundrum. The demand across the regions for such growth raises the ever-mounting question of how growing demand for tourism can be sustained, balanced or for that matter strategically managed in the light of the ongoing predictions for climate change and its consequences.

Paradoxically, such issues have become quite complex, with adverse climate events and associated assessments for environmental damage now threatening to destroy coastal tourism destinations. Predictions also suggest that this will also be exacerbated by ever-increasing concerns and debates over the continued need and merits for remedial actions such as 'hard' and 'soft' mitigation measures (e.g. hard engineering options, smart technology and smart design options, skills and training through capacity building) to offset such problems. Who takes responsibility for the implementation and funding of such actions also remain key issues that remain (Agarwal and Shaw, 2007; Kunreuther and Erwann, 2007; Gössling, 2011; Jones and Phillips, 2011; Prats, 2011). As such, the evidence or science, although not exact, has predicted unambiguous consequences for coastal destinations where both predictions

for adverse climate change and unprecedented levels of tourism growth appear to be on an escalating collision trajectory.

Although there has been much media attention since 2005, concerns and possible solutions are not just a contemporary phenomenon. There have been some earlier responses to predicted threats, particularly relating to carbon emissions. As early as 1999 Viner and Agnew (p. 2) recommended that:

the tourism industry itself must take action to reduce its contribution to global greenhouse gas emissions. For example, in destinations, changes to energy supply should be introduced, creating a shift from fossil fuel to renewable sources of energy such as wind, biomass and solar power. This needs to be coupled with changes to planning procedures and laws, so that more opportunities for renewable energy sources can be developed. More stringent efficiency standards and a compulsory energy rating scheme could also be employed in buildings, such as hotels. Transport to, from, and around resorts and within destinations, is another key area where changes could be made.

The United Nations has also made some headway in the 15-plus years since it began addressing climate change. The UN's 1997 Kyoto Protocol to address carbon emissions set binding targets for carbon emissions, but the absence of support from the USA made the protocol weaker than many had hoped (Henson, 2006). The second International Conference on Climate Change in Davos, Switzerland (UNWTO, 2007) established new agreements that the tourism sector must rapidly respond to climate change and progressively reduce its greenhouse gas (GHG) contribution. This, it suggested, would require action to mitigate its GHG emissions, derived especially from transport and accommodation activities; adapt tourism businesses and destinations to changing climate conditions; apply existing and new technology to improve energy efficiency; and secure financial resources to help poor regions and developing countries (UNWTO, 2007). The consequent United Nations Copenhagen Climate Change Conference in December 2009, although hailed as a further step, was disappointing

in this respect and failed to reach agreement (Vidal *et al.*, 2009). The Doha Climate Change Agreement in 2012 went some way to address the balance between climate and tourism and future ways forward. However, more recent initiatives, such as the United Nations Framework Convention on Climate Change (UNFCCC) held in Paris during December 2015, have been seen as a watershed in establishing binding agreements and as such bode improved prospects for tackling climate change threats in the short- to medium-term futures (Harvey, 2015).

Summary

From such evidence it seems increasingly apparent that coastal tourism and its relationship with climate change are now established topics of research, increasingly discussed within international policy contexts. In this respect, coastal destinations, beaches and beach resorts have become synonymous with socio-economic growth but in turn are becoming increasingly threatened by climate change and associated environmental and economic disruption and damage. It is the consequences of such phenomena that will ultimately impact upon the long-term future of coastal tourism environments and, of course, their continued survival. With respect to such, it would seem increasingly propitious to identify management strategies that on the one hand recognize climatic threats and on the other protect tourism infrastructure and coastal resources, especially in areas significantly reliant on the tourism industry for their economy. This includes destinations small and large, both in the developed and developing world, as coastal regions are places where the impacts from climate change have no discrimination. As a result, across the world, in the USA, Australasia, Asia and Europe, coastal zone strategies to tackle such challenges are now firmly on the political agenda.

Clearly, in the second decade of this new millennium, two factors are clear, one suggests that tourism is having a major environmental impact on many coastal areas

and the second suggests that potential threats from climate change are likely to create considerable adverse impacts unless managed effectively. Thus we find an increasingly clear juxtaposition and paradox emerging between, on the one hand, tourism itself, creating many undesirable impacts on the coastal zone and on the other, climate change threatening to adversely impact on coastal tourism destinations, ultimately threatening the very nature, character and socio-economic well-being of many tourist coastal environments.

