

# A Companion to Contemporary Documentary Film

Edited by

Alexandra Juhasz and Alisa Lebow

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- Renov, M. (1993) *Theorizing Documentary*. New York: Routledge.
- Robinson, K.S. (2011) Remarks on Utopia in the Age of Climate Change. *Arena Journal*, 36(6), 8–21.
- Roe, A.H. (2009) *Animating Documentary*. Unpublished PhD Dissertation, University of Southern California, <http://digitallibrary.usc.edu/cdm/compoundobject/collection/p15799coll127/id/257788/rec/7>, accessed July 19, 2014.
- Rogers, B. (2010) *Otolith I*, <http://otolithgroup.org/index.php?m=project&id=5>, accessed July 20, 2014.
- Seligman, M.E.P. and Csikszentmihalyi, M. (2000) Positive Psychology: An Introduction. *American Psychologist*, 55(1), 5–14.
- Solte, D. (2009) Global Financial System in Balance: Crisis as Opportunity for a Sustainable Future. Berlin: Terra Media Verlag.
- Vint, S. (2009) Possible Fictions: Blochian Hope in The Scar. *Extrapolation*, 50(2), 276–292.
- Williams, L. (2011) Shadows of the Holocene: Transfigurations of the Non-Human World in Science Fiction Film. *Arena Journal*, 36(6), 196–215.
- Williams, R. (1989) *Resources of Hope: Culture, Democracy, Socialism*, ed. Robin Gable. London and New York: Verso.
- Wissot, L. (2011) Into Eternity: An Interview with Michael Madsen. *Global Comment*, February 2, 2011, <http://globalcomment.com/2011/into-eternity-an-interview-with-michael-madsen/>, accessed July 20, 2014.
- Wolf, M. (1999) Subjunctive Documentary: Computer Imaging and Simulation. In Gaines, J.M. and Renov, M. (eds.) *Collecting Visible Evidence*, pp. 274–291. Minneapolis: University of Minnesota Press.

## 3

# Projecting Sea Level Rise Documentary Film and Other Geolocate Technologies

Janet Walker

*The catastrophe of climate change is excessive and will inscribe all earthly space.  
It is earth writing writ large.*

Kathryn Yusoff (2009: 1010)

## Introduction<sup>1</sup>

Part way into the documentary film *Someplace with a Mountain* (2010), the director Steve Goodall describes how the people of Puluwat atoll in the Federated States of Micronesia first learned of climate change-induced sea level rise. They had been making their own observations of high waters and the effects of encroaching salinity on crops. However, according to the film, it was only when Goodall fetched a laptop computer from his sailboat anchored in the cove and showed the gathered islanders Al Gore's and Davis Guggenheim's *An Inconvenient Truth* (2006) that they realized the extent of the problem.

"I made friends with the chief," Goodall reports to the camera from the deck of his boat, "a young chief named Ioki [cut to images of the Ioki Alet surrounded by children]; I mean, just [a] fantastic guy and his family, it's beautiful ... And always in the back of my mind was sea level rise, sea level rise. What's going to happen to these people?" Goodall then describes in retrospect how he finally got up the courage to ask about their preparations and how Alet reacted immediately, running across the island to draw in other chiefs and elders. This urgency is conveyed – in a way, re-enacted – through a hand-held camera bobbing along a path through the tropical foliage. It is then that we see a shot of the laptop on a desk and hear Gore's voice

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Figure 3.1 *Someplace with a Mountain*. Still frame reproduced courtesy of Steve Goodall.

emanating from it, as the surrounding men discuss and imitate with sweeping gestures *An Inconvenient Truth*'s animation of predicted, encroaching sea level rise in the Shanghai area. Chevy Chase as narrator of *Someplace with a Mountain* takes over from Gore and the now soundless excerpt from the latter's film breaks free of the laptop and enlarges to fill our distant screens (Figure 3.1): "They knew the sea had been rising," Chase intones, "but they didn't understand that the worst was yet to come. When they saw the animated graphic of rising water levels, they understood immediately the true seriousness of their situation." The extent of sea level rise in this particular area, we're told, is already among the highest on the planet.<sup>2</sup> "It was the end of their world and you could see it in their faces," recalls Goodall. Reaction shots – still and moving – of men, women, and children reveal their shocked expressions in being confronted with the planetary scale of the problem.

There are aspects of this documentary with which I take issue, informed by the literature of new ethnography. For one, the sequence uncritically recapitulates "first contact," with great white men and their all-knowing technology bringing "civilization" to stunned natives.<sup>3</sup> Elsewhere in the film there is the verbal characterization of Pacific atoll inhabitants as "suspended in time," and "still living their traditional, independent, and sustainable ways they have for almost three millennia" (while consumer goods pervade the shots). This denial of coevalness – that is, "*a persistent and systematic tendency to place the referent(s) of anthropology in a Time other than the present of the producer of anthropological discourse*" (Fabian, 1983: 31, italics original) – is particularly egregious given the profound and instantaneous response by the Puluwates to a symptom of global warming still largely neglected by the developed world.

Nevertheless, I believe the film is significant as an activist work and, even more importantly, for the links it makes – and/or makes possible – between the affective and geospatial registers. Human geographer Carol Farbotko and earth and environmental

scientist Helen V. McGregor call for greater attention to "the emotional geographies of climate change, and the ways in which science and emotion combine with reformist or radical potential" (Farbotko and McGregor, 2010: 164). Goodall's ethnographic film, unlike others in which only the narrating filmmaker or anthropologist speaks to the audience, includes articulate and moving statements by locals and their embodied presence in the increasingly affected environment.<sup>4</sup> Thus, in addition to bringing Gore to Puluwat, *Someplace with a Mountain* transports emotionally charged islander testimonials across Micronesia and into spaces where they may be witnessed by viewers on our own "psychogeographic journeys" (Bruno, 2002: 6).

*An Inconvenient Truth*, for its part, has been subject to a great deal of criticism: from climate skeptics of the political right wing to those expressing annoyance with the autobiographical elements (read as careerist partisan politics or as an insult to the audience's ability to connect with a film minus a crusading hero). My environmental media students find the film's listing of "solutions" in the end credits to be too little too late. Moreover, the film barely depicts affected individuals other than scientists or other opinion leaders. Two photos shot on Tuvalu by Mark Lynas are an exception,<sup>5</sup> yet their use in *An Inconvenient Truth* has been criticized by Farbotko since, ironically, it is to illustrate Gore's point that "the people on these Pacific islands have all had to move to New Zealand." Not quite all, Farbotko points out (2010: 58). In any case, the overall absence of people serves to downplay sensations of human suffering and maintain the focus on scientific argument.

As with *Someplace with a Mountain*, though, *An Inconvenient Truth* has its exemplary attributes. The Gore/Guggenheim work is a premier environmental documentary of the current wave, recipient of numerous accolades including an Academy Award. Its graphic animation of coastal areas being flooded, in combination with the citation of population numbers of coastal residents, presages climate migration on a massive scale. Gore's refrain "this is what would happen" – accompanied by anxiety-producing musical cues – is applied to Florida and then, after an ominous pause, to the San Francisco Bay Area. After describing what would happen in The Netherlands (their impressive flood protection infrastructure notwithstanding) as "absolutely devastating," he moves from the West to the Far East and begins to mention the huge numbers of people who would be forced to relocate. From a perspective that is historical and long-term on the one hand, and urgent on the other, the film draws on scientific extrapolation to advocate mitigation of the greenhouse gas emissions that contribute to global warming.

This chapter takes these two films' common subject of sea level rise<sup>6</sup> and the embedding of the one film into the other as an opportunity to read the works relationally and spatially. In *Atlas of Emotion*, Giuliana Bruno conceptualizes the motion picture as a form of "site seeing," defining the medium, poetically, as "the very synthesis of seeing and going – a place where seeing is going" (2002: 15–53, 245). This motile sense of cinema seems to me apposite for studying *Someplace with a Mountain* as a site-specific or "situated" documentary where movement and location loom large. I choose to regard this film – among others with perambulatory subjects and

makers and moving cameras – as a kind of a navigational technology. Then, factoring in the technically rich means *An Inconvenient Truth* uses to convey the impending need for people to retreat from coastal areas, a second goal of this chapter is to envision these documentaries within a substantially wider repertoire of geolocative screen media that includes modes of scientific modeling and geoweb-based programs and applications for digital earth mapping.

These other “discourses of sobriety” – to embrace the geosciences within the kinship structure Bill Nichols describes for documentary and other nonfictional systems (“science, economics, politics, foreign policy, education, religion, welfare” [1991: 3–4]) – take various media forms: live action, animated, computer- or web-based, interactive, moving, graphic, photographic, or any combination thereof. And they are all, as documentary scholars know about our purview, rhetorically nuanced in their design and construction. Together and separately, they participate in the shaping of the physical and social spaces they may seem only to access, observe, measure, model, or move through.

