REPRESENTATION AS DISASTER: MAPPING ISLANDS, CLIMATE CHANGE, AND DISPLACEMENT IN OCEANIA

Wolfgang Kempf
University of Goettingen

Introduction

Pacific islands and island states figure prominently in the global media landscape, especially when it comes to picturing how climate change and sea-level rise will play out in the future. Dramatic representations dominate, invoking images of catastrophe, decline, and loss. The direct linkage between Pacific islands and sea-level rise accords centrality to tropes of inundation and submergence—in combination with scenarios of displacement, flight, and resettlement, which envisage the depopulating not only of single islands but of entire island states as well. This discursive construction derives its tragic momentum from the conviction that deprivation and perdition are waiting in the wings and are, in any event, inescapable. One thing is certain: media depictions of this kind are alarmist, simplistic, and heavily exaggerated (see, e.g., Barnett and Campbell 2010: 167–74; Connell 2003, 90; Farbotko 2005: 286–87; Nunn 2009, 182). At the same time, the findings of climate research leave no doubt that the future of many island states and their populations is highly likely to be one of severe imperilment (see Nurse et al. 2014). My study is situated within this conflicting terrain of media representations and scientific constructions.

The focus will be on how depiction of the consequences of climate change and sea-level rise for the islands, peoples, and states of the Pacific plays out at the interface of media and popular scientific communication. Works popularizing science differ from their cutting-edge counterparts in the specific ways

Pacific Studies, Vol. 38, Nos. 1/2—Apr./Aug. 2015

in which complex matters are disseminated and (inevitably) simplified, so that these matters can be brought to a wider lay public and not remain confined to a small pool of experts. Broad impact and market orientation mean that popular scientific publications fall chiefly within the ambit of the global media, despite the fact that validation for such depictions is often secured by adopting scientific rationales or by referencing the international scientific community.

I will exemplify this contention on the popular scientific work *The Atlas of Climate Change: Mapping the World's Greatest Challenge* (Dow and Downing 2011). Perusal of this work is an object lesson in how representations of the consequences of sea-level rise for the Pacific island states are being lifted in their entirety from media reports (see Dow and Downing 2011: 68–69). Thus, it is hardly surprising to find centrality accorded to Bikeman and Tebua Tarawa (Kiribati), the Carteret Islands (Papua New Guinea), Tégua (Vanuatu), and the island state of Tuvalu—to name the four most widely known media icons of a linkage between climate change, Pacific islands, disappearance, and displacement. Accordingly, this atlas presents a discursive distillation, reinforcing, upgrading, and stabilizing what are no more than a series of truncations, exaggerations, and essentializations—not to say downright alarmism—peddled by the media under the ordering principles of exemplification, categorization, and systemization. I will show that, when addressing the issue of climate change and sea-level rise at the interface between media and popular scientific communication, what we find is less an appropriate representation of disaster than a disaster of representation.

In this study, I shall be tapping into a wider field of investigation of climate change and its representation in the global media (see Boykoff 2011; Carvalho 2007; Hulme 2009: 211–47; Neverla and Schäfer 2012; Moser and Dilling 2007; Weingart, Engels, and Pansegrau 2000, 2008). Central to this research agenda is identifying the reasons for a general disconnect between scientific and media constructions of climate change. Here media experts point to the complex and variable models of a heterogeneous climate science, but they also stress the systemic maxims constraining production and presentation of news in a globalized media landscape.

Especially important in this connection is the fact that climate itself as well as climate change and sea-level rise are scientific abstractions, mathematical constructs that are fleshed out and rendered comprehensible in the form of global averages and fluctuations about the norm. Thus, climate is to be understood as the average weather, recorded in a certain region over a certain period of time. What we call global warming refers to higher global mean temperatures due to increased emissions of greenhouse gases (chiefly carbon dioxide) since the onset of industrialization.

It is now an established scientific finding that human activities contribute significantly to observed changes in the earth's climate system. One of the consequences of global warming is a long-term trend to higher sea levels caused by a combination of thermal expansion of seawater and the melting of diverse ice masses, such as glaciers and ice sheets (Rahmstorf 2010a, 2010b). But global average values, changes in the chemical composition of the atmosphere, the gradual rising of surface temperatures, and the trend to ever-higher sea levels are not things that are directly apparent to the senses, nor can they be observed in our daily lives (see Barnett 2005, 216; Hamblyn 2009, 231, 234; Hulme 2009: 3–9; Neverla and Schäfer 2012: 16–17). It is the very abstraction and latency of these asserted phenomena and processes that complicate media communication and, by implication, their social reception as well.

The problematic of media translation and communication of science's current understanding of the forces driving climate change is further complicated by the structures, conditions, and prevailing standards of journalistic activity (see especially Boykoff 2011; Weingart, Engels, and Pansegrau 2000, 2008). Hence, market calculations and competitive pressures require global media to transform scientific facts into topics possessing news value. So today's media resort to elements of construction, such as eventfulness, visualization, personalization, immediacy, actuality, dramatic impact, and (not least) sensation value. In doing so, they accept losing sight of overarching structures or of long-term but unspectacular developments, even as they conjure up almost phantasmagoric landscapes of visible effects, of looming dangers, and of catastrophes in the making, most of which have no scientific backing (Boykoff 2011: 101–6; Weingart, Engels, and Pansegrau 2000, 2008, 17).

The islands of the Pacific are a convenient foil for the global media when it comes to producing and marketing representations of climate change and sea-level rise that, on the one hand, convey a sense of (ever heightening) drama and, on the other, purport to be anchored in the here and now. Historical cum geographic imaginings of islands as isolated, small, accessible, and vulnerable entities play a key role in the serial production of alarmist reports of inundation, disappearance, and displacement. As I hope to demonstrate more explicitly in the following section, these media narratives of recent provenance perpetuate—in combination with climate change and sea-level rise—the same colonial constructions, Eurocentric imagery, and continental projections that have long characterized Western discourses on islands (see Barnett and Campbell 2010; Besnier 2009, 61; Edmond and Smith 2003; Farbotko 2010a, 2010b; Gillis 2003; Howe 2000; Lazrus 2012, 287; Nunn 2004).

Building Blocks of Representation

My primary focus will be on modalities of media representation of Pacific islands and/or island states in the context of climate change and sea-level rise. The economic imperative to manufacture news value in combination with journalistic norms of representation and media-specific usage and the continuing efficacy of Western-continental discourses—these, in short, are the benchmarks by which the global media operate. This modus operandi is based, in my view, on three principles: insularity, concretion, and alterity. I will show that these three principles are best seen as building blocks in a discursive formation linking the islands and island states of the Pacific to scenarios of imminent climatic catastrophe.

The principle of insularity refers to the spatial remoteness, singularity, and bounded nature of islands. Distance, isolation, and limited size have long been key prerequisites making for Western-continental constructions of islands as paradise and utopia (Edmond and Smith 2003: 1–3). Echoes of earlier historical models can be detected today in the idealizing images put out by the tourist industry (see Kahn 2004, 2011) or else in plans for alternative ecological projects (see Farbotko 2010a), although it remains generally true that islands—in the contemporary context of globally networked modernity—are more strongly associated with stagnation, marginality, vulnerability, and loss (see Edmond and Smith 2003, 8). These latter categorizations predominate, too, in mass media narratives on the fatal consequences of climate change and sea-level rise for Pacific islands (see Barnett and Campbell 2010: 155–58; Farbotko 2005: 281, 284–85; 2010b, 52). The concomitant distanced image of a place that is not only bounded and calculable but also a useful model for complexities on a global scale suggests, moreover, that many media depictions construe insularity, within the continuity of Western-continental constructions of islands, as laboratories (Farbotko 2010b: 53–54; cf. Edmond and Smith 2003, 3).[1] Islands are deployed here with the aim of manufacturing knowledge and truth about a complex environmental problematic; at the same time, they are distanced and turned into delimited spaces of evidence holding a moral lesson for consumption by a global public (see Farbotko 2010b: 47, 53–55). The fact that the value of insularity has long been questioned as an analytic concept within the social and cultural sciences (see especially Hau'ofa 1994; Nero 1997; Edmond and Smith 2003) is irrelevant from the perspective of the media, dominated as it is by the struggle for public attention and market share—unsurprising, therefore, that insularity offers the media a suitable terrain for positioning and giving graphic expression to the immediacy of climate catastrophe (cf. Weingart, Engels, and Pansegrau 2008: 88–89).