In summary this edited volume will explore such issues and discuss the consequences of current and future tourism growth within coastal destinations and the threats and implications that are predicted from climate change. The book is thus divided into two parts. Chapters 1–7 focus on the current theoretical and conceptual issues that are currently in the policy and enviro-socio-economic arenas. For example, Chapters 1, 2, 3 and 4 assess and evaluate contemporary relationships between climate change, coastal zone management and tourism and the current policy and management concepts pertaining to these three dynamic and increasingly inter-related topics. Chapters 5, 6 and 7 discuss emerging strategic interrelated themes on regional assessments and knowledge gaps for coastal and island destinations and, in turn, their implications for economic well-being.

In Part 2 of this book, chapters 8–25 will present more specific global case examples illustrating the practical relationship between climate change and coastal tourism at local destinations. The case examples from Asia, Europe, North and Central America, the Caribbean, Australasia and Antarctica assess implications of current and predicted impact of climate change on coastal tourism destinations and discuss options for ameliorative management and policy measures that can be adopted to help offset predicted effects. Conclusions from such case examples are evaluated and consequences for tourism development outlined. The validity and practicality of management options to tackle the complex nature and juxtaposition between tourism, climate change and coastal zone management are explored and considered, including an evaluation of management

responses and consequent policy choices. Recommendations are made to ameliorate projected impacts on coastal tourism infrastructure by making choices that include a range of strategic policy measures and applied management options for coastal destinations and to explore new opportunities for alternative sustainable tourism development.

References

- Agarwal, S. and Shaw, G. (2007) *Managing Coastal Tourism Resorts*. Channel View Publications, Clevedon, UK.
- Agnew, M.D. and Viner, D. (2001) Potential impacts of climate change on international tourism. *International Journal of Tourism and Hospitality Research* 3(1), 37–60.
- Becken, S. and Hay, J.E. (2007) *Tourism and Climate Change: Risks and Opportunities*. Channel View Publications, Clevedon, UK.
- Benoit, G.E. and Comeau, A. (2005) *Sustainable Future for the Mediterranean: The Blue Plan's Environment and Development Outlook*. UNEP, Earthscan, London.
- Booker, C. (2009) *The Real Global Warming Disaster: Is the Obsession with 'Climate Change' Turning Out to be the Most Costly Scientific Blunder in History?* Continuum International Publishing Group, London.
- Dessler, A. and Parson, E. (2010) *The Science and Politics of Global Climate Change: A Guide to the Debate*, 2nd edn. Cambridge University Press, Cambridge.
- Dharmaratne, G.S. and Braithwaite, A.E. (1998) Economic valuation of the coastline for tourism in Barbados. *Journal of Travel Research* 37(2), 138–144.
- Environmental Scientist (1999) Living in the greenhouse. *Environmental Scientist* 8(1), 1–3.
- Environmental Scientist (2000) The cost of climate change – UK report is a world first. *Environmental Scientist* 9(3), 1–2.
- Epaedia (2005) Available at: www.eea.europa.eu (accessed 1 June 2017).
- European Commission (1999) *Towards a European Coastal Zone Management: General Principles and Policy Options*. European Commission, Brussels.
- European Environmental Agency (EEA) (2012) *Climate Change, Impacts and Vulnerability in Europe 2012*. EEA 12/2012. European Environmental Agency, Copenhagen.
- Flannery, T. (2015) *Atmosphere of Hope: Searching for Solutions to the Climate Crisis*. Atlantic Monthly Press, New York.
- Forum for the Future (2009) *Tourism 2023*, Forum for The Future. Available at: www.forumforthefuture.org/project/tourism-2023/overview (accessed 30 May 2016).
- Giddens, A. (2011) *The Politics of Climate Change*, 2nd edn. Polity Press, Cambridge, UK.
- Gössling, S. (2011) *Carbon Management in Tourism: Mitigating the Impacts on Climate Change*. Routledge International Series in Tourism, Routledge, Abingdon, UK.
- Granja, H.M. and Carvalho, G.S. (2000) Inland beach migration (beach erosion) and the coastal zone management (the experience of the northwest coastal zone of Portugal). *Responsible Coastal Zone Management. Periodicum Biologorum* 102(1), 413–424.
- Greenpeace (2007) *Photoclima-Photoclimate-Spain*. Greenpeace, Madrid, Spain.
- Hall, M.C. (2011) Climate change and its impacts on tourism: regional assessments, knowledge gaps and issues. In: Jones, A. and Phillips, M. (eds) *Disappearing Destinations: Climate Change and Future Challenges for Coastal Tourism*. CAB International, Wallingford, UK.
- Hall, M.C. and Gössling, S. (2015) *The Routledge Handbook of Tourism and Sustainability*. Routledge, London.
- Hall, M. and Higham, J. (2005) *Aspects of Tourism: Tourism Recreation and Climate Change*. Channel View Publications, London.
- Harvey, F. (2015) Paris Climate Change Agreement: The world's greatest diplomatic success, *The Guardian*, 14 December 2015.
- Henson, R. (2006) *The Rough Guide to Climate Change*. Rough Guides Limited, London.
- Henson, R. (2011) *The Rough Guide to Climate Change*, 3rd edn. Rough Guides Limited, London.
- HM Treasury – Cabinet Office (2005) *The Economics of Climate Change: Stern Review*. HM Treasury, HMSO, London.
- Houston, J.R. (2002) The economic value of beaches – A 2002 update. *Shore and Beach* 70(1), 9–12.
- Hulme, M. (2009) *Why We Disagree about Climate Change: Understanding Controversy, Inaction and Opportunity*. Cambridge University Press, Cambridge.