Furthermore, just as digital technologies of modeling, mapping, visualization, and systemization are proliferating, so too are new scholarly approaches. The literature at the intersection of geography with literary, historical, and media studies is burgeoning and an interdisciplinary known as the “spatial humanities” or the “geohumanities” is forming (Rumsey, 2009; Bodenhamer, Corrigan, and Harris, 2010; Dear et al., 2011; Gregory and Ell, 2007; Cope and Elwood, 2009). Although scholars characterizing this development point to a friction between the humanities’ treatment of knowledge “as multivalent, equivocal, and protean” and the scientific privileging of empirical study and disambiguation (Harris, Corrigan, and Bodenhamer, 2010: 169), actually, at the same time that humanists are curious about geospatial tools, geographers are aware of geography’s epistemological nature and thorough imbrication with cultural, social, and political practices and ideologies (Gregory, 1993; Massey, 1994; Smith, 2008).<sup>7</sup>

From within film and media studies, therefore, I am interested in developing our spatial consciousness and perception of the media textuality of scientific visualization and geographic information systems (GIS).<sup>8</sup> Facing outward, I am interested in articulating what film and media studies has to offer geospatial research, including especially critical human geography as an approach to place and environment. Spatial humanities researchers Alexander von Lünen and Wolfgang Moschek understand a GIS as “an *active* component” and not a neutral medium for the presentation of a research outcome. “We employ GIS,” they state, “as a *geographically induced* heuristics in historical research” (2011: 249). Similarly, the project of this chapter is to engage with screen-based navigational technologies as an “active component” and “geographically induced heuristics” to investigate how people in coastal areas form attachments to and also shape the places they inhabit.

What are the conceptual elective affinities or frictions among geolocative representations of people and places, among geographical imaginations (Gregory, 1993), if you will? Kathryn Yusoff has termed catastrophic climate change a form of “earth writing writ large” (2009: 1010). As the inhabitants of low-lying Pacific islands

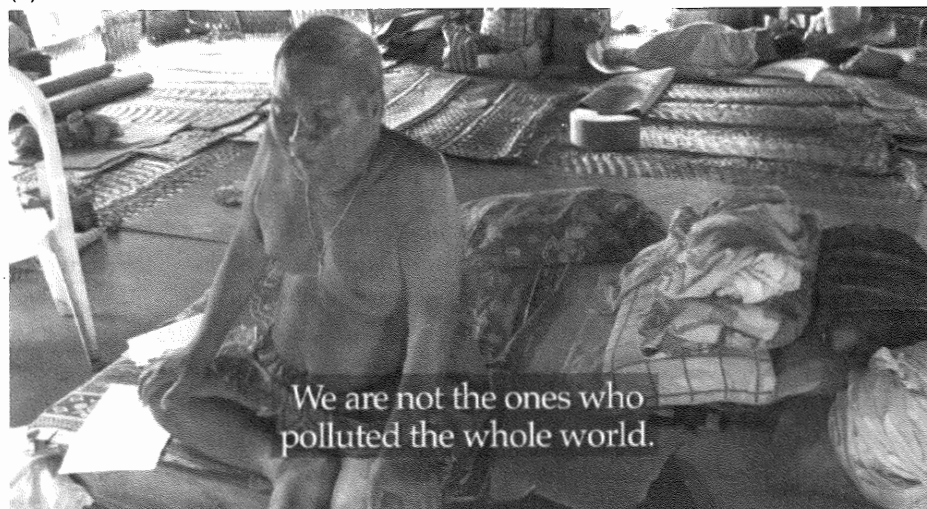
imagine, plan for, and seek to exert agency over their future lives, this chapter proposes geolocative media, in combination with environmental activism, as a potentially eloquent form of “earth *re-writing*.”

## Land and Water

The primary message of *Someplace with a Mountain* is that the traditional self-sufficiency of the outer islanders – especially the Puluwatese – is threatened by sea level rise, and that, in moving out of harm’s way to a high island area, at least some of them should keep together as an isolated group in order to maintain their cultural practices “uncontaminated” by other influences. The sequence following the importation of *An Inconvenient Truth* to Puluwat opens with rain falling on a slate grey sea. Several interlocutors remark on the sore irony of islanders being harmed by industrialized nations’ profligate use of fossil fuels. “We know the water is getting higher and higher and we are going to lose our homes,” states Chief Manuel Taromai, seated on a cushion among the mats, pillows, and blankets in an interior space (Figure 3.2a). “We are not the ones who polluted the whole world.” The subtitle of this statement persists over a shot of inundated plants that used to stand clear of the ocean (Figure 3.2b). A wave crashes against the base of a downed palm, its top partially submerged. We meet Francis of Lamotrek who gestures across the remains of a taro patch. No crops can grow there any longer, he explains. We see him at the left of the frame, where, in the center, a pool of water – saltwater incursion – reflects the blue sky.

This depiction of the islanders’ blameless vulnerability might be read as a productive social ecological critique: those already without resources beyond the subsistence level tend to be disproportionately affected by so-called natural disasters that are in fact anthropogenic.<sup>9</sup> Or the depiction of island culture as untainted by consumerism might be read as expeditious.<sup>10</sup> If, as Goodall believes, the inhabitants of small low-lying islands will be obliged to relocate, and since he sees their culture as worthy of preservation because it is traditional, then playing up this claim to prospective hosts may well make the climate migrants more culturally appealing and less threatening as competitors for jobs in their new location.<sup>11</sup> The pointedly ethnographic material Goodall has shot therefore becomes his – and, by extension, the islanders’ – calling card on the island of Yap. We see him with Francis overlooking an uninhabited, high-elevation area on Yap that, he says, could support about 1000 relocated people. Then, in a second film-within-a-film sequence, we see Goodall entering the Yap State Legislature. In the Office of the Governor he screens a montage of his own footage for an audience of gathered politicians and residents of Yap. “It’s tragic to lose their islands because they’re so beautiful,” he says in introducing the presentation. “But the real tragedy is to lose the culture that is totally self-sufficient and doesn’t use fossil fuels.” Across the table we make out on the laptop images of islanders weaving thatch and a theme familiar from earlier sequences: “Still living the traditional, independent, and sustainable ways they have for almost three

(a)



(b)



**Figure 3.2a and Figure 3.2b** “We are not the ones who polluted the whole world.” Coastal inundation in *Someplace with a Mountain*. Still frames reproduced courtesy of Steve Goodall.

millennia. Every essential is done by hand. Everything is done for the good of the village. Could this truly be the last utopia?”

Well, perhaps. But not for the qualities such a salvage ethnography is capable of conveying. In fact, *Someplace with a Mountain* dispenses with many of the tangible and intangible realities of life as it is currently lived on Puluwat, including, significantly, major privileges of the islanders’ citizenship. The Federated States of Micronesia (FSM), in which Chuuk is a state and Puluwat (alternative spellings,

Polowat and Poluwat) a coral atoll and municipality, has had the political status since 1986 of a sovereign nation under a Compact of Free Association with the United States. This status enables the US education of FSM citizens (which is mentioned in the film), and also (left out of the film) travel without a visa by FSM citizens to places including Guam, Hawaii, and the US mainland. More than half of the people once living on Puluwat now live abroad, such that a large proportion of current inhabitants are children and older people. In the FSM overall, “aid counts for at least one third of the GNP” and locals are also supported by “remittances sent from family living abroad” (Barnett and Campbell, 2010: 7–8). The islanders’ so-called sustainable ways are enmeshed within and supported by a broad geographic network extending well beyond the islands themselves.

I communicated with two Chuukese individuals living in California to confirm what I was reading about the area. Vid Raatior, who was raised on the islands of Onoun and Tamatam just to the north of Puluwat and on Houk (formerly Pulusuk) just to the south, queried why the assistance Goodall promised as a follow-up to the filming could not take the form of “rebuilding the terrible elementary and high schools, buying textbooks, water catchments for potable water, etc.” instead of funding a move to another island (pers. comm., December 22, 2011). Schools? No such buildings, dilapidated or otherwise, are shown on Puluwat. Given that Goodall has to a large extent *framed out* the aspects of Puluwatese life that don’t fit within the narrative of a culture unchanged for millennia, we are left to wonder about the plastic bags, glass bottles, snorkels, and flip-flops that pass through our field of vision without explanation. And actually, even though the film has a stake in the depiction of island culture as unchanging, it also contributes by its very existence to the islanders’ imagination of dispersed audiences and new horizons.

### (Re)mapping “A Sea of Islands with Their Inhabitants”

What other options are there for illustrating the plight of islanders and how can we deepen our spatially attuned thinking about the problem? An essay by Fijian anthropologist Epeli Hau’ofa is noteworthy in this regard. Hau’ofa powerfully refutes the notion that islands and island states across Polynesia and Micronesia “are much too small, too poorly endowed with resources, and too isolated from the centres of economic growth for their inhabitants ever to be able to rise above their present condition of dependence on the largesse of wealthy nations” (1993: 4).

Micronesia’s physical geography is characterized by great distances and comparatively small landmasses. The FSM comprises 607 small islands in what are known as the Eastern and Western Caroline Islands for a total land area of only 270.8 square miles over more than one million square miles of the Pacific Ocean. Nevertheless, Hau’ofa’s insight was to perceive “a gulf of difference” between islander and outsider thinking. “The idea of smallness is relative,” he writes, “it depends on what is included and excluded in any calculation of size” (1993: 6). In fact it was “the continental men, Europeans and Americans who drew imaginary



lines across the sea, making the colonial boundaries that for the first time confined ocean peoples to tiny spaces" (1993: 7). Instead of using the term "Pacific Islands," with its connotations of "small areas of land surfaces sitting atop submerged reefs or seamounts," Hau'ofa nominates "Oceania" to connote "not only land surfaces, but the surrounding ocean as far as they could traverse and exploit it." "Our ancestors," he tells us, "viewed their worlds as a 'sea of islands,' rather than 'islands in the sea'" (1993: 7).