Concretion, the second principle, subscribes to the idea that islands, owing to their delimited nature, their singularity, and their relatively small size, are intrinsically transparent and graspable (Edmond and Smith 2003: 2–3). Also, the analogy with a laboratory insinuates that islands, in view of their bounded nature, are suitable vehicles for rendering concrete and simplifying complex matters (cf. Farbotko 2010b, 54, 58). In this sense, the reporting of climate change instrumentalizes the Pacific islands and the small island states, reconfiguring the complexity and abstract nature of global climate change in terms of the regional. This "regionalization" is accompanied by construction of a temporal order, a sequencing of events. This has the effect of drawing together the (barely imaginable) time line of the future consequences of climate change and sea-level rise and channeling it into a readily comprehensible narrative confined to the present. By recourse to these stratagems—turning complex developments into events, units of comprehensibility, and an exclusive focus on the present—it becomes possible to narratively order the phenomenon of global climate change while, at the same time, visualizing it and rendering it accessible to a wider public; moreover, continuity and consistency in what is reported are conducive to improving news value (Weingart, Engels, and Pansegrau 2008: 94–100). The authorization of media constructions is effected mainly by reference to scientific expertise (see Boykoff 2011:106–7; Weingart, Engels, and Pansegrau 2008: 92, 101–4). The not infrequent effect of this procedure is to amplify into a media-specific metaphor of climate catastrophe the widespread discursive linkage between islands and vulnerability (see Barnett and Campbell 2010, 2).

The principle of alterity focuses on the construction of Otherness in relation to the self. This relation is characterized by a power structure constituting and specifying the Other in opposition to the self. From a Western-continental perspective, islands (and their inhabitants as well) are systematically recast as Others. This process of Othering assigns to them a subordinate position. Hence it is that islands stand for vulnerability, inferiority, smallness, and loss; they lie at the margins of modernity, and they assume the role of early warning signposts and end up being turned into places of experimental knowledge production and validation under laboratory-like conditions. Alterity sheds light on the spatial and temporal order of power within popular representations of the climate crisis and its consequences for the Pacific islands and island states (cf. Barnett and Campbell 2010, 165). A key indicator, in this connection, is the construction of a number of global "firsts"—from the first islands to have already fallen victim to inundation and disappeared below the waves, through the first climate refugees to have seen themselves forced from their home islands, to the first nation-state to have been (or on the brink of being) engulfed in its entirety (see, e.g., Farbotko 2010b; Farbotko

and Lazrus 2012; Kempf 2009). The spatial distance and isolation of islands, as generated by media conceptions of insularity, also conduces to discursive construction of temporal gradations. In this way, islands are fashioned into remote temporal spaces where climate catastrophe in the present presages a fateful future of the entire world.[2] Constructing an insular chronotope as a microcosm of Planet Earth anticipates what climate change will mean for the industrialized metropolitan states in the mirror of the Other (cf. Connell 2003; Farbotko 2010b). Alterity structures the relations and power constellations pervading this terrain. Subordination, distance, reduction, limitation, and dispensability act here as structural prerequisites for global insight/farsight but also for constitutings of superiority and, not least, for hegemony in the defining of knowledge and truth by continental power formations. Spatial and temporal distance from the immediacy of climate catastrophe in Oceania, such as is created by these discursive orders, creates windows of opportunity and room for maneuver as a way of confirming the hegemony of the industrialized states (cf. Farbotko 2005, 285; 2010b). If alterity is a core principle of media representation, it is primarily because—reflected in the mirror of vulnerability, powerlessness, and extinction of other insular entities—we find primacy, agency, and resources being ascribed to Western-continental power centers for the purpose of finding answers to and relief from a spatially and temporally remote present of a climate catastrophe in the making.

An Island Typology through the Lens of Climate Change

Insularity, concretion, and alterity—these three principles offer a lens through which to view media constructions of a current climate crisis in Oceania. My concern is to achieve a comparative overview especially of those islands or island states in the Pacific that have—in recent history—advanced to become the best-known examples of inundation, disappearance, and displacement as measured by global circulation. In order to keep such a comparative perspective methodologically manageable, I confine myself here to *The Atlas of Climate Change* (Dow and Downing 2011). Not only does this standard resource claim to give a clearly written and graphic account of all scientific data and facts relevant to global warming and its consequences, but it combines this claim with the goal of bringing this thematic complex to as many consumers of popular science as possible. Since the original sources, from which the case studies from Oceania are derived, consist chiefly of articles and reports appearing in the global media, I view the section of the atlas dealing with sea-level rise as an interface between contemporary media representations and their typifications in popular science. If I choose to highlight this interface, it is because I believe that here a further norming and

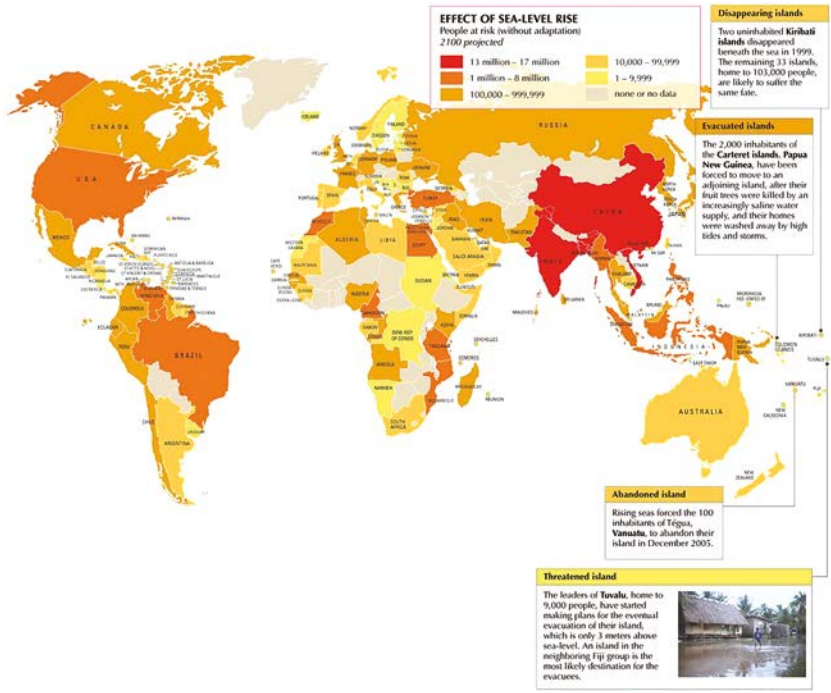

FIGURE 1. **Representations of Sea-Level Rise and the Consequences for Pacific Islands. From *The Atlas of Climate Change*, 3rd ed., by Kirstin Dow and Thomas E. Downing, pp. 68–69. Copyright © 2011 Myriad Editions Ltd (www.MyriadEditions.com).**

authorization of media-produced global cases is being effected by forms of popular presentation that simulate a systemizing scientific approach.

I have chosen to focus primarily on the manner in which Oceania is represented in the chapter "Rising Sea Levels" (Dow and Downing 2011: 68–69). The plate (reproduced here; see Fig. 1) surveys on a global scale the potential risks facing coastal regions and islands. A map of the world gives the global distribution (as well as a numerical breakdown) of the millions of people who will have become directly affected by sea-level rise, inundation, and the loss of land by 2100. Expanded sections treat certain parts of Oceania for their illustrative value.[3] Here Dow and Downing offer a typology plotting the scale on which sea-level rise will potentially impact the islands in this region. Their categories foresee four scenarios: (1) disappearing islands, (2) evacuated islands, (3) abandoned island, and (4) threatened island (see Dow and

Downing 2011, 69). Particularly informative are the concrete case studies under this typology. Thus, the authors, in the case of disappearing islands, have chosen two uninhabited islands, namely, Bikeman and Tebua Tarawa in Kiribati; in the case of evacuated, that is, resettled islanders, their choice has fallen on the Carteret Islands in Papua New Guinea; in the case of abandoned islands, on Tégua in Vanuatu; and in the case of threatened islands, on the island state of Tuvalu. The above representations of islands and island states, plus the concomitant concrete references to climate change and sea-level rise, will be the subject of the following analysis.

