

**Natural disaster and destination management: The case of  
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## 1. Introduction

On Tuesday 02.09.17, hurricane Irma (category 5) severely damaged the Caribbean. The negative impacts of this hurricane were particularly visible in Saint-Barthelemy, Saint-Martin, Barbuda and Anguilla. This current issue in the Caribbean raises the topic of tourism disaster planning and management and more particularly the importance of considering natural phenomenon when planning and developing a tourism product. This criterion has not been a major focus in academic research (table 1). For Ritchie (2008: 316), there is an ‘urgent need for attention on tourism disaster planning, reduction and readiness’.

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Our research question is as follow: How to turn risk of natural disasters to an opportunity for Caribbean destinations? This research question is motivated by the fact that there are many tourists who are keen to experience and / or observe hurricane (Walker, 2013 [Online]; Cantillon & Bristow, 2001; Robertson, 1999).

## 2. The tourism industry in the Caribbean

The Caribbean is a very popular tourist destination with destinations performing at different level. Séraphin and Dosquet (2015) identified a group that stands out in the Caribbean: Dominican Republic’, ‘Cuba’, ‘Jamaica’, ‘Bahamas’, ‘Puerto-Rico’ and ‘Aruba’. These destinations named the ‘Big 6’ are the only destinations in the Caribbean receiving at least 1 million visitors (table 2).

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Holder (1980) explained that tourism can play a major role in the economic development of the Caribbean and should therefore be a priority. For some islands, the industry is the main,

even only source of income (Peter, 1980). Hurricane Irma seriously damaged the tourism infrastructure of the Caribbean and potentially the future performance of the area (table 3). That said, despite the fact ‘tourism is a weather and climate-sensitive industry’ (Hubner & Gosling, 2012: 47), extreme weather condition seems to only affect the perception of first time visitors to the Caribbean (and more specifically, Martinique) as ‘repeat visitors are more resilient to weather extremes, as weather loses importance with continued visitation’ (Hubner & Gosling, 2012: 54).

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### **3. Post-hurricane strategies**

Risk management, is the process of considering and then controlling risks (Becker, 2006). It is also about finding protection against the risks (Becker, 2006). To mitigate the extent of negative impacts of natural disasters, Ritchie (2008) provides a list of strategies that could be implemented like continually updating obsolete materials / strategies; holding disaster drills; emergency shelter coordination; etc...but nothing specific to the tourism industry. Ritchie (2008) also mentioned a relief and insurance schemes which is quite interesting, but in the case of the Caribbean where hurricane is a recurrent phenomenon, insurance companies might refuse to cover this part of the world for this kind of disaster. That said, a tourism weather insurance appears as the most suitable and applicable strategy for a quick reconstruction of the destination (restoring services, repair, reinvestment etc) at stage 4 and 5 of Ritchie (2004) crisis and disaster management framework. This insurance is all the more important when we consider the fact that hurricanes are considered to be the most expensive natural disaster in coastal areas (Cahyanto, Pennington-Gay, Thapa, Srinivasan, Villegas,

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#### **4. Hurricane Irma and related potential opportunities**

Since the movie 'Twister' in 1995, there has been an increased interest for storm chasing, followed with the emergence of businesses specialised in the area, like *Cloud 9 Tours*, *Storm Chasing Adventure Tours* to name a few (Cantillon & Bristow, 2001; Robertson, 1999). Because of the risks associated with storm chasing it has been put under the umbrella of either 'risk tourism', 'extreme sport' or 'adventure travel' (Cantillon & Bristow, 2001; Robertson, 1999). This activity that involves 'the tracking and direct observation of severe thunderstorms and tornadoes' (Robertson, 1999: 533), attracts extreme-sport connoisseurs and people looking for high adrenaline activities (Robertson, 1999). Based on the above, hurricane and thunderstorms chasing could be developed as a Special Interest form of Tourism (SIT) in the Caribbean. Indeed, the area could benefit from the proximity with the USA to attract potential tourists as this activity is very popular there (Walker, 2013 [Online];

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## 5. Conclusion

From an academic point of view, the findings of this research provide evidence that further research still need to be done in the field of pre and post management of natural disasters. More importantly, this study highlights potential innovation for the sustainable development of the Caribbean like the development of SIT. To some extent, natural disasters provide *tabularaza* that give destinations opportunities to reinvent themselves via the development of new products and services and could also be an opportunity for them to develop a new image and subsequently attract additional (or different) types of visitors.

Implementable practical suggestions could basically be geared by two constructs. First, an ambidextrous construct, that would consist in using the hurricane season (exploitation) to develop a new tourism product (exploration) like hurricane and thunderstorms chasing. This would require the education of tourism workers in terms of safety practices but also the need for tourists to sign disclaimers as adverse experience includes accidents, injuries and health problems that can't be prevented (Rantala & Valkonen, 2011). Second, the construct that strategies need to be put in place to counter the threat that frequency and intensity of adverse weather represent in terms of impacts on hotel plants, tourist attractions and demands (Moore, 2010). Hence the reason we are suggesting the development of resorts under domes like *The Tropical Islands Dome*, Europe's largest tropical holiday resort, located in Germany (Tropical Islands Dome, [Online]).