- Intergovernmental Panel on Climate Change (IPCC) (2007) *Climate Change 2007*, the Fourth IPCC Assessment Report. UNEP, Cambridge University Press, Cambridge.
- Intergovernmental Panel on Climate Change (IPCC) (2014) *Fifth Assessment Report on Climate Change 2014*. UNEP, Cambridge University Press, Cambridge.
- Jensen, J., Bender, F. and Blasi, C. (2001) Analysis of the water levels along the German North Sea coastline. In: Ozhan, E. (ed.) *Medcoast 01: Proceedings of the fifth International Conference on the Mediterranean Coastal Environment*. Medcoast, Ankara, Vol. 3, pp. 1129–1140.
- Jones, A.L. (2009) Climate change impacts on UK coastal tourism destinations. *Proceedings of Council for Australia Universities CAUTHE Annual Conference 2009 on Sea Change: Tourism and Hospitality in a Dynamic World*, Fremantle, Perth, Australia.
- Jones, A.L. (2011) UK coastal tourism destinations: Assessment of perceived climate impacts: issues for destination management, local governance and public policy making. In: Jones, A. and Phillips, M. (eds) *Disappearing Destinations: Climate Change and Future Challenges for Coastal Tourism*. CAB International, Wallingford, UK.
- Jones, A.L. and Phillips, M. (eds) (2011) *Disappearing Destinations: Climate change and the Future Challenges for Coastal Tourism*. CAB International, Wallingford, UK.
- KPMG (2009) *Climate Changes Your Business*. KPMG, UK.
- Kunreuther, H.C. and Erwann, O. (2007) Climate change, insurability of large-scale disasters and the emerging liability challenge. *National Bureau of Economic Research*, issue 12821. NBER, Cambridge, Massachusetts.
- Lohmann, M. (2002) Coastal resorts and climate change. In: Lockwood, A. and Medlick, S. (eds) *Tourism and Hospitality in the 21st Century*. CAB International, Wallingford, UK, pp. 285–287.
- Meyer-Arendt, K. (2011) Grand Isle, Louisiana: A historic U.S. Gulf Coast resort adapts to hurricanes, subsidence, and sea level rise. In: Jones, A. and Phillips, M. (eds) *Disappearing Destinations: Climate Change and Future Challenges for Coastal Tourism*. CAB International, Wallingford, UK, pp. 203–217.
- Mushi, R. (2011) *Climate Change and the Coastal Environment: Implications on Coastal Tourism in Bagamoyo District, Tanzania*. LAP LAMBERT Academic Publishing, Saarbrücken, Germany.
- Nature (2002) *When Doubt is a Sure Thing*. News Feature. *Nature* 418, 476–478.
- Office of Ocean and Coastal Resource Management/OCRM (2004) Coastal Zone Management Act. Available at: <https://coast.noaa.gov/about> (accessed 1 June 2016).
- Phillips, M. and Jones, A. (2006) Erosion and tourism infrastructure in the coastal zone: problems, consequences and management. *Tourism Management* 27(3), 517–524.
- Povh, D. (2000) Economic instruments for sustainable development in the Mediterranean region. *Responsible Coastal Zone Management. Periodicum Biologorum* 102(1), 407–412.
- Prats, L. (2011) *Researching Coastal and Resort Destination Management: Cultures and Histories of Tourism*. Palibrio, Bloomington, Indiana.
- Prideaux, B. and Mc Kercher, B. (2014) *Climate Change and Tourism in the Asia Pacific*, 1st edn. Routledge, London.
- Quiret, M. (2011) Maldives in a troubled paradise: time runs out on an environmental deadline. *Time Magazine*, 17 October.
- Ranade, P.S. (2012) *Climate Change and Tourism*. SBS, London.
- Responsible Travel (2014) Responsible Travel Awards. Available at: www.responsibletravel.com/awards (accessed 1 June 2017).
- Ridderstaat, J., Oduber, M., Croes, R., Nijkamp, P. and Martens, P. (2014) Impact of seasonal patterns of climate on recurrent fluctuations in tourism demand: evidence from Aruba. *Tourism Management* 41, 245–256.
- Romm, J. (2015) *Climate Change – What Everyone Needs to Know*, 1st edn. Oxford University Press, Oxford.
- Scott, D., Hall, M.C. and Gössling, S. (2012) *Tourism and Climate Change: Impacts. Adaptation and Mitigation*. Routledge, Abingdon, UK.
- Singh, T.V. (2012) *Critical Debates in Tourism*. Channel View Publications, Clevedon, UK.
- Smithers, R. (2006) Tourist hotspots at risk of closure. *The Guardian*, 22 September 2006.
- Townsend, M. and Harris, P. (2004) Now the Pentagon tells Bush: Climate Change will destroy us, secret report warns of rioting and nuclear war; threat to the world is greater than terrorism. *The Observer*, London, 22 November 2004.
- TUI (2014) *Better Holidays Better World: Sustainability Strategy 2015–2020*. TUI Group, Luton, UK.
- UNEP (1997) Coastal Tourism in the Wider Caribbean Region: Impacts and Best Management Practices. *CEP Technical Report No. 38*.
- UNEP (2009) *ICZM for Coastal Tourism Destinations Adapting to Climate*. UNEP.