The Islands of Bikeman and Tebua Tarawa (Kiribati)

The first category is "disappearing islands." The pertinent text runs as follows: "Two uninhabited Kiribati islands disappeared beneath the sea in 1999. The remaining 33 islands, home to 103,000 people, are likely to suffer the same fate" (Dow and Dowing 2011, 69). The authors cite as their source a BBC story filed by environmental correspondent Alex Kirby on June 14, 1999, in which the "disappearance"—untrue actually, contrary to what the media assert[4]—of these two uninhabited islands, namely, Bikeman (or Te Abanuea) and Tebua Tarawa, both located in the lagoon of Tarawa atoll, was attributed to rising sea levels brought on by climate change (see Kirby 1999). The cited BBC story is, in turn, a summary of a report that had appeared the day before in the weekend edition of *The Independent*, headlined "They're going under. Two islands have disappeared beneath the Pacific Ocean—sunk by global warming. This is just the beginning" (Lean 1999).

This theme of two uninhabited islands disappearing below the waves in Kiribati first surfaced in the printed media toward the end of the 1990s (cf. Connell 2003, 99). Reports about Bikeman and Tebua Tarawa, it is apparent with hindsight, are among the earlier witnesses of a journalistic endeavor to encapsulate in concrete images the consequences of global warming for the Pacific region—in a way calculated to gain maximum attention. Journalists like Lean and Kirby construed the disappearance of these uninhabited islands as a visible harbinger of a worldwide crisis. The loss of the two islands should, they claimed, make clear that climate change was playing out in the present, marking the beginning of a development that would menace small island states and the coastal regions of large countries alike.

The media's construction of the first tiny, uninhabited islands to fall victim to rising sea levels was rapidly noted and diversely received. Aside from routine dissemination via the usual journalistic channels, the idea was also taken up by, for example, the documentary film *Rising Waters: Global*

Warming and the Fate of the Pacific Islands (Torrice 2000). This film opens with a sequence of an I-Kiribati man wading knee deep over what purports to be the submerged island of Bikeman, leaving viewers in no doubt as to the threat posed to Pacific islands by sea-level rise. And Stephen Royle, the author of a standard work—*A Geography of Islands: Small Island Insularity* (2001)—cited the press report carried by *The Independent* on the sinking of Bikeman and Tebua Tarawa as a way of indicating how sea-level rise was increasingly impacting low-lying atolls (see Royle 2001, 39). Years later, the media construction of two disappeared Kiribati islands also gained entry into *The Atlas of Climate Change* already mentioned. Once the disappearing islands had found inclusion in this work of popular science as a case study, their primary function now became to illustrate the real threat an entire Pacific nation was facing from an encroaching ocean.

But however rapidly these reports of the shared fate of Bikeman and Tebua Tarawa were spread and however eagerly they were taken over, doubts concerning accuracy followed hard on their heels. The geographer John Connell (2003: 99–101), one of the first to address the alarmist tone of the media coverage of climate change impacts on the Pacific island states, was especially skeptical about the media's preferred version of events, namely, that the disappearance of Bikeman was a response to sea-level rise. Connell objected that no consideration had been given to a possible role for human-induced environmental changes in the wake of local development projects. He was alluding to the construction of the Dai Nippon Causeway (so called) connecting Betio and Bairiki, which was much more likely to have triggered the transformation of Bikeman than sea-level rise (Connell 2003, 100).

Causeways in Kiribati, rather than bridges, provide a transport link (usually roads) between the islands within an atoll. On Tarawa, the construction of causeways has been an integral part of urban development, which comes with its own history (and also problematic) of ecological fault lines and confrontations between landowners and political leadership (see Bryant-Tokalau 1993, 156; Itaia 1987: 214–15; Macdonald 1982, 177, 272; Takaio 1993, 282). The Dai Nippon Causeway, the longest of its kind in Kiribati, was opened in July 1987 (Gillie 1991). Its construction altered the flow dynamics of waves and sand, affecting the sedimentary deposits within the lagoon. The resultant impeded flow of water between lagoon and open ocean, in the opinion of experts and of many in the local population, has to be seen as the primary reason behind the massive changes to the small island of Bikeman (see Connell 2003, 100, 105; Nunn 2009: 170–71) (see also Fig. 2).

The case of Bikeman illustrates how media coverage, bent as it usually is on attributing the ecological transformations of Pacific islands to sea-level rise, displaces all other dynamics and historically attested *wechselwirkungen*

FIGURE 2. **The Island of Bikeman in the Lagoon of Tarawa, Kiribati. Photo: W. Kempf (2010).**

(interaction) between land, sea, and people (see also Bonnelykke Robertson and Rubow 2014: 62, 65–68). But the question remains of what, in the final analysis, led to the flooding of Tebua Tarawa, the second uninhabited island at the northern end of Tarawa. Now, several experts are willing to entertain the possibility of sea-level rise as a cause (see Aung, Awnesh, and Prasad 2009, 204; Nunn 2009, 171). But no concrete scientific investigation is available. Also in need of clarification is whether the flooding of two small islands within a single lagoon, events occurring at roughly the same time, could be due to such different causes.

Nor should the dynamic underpinning media representations be ignored in any way. There is much to suggest that the attribution of Bikeman's and Tebua Tarawa's disappearance to sea-level rise bears the imprint chiefly of journalistic narrative strategy. Being remote, small, uninhabited, and dispensable, the two islands could be turned by the global media—in the years around the new millennium—into paradigm cases where the perilous consequences of global warming could be graphically revealed to the world. Based on such media representations, *The Atlas of Climate Change* was induced to include under the rubric of rising sea levels the category of disappearing islands. Condensed into a popular scientific case study, the "disappearance"

of these two Kiribati islands is portrayed as heralding a bleak future for the entire archipelago.

Migration and Resettlement: The Carteret Islands in Papua New Guinea

Remaining with *The Atlas of Climate Change*, let us examine the second category: "Evacuated islands." A case study is adduced for exemplary purposes: "The 2,000 inhabitants of the Carteret islands, Papua New Guinea, have been forced to move to an adjoining island, after their fruit trees were killed by an increasingly saline water supply, and their homes were washed away by high tides and storms" (Dow and Downing 2011, 69). The coauthors give as their source an article posted by Robinson, Rowe, and Khan (2006) on "Jamaica Gleaner Online" (a website). In this article, the problems the Carteret Islands are currently encountering are linked to sea-level rise on a global scale. The question is then asked if developments in the Pacific are not a window into the future for the low-lying regions and coastlines of Jamaica. The above quotation forms the point of departure for my analysis of media constructions of the Carteret Islands and its people as victims bearing the brunt of climate change. Two contentions rub shoulders in such a representation. The first is that the effects of climate change and sea-level rise have, to a greater or lesser extent, rendered the Carteret Islands uninhabitable. The second is that the islanders have had, therefore, to be resettled on another island. I shall argue, to the contrary, that such an account cannot withstand differentiated scrutiny.

The Carteret Group (also known as Tulun or Kilinailau) comprises six inhabited islands northeast of Bougainville in Papua New Guinea. The ancestors of the present inhabitants of the Carteret Islands are thought to have arrived there some three hundred or four hundred years ago, coming from the Hanahan region in the northeast of Buka Island. The Carteret islanders were known to be struggling to cope with a deteriorating environment. At the end of the 1960s, the Australian administration, then the authority, monitored the situation by dispatching patrols and collecting data on population trends and the economy but also on environmental problems. Plans were hatched by the administration to resettle the people of the Carteret Islands (at their own request); these, however, came to nothing, as no suitable land could be found (O'Collins 1990, 250, 254). At the beginning of the 1980s, the provincial government (which by then had taken over from the Australians) set up the Atoll Resettlement Project. The plan was to evacuate a limited number of families from the Carterets, Takuu, Nuguria, Nukumanu, and Nissan and resettle them on Bougainville in the vicinity of Arawa

(see O'Collins 1990, 255, 258; cf. Connell 1990, 153). As it happened, persons from the Carterets and Nissan who had relocated to Bougainville under this project withdrew from it the moment civil war broke out in 1989 (Bourke and Betitis 2003, 49; Rakova 2009).