The geographical imagination of *Someplace with a Mountain* contrasts with that of Hau'ofa. Just as the field of contemporary documentary studies was founded on the premise that documentary films, while accepted as non-fiction, are nevertheless structured in and through their profoundly "fictive" strategies (Renov, 1993: 2–3; see also Nichols, 1991), so too is there a "fictive" quality to documentary space. This is the case, I believe, even when the given documentary is shot in and depends for its meaning on a specific location. Instead of a "sea of islands," *Someplace* presents a pre-Oceanian (in Hau'ofa's sense) geography that emphasizes island smallness, isolation, and vulnerability and de-emphasizes multiplicity, connectivity, fluidity, and the agency of islanders. The film's first shot is of a distant island, its flat top visible above a wide and otherwise empty horizon.<sup>12</sup> People are first seen after a tilt up from footprints in the sand to the two local children who made them. The third to last shot of the film (in the Epilogue) is a long take from a high angle looking down at four children in a small canoe. For much of the time there is no horizon in sight. The space around them is an expanse of opaque aquamarine in which the children appear profoundly isolated (Figure 3.3). This is not to minimize the considerable threat of sea level rise to low-lying islands nor the challenges of expressing Oceania in documentary form. Rather, my point is to exemplify the eminently ideological implications of this particular documentary geography.

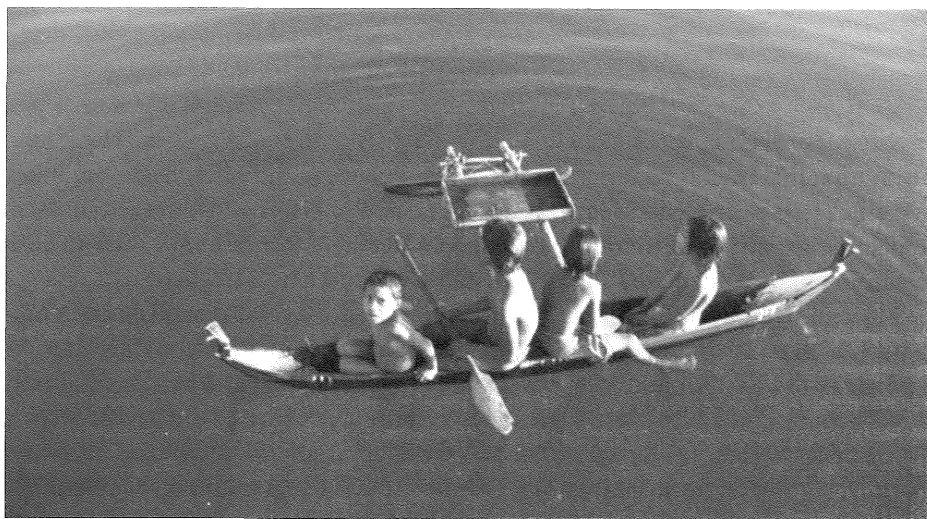


Figure 3.3 *Someplace with a Mountain*. Still frame reproduced courtesy of Steve Goodall.

Farbotko describes a further problem attendant upon perceptions of "smallness." Disappearing islands in the South Pacific, she submits, are saddled with the burden of "proof of a global climate change crisis" (2010: article abstract; see also Cameron, 2011) and are therefore rendered *expendable* in the "onward sweep of both climate activism and its opponent, capitalist modernity" (2010: 58). Pacific islands have become, she concludes, a "litmus" test of global warming and, even more unfortunately, a site of "wishful sinking."

### Other Technologies of Navigation

Characterizing the difference between European and Puluwatese seafaring, Levinson, Ward, and Webb (1973) explain that while "[t]he European at sea in a small vessel, tends to envisage his situation as one in which his craft moves towards, passes by, and then away from fixed islands ... the Puluwat navigator, once on course, inverts the concept and in his navigational system considers the canoe to be stationary and the islands to move towards and past him" (Levinson et al., 1973).

As a navigational technology extraordinaire, the Google Earth web application greatly multiplies this Western proclivity for speed, and for moving towards, by, and away from objects of consequently fleeting interest; for "flying to" as the Google interface would have it, but also "flying from," one could say. Echoing the navigational orientation and practices of the European seafarers, the Google Earth vessel runs counter to the canoes of island navigators who evidently – steering by the sun, stars, and planets; by reefs, land masses, and marine animals; by swell, waves, currents, and winds; and by the curvature of the earth's surface – remained present and centered in their environment.

On the (admittedly small) screen of my laptop, I locate the FSM. At an altitude ("eye alt" in Google Earth terminology) of 3600 km, one can compose a frame in which Guam, Papua New Guinea, and Tuvalu are visible in a triangular relationship, with Yap just to the southwest of Guam (Figure 3.4). But the actual contours of Puluwat (and Tuvalu and Guam for that matter) are invisible from this distance. Zooming in to eye alt 1498 km and rotating the image clockwise from due north, I manage to frame the main islands of the state of Chuuk, where Puluwat is located, in the lower right corner, with the island of Yap in the upper left. But still, specific geographic features are barely visible. Zooming in even further to get the lay of the land, one loses the broader orienting points. For the names of villages on the atoll to pop up, everything else must be relegated beyond the margins. Through its visual capacity and haptic features, the Google Earth web application necessitates a choice between the broader orienting view *or* the locally refined details.<sup>13</sup>

Navigation in the South Pacific via Google Earth is also challenging because of the nature of "landmarks." Those that do appear are ocean reefs, banks, and ridges, features less familiar to those of us continental dwellers who are oriented to lakes, mountains, and deserts. For example, attempting to navigate laterally from Palikir, Micronesia to Manila, Philippines at a certain altitude, say Google Earth eye alt 450,

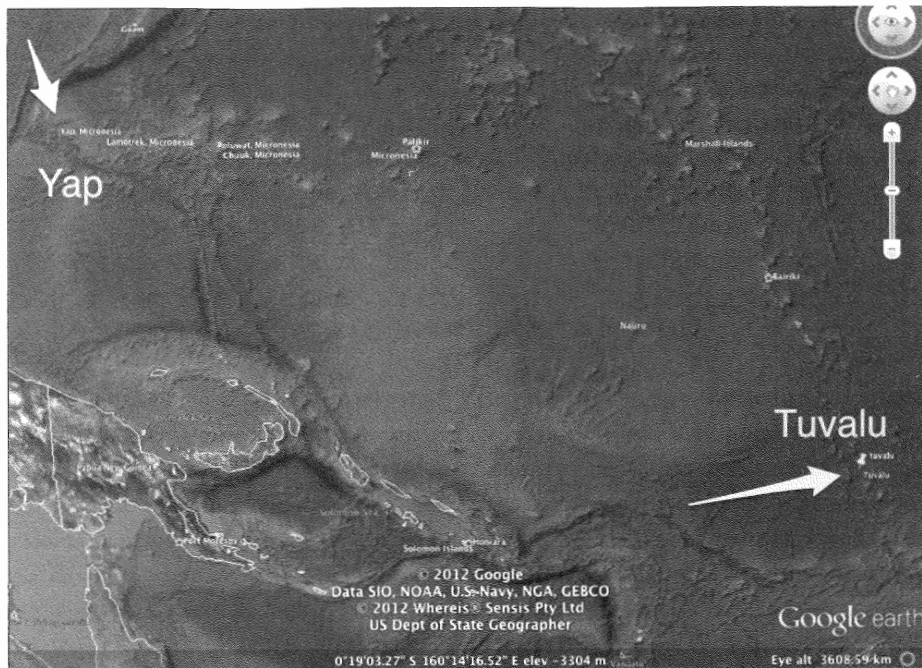


Figure 3.4 Framing Yap and Tuvalu in Google Earth.

one might become lost in sea of blue. But if one embarks over approximately the same distance east from California to Atlanta there are, literally, landmarks along the way: the Salton Sea, the Grand Canyon, the Mississippi River.

It is not these formal aspects alone that matter, but rather how they make meaning in relation to the geographic information program's overall "geometry of social/power relations" (Massey, 1994: 4). Released in 2005 by Google corporation, Google Earth eschews established boundaries while at the same time profiting from the disparities that these boundaries – as manifestations of the colonial imagination Hau'ofa invoked – maintain. As satellite media scholar Lisa Parks explains:

[t]he very production of Google Earth software is symptomatic of a global economy in which most nation-states are unable to control the production and circulation of representations of their own territories and those transnational corporations that own and operate satellite and computer technologies – the technologies of high visual capital – are able to generate huge profits from such a condition of disparity. (Parks, 2010: 260)

The images we see as we fly around include those gathered over 50 years by multiple US federal agencies but then repurposed in the web application to which Google Earth owns the proprietary rights (Parks, 2010: 259–260). It is a conceit that Google Earth is a free and democratic service for the realization of fantasies of "digital nomadism," "bodily transcendence," instant connectivity," and the annihilation of time and space (Parks, 2004: 37). Responding to Parks's exhortation to take seriously

"the material specificities and limits of network infrastructures" (2004: 37–38), I would add that the expenditure of different fuels made to secure Google Earth's combination of satellite, space shuttle, and airplane aerial imagery directly connect this earth-mapping system to the problems of global warming and sea level rise.