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- UNEP/OECD (2010) *Climate Change and Tourism Policy in OECD Countries*. UNEP/OECD.
- UNESCO (2007) *Case Studies on Climate Change and World Heritage*. UNESCO, Venice, Italy.
- United Nations World Tourism Organisation (UNWTO) (2007) *Proceedings of 2nd International Conference on Climate Change and Tourism*, Davos, Switzerland.
- United Nations World Tourism Organisation (UNWTO) (2014) *Tourism Highlights, 2014 edn*. UNWTO, Madrid.
- US Army Corps of Engineers (1994) Shoreline protection and beach erosion control study. Phase 1: Cost comparison of shoreline protection projects of the US Corps of Engineers. Water Resources Support Center, Washington, DC.
- Vidal, J., Stratton, A. and Goldenburg, S. (2009) Low targets, goals dropped: Copenhagen ends in failure. *The Guardian*, London, 19 December 2009.
- Vilibic, I., Leder, N. and Smircic, A. (2000) Storm surges in the Adriatic sea: an impact on the coastal infrastructure. *Responsible Coastal Zone Management. Periodicum Biologorum* 102(1), 483–488.
- Viner, D. (ed.) (2006) Tourism and its interactions with climate change. *Journal of Sustainable Tourism* 14(4), 317–322
- Viner, D., Agnew, M. and World Wide Fund for Nature (WWF) (1999) *Climate Change and Its Impacts on Tourism*. WWF, Norwich, UK, p. 2.
- Williams, A. and Micallef, A. (2009) *Beach Management Principles and Practice*. Earthscan, London.
- Wilson, R. and Turton, S. (2011) The impact of climate change on reef-based tourism in Cairns, Australia – Adaptation and response strategies for a highly vulnerable destination. In: Jones, A. and Phillips, M. (eds) *Disappearing Destinations: Climate Change and Future Challenges for Coastal Tourism*, CAB International, Wallingford, UK, pp. 233–253.
- World Wide Fund For Nature (WWF) (2007) *Environmental Report 2007*. WWF, London.
- World Travel and Tourism Council (WTTC) (2009) *Leading the Challenge on Climate Change*. WTTC, London.
- World Travel and Tourism Council (WTTC) (2014) Tourism for Tomorrow Awards. Available at: www.wttc.org/tourism-for-tomorrow-awards (accessed 6 May 2016).