As for what really lies behind the changes to the environment registered on the Carteret Islands, no expert consensus exists (see Barnett and Campbell 2010, 173). Early reports and appraisals by Connell (1990, 154) and O'Collins (1990, 247) incline toward global warming and rising sea levels. Bourke and Betitis (2003: 28–29, 50) are more cautious, noting, for example, that no linkage between erosion and sea-level rise has ever been demonstrated. To what extent plate tectonic movements and other factors furnish an alternative explanation for the continuing crisis in the Careret Islands remains unclear (see, e.g., Rakova, Patron, and Williams 2009; Roberts 2002). In a recent publication Ursula Rakova (a spokeswoman from the Carteret Islands) attributes the environmental changes on the Carteret Islands mainly to climate change and sea-level rise (see Rakova 2014: 269, 271).

The paucity of scientific investigations and substantiated results has in no way prevented the global media from stylizing the inhabitants of the Carteret Islands as "some of the world's first climate refugees" (see, e.g., Cooney 2009; Morton 2009; Parry 2006; Vidal 2005). But such a characterization is misleading in manifold respects. As already pointed out, it is unclear that the transformed environment of the Carteret Islands can be attributed solely to climate change and sea-level rise (Barnett and Campbell 2010, 173). But what *is* clear by now is that categories like "environmental refugees" or "climatic refugees" are imprecise and therefore problematic (see Castles 2002, 2010; Farbotko and Lazrus 2012; Kempf 2009). Moreover, the narrow horizon of a media account turning on flight, disappearance, and catastrophe has had the effect of completely airbrushing out of the picture an earlier history of mobility, migration, and resettlement within the region (see Connell 1990; O'Collins 1990). In the concrete case of the Carteret islanders, it is additionally clear, as shown by a glance at the background political circumstances, that this is a case of a relocation spread over many years—in no sense, then, can it be described as a precipitous flight of refugees.

In 2001, the Autonomous Government of Bougainville announced contingency plans for the relocation of the Carteret islanders. Two years later, the national government pledged its support. Since then, there has been a spate of press releases at regular intervals, announcing that resettlement was about to proceed and would soon be completed. But no concrete measures were ever taken. The passivity of state institutions, in combination with a worsening of the environmental problems and repeated shortfalls in the food supply, finally made the Council of Elders of the Carteret Islands set

up—the year was 2006—a nongovernmental organization it named Tulele Peisa (or "Sailing the Waves on Our Own") (see Tulele Peisa Inc. 2009). The original goal of this body was, over a period of many years, to resettle on an entirely voluntary basis the bulk of the Carteret islanders on Bougainville. But it was only during 2009 that Tulele Peisa could, with the help of the Catholic Church, relocate the first five families to Tinputz on Bougainville. Two families did stay, but the other three appear to have returned to the Carteret Islands (Kilvert 2010; Tweedie 2009). Meanwhile, another twenty families had moved to Bougainville, acting evidently on their own initiative (Rakova 2009). Current figures list seven families (totaling eighty-six persons) as having settled down permanently in Woroav/Tinputz on Bougainville. Tulele Peisa plans to resume relocating the remaining 1,700 Carteret Islanders in 2016.[5] It is precisely these delays and the setbacks that drive home just how far the Carteret islanders are from embracing a comprehensive solution.

Although in recent years (2012–2014) the Carteret Islands have attracted less mass media coverage than earlier, it is fair to say that media constructions linking the first climate refugees to global warming and sea-level rise are remarkably tenacious—and this despite the basically unresolved causes of the decades-long environmental crisis, despite the evident multiplicity of migration flows, and despite the fact that—in view of the staggered nature of the resettlement process—talk of a collective flight is clearly unjustified. In their role as laboratory islands for purposes of concretion of sea-level rise, inundation, and collective displacement, the Carterets have become (at one and the same time) dispensable and indispensable for the global media. *The Atlas of Climate Change* has seized on this media-created case—the intrinsic news value of the Carteret Islands—and fashioned from it a second category of evacuated islands. Despite never talking explicitly of climate refugees, the atlas dwells (heuristically and in concrete detail) on the loss of land and livelihood as well as the necessity to collectively resettle the local population. The ordering principle is that of evacuation, and the contention is that the islanders have already been rescued from the consequences of sea-level rise.

The Island of Tégua in Vanuatu

A third issue addressed in *The Atlas of Climate Change* is a resettlement project in the island state of Vanuatu. Under the category "abandoned island," the atlas supplies the following information: "Rising seas forced the 100 inhabitants of Tégua, Vanuatu, to abandon their island in December 2005" (Dow and Downing 2011, 69). The only source the coauthors give is the

link www.sidsnet.org/1f.html, which accesses the website of the "Small Island Developing States Network," an international association of small island states. The evidence furnished in support of this claim is extremely vague. A press report headlined "Pacific: Global Warming Already Affects Low-Lying Islands" and dated December 12, 2005, to which it would appear that this citation refers, requires much trawling through the Web to access. But what is more to the point is that the atlas's description of the situation on Tégua has no basis in fact. The inhabitants of Tégua have not left their island. Rather, they were, under the terms of an aid project promoting adaptation to climate change, supported in a decision they had already made to relocate away from the coast onto higher ground. Therefore, to portray this as a case of an "abandoned island" is unwarranted.

Relocation within Tégua itself took place under a project called "Capacity Building for the Development of Adaptation Measures in Pacific Islands Countries" (CBDAMPIC), paid for out of developmental funds from the Canadian government and overseen by the Secretariate of the Pacific Regional Environment (SPREP). This three-year project set itself the goal of improving the living conditions of the inhabitants of Pacific islands, thus bolstering local abilities to counter the hazards—present and future—of climate change (Nakalevu 2006). To advance this goal, pilot projects were initiated in four different Pacific states. A series of structural measures, all of which played a role in advancing the project as a whole, were (with the eye of hindsight) positively received (see Barnett and Campbell 2010: 127–30).

The specific challenges confronting the community on Tégua largely contributed to its being singled out for one of the three pilot projects in Vanuatu. The islanders—estimates of their numbers range between fifty and one hundred—lived on a coastal strip much exposed to erosion and inundation. Aside from rampant disease, to which the often-flooded and waterlogged area of settlement was prone, shortage of drinking water ranked among the most urgent problems. Since no water bodies of any size exist on Tégua, the population was entirely dependent on rainwater—hence, the aim of the CBDAMPIC program became to provide corrugated iron roofing and water tanks as structural prerequisites for the goal of resettling the population inland on higher ground. In August 2005, this new settlement on Tégua could be officially inaugurated (see Nakalevu 2006: 56–61).

Tégua attracted global attention through a press release put out by the United Nations Environment Program (UNEP) in December 2005 on the occasion of the 11th World Climate Conference in the Canadian city of Montreal. The claim was advanced that the resettled Téguan islanders were the world's first refugees to have been driven to flight by the havoc wrought by climate change (see UNEP 2005). This media construction

was presumably the source of further reports along the same lines, which finally resulted in Tégua gaining inclusion in *The Atlas of Climate Change* as an "abandoned island." Generally, we may ask why it is that from the CBDAMPIC project, involving a total of four countries and a large number of national pilot projects, only Tégua was selected for presentation to the global public as a success story for adaptation to climate change. Thus—to take the case of Vanuatu alone—there were two other pilot projects, one of which had likewise foreseen the relocation of islanders. And yet no information on the progress of these latter resettlement measures and no stock taking of their success or otherwise were forthcoming in the CBDAMPIC project's final report.