*Someplace with a Mountain* also fantasizes borderlessness, harkening back, again, to past millennia. As Goodall describes his discovery of the area of Micronesia where the film takes place, narrating how he sailed in the Caribbean and then through the Panama Canal and to and past the islands of the Galapagos, the Marquesas, Tahiti, Tonga, Fiji, Tuvalu, Kirabati, and the Marshalls, the film presents an aerial map of this whole area with each spot illuminated in turn by a kind of lighthouse visual effect. The film then settles on a group of atolls including Puluwat, Ifalik, and Lamotrek (Figure 3.5). This map emphasizes, by its choices of scale and labeling, the atolls' physical nature as a proximate cluster. Chase's narration chimes in a bit later explaining that the people living in this area of the Pacific from Papua New Guinea to Hawaii are all the descendants of the "Lapita navigator explorers who sailed and settled these waters 500 years before the birth of Christ." Later in the film, when we see Goodall screening his footage for citizens on Yap, he explains that the Yapese regard the inhabitants of "these endangered atolls" as their cultural kin from less developed times.

But actually, proximity and visual grouping notwithstanding, Puluwat is in the FSM state of Chuuk whereas Lamotrek is on the other side of the stateline, in Yap (Figure 3.6). Raatior finds these distinctions historically important and has objected to the conflation of peoples as a case of the consistent failure of Westerners to distinguish among sub-groups of blacks, Asians, and Pacific Islanders. "[S]how the film to any outer islanders from Polowat or the other islands in Yap (Elato, Fais, Ulithi) and they would, like me, be offended at the terrible way that Goodall uses scenery and people from elsewhere to tell the story of the Polowatese" (pers. comm.,

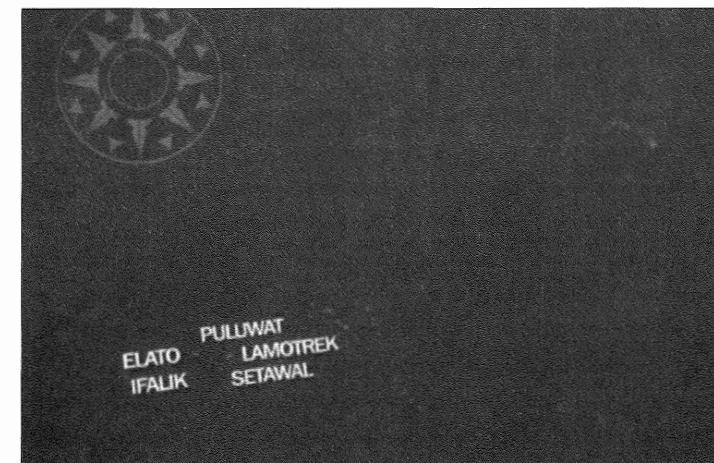


Figure 3.5 *Someplace with a Mountain's* proximate cluster. Still frame reproduced courtesy of Steve Goodall.



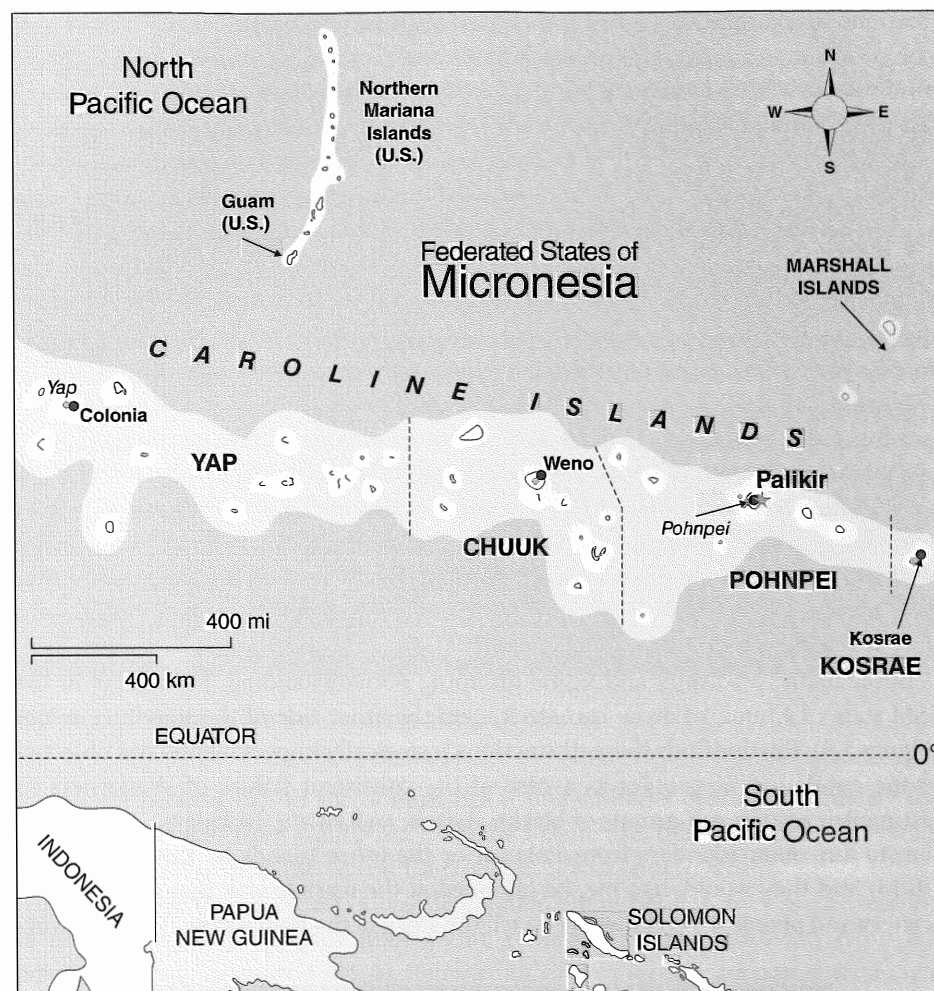


Figure 3.6 State lines in the Federated States of Micronesia.

December 22, 2011).<sup>14</sup> The film's editing, he believes, encourages this problematic logic of similarity and mixing. I agree. Not only are we given the impression (see n. 12) that an outer atoll of Lamotrek is Puluwat (this type of expeditious substitution occurs frequently in documentary editing), but furthermore the film edits together – absent information that would allow us to distinguish them – shots from different islands in the cluster. Amanda Tachibelmel, introduced as a mother and educator on the island of Ifaluk (subtitular spelling), emphasizes the need to maintain traditional culture, dress, and rituals, and the role of women in decision-making. We see a girl weaving a red and yellow band, two girls playing guitars, a community gathered at the beach, children two-by-two in a procession, and a woman weaving at a loom. Then the film returns to Saplan Bessy, to whom we were previously introduced. He is interviewed and observed on Puluwat building a canoe with the help of young

apprentices who are learning the craft. The film then cuts back to Tachibelmel and a community thatched roof-raising on Ifaluk.

Distinguishing sub-cultures is important, not only in principle, but also in terms of policy. Watching the non-subtitled DVD copy of the film he received from Goodall, Raatior understood Yapese officials to be offering aid to small islanders from Yap's but *not* to those from Chuuk's outer islands (pers. comm., December 19 and 22, 2011). While I strongly appreciate Hau'ofa's allusions to pre-colonial Oceania as a resuscitated spatial consciousness that empowers islanders in the present, it seems important in this case to acknowledge contemporary islanders' own assertions of cultural specificity and their coevalness with powerful nations and other entities that would usurp self-determination. Listening to islanders characterizing their territory goes hand in hand with acknowledging the benefits of their participation in intergovernmental planning (through the Alliance of Small Island States, for example) as well as local decision-making.

### Futurity Practices

If findings by local residents, filmmakers, and scientists (groups not mutually exclusive) have revealed the reality of Pacific Ocean sea level rise, the amount and time-frame of that rise are far from clear. How much will the seas rise in any given spot? When will it happen? What impacts will be felt? Will people living on islands lacking high or even moderate elevation areas be obliged to leave entirely, since there is no inland retreat? If so, when and where will they go? In the fall of 2011, Goodall was talking to audiences at screenings of *Someplace with a Mountain* about his intention to return to the South Pacific in order to help the Puluwatese and also to videotape their process of deciding which aspects of the proffered aid to accept.<sup>15</sup> I convened an interdisciplinary group of scholars to brainstorm what types of information would be helpful to the islanders.<sup>16</sup> Professor Emeritus Oran Young of the Bren School of Environmental Science and Management at UC Santa Barbara, a world leader in international governance and environmental institutions, characterized the vagaries of the situation by telling us that it might be one or two hundred years before the full effects of melting ice and thermal expansion are felt, but that even now there is increased volatility of ocean and air systems. Goodall is concerned that a big storm could blow through at any point with a king wave capable of wreaking devastation on Puluwat. To understand and predict the results of sea level rise – whether Puluwat will “sink” into the sea, and if so, how soon – various types of information from a wide array of research specialties is necessary: measurements of sea surface and coastal elevations,<sup>17</sup> maps of physical features; estimations of water volumes and flows;<sup>18</sup> information about physically adaptive architectures, such as sea walls and flood control engineering, and social architectures, such as policy planning and interrelationships among groups.