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Table 1: Sample of research on tourism in the Caribbean

Journals	Author	Year	Title	Topic
Annals of Tourism Research	Amaro, Duarte & Henriques	2016	Travelers' use of social media: A clustering approach	Segment travelers according to their use of social media
Annals of Tourism Research	Jackson & Murphy	2006	Clusters in regional tourism. An Australian case	Application of cluster theory to tourism
Annals of Tourism Research	Perez & Nadal	2004	Host community perceptions. A cluster analysis	Cluster based on opinion of tourism
Annals of Tourism Research	Fredline & Faulker	2000	Host community reactions. A cluster analysis	Cluster based on residents' perceptions of tourism and events
Tourism Management	Jin, Weber & Bauer	2012	Impact of clusters on exhibition destination attractiveness: Evidence from Mainland China	Cluster & destination attractiveness
Tourism Management	Bermini	2009	Convention industry and destination clusters: Evidence from Italy	Cluster & local tourism development
Tourism Management	Erkuş-Öztürk	2009	The role of cluster types and firm size in designing the level of network relations: The experience of the Antalya tourism region	The size of the firm in a cluster that determines the level of networking of that cluster
Tourism Management	Novelli, Schmitz & Spencer	2006	Networks, clusters and innovation in tourism: A UK experience	Cluster & stakeholders collaboration
Tourism Management	Lee, Lee, Bernhard & Yoon	2006	Segmenting casino gamblers by motivation: A cluster analysis of Korean gamblers	Segment the casino gambling
Tourism Management	Jackson	2006	Developing regional tourism in China: The potential for activating business clusters in a socialist market economy	Cluster as a way of fostering competitive advantage in regional China
Journal of Travel Research	Grun	2008	Challenging "Factor-Cluster Segmentation"	Clustering is widely spread but it is not the best practice
Journal of Travel Research	Lee	1983	Marketing Strategies for Hotels: A Cluster Analysis Approach	Clustering of hotels and their marketing strategy
Journal of Travel Research	Prayag, Disegna, Cohen & Yan	2013	Segmenting Markets by Bagged Clustering. Young Chinese Travelers to Western Europe	Clustering of travelers
Journal of Travel Research	Davis & Sternquist	1987	Appealing to the Elusive Tourist: An Attribute Cluster Strategy	Attribute as a way of clustering visitors
Journal of Travel Research	Cha, McCLeary & Uysal	1995	Travel Motivations of Japanese Overseas Travelers: A Factor-Cluster Segmentation Approach	Motivation of travelers as a way of clustering
Journal of Travel Research	Arimond & Elfessi	2001	A Clustering Method for Categorical Data in Tourism Market Segmentation Research*	Clustering method

Journal of Travel Research	Mazanec	1984	How to Detect Travel Market Segments: A Clustering Approach	Segmentation & impacts
Journal of Travel Research	Dolnicar & Leisch	2003	Winter Tourist Segments in Austria: Identifying Stable Vacation Styles Using Bagged Clustering Techniques*	Clustering vacation styles
Journal of Sustainable Tourism	Kibicho	2010	Community-based Tourism: A Factor-Cluster Segmentation Approach	Hierarchical cluster analysis & local community
Journal of Sustainable Tourism	Hawkins	2010	A Protected Areas Ecotourism Competitive Cluster Approach to Catalyse Biodiversity Conservation and Economic Growth in Bulgaria	Cluster & competitive advantage
Journal of Sustainable Tourism	Ryan & Huyton	2010	Who is Interested in Aboriginal Tourism in the Northern Territory, Australia? A Cluster Analysis	Cluster & interests for a destination
Journal of Travel and Tourism Marketing	Voges	2008	Rough Clustering of Destination Image Data Using an Evolutionary Algorithm*	Clustering using algorithm
Journal of Travel and Tourism Marketing	Guillet, Guo & Law	2015	Segmenting Hotel Customers Based on Rate Fences Through Conjoint and Cluster Analysis	segment hotel customers based on room rates and rate fences
Journal of Travel and Tourism Marketing	Upchurch, Ellis & Seo	2008	Applying the Hierarchical Cluster Analysis Procedure Upon the Process of Yield Management	Clustering the use of yield management
Journal of Travel and Tourism Marketing	Lin & Morais	2010	The Spatial Clustering Effect of Destination Distribution on Cognitive Distance Estimates and Its Impact on Tourists' Destination Choices*	Clustering and impacts on tourists' destination choice
Leisure Sciences	Legare & Haider	2008	Trend Analysis of Motivation-Based Clusters at the Chilkoot Trail National Historic Site of Canada	Clustering motivation

Table 2: Visitors in the Caribbean (2003-2014)