To designate the inhabitants of Tégua as climate change refugees is to succumb to the same conceptual straitjacketing referred to earlier in my discussion of the Carteret Islands. Factors such as earlier migration flows and contemporary demographic movements have been overlooked, and—not for the first time—we see how misleading the original accounts in the press releases in fact were, as when it was reported, for example, that the entire Téguan community had been evacuated to higher ground to escape the ravages of climate change. A study by SPREP on the situation of the Téguan community one and a half years after conclusion of the pilot project showed that several families were still in the process of resettling (Nakalevu and Philips 2007). Thus, talk of a dramatic flight of refugees is wholly exaggerated. Relocation to Tégua was finally concluded in 2008 (C. Mondragon, pers. comm., 2011).[6]

It remains unclear to what extent Tégua's environmental problems are actually (or solely) due to climate change and sea-level rise. As is so often the case, here too the statements made are based on gross generalizations that omit from consideration other possible factors, such as earthquakes, vertical tectonic movements, and wave activity (Ballu et al. 2011; C. Mondragon, pers. comm., 2011). Depictions that pander to alarmism and our craving for the dramatic usually attract more attention than do balanced or complex analyses. And so a project that could certainly claim to be strengthening the resilience of the Téguan community against future environmental hazards was pounced on by UNEP and the media and then subverted into a flight scenario triggered by acute risk to life and limb from climate change and sea-level rise. But presumably it was this very media construction that lies behind Tégua's inclusion for heuristic purposes in *The Atlas of Climate Change*. Thus could be treated and authorized, by systematic inclusion in the color chart under the category of "abandoned island," yet another concrete case of collective displacement of Pacific Islanders by rising sea levels.

The Case of Tuvalu

"Threatened island" is the last of the four categories reproduced in the color chart on sea-level rise in *The Atlas of Climate Change*. Again we are treated to an illustration of this purported problematic: "The leaders of Tuvalu, home to 9,000 people, have started making plans for the eventual evacuation of their island, which is only 3 meters above sea-level. An island in the neighboring Fiji group is the most likely destination for the evacuees" (Dow and Downing 2011, 69). This description, let me quickly point out, is fundamentally flawed. Tuvalu is not an island but rather an independent island state in the southwestern Pacific. Barely half of the population lives on the main atoll, Funafuti; the rest are scattered across the other eight islands that make up the territory of this small Pacific nation.[7]

The evidence that Dow and Downing chiefly cite takes the form of a press article from February 20, 2006, headlined "Move Tuvalu Population to a Fiji Island to Ensure Survival, Scientist Says" (see Tuvalu News 2006).[8] It reports the position of Don Kennedy, a committed advocate of Tuvalu, who—at a forum on climate refugees held in the Australian city of Melbourne—had urged that the population of this atoll state be resettled on the island of Kioa in the northeast of Fiji. Kennedy, one of whose parents was from Tuvalu, had previously floated plans to that effect and passed them on to Tuvalu's government (Paton 2009, 122). The then prime minister of Tuvalu, Maatia Toafa, had reacted cautiously. The government he headed favored a different approach, that of exposing the industrialized countries as the chief culprits responsible for global warming. Plans for resettling the population were secondary, even if government members had agreed among themselves to keep an eye out for available land in Australia or New Zealand (Taafaki 2007, 281). Earlier ideas of possibly evacuating Tuvaluans to Fiji, in the event of a full-fledged climate-related crisis, were set aside in the wake of the military coup of 2000 (Barnett 2002, 27). Recent studies in Tuvalu indicate that the government's reluctance to draw up plans for migration and resettlement might also reflect domestic considerations—large parts of the population feel deeply bound to their country, both culturally and socially; given the long-standing nature of these ties, they are unwilling to relocate to foreign shores (see Gemenne and Shen 2009; Mortreux and Barnett 2009).

The question why, in the event of a possible resettlement of Tuvaluans, the island of Kioa in Fiji was specifically singled out—a circumstance also apparent in the cited passage from *The Atlas of Climate Change*—is best answered by a brief excursion into colonial history. When Kioa went up for sale in 1946, residents of Vaitupu in Tuvalu had enlisted the help of the colonial administration to purchase this Fijian island. The father of Don

Kennedy, Donald Gilbert Kennedy—who before the war had founded and then headed the national school on Vaitupu before going on to become an administrative officer in the Gilbert and Ellice Islands Colony—had, at the time, drawn the Vaitupuans' attention to Kioa and recommended its acquisition as an investment with future potential (see Koch 1978; Teaiwa 1997; White 1965). Prompted not least by his family background, Don Kennedy probably felt himself predestined for the role of mediator and advocate, propagating volcanic Kioa as a suitable place of refuge for the population of the atoll state Tuvalu.[9] If, bearing in mind these background circumstances, we return to the passage from *The Atlas of Climate Change* heading this section, it becomes instantly clear that collectively resettling the inhabitants of Tuvalu was the idea, first and foremost, of a private individual; it did not reflect official planning by the political authorities. Likewise, the statement that there was an island available in Fiji to which the migrants from Tuvalu could very probably relocate simply ignores the historical and political realities of both countries, Fiji and Tuvalu.

Both the journalistic narrative and its subsequent refinement for inclusion in *The Atlas of Climate Change* target a very special segment from the global roundabout of media representations of Tuvalu. That said, intimations can be found—in narrative and subsequent refinement alike—of prevalent discursive patterns in respect of Tuvalu's role as a diagnostic instrument demonstrating the immediacy of climate change (see especially Farbotko 2010b; Farbotko and Lazrus 2012). Thus, we are given to understand that the inherent vulnerability of Tuvalu's low-lying atolls, against a background problematic of sea-level rise, leaves the political principals no choice but to proceed with plans for a collective evacuation of this island nation, consigning Tuvaluans to a future existence as climate refugees. In this discursive terrain, the physical inevitability of sea-level rise directly sets in motion concrete planning by the authorities for collective flight by the local population. The construction of Tuvaluans as climate refugees, it has been countered, leaves no room for the multiplicity, divergence, and efficacy of indigenous ideas, practices, and capacities (see Farbotko 2005, 280; Farbotko and Lazrus 2012: 382–83).

Especially important is that *The Atlas of Climate Change* saw fit to classify Tuvalu as a "threatened island." Whereas the three other categories purport to refer to past events—Bikeman and Tebua Tarawa have recently disappeared, the entire population of the Carteret Islands was forced to seek refuge on a neighboring island, and the inhabitants of Tégua have already abandoned their island—what this last category envisages is an ongoing process. To this let me add that Tuvalu, as a "threatened island," is the only case to be dignified by a photographic image (see Fig. 1). The photograph shows

a child wading through an inundated area. Two houses in the background strengthen the impression that settled land has been flooded. In combination with the statements about the planned evacuation of Tuvalu, this image illustrates the urgency of an environmental crisis already happening, even as it anticipates a coming identity for Tuvalu's people as climate refugees (see Farbotko and Lazrus 2012, 383). This representation, therefore, is merely a variant on media constructions of Tuvalu as an island laboratory that would chiefly link this island state and its people to scenarios of vulnerability, disappearance, and displacement, furnishing concrete evidence of the perils and impacts of climate change (see Barnett and Campbell 2010; Connell 2003; Farbotko 2005, 2010a, 2010b; Farbotko and Lazrus 2012).

The Basics of Representation

Representation of the risks and ramifications of sea-level rise for Pacific islands, such as is found in the plate in *The Atlas of Climate Change*, rests solely on information supplied by the global media. So it is hardly surprising to find the disappearance of islands and the displacement of their peoples being foregrounded. Finally, speaking in the concrete case of how Oceania is represented, what we are left with is the systematization of a media construction turning on a looming climate catastrophe. Finding the alarmism and hyperbole of a media discourse being categorized and authorized in the pages of what is, after all, a reference work, seeking to communicate to a wider public what science currently knows about anthropogenic climate change, is among the truly astonishing achievements of this atlas.

The categories operated with here—disappearing islands, evacuated islands, abandoned island, and threatened island—parade, in one way or another, the vulnerability of islands and the status of their inhabitants as victims and climate refugees. Whereas the second and the third categories posit collective resettlements by Carteret and Tégua Islanders that have already occurred, the first and the fourth envisage future displacements of the entire populations of Kiribati and Tuvalu. The causes invoked, in both cases, are past, present, or coming scenarios of inundation and/or disappearance of islands as a direct consequence of sea-level rise. But it must be pointed out that such causalities give an inadequate and, for the most part, contestable account of the effects of sea-level rise. Barnett and Campbell get to the heart of the matter when they state, "[It] is worth noting that in almost all places it will not be sea-level rise that is the primary climate change related driver of social problems in the region, rather it will be changes in the timing and magnitude of precipitation, and in the frequency and intensity of extreme events that will have the most immediate social impacts" (Barnett and Campbell

2010: 167–68). The simplistic accounts proffered by the global media and popular science attempt, on the contrary, to take a global phenomenon like sea-level rise—abstract by nature, difficult to comprehend, and operating across vast tracks of time—and make it graspable and newsworthy through a strategy of compaction, eventfulness, and accentuating the here and now. From an analytic perspective, therefore, the attempt to directly link disappearance and displacement to ongoing sea-level rise furnishes an important clue to popular and media constructions of climate catastrophe.