Extrapolating future occurrences through a range of futurity practices is crucial, and yet there are enormous differences in tone and validity among such practices.

In this regard, the previously discussed projected sea level sequence bears further examination. *An Inconvenient Truth's* coastal inundation animations – commissioned from visual effects expert Brian Fisher, whose numerous big-budget film credits include *District 9*, *Avatar*, *Tron: Legacy*, and *Transformers: Dark of the Moon* – are technically impressive as well as awesome to behold. On the commentary track director Davis Guggenheim attests to the achievement of the sequence:

When Al gave his slide show, and I saw it, these were still pictures, and to me [animating them] ... this is one of the most devastating things in the movie. I just couldn't imagine what would happen to all the people who lived under this water. This was actually extremely technically difficult to actually find out where the levels of sea level rise would be on these maps in an accurate way. All these maps are exactly accurate. And then animating how the water would seep into these areas. It was actually very very difficult. It took us months to do. It looks very simple.

It does seem apparent, as Gore states, that tens of millions of people will soon be on the move. However, the statement that the “maps are exactly accurate” invites qualification.

Scientists tend to perceive the challenge to map the world's existing coastline, predict its changing contours, and evaluate its vulnerability to sea level rise as ongoing rather than as achievable through a few months of hard work. Pioneering GIS geographer Michael Goodchild often references the French mathematician Benoit Mandelbrat to make the point that the length of a coastline is in fact indefinite (unknowable, infinite) since the measurement becomes greater according to the refinement of the measuring instrument and the scale of the physical feature being measured.<sup>19</sup> A.T. Vafeidis and colleagues explain that “[d]espite being one of the most distinct features on the earth's surface ... the coast has always been difficult to represent due to its dynamic nature and to the multi-dimensionality of information associated with it” (2004: 802). Of course these creators of what is a major European Union coastal mapping project tackle the problem nevertheless, by combining GIS processing of datasets with a new technique for spatially referencing coastal features called “dynamic segmentation.” But they do so while highlighting the relationships among “how information is presented,” the “organization and reliability of a database,” and decision-making,<sup>20</sup> that is to say, with a respect for knowledge as “multi-valent, equivocal, and protean.”

I decided to search for scientific counterparts to the extrapolative animations of coastal inundation in *An Inconvenient Truth*, with a focus on the Pacific island area under discussion here (but left out of Gore's film). This scientific knowledge, while medium specific and analytically distinct, can be pooled with *Someplace with a Mountain's* ethnographic “modeling” of the coast, its inhabitants, and the coming changes.

Interactive visioning tools are proliferating online. The Digital Coast project of the National Oceanic and Atmospheric Administration (NOAA) and a web map visualization tool called climateGEM created at the University of Arizona are state of

the art for sea level rise visualization.<sup>21</sup> NOAA's and the University of Arizona's models show inundation at six meters, while Alex Tingle's Google Earth hack models flooding up to 60 meters!<sup>22</sup>

In general and in comparison with Gore's didactic certainty, these geospatial mapping tools are often accompanied by statements of their own limitations. The NOAA tool has a button labeled “confidence.” Clicking on it, one reads, “The inundation areas depicted in the Sea Level tab are not as precise as they may appear.” A “Mapping Confidence” slider is provided; blue is for “High Confidence,” ochre for “Low Confidence.” The “Understanding the Map” section indicates:

[t]here are many unknowns when mapping future conditions, including natural evolution of the coastal landforms ... as well as the data used to predict the changes. The presentation of confidence in these maps represents only the known error in the elevation data and tidal corrections.

Tingle blogs about “significant sources of inaccuracy,” including that his model “knows nothing about the tides” and “takes no account of the effects of coastal erosion” nor of coastal defenses. And, in fact, he reports, the NASA data he has drawn on “is not very accurate” (<http://blog.firetree.net>). Whereas Guggenheim and Gore purport to exact accuracy, geographers are careful to map on the basis of multiple data sources, and they often signal where data is lacking, especially when it comes to coastal modeling.

It is true that the critique I leveled at Google Earth applies here too: regional, disparities in interactive visioning disfavor the South Pacific. The FSM is difficult to locate. Zooming in, one loses one's bearings. Zooming out, the islands appear minute and ultimately invisible. Moreover, with the NOAA and University of Arizona tools one cannot travel southwest from California to the South Pacific. Attempts to do so bring one to the edge of the map. One must navigate in the other direction, east across Africa, the Indian Ocean, and Papua New Guinea. The inputting of data for the South Pacific has not been prioritized. The NOAA tool does not, as this time of writing, contain information about future inundation in the FSM. The University of Arizona tool climateGEM contains limited information, less than for other regions. Nevertheless, in keeping with the scientists' greater and the filmmakers' lesser acknowledgement of uncertainty, the gaps in information on the interactive visioning sites tend to be *textually marked*. Phrases such as “map data not yet available” (climateGEM) are incorporated, and “We are sorry, but we don't have imagery at this zoom level for this region. Try zooming out for a broader look” (flood.firetree.net) (Figure 3.7).

Another epistemological difference between *An Inconvenient Truth* and these tools is relative movement. The interactive visioning tools are, precisely, interactive, but not animated: the user him/herself adjusts the elevation to see progressive inundation at the different levels, rather than sitting back and watching the animated sea roll in. Thus, whereas sea level rise in *An Inconvenient Truth* appears inexorable, modeling by the tools allows contemplation of what may or may not occur.

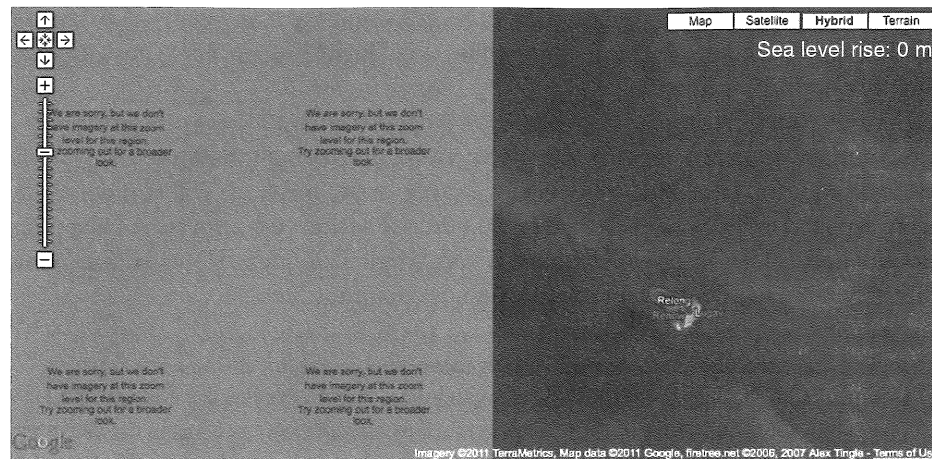


Figure 3.7 A suggestion from flood.firetree.net: “Try zooming out for a broader look.”

From a critical perspective, therefore, the didacticism and unacknowledged limits of *An Inconvenient Truth*'s scientific basis are problematic. And yet, embracing the complexity of texts and thought, I do still believe that there are critical as well as practical grounds for celebrating the film's bold advocacy work. *An Inconvenient Truth*'s animations might be regarded as productively “excessive” in the way Yusoff (2009) supports. This is not to fall into a crisis mode of panicked response,<sup>23</sup> but rather to accept the need to act, even in the face of uncertainty and given that “map-  
ping confidence” is never full.

Yusoff is critical of the timidity of The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) (Solomon et al., 2007) because, even as it projected a global sea level rise of ~60 centimeters (nearly two feet) by 2100 due to the thermal expansion of sea water and the melting of glaciers (Nicholls and Cazenave, 2010: 1517), the report pointed *only implicitly* toward abrupt change (Yusoff, 2009: 1010). As she explains:

the catastrophic failure of the ice sheet was seen by the IPCC as an excessive, unpredictable event (the problem of rising sea levels was not entirely understood), which was consequently left out of the IPCC's calculations for the Fourth Assessment Report. *Rather than risk uncertainly and disagreement over how sea level would rise, the IPCC omitted the failure of the ice sheets and relegated it to a footnote.* (Yusoff, 2009: 1011–1012, italics added)

Drawing on Bataille and Blanchot, Yusoff articulates the problem of “nonknowledge [being] that part of human experience that is excluded or expelled, because it is seen not to contribute to knowledge, even though it is experienced and is thus the most intimate form of knowledge” (2009: 1014). She therefore queries how we can “respond to unknowing within knowledge in a way that does not simply restate the limited terms of engagement that continue to disregard this excess” (2009: 1015).