DESTINATION	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Antigua and Barbuda	182 423	245 797	245384	253 669	261 786	265 841	234 410	229 943	241 331	246 926	243 932	249 316
Aruba	641 906	728 157	732514	694 372	772 073	826 774	812 623	824 330	868 973	903 934	979 256	1 072 082
Bahamas	1 428 599	1 450 043	1514532	1 491 633	1 527 726	1 462 404	1 327 005	1 370 135	1 346 372	1 421 341	1 363 487	1 421 860
Barbados	531 211	551 502	547534	562 558	572 937	567 667	518 564	532 180	567 724	536 303	508 520	519 598
Belize	220 574	230 831	236573	247 308	251 655	245 027	232 247	241 909	250 264	277 136	294 176	321 217
Bermuda	256 563	271 607	269576	298 973	305 548	263 613	235 860	232 262	236 038	232 063	236 343	224 246
British Virgin Islands	184 777	304 518	337135	356 271	358 056	345 934	308 793	330 343	337 773	351 404	355 677	386 049
Cayman Islands	293 515	259 929	167801	267 257	291 503	302 879	271 958	288 272	309 091	321 650	345 387	382 816
Cuba	1 894 746	2 048 572	2319334	2 220 567	2 152 221	2 348 340	2 429 809	2 531 745	2 716 317	2 838 169	2 851 330	3 001 958
Curacao	221 390	223 439	222070	234 383	299 782	408 942	366 703	341 656	390 297	419 621	440 044	450 953
Dominica	72 948	80 087	79257	83 916	76 515	80 410	74 923	76 517	75 546	78 119	78 277	81 472
Dominican Republic	3 268 182	3 443 205	3690692	3 965 055	3 979 582	3 979 672	3 992 303	4 124 543	4 306 431	4 562 606	4 689 770	5 141 377
Grenada	142 333	133 865	98244	118 490	129 118	129 605	113 370	110 471	118 295	112 307	116 456	133 521
Guyana	100 911	121 989	116596	113 474	131 487	132 776	141 053	151 926	156 910	176 642	165 841	205 824
Haiti	136 031	96 439	112 267	107 783	386 060	258 070	387 219	254 732	348 755	349 237	419 736	465 174
Jamaica	1 350 284	1 414 786	1478663	1 678 905	1 700 785	1 767 271	1 831 097	1 921 678	1 951 752	1 986 084	2 008 409	2 080 181
Martinique	445 424	470 891	484127	502 053	503 107	481 226	443 202	476 492	496 538	487 359	489 706	489 561
Puerto Rico	1 324 968	1 411 910	1465292	1 485 296	1 356 470	1 321 505	1 300 783	1 369 197	1 448 710	1 569 472	1 588 677	1 688 472
St Lucia	276 948	298 431	317939	302 510	287 435	295 761	278 491	305 937	312 404	306 801	318 626	338 158
St Maarten	427 587	475 031	467861	467 804	469 407	475 410	440 185	443 136	424 340	456 720	467 259	499 920
St Vincent and the Grenadines	78 535	86 727	95505	97 432	89 637	84 101	75 446	72 478	73 866	74 364	71 725	70 713
US Virgin Islands	618 703	658 638	697033	671 362	693 372	683 294	666 051	691 194	678 962	737 651	702 963	730 367

Table 3: Tourism in the Caribbean after Hurricane Irma: A snapshot

Author / date	Title article	Source	Key point article
Fraser (2017)	Tourism after the hurricanes	Caribbeanintelligence.com	-Dominica, as a nature resort, lost 95% of its vegetation. As a consequence, Dominica will lose more than a year of the island's usual income -Barbuda's 3 major hotels were damaged -The loss to the region's economy will amount to US\$ 137.8 m
Doig, Locke & Burgess (19.07.17)	Rebuilding a resilient, renewable Caribbean	www.greenbiz.com	In total, Hurricane Irma caused an estimated \$10 billion in damages, and the overall economic losses could be tenfold higher
Wetschler (3.10.17)	Report from SOTIC, part 2: What's new on four islands	Recommend.com	-Before the hurricane, tourism accounted for 55% of Antigua and Barbuda's GDP
No author (16.10.17)	Caribbean's first post-hurricane tourism report	travelpulse.com	The 28 destination tracked by Caribbean Tourism Organisation (CTO) recorded 16.6 million international tourist arrivals in first 6 months of 2017, an increase of 800000 travellers compared with the first six months of 2016. With the passage of Hurricanes Irma and Maria, the growth rate will slow down in the remaining quarters of the year. Hence the expected growth rate of tourist arrivals will range between 1.0 percent and 2.0 percent in 2017, with the 2018 performance expected to be similar.
Campbell (19.10.17)	Help storm-swept Caribbean islands recover with a vacation	Beta.theglobeandmail.com	-Puerto Rico - is not recommended to tourism until late 2018 -Saint Martin – major resorts will reopen in spring 2018
No author (17.11.17)	What's open and closed after hurricanes. Map of Caribbean islands	Travelweekly.com	-95% of properties suffered significant damage -In British Virgin Islands (BVI) estimated the damage from Irma at \$3 billion -BVI has lost more than half of their hotel rooms (before the hurricane they had between 2500 and 3000 rooms)

The author would like to thank **Dr Vanessa Gowreesunkar** (Mauritius of Institute of Education) for proof reading the manuscript

For Peer Review

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