The plate on sea-level rise shows insularity being articulated in a specific way—for all the abundance of information on islands or groups of islands, there is no mention of modern state structures. This lopsided reading of insularity is especially evident in the case of Tuvalu, where we find this sovereign state being identified as a single island rather than as the archipelago it actually is. The same holds for Kiribati and Vanuatu, also sovereign states but here classified as groups of islands. As for Papua New Guinea and how this entire country is to be classified, we are left in the dark. This systematic exclusion of modern political structures in the Pacific, a practice transcending even the conventions of the underlying media reportage, only strengthens the impression we are given of distance, remoteness, limitation, and otherness. If contemporary understanding of insularity is based, among other things, on stagnation and marginality, then the conception of a premodern island world, removed from any form of postcolonial nation building and not part of any present-day state structure, only compounds an initial distortion by adding a historically and politically antiquated dimension. Such constructions support the image of islands and groups of islands as natural, bypassed, and vulnerable counterpoles to the world of industrialized modernity. The concomitant construction of islands as other spaces simultaneously stabilizes the imagined discourse of island laboratories as remote, bounded, and timeless but readily inspectable places where knowledge is produced of the real consequences of climate change and sea-level rise. Insularity is thus an essential tool in the media production and marketing of climate catastrophe.

Turning now to the issue of concretion, in *The Atlas of Climate Change* this takes the form of a typology of (invariably) short descriptions. The elaboration of such a systematic order, together with the prominence given to a few case studies, does little more than simplify and glide over the surface of matters of great complexity. The quadrupling of island laboratories—each one operating a bounded experimental logic of its own—is a force multiplier when it comes to demonstrating the real dangers posed worldwide by sea-level rise. The systematic arrangement of comparable dramatic events and catastrophe scenarios, either played out in the recent past or projected into

the near future, makes the environmental crisis seem all the more concrete, probable, and believable. The authors of the atlas not only have opted to pursue the media's own strategy of concretizing an otherwise abstract global climate problematic, in terms of the regional and the episodic, but also have chosen to emphasize the factor of continuity, with its demonstrated capacity to positively influence news value. As shown by earlier studies of how the global media represent the consequences of climate change for the Pacific islands and island states, it is always the same islands or island states, along with the ecological and social catastrophes allegedly unfolding there, that are mentioned in this connection—principally the Pacific state of Tuvalu but also the Carteret Islands in Papua New Guinea, the islands of Bikeman and Tebua Tarawa in Kiribati, and (though more rarely) the island of Tégua in Vanuatu (see Barnett and Campbell 2010; Connell 1990, 2003, 2004; Farbotko 2005, 2010a, 2010b; Farbotko and Lazrus 2012; Nunn 2009). Characteristic of this co-optation and systematization of the above media icons of disappearance, doom, and displacement by the atlas is the fact that a media representation—erected anyway on a platform of simplification and sensation—becomes only further customized and overblown. The universalizing compass of a work that attempts, with the help of graphics, maps, and analyses, to present scientific facts in a readily understandable form lends added authority to this account.

The principle of alterity is written into the very way the plate is set out. In the middle is a world map showing the continental landmasses. A color code indicates the various population segments that may be threatened by rising sea levels in 2100. The Oceanian region is, as it happens, confined to the right-hand side of the page. Mostly shown are the southwestern parts of Oceania. The four case studies plus the classifications and descriptions are clearly highlighted. Whereas the consequences of sea-level rise in the main portion of the world map are projected into 2100, the remote and isolated Pacific islands are assigned the function of visualizing a catastrophe in a future that has long since begun there—in the extreme periphery. This depiction illustrates the praxis of Western-continental constitutings of the Other in relation to the self. Deemed to be remote, graspable, vulnerable, and dispensable, islands are turned into spaces of otherness, closed laboratories that enable a distanced view of the catastrophic effects of climate change and sea-level rise. Such positionings are based on a power gradient; they enforce inferiority and miniaturization as a condition for reflexivity relating to the self. Thus, islands (or island states) constitute—as a world *en miniature*, as *pars pro toto*—the power, the knowledge, and the agency of the industrialized metropolitan states reflected in the mirror of the disappearance and displacement of Others.

Conclusions

Catastrophe scenarios abound in the links the media have drawn between climate change and the islands and/or island states in the Pacific. This is due, in large part, to the long-term structures of Western-continental constructions of islands but also the economic conditions under which the media operate, with constant pressure to produce and communicate items of news. As an interface between media and popular scientific representations, the color chart on sea-level rise in *The Atlas of Climate Change* is symptomatic of this contemporary discourse. In it, selected media reports on the consequences of climate change and sea-level rise are ordered and authorized under the rubric of popular science, in the course of which they are adapted to fit the general receptivity of a wider, interested public. If the atlas demonstrates anything, it is that assigning categories to media representations and thereby overstating the latter is not necessarily the best way to produce objectively reliable tabulations. The opposite is true. Not a single case study given in the color chart on sea-level rise in the atlas withstands closer inspection. The step from processing media representations into popular scientific models of exemplary value, purporting to portray climate catastrophe in graspable and demonstrable terms, leads directly to a disaster of representation.

This media practice of representation, with its one-sided focus on catastrophes, is harmful over the longer term. The construction of Pacific islands and island states as *pars pro toto*, with one part standing proxy *for* the whole, closes our eyes to a conceptual horizon that would view the individual regions of Oceania as geographically, politically, historically, and culturally specific parts *of* the whole. The latter would be an essential prerequisite if we were to recognize, take seriously, and strengthen local agency but also the available potential for resilience and adaptation in the face of the risks that climate change and sea-level rise will undoubtedly pose.

ACKNOWLEDGMENTS

The intellectual foundations on which this article draws were developed during a visiting professorship with the Institute for Social and Cultural Anthropology of the University of Vienna in the summer semester of 2010. An earlier German version of this text appeared in "Novara—Contributions to Research on the Pacific," a series published by the Austrian South Pacific Society. In clarifying some geographical, historical, and/or cultural details involving the various case studies, the help of Mike Goldsmith, Steffen Herrmann, and Carlos Mondragon proved invaluable. For their

attentive reading of and valuable suggestions to the English version of my article, I wish to thank Niko Besnier, Nancy Lutkehaus, Jim Roscoe, and Judith Schachter. My particular thanks go to Elfriede Hermann for her insightful critiques and support. Responsibility for the views in this article is, of course, mine alone.

NOTES

1. Hence, for example, the metaphorical equation of Pacific islands with "canaries in the coal mine" evokes not just the image of the island as a warning sign against existential hazards but also the notion that islands are interchangeable or expendable and so—not unlike laboratory animals—exploitable for purposes of an overriding epistemological gain (cf. Barnett and Campbell 2010: 168–69; Farbotko 2010b: 53–55; Hamblyn 2009: 230–31).

2. Parallels to the popular construction of Easter Island as a microcosm of an ecologically stricken planet are evident. While the image of the island stands, in this case, for an ecological and cultural collapse brought about by the indigenous population itself, the Western-continental projection of the global environmental problematic onto a particular Pacific island falls back—here as elsewhere—on the image of the island as laboratory and world *en miniature* (see Haun 2008, 240).

3. *The Atlas of Climate Change: Mapping the World's Greatest Challenge* was first published in 2006. Now in its third and revised edition, the layout of the "Rising Sea Levels" color chart has been significantly modified, yet the four case studies (and their descriptions) have been left unaltered (cf. Dow and Downing 2007, 63; 2011, 68–69).

4. The island Bikeman, for all the massive ecological changes it has undoubtedly undergone, continues to be visible above the waves (cf. Bonnelykke Robertson and Rubow 2014). For that reason, I prefer to talk of transformation instead of "submergence" and "disappearance" (Fig. 2).