Focus on the aesthetics of scientific visualizations and not merely their content, may be productive, she suggests:

At the point at which data become image, and thus regimes of colour, light, and density, the accumulative force of data become fluvial, in the sense that it washes away the possibility of the atomisation of thought – information is inhabited as experience or as “matter-emotion” (Blanchot, 1995b, page 108) ... In short, the animated world that we know is reanimated through visualisation models ... Placing the catastrophic “visions of the world” generated by digital earth into an aesthetic and philosophical space of consideration (they are of course already there), we can say that they exhibit an exorbitant potential, pushing conventional conditions of observing to the limit. (2009: 1021)

If “[f]or Bataille the project of recognising excess within economies is part of an uneasy form of vital recuperation that allows us to understand rather than undergo destruction” (2009: 1024), then excessive visions with their exorbitant potential may contribute understanding, Yusoff is convinced.

Embracing this film's exorbitant potential, we might say that *An Inconvenient Truth*'s animations particularly, along with other research generated visualizations, contribute to our understanding of climate change not simply to the extent that they purport scientific accuracy, but also because – in their excess – they escape the boundaries of the known and the knowable. If in climateGEM, information specific to Puluwat is lacking, still there are frighteningly blatant rectangular red boxes denoting what would be under water should the seas rise over areas of the high islands in the state of Chuuk (Figure 3.8). With flood.firetree, the effects of sea level rise on Puluwat are evident. At each of the different projected elevations, the atoll becomes progressively inundated (Figure 3.9). Also, Yap, the possible destination island,



Figure 3.8 Representing inundation through climateGEM's web map visualization tool. Created by Jeremy Weiss and used with permission. See <http://www.geo.arizona.edu/dgesl/research/other/climateGEM/climateGEM.htm>.



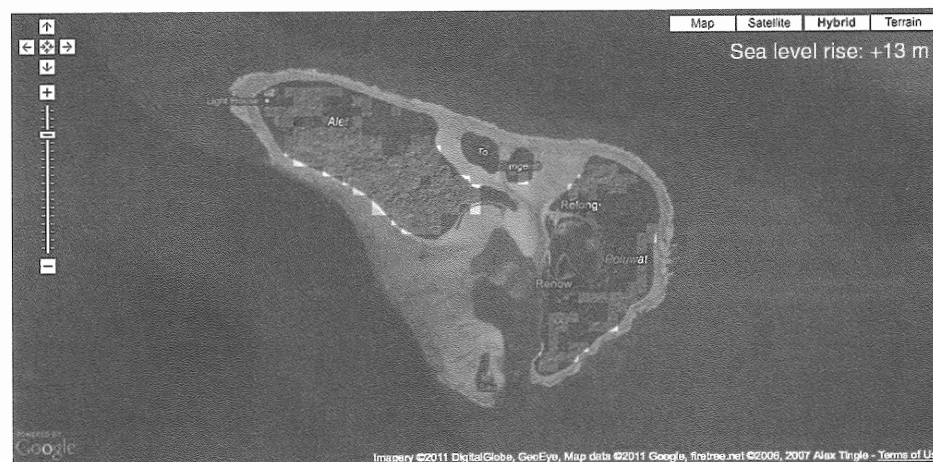
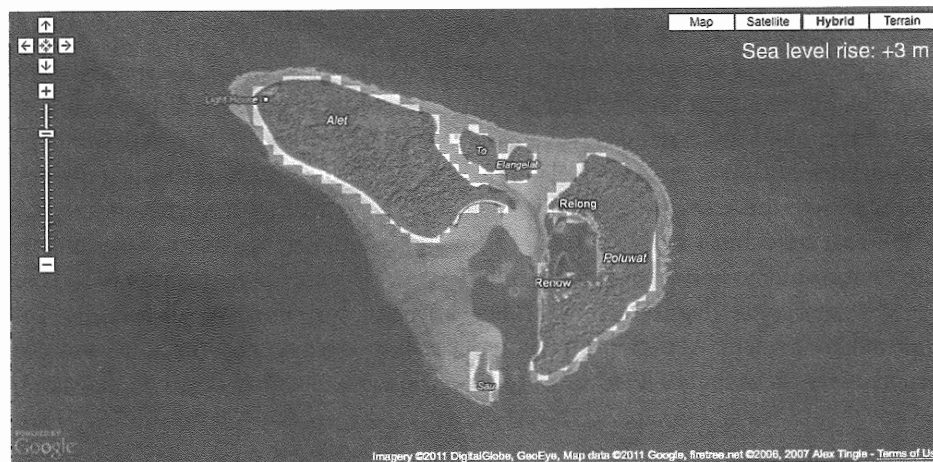
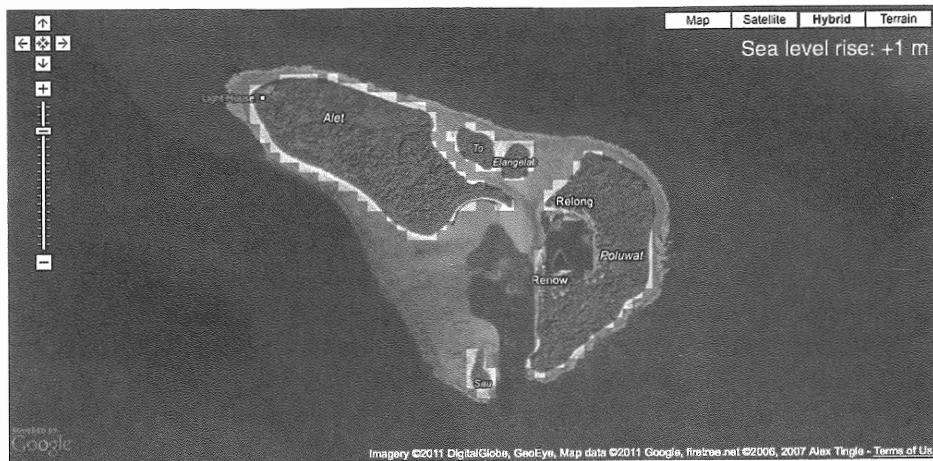


Figure 3.9 Toggling up the sea height in firetree.net.

would see significant inundation. These various colorful and/or fluvial visualizations are *affective*; differently affective than on-site subject interviews such as the one with Francis of Lamotrek, but affective nevertheless.

How might a person from an endangered area experience this interactive mapping tool? I checked climateGEM for my own locale. At four meters of sea height an ominous red rectangle appears over my workplace, the coastal campus of the University of California, Santa Barbara (Figure 3.10). However, we were relieved to learn from the author of a sea level rise vulnerability study of our area and from our campus architect that the campus is both prepared and fortunate in its bluff-top location, in contradistinction to the city's airport.<sup>24</sup>

### Navigating the Future

Who will be obliged to uproot, with what support, how will this be decided, where will they/we go, and how will they/we be received? While intergovernmental planning has focused – with insufficient results – on climate change mitigation,<sup>25</sup> the navigational technologies I have analyzed in this chapter variously and knowledgeably communicate the vagaries of coastal space and the profound uncertainties and painful contingencies of moving to higher ground.

Documentary films and other screen media figuring sea level rise are hugely important, therefore, not relative to their omniscience, but as a way of raising further debate and resources.<sup>26</sup> People from small, low-lying Pacific islands already exceed *Someplace with a Mountain's* characterization of current residents as “traditionals,” in part through their openness to an array of possibilities. As Vid Raatior and Chief

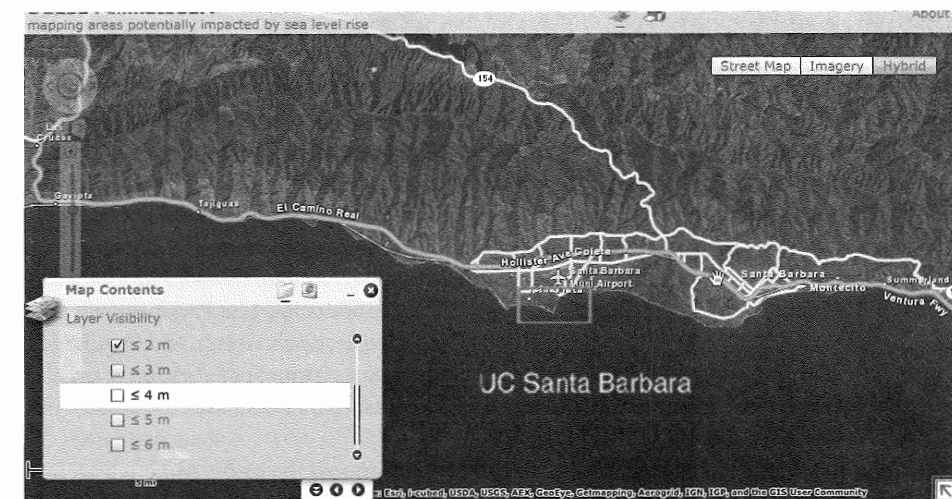


Figure 3.10 Another potentially impacted Pacific community, using climateGEM imagery. Created by Jeremy Weiss and used with permission. Rectangular outline added. See <http://www.geo.arizona.edu/dgesl/research/other/climateGEM/climateGEM.htm>.