5. Embassy of Finland in Canberra, Australia, personal communication, January 15, 2015, cf. Rakova (2014, 270).

6. Wolfgang Behringer commented on this much-protracted resettlement on Tégua in his book *A Cultural History of Climate* as follows: "After the island-dwellers had cashed in their aid money from a climate fund, they even refused to move to higher land within the same atoll" (Behringer 2010, 201). The first point to make is that Tégua is not an atoll but an uplifted island; nor is this a mere quibble since resettlement "to higher land" could hardly take place on an atoll. Second, it would seem rather dubious scientific practice to fix on a single media report without checking its reliability and impute to the inhabitants of this island a misuse of aid moneys without making allowance for the cultural context of relocation in this particular case.

7. The latest census from 2002 indicates a total population of 9.561 persons; on this point, see the Government of Tuvalu, Central Statistics Division, www.spc.int/prism/country/tv/stats/Census%20&%20Surveys/Census_index.htm, June 9, 2011.

8. The article additionally contains a link to another online article from an Australian newspaper (*The Age*, August 2004), supplying further background details on the planned resettlement project (see Mascall 2004).

9. To be sure, among the inhabitants of Kioa, the idea elicited mixed feelings. Especially the notion that Kioa might become a refuge not only for those living on the island of Vaitupu but for the whole of Tuvalu as well was greeted with skepticism, given the size of the undertaking (Paton 2009, 122). Worth pointing out, in this connection, is that decisions about Kioa's future are the sole prerogative of Vaitupuans and cannot be taken by Tuvalu's government (M. Goldsmith, pers. comm.).

REFERENCES

Aung, Than, Singh Awnesh, and Uma Prasad
2009 A study of sea-level changes in the Kiribati area for the last 16 years. Weather 64 (8): 203–6.

Ballu, Valérie, Marie-Noelle Bouin, Patricia Siméoni, et al.
2011 Comparing the role of absolute sea-level rise and vertical tectonic motions in coastal flooding, Torres Islands (Vanuatu). *Proceedings of the National Academy of Sciences* 108 (32): 13019–22.

Barnett, Jon
2002 Rethinking development in response to climate change in Oceania. *Pacific Ecologist* 1: 25–28.
2005 Titanic states? Impacts and responses to climate change in the Pacific Islands. *Journal of International Affairs* 59: 203–19.

Barnett, Jon, and John Campbell
2010 *Climate change and small island states: Power, knowledge and the South Pacific*. London: Earthscan.

Behringer, Wolfgang
2010 *A cultural history of climate*. Cambridge: Polity Press.

Besnier, Niko
2009 *Gossip and the everyday production of politics*. Honolulu: Univ. of Hawaii Press.

Bonnelykke Robertson, Maria Louise, and Cecilie Rubow
2014 Engaged world-making: Movements of sand, sea, and people at two Pacific islands. In *Anthropology and nature*, ed. Kirsten Hastrup, 62–78. New York: Routledge.

Bourke, Mike, and Thomas Betitis
2003 Sustainability of agriculture in Bougainville Province, Papua New Guinea. Report by the Land Management Group, Department of Human Geography,

Research School of Pacific and Asian Studies, Australian National Univ.,, Canberra. http://rspas.anu.edu.au/papers/lmg/SustainAg_Bvill_text.pdf.

Boykoff, Maxwell T.
2011 *Who speaks for the climate? Making sense of media reporting on climate change*. Cambridge: Cambridge University Press.

Bryant-Tokalau, Jenny J.
1993 What future Pacific cities? The challenge in managing urban environments. In *The margin fades: Geographical itineraries in a world of islands*, ed. Eric Waddell and Patrick D. Nunn, 151–65. Suva: Institute of Pacific Studies.

Carvalho, Anabela
2007 Ideological cultures and media discourses on scientific knowledge: Re-reading news on climate change. *Public Understanding of Science* 16 (2): 223–43.

Castles, Stephen
2002 Environmental change and forced migration: Making sense of the debate. *UNHCR Working Paper No.70* 70: 1–14.
2010 Afterword: What now? Climate-induced displacement after Copenhagen. In *Climate change and displacement: Multidisciplinary perspectives*, ed. Jane McAdam, 239–46. Oxford: Hart Publishing.

Connell, John
1990 The Carteret Islands: Precedents of the greenhouse effect. *Geography* 75: 152–54.
2003 Losing ground? Tuvalu, the greenhouse effect and the garbage can. *Asia Pacific Viewpoint* 44 (2): 89–107.
2004 Environmental change, economic development, and emigration in Tuvalu. In *Globalization and culture change in the Pacific Islands*, ed. Victoria S. Lockwood, 260–72. Upper Saddle River, NJ: Pearson Prentice Hall.

Cooney, Campbell
2009 Bougainville works to relocate "climate refugees." *ABC News*. www.abc.net.au/news/stories/2009/02/13/2491415.htm, May 11, 2009.

Dow, Kirstin, and Thomas E. Downing
2007 *The atlas of climate change: Mapping the world's greatest challenge*. Rev. and updated. London: Earthscan.
2011 *The atlas of climate change: Mapping the world's greatest challenge*. 3rd ed. London: Earthscan.

Edmond, Rod, and Vanessa Smith
2003 Editors' introduction. In *Islands in history and representation*, ed. Rod Edmond and Vanessa Smith, 1–18. London: Routledge.

Farbotko, Carol
2005 Tuvalu and climate change: Constructions of environmental displacement in the *Sydney Morning Herald*. *Geografiska Annaler B* 87 (4): 279–93.
2010a "The global warming clock is ticking so see these places while you can": Voyeuristic tourism and model environmental citizens on Tuvalu's disappearing islands. *Singapore Journal of Tropical Geography* 31: 224–38.
2010b Wishful sinking: Disappearing islands, climate refugees and cosmopolitan experimentation. *Asia Pacific Viewpoint* 51 (1): 47–60.

Farbotko, Carol, and Heather Lazrus
2012 The first climate refugees? Contesting global narratives of climate change in Tuvalu. *Global Environmental Change* 22: 382–90.

Gemenne, Francois, and Shawn Shen
2009 Tuvalu and New Zealand: Case study report. Environmental Change and Forced Migration Scenarios. www.each-for.eu/documents/CSR_Tuvalu_090215.pdf, July 5, 2011.

Gillie, Richard D.
1991 Beach profile surveys on Betio and Bairiki and along the Nippon Causeway, South Tarawa, Kiribati. SOPAC Preliminary Report 37, Coastal and Nearshore Programme. Kiribati: SOPAC Technical Secretariat.

Gillis, John R.
2003 Taking history offshore: Atlantic islands in European minds, 1400–1800. In *Islands in history and representation*, ed. Rod Edmond and Vanessa Smith, 19–31. London: Routledge.

Hamblyn, Richard
2009 The whistleblower and the canary: Rhetorical constructions of climate change. *Journal of Historical Geography* 35: 223–36.

Haun, Beverly
2008 *Inventing "Easter Island."* Toronto: Univ. of Toronto Press.

Hau'ofa, Epeli
1994 Our sea of islands. *The Contemporary Pacific* 6: 148–61.

Howe, K. L.
2000 *Nature, culture and history: The "knowing" of Oceania*. Honolulu: Univ. of Hawaii Press.

Hulme, Mike
2009 *Why we disagree about climate change: Understanding controversy, inaction and opportunity*. Cambridge: Cambridge Univ. Press.

Itaia, Maunaa
1987 Squatters on South Tarawa, Kiribati. In *In Search of a home*, ed. L. Mason and P. Hereniko, 206–29. Suva: Institute of Pacific Studies, Univ. of the South Pacific.

Kahn, Miriam
2004 Placing Tahitian identities: Rooted in land and enmeshed in representations. In *Globalization and culture change in the Pacific Islands*, ed. Victoria S. Lockwood, 285–306. Upper Saddle River, NJ: Pearson Prentice Hall.
2011 *Tahiti beyond the postcard: Power, place, and everyday life*. Seattle: Univ. of Washington Press.

Kempf, Wolfgang
2009 A sea of environmental refugees? Oceania in an age of climate change. In *Form, Macht, Differenz: Motive und Felder ethnologischen Forschens*, ed. Elfriede Hermann, Karin Klenke, and Michael Dickhardt, 191–205. Göttingen: Univ. of Göttingen.