John Uruo counsel,<sup>27</sup> all good options for the Puluwatese and other inhabitants of threatened islands should be explored, including those that might necessitate a change in the islanders' daily practices. The Puluwatese may well choose, under dire circumstances, to shift their venue while doing their best to sustain their "ways." We in the West have much to learn from them.<sup>28</sup>

Here in Santa Barbara there was a volunteer education effort to paint a "blue line" on the city streets to remind people "that the coastline is an outcome of collective human efforts." Inspired by *An Inconvenient Truth*, this line, estimated at 7 meters to reflect sea level rise in the event of the melting of the Greenland ice cap, would have cut inland "right up into the heart of the city." After protracted efforts to gain the proper permits for the painted line, the physical plan was sunk by real estate and other interests. But the project continues online ([lightblueline.org](http://lightblueline.org)), perhaps reminding us of the connectedness of Californians with South Pacific islanders across the ocean, and for that matter, of the oceanic medium that sustains us all across the vast sea of islands that is our planet earth.

Daniel Sui suggests that "[b]y integrating tools with creative imaginations, we can ask more innovative and socially relevant questions about the evolving character of the Earth's surface under conditions of global environmental change" (2004: 63). This chapter has been an exploration of specific ways that "tools with creative imaginations" participate in a circuit of understanding and feeling. Each of the mobile media forms discussed – whether realized at a computer interface or in the physical realm, as when a laptop is transported by sailboat across the open sea – is intricately constructed, rhetorically multiple, and epistemologically uncertain. Such are the complexities we must continue to probe if we are to understand figurations of sea level rise, and how our next steps in the coastal zone might be further imaged, imagined, and directed along a path of self-determination and social justice.

## Notes

- 1 This chapter is related to my book-in-progress about media, geography, and environment. As a humanities scholar delving into navigational technologies pertaining to an area of the world from which I do not hail, I am particularly cognizant of the debt owed to the many knowledgeable people who were willing to share their expertise with me. In particular I would like to thank Steve Goodall, Candace Schermerhorn, Flora Furlong, Vid Raatior, Bruce Caron, Eckart Meiburg, Michael Goodchild, Lisa Parks, members of the UC Santa Barbara Environmental Media Initiative Research Group, and Don Janelle and the participants in the UC Center for Spatial Studies ThinkSpatial group. I am also grateful for astute and encouraging editorial comments from Juan Francisco Salazar, Alex Juhasz, and Alisa Lebow.
- 2 Sea height does not rise uniformly like a bathtub ring around the globe. Although average or mean rise is discussed and attempts are made to quantify it, regional differences in sea level rise attributable to wind patterns, ocean currents, vertical land adjustments, and all manner of anthropogenic factors are significant. See Lemonick (2010), Church (2001), Bromirski et al. (2012).

- 3 See Connolly and Anderson (1987) and their film *First Contact* (1983), MacCannell (1994), Clifford and Marcus (1986), Taylor (1994), and Rony (1996) for critical discussions of the colonialist impulses of traditional anthropology and the disparate results of contact including "first contact," or the initial meeting between Westerners and indigenous peoples.
- 4 Robert Gardner's *Dead Birds* (1963) exemplifies the ethnographic mode that does not include subject interviews.
- 5 I am relying on Carol Farbotko's identification of the photographer as Mark Lynas. The film itself lists Lynas in the credits, but does not identify the photos' sources where they appear in the film.
- 6 Documentaries about sea level rise are proliferating and their existence and variety is a rich and vital topic for analysis. Although this chapter is focused on *Someplace with a Mountain* and *An Inconvenient Truth*, I do want to acknowledge other current documentary films about the effects of sea level rise on low-lying islands. Among them are Michael Nash's *Climate Refugees* (2009), Jon Shenk's *The Island President* (2011), Tom Zubrycki's *The Hungry Tide* (2011), and Jennifer Redfearn's Academy Award-nominated documentary, *Sun Come Up: The Story of Climate Change Refugees* (2011). The website for "Water Is Rising," a Pacific islander performance project, <http://www.waterisrising.com/content/films>, accessed July 20, 2014, lists a dozen relevant films, many of which are available on the site as streaming video.
- 7 As Bodenhamer et al. indicate, "the discipline ... [of] ... geography found itself divided over the technology in ways that mimicked the concerns expressed by humanists about quantitative methods generally. The central issue was, at heart, epistemological: GIS privileged a certain way of knowing the world, one that valued authority, definition, and certainty over complexity, ambiguity, multiplicity, and contingency, the very things that engaged humanists. From this internal debate, often termed Critical GIS, came a new approach, GIS and Society, which sought to reposition GIS as GIScience, embodying it with a theoretical framework that it previously lacked" (Bodenhamer et al., 2010: ix). Geographers have been for some time "re-examining cartographic conventions and seeking ways to represent uncertainty and ambiguity, subjectivity and agency" (Rumsey, 2009: 4). Attending specifically to methods of geovisualization, Sarah Elwood clarifies that what defines approaches to qualitative geovisualization "is not the absence of numeracy. Rather, it is their integration of multiple modes of representation – visual, textual, numerical – and iterative interpretive analysis of these representations to tease out what they reveal about social and material situations" (Elwood, 2010: 403).
- 8 The software company ESRI defines a Geographic Information System as one that "integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information."
- 9 Yoosun Park and Joshua Miller (2006) have written compellingly about the suffering of poor New Orleanians whose homes in low-lying and other environmentally undesirable areas of the city sustained greater damages and in much greater proportion from Hurricane Katrina than those of wealthier residents in more desirable, higher elevation neighborhoods.
- 10 It is not clear from the film itself to what extent the islanders collude with Goodall to "perform," in the way that Dean MacCannell (1994) has described, a "primitivity" that is no longer theirs.
- 11 There is an ongoing debate in the literature on climate change induced migration about whether those forced to move should be called climate migrants or climate "refugees."



- The latter term is thought by some to make the people and their plight legible and deserving of consideration within policy discourses. Others dispute the label as one that undermines the perceived identities, rights, and agency of people at the greatest risk of being made landless. See McNamara and Gibson (2009) and Biermann and Boas (2010).
- 12 Steve Goodall has let me know via email that the shot is actually of one of the small outer atolls of Lamotrek (7° 27' 30.06"N 146° 22' 27.62" E). While perhaps not problematic in and of itself, the substitution for Puluwat is part of a broader conflation to be discussed below.
  - 13 There is also a dearth of labels programmed into Google Earth for the area, especially in comparison with the large number appearing for the continental United States.
  - 14 Also when he talks about the film project, as I have heard him do on four occasions, Goodall consistently states that it is the Puluwatese, in particular, he seeks to help. The four occasions were at the 2010 Santa Barbara International Film Festival, to students in my course on Films of the Natural and Human Environment in the fall of 2011, and during two meetings of UC Santa Barbara's Environmental Media Initiative Research Group of the Carsey-Wolf Center in November 2011.
  - 15 Goodall is resolved that the decision whether to relocate from Puluwat is for the Puluwatese themselves to make. That said, a documentary scholar will know that the actions of documentary subjects are never wholly independent of the production process.
  - 16 The participants were a core group of the members of the Environmental Media Initiative Research Group of the Carsey-Wolf Center on the University of Santa Barbara campus. See <http://www.carseywolf.ucsb.edu/emi>, accessed July 20, 2014.
  - 17 Land elevation and sea surface measurements may be achieved through the high resolution imaging instruments LIDAR (Light Detection And Ranging, looking downward from airplanes and satellites) and ASTER (Advanced Spaceborne Thermal Emission and Reflection Radiometer, flying on the Terra satellite).
  - 18 These would include predictions of land-based ice melt and calculations of the earth's gravitational pull, termed "glacial forebulge" (where the earth is pooched up by glacial movement). See also n. 2.
  - 19 Michael Goodchild mentioned this point in his October 4, 2011 talk, "Geographical Intelligence," for the ThinkSpatial forum of the Center for Spatial Studies at UC Santa Barbara, <http://spatial.ucsb.edu/events/thinkspatial-brownbags/brownbags-2011-2012/>, accessed July 20, 2014. See also Longley et al. (2011).
  - 20 The project is entitled DINAS-COAST, which stands for Dynamic and Interactive Assessment of National, Regional and Global Vulnerability of Coastal Zones to Climate Change and Sea-Level Rise. The goal is to establish a user-friendly, cross-disciplinary database for coastal modeling and vulnerability assessment taking into account "(i) the geomorphic structure of the coastal environment; (ii) the potential for wetland migration; (iii) the locations of major rivers and deltas; (iv) population density classes; and (v) administrative boundaries" (Vafeidis et al., 2004: 803).
  - 21 The NOAA tool is the "Sea Level Rise and Coastal Flooding Impacts Viewer" provided by the Digital Coast project of the Coastal Services Center, <http://www.csc.noaa.gov/digitalcoast/tools/slrviewer/>, accessed July 20, 2014. The University of Arizona "web map visualization tool," climateGEM, has been created under the Geospatial Environmental Modeling of Climatic Hazards and Their Impacts project of the Department of Geosciences and Environmental Studies Laboratory, <http://climategem.geo.arizona.edu/slr/world/index.html>, accessed July 20, 2014. There is also the Google Earth hack by Alex Tingle, <http://flood.firetree.net>, accessed July 20, 2014, which uses NASA data.