Kilvert, Andrew
2010 PNG losing island homes. *The Northern Rivers Echo*. www.echonews.com.au/story/2010/10/14/png-neighbours-losing-their-island-homes, May 25, 2011.

Kirby, Alex
1999 Islands disappear under rising seas. *BBC News*. http://news.bbc.co.uk/2/low/science/nature/368892.stm, December 4, 2009.

Koch, Klaus-Friedrich
1978 *Logs in the currents of the sea: Neli Lifuka's story of Kioa and the Vaitupu colonists*. Canberra: Australian National Univ. Press.

Lazrus, Heather
2012 Sea change: Island communities and climate change. *Annual Review of Anthropology* 41: 285–301.

Lean, Geoffrey
1999 They're going under. *The Independent*. www.independent.co.uk/life-style/theyre-going-under-1099931.html, May 13, 2010.

Macdonald, Barry K.
1982 *Cinderellas of the empire: Towards a history of Kiribati and Tuvalu*. Canberra: Australian National Univ. Press.

Mascall, Sharon
2004 Tuvalu's tides divide scientists. www.theage.com.au/articles/2004/08/24/1093246516150.html, December 4, 2009.

Morton, Adam
2009 First climate refugees start move to new Island home. *The Age*. www.theage.com.au/national/first-climate-refugees-start-move-to-new-island-home-20090728-e06x.html, October 20, 2009.

Mortreux, Colette, and Jon Barnett
2009 Climate change, migration and adaptation in Funafuti, Tuvalu. *Global Environmental Change* 19: 105–12.

Moser, Susanne C., and Lisa Dilling
2007 *Creating a climate for change: Communicating climate change and facilitating social change*. Cambridge: Cambridge Univ. Press.

Nakalevu, Taito
2006 Final report. CBDAMPIC Project. Secretariat of the Pacific Regional Environment Programme. www.sprep.org/climate_change/PYCC/documents/CBDAMPIC.pdf, May 11, 2010.

Nakalevu, Taito, and Brian Phillips
2007 Post relocation survey report: Tegua Community, Torba Province, Vanuatu. Secretariat of the Pacific Regional Environment Programme. http://lyris.sprep.org/att/IRC/eCOPIES/Countries/Vanuatu/73.pdf, May 11, 2010.

Nero, Karen L.
1997 The end of insularity. In *The Cambridge history of the Pacific Islanders*, ed. Donald Denoon and Malama Meleisea, 439–67. Cambridge: Cambridge Univ. Press.

Neverla, Irene, and Mike S. Schäfer
2012 Einleitung: Der Klimawandel und das "Medien-Klima." In *Das Medien-Klima: Fragen und Befunde der kommunikationswissenschaftlichen Klimaforschung*, ed. Irene Neverla and Mike S. Schäfer, 9–25. Wiesbaden: Springer VS.

Nunn, Patrick D.
2004 Through a mist on the ocean: Human understanding of island environments. *Tijdschrift voor Economische en Sociale Geografie* 95 (3): 311–25.
2009 *Vanished islands and hidden continents of the Pacific*. Honolulu: Univ. of Hawaii Press.

Nurse, Leonard A., et al.
2014 Small islands. In *Climate change 2014: Impacts, adaptation, and vulnerability. Part B: Regional aspects*, ed. V. R. Barros, C. B. Field, D. J. Dokken, et al., 1613–54. Cambridge: Cambridge Univ. Press.

O'Collins, Maev
1990 Carteret Islanders at the Atolls Resettlement Scheme: A response to land loss and population growth. In *Implications of expected climate changes in the South*

Pacific region: An overview, ed. J. C. Pernetta and P. J. Hughes, 247–69. Nairobi: United Nations Environment Program.

Parry, Richard L.
2006 The last tide could come at any time: Then these islands at the end of the earth will simply vanish. *Timesonline*. www.timesonline.co.uk/tol/news/world/article759319.ece, December 15, 2009.

Paton, Kathryn L.
2009 At home or abroad: Tuvaluans shaping a Tuvaluan future. Wellington: Master's thesis, Victoria Univ. of Wellington.

Rahmstorf, Stefan
2010a Climate change—State of the science. www.pik-potsdam.de/~stefan/warming facts.pdf, June 16, 2010.
2010b A new view on sea level rise. www.nature.com/climate/2010/1004/pdf/climate.2010.29.pdf, January 31, 2013.

Rakova, Ursula
2009 How-to guide for environmental refugees: Carteret Islanders' own in-depth relocation plan. *OurWorld 2.0, World Refugee Day Special Report*. http://ourworld.unu.edu/en/how-to-guide-for-environmental-refugees, May 25, 2011.
2014 The sinking Carteret Islands. Leading change in climate change adaptation and resilience in Bougainville, Papua New Guinea. In *Land Solutions for Climate Displacements*, ed. Scott Leckie, 268–90. London: Routledge.

Rakova, Ursula, Luis Patron, and Citt Williams
2009 How-to guide for environmental refugees. Human rights: Climate change, environment, indigenous people, oceans. http://ourworld.unu.edu/en/how-to-guide-for-environmental-refugees, January 23, 2015.

Roberts, Greg
2002 Islanders face rising seas with nowhere to go. *Sydney Morning Herald*. www.smh.com.au/articles/2002/03/29/1017206152551.html, July 5, 2011.

Robinson, Edward, Deborah-Ann C. Rowe, and Shakira A. Khan
2006 Dwindling coastlines—Hazards of the Jamaican coastline—Beach erosion: A response to rising sea level? *Jamaica Gleaner Online*. http://jamaica-gleaner.com/gleaner/20060127/news/news1.html, December 4, 2009.

Royle, Stephen A.
2001 *A geography of islands: Small island insularity*. London: Routledge.

Taafaki, Tauaasa
2007 Polynesia in review: Issues and events, 1 July 2005 to 30 June 2006. *The Contemporary Pacific* 19 (1): 276–86.

Takaio, Abureti
1993 Kain Tarawa. In *Atoll politics: The Republic of Kiribati*, ed. Howard van Trease, 278–84. Suva: Macmillan Brown Center for Pacific Studies and Institute of Pacific Studies, Univ. of the South Pacific.

Teaiwa, Teresia K.
1997 Rabi and Kioa: Peripheral minority communities in Fiji. In *Fiji in transition*, vol. 1, ed. Brij V. Lal and Tomasi R. Vakatora, 130–52. Suva: Univ. of the South Pacific.

Torrice, Andrea
2000 Rising waters: Global warming and the fate of the Pacific Islands. Documentary, 57 minutes. Bullfrog Films. Torrice Productions.

Tulele Peisa Inc.
2009 Carterets Integrated Relocation Program Bougainville, Papua New Guinea. Project proposal. http://ourworld.unu.edu/en/wp-content/uploads/2009/06/carterets-integrated-relocation-program-proposal.pdf, January 20, 2010.

Tuvalu News
2006 Move Tuvalu population to a Fiji island to ensure survival, scientist says. www.tuvaluislands.com/news/archived/2006/2006-02-20.htm, July 5, 2011.

Tweedie, Neil
2009 Carteret Islands: "The sea is killing our island paradise." *Telegraph*. www.telegraph.co.uk/earth/carteret-islands/6771651/The-sea-is-killing-our-island-paradise.html, July 5, 2011.

United Nations Environment Program
2005 Pacific Island villagers first climate change "refugees." www.unep.org/Documents.Multilingual/Default.asp?DocumentID=459&ArticleID=5066&l=en, July 5, 2011.

Vidal, John
2005 Pacific Atlantis: First climate change refugees. *The Guardian*. www.guardian.co.uk/environment/2005/nov/25/science.climatechange, July 21, 2008.

Weingart, Peter, Anita Engels, and Petra Pansegrau
2000 Risks of communication: Discourses on climate change in science, politics, and the mass media. *Public Understanding of Science* 9: 261–83.
2008 *Von der Hypothese zur Katastrophe: Der anthropogene Klimawandel im Diskurs zwischen Wissenschaft, Politik und Massenmedien*. Opladen: Budrich.

White, G. M.
1965 *Kioa: An Ellice community in Fiji*. Eugene: Univ. of Oregon.