- 22 Google Earth has its own interactive sea level rise modeling layer in a section of the web application under "terrain." But I decided to discontinue prioritization of Google Earth at this point in the chapter.
- 23 Parks (2010) is critical of the "Crisis in Darfur" layer of Google Earth because although it intends a productive crisis mapping, it nevertheless reverts to unproductive stereotypes of Africa and Africans and pretends a fullness of information that it actually lacks. For research on crisis mapping see Liu and Palen (2010) and Meier (2010).
- 24 The session at which this information was presented, entitled "Santa Barbara Geographies: Past, Present, and as the Sea Levels Rise" (November 9, 2012), was part of the 2012–2013 "Figuring Sea Level Rise" series of our campus's Critical Issues in America program. The speakers being referenced here are Gary Griggs and Marc Fisher. The third speaker was Edward Keller. See <http://criticalissues.ucsb.edu>, accessed July 20, 2014.
- 25 The Kyoto Protocol with its binding targets for the reduction of greenhouse gases is an intergovernmental attempt at mitigation. The Protocol has been signed and ratified by 192 parties. Canada withdrew. The US is the only signatory that has not ratified the agreement.
- 26 The recent *Sun Come Up* (Redfearn, 2011) is notable for showing Carteret islanders themselves attempting to arrange for the migration of an initial cluster of families to Bougainville, the main island of the Autonomous Region of Bougainville, Papua New Guinea.
- 27 Chief Uruo visited our UC Santa Barbara campus on January 25, 2012.
- 28 Also, a group calling themselves The Pacific Voyagers are sailing across the Pacific to raise awareness about "our Ocean in peril."

## References

- Barnett, J. and Campbell, J. (2010) *Climate Change and Small Island States: Power, Knowledge and the South Pacific*. London: Earthscan.
- Biermann, F. and Boas, I. (2010) Preparing for a Warmer World: Towards a Global Governance System to Protect Climate Refugees. *Global Environmental Politics*, 10(1), 60–68.
- Blanchot, M. (1995) *The Work of Fire*, trans. C. Mandell. Palo Alto, CA: Stanford University Press.
- Bodenhamer, D.J., Corrigan, J., and Harris, T.M. (eds.) (2010) *The Spatial Humanities: GIS and the Future of Humanities Scholarship*. Bloomington: Indiana University Press.
- Bromirski, P.D., Miller, A.J., and Flick, R.E. (2012) Understanding North Pacific Sea Level Rise Trends. *EOS, Transactions, American Geophysical Union*, 93(27), 249–256.
- Bruno, G. (2002) *Atlas of Emotion: Journeys in Art, Architecture and Film*. New York: Verso.
- Cameron, F.R. (2011) Saving the "Disappearing Islands": Climate Change Governance, Pacific Island States and Cosmopolitan Dispositions. *Continuum: Journal of Media & Cultural Studies*, 25(6), 873–886.
- Church, J.A. (2001) How Fast are Sea Levels Rising? *Science*, 294 (October 26), 802–803.
- Clifford, J. and Marcus, G.E. (eds.) (1986) *Writing Culture: The Poetics and Politics of Ethnography*. Berkeley: University of California Press.
- Connolly, B. and Anderson, R. (1987) *First Contact: New Guinea's Highlanders Encounter the Outside World*. New York: Viking.

- Cope, M. and Elwood, S. (eds.) (2009) *Qualitative GIS: A Mixed Methods Approach*. Los Angeles and London: Sage.
- Dear, M., Ketchum, J., Luria, S., and Richardson, D. (eds.) (2011) *GeoHumanities: Art, History, Text at the Edge of Place*. London and New York: Routledge.
- Elwood, S. (2010) Geographic Information Science: Visualization, Visual Methods, and the Geoweb. *Progress in Human Geography*, 35(3), 401–408.
- Fabian, J. (1983) *Time and the Other: How Anthropology Makes Its Object*. New York: Columbia University Press.
- Farbotko, C. (2010) Wishful Sinking: Disappearing Islands, Climate Refugees and Cosmopolitan Experimentation. *Asia Pacific Viewpoint*, 51(1), 47–60.
- Farbotko, C. and McGregor, H.V. (2010) Copenhagen, Climate Science and the Emotional Geographies of Climate Change. *Australian Geographer*, 41(2), 159–166.
- Gregory, D. (1993) *Geographical Imaginations*. Oxford: Wiley-Blackwell.
- Gregory, I.N. and Ell, P.S. (2007) *Historical GIS: Technologies, Methodologies and Scholarship*. Cambridge: Cambridge University Press.
- Harris, T.M., Corrigan, J., and Bodenhamer, D.J. (2010) Challenges for the Spatial Humanities: Toward a Research Agenda. In Bodenhamer, D.J., Corrigan, J., and Harris, T.M. (eds.) (2010) *The Spatial Humanities: GIS and the Future of Humanities Scholarship*. Bloomington: Indiana University Press.
- Hau'ofa, E. (1993) Our Sea of Islands. In Waddell, E., Naidu, V., and Hau'ofa, E. (eds.) *A New Oceania: Rediscovering Our Sea of Islands*, pp. 2–16. Suva: School of Social and Economic Development, University of the South Pacific and Beake House.
- Lemonick, M.D. (2010) The Secret of Sea Level Rise: It Will Vary Greatly by Region. Yale Environment 360 (March 22), <http://e360.yale.edu/content/feature.msp?id=2255>, accessed July 21, 2014.
- Levinson, M., Ward, R.G., and Webb, J.W. (1973) *The Settlement of Polynesia: A Computer Simulation*. Minneapolis: Minnesota University Press.
- Liu, S. and Palen, L. (2010) The New Cartographers: Crisis Map Mashups and the Emergence of Neogeographic Practice. *Cartography and Geographic Information Systems*, 37, 69–90.
- Longley, P.A., Goodchild, M.F., Maguire, D.J., and Rhind, D.W. (2011) *Geographic Information Systems and Science*, 3rd edn. Chichester: John Wiley & Sons, Ltd.
- MacCannell, D. (1994) *Cannibal Tours*. In Taylor, L. (ed.) *Visualizing Theory: Selected Essays from V.A.R. 1990–1994*. New York and London: Routledge.
- McNamara, K.E. and Gibson, C. (2009) “We Do Not Want to Leave Our Land”: Pacific Ambassadors at the United Nations Resist the Category of “Climate Refugees.” *Geoforum*, 40, 475–483.
- Massey, D. (1994) *Space, Place, and Gender*. Minneapolis: University of Minnesota Press.
- Meier, P. (2010) The Rise of Crisis Mapping and the Crisis Mappers Group. iRevolution (March 28), <http://irevolution.wordpress.com/2010/03/28/rise-of-crisismappers>, accessed July 21, 2014.
- Nichols, B. (1991) *Representing Reality*. Bloomington: Indiana University Press.
- Nicholls, R.J. and Cazenave, A. (2010) Sea-level Rise and Its Impact on Coastal Zones. *Science*, 328, 1517–1520.
- Park, Y. and Miller, J. (2006) The Social Ecology of Hurricane Katrina. *Smith College Studies in Social Work*, 76(3), 9–24.
- Parks, L. (2004) Kinetic Screens: Epistemologies of Movement at the Interface. In Couldry, N. and McCarthy, A. (eds.) *MediaSpace: Place, Scale and Culture in a Media Age*, pp. 37–57. London and New York: Routledge.

- Parks, L. (2010) Between Orbit and the Ground: Conflict Monitoring, Google Earth and the “Crisis in Darfur” Project. In Sarkar, B. and Walker, J. (eds.) *Documentary Testimonies: Global Archives of Suffering*, pp. 245–267. London and New York: Routledge.
- Renov, M. (1993) Introduction: The Truth About Non-Fiction. In M. Renov (ed.) *Theorizing Documentary*, pp. 1–11. New York and London: Routledge.
- Rony, F.T. (1996) *The Third Eye: Race, Cinema, and Ethnographic Spectacle*. Durham, NC: Duke University Press.
- Rumsey, A.S. (2009) Spatial Technologies and the Humanities. Scholarly Communication Institute 7 Report, University of Virginia, <http://uvasci.digress.it/>, accessed August 15, 2014.
- Smith, N. (2008) *Uneven Development: Nature, Capital and the Production of Space*, 3rd edn. Athens: University of Georgia Press.
- Solomon, S. et al. (eds.) (2007) *Climate Change 2007: The Physical Science Basis, Contribution of Working Group 1 to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press.
- Sui, D.Z. (2004) GIS, Cartography, and the “Third Culture”: Geographic Imaginations in the Computer Age. *The Professional Geographer*, 56(1), 62–72.
- Taylor, L. (ed.) (1994) *Visualizing Theory: Selected Essays from V.A.R. 1990–1994*. New York and London: Routledge.
- Vafeidis, A.T., Nicholls, R.J., McFadden, L., Hinkel, J., and Grashoff, P.S. (2004) Developing a Global Database for Coastal Vulnerability Analysis: Design Issues and Challenges. *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, 34, Part XXX, 801–805.
- von Lünen, A. and Moschek, W. (2011) Without Limits: Ancient History and GIS. In Dear, M., Ketchum, J., Luria, S., and Richardson, D. (eds.) (2011) *GeoHumanities: Art, History, Text at the Edge of Place*. London and New York: Routledge.
- Yusoff, K. (2009) Excess, Catastrophe, and Climate Change. *Environment and Planning D: Society and Space*, 27, 1010–1029.