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Introduction. Synthèse interdisciplinaire de quelques discours et réponses liés au climat dans le Pacifique

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Introduction: An interdisciplinary overview of some climate-related narratives and responses in the Pacific

Introduction. Synthèse interdisciplinaire de quelques discours et réponses liés au climat dans le Pacifique

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Introduction

- 1 The scientific, political and media communities alike generally present the tropical Pacific as located on the frontlines of climate change and, therefore, as a region where climate change adaptation has unmatched urgency. Some of the effects of climate change have indeed already been detected and started being analyzed in this region: sea level rise (exacerbating extreme sea level events and therefore leading to an increased risk of inundation, coastal erosion, severe storm surges, salt-water intrusion, etc.), sea surface temperature increase, ocean acidification, the decreased predictability of weather patterns as well as escalating patterns of extreme weather events, etc. (Howes, Birchenough and Lincoln, 2018; Moesinger in this volume). These changes to the Pacific physical environment are also expected to intensify in the years ahead and significantly impact both terrestrial and marine habitats (e.g., forests, wetlands, coral reefs, seagrasses, mangroves, open ocean, etc.), the associated biodiversity, and therefore the ecosystem services these habitats provide to the region (Bell *et al.*, 2011).

PHOTO 1. – High volcanic island, Banks, Vanuatu. Located on the Pacific Ring of Fire, Vanuatu's islands are particularly vulnerable to climatic and geological hazards



(© IRD Pascal Dumas)

- 2 If there is little doubt that these changes will constitute major challenges for the populations whose lifestyle and livelihoods depend on these resources and ecosystems, as noted by Crook and Rudiak-Gould, “by and large, for now, life goes on in the Pacific islands, and climate change exerts its influence as much as anticipatory idea and conceptual resource as it does through saltwater intrusion, eroding graveyards, cyclonic winds, and bleached reefs” (2018: 10). Furthermore, the Pacific Islands have widely varying exposure to, experience of, and attitude to climate change, as well as enormous differences of wealth and power (*ibid.*: 11), and are therefore “somewhat diverse in both their vulnerability and resilience to climate change” (Lata and Nunn, 2012: 170-171). Besides this, if in the Pacific maybe even more than anywhere else, climate change has become “the key narrative within which all environmental politics – from global to local – is now framed” (Hulme, 2009), climate change is not necessarily the main concern of Pacific Islanders. Among the latter, some prioritize poverty, livelihoods and food security over climate change (Walshe *et al.*, 2018: 315). The ever-increasing focus on climate change has indeed been regarded as a potential “depoliticiser” of the development challenges faced by so-called Pacific small island developing states (Kelman, 2014). Based on an ethnography of Takuu Atoll, a Polynesian outlier located in the Autonomous Region of Bougainville in Papua New Guinea, Anke Moesinger presents in this volume a clear case study where the emphasis put by the media on climate change-related physical hazards mask what islanders identify as pressing development challenges: inadequate transportation services, insufficient healthcare, and lack of employment opportunities.

PHOTO 2. – Severe coastal erosion near the harbour of Rotuma, a high island in the north of the Fijian archipelago, 31/03/2017



(© A. De Ramon N'Yeurt)

PHOTO 3. – Severe coastal erosion near the harbour of Rotuma, a high island in the north of the Fijian archipelago, 31/03/2017



(© A. De Ramon N'Yeurt)

- 3 It is therefore necessary to encourage nuanced views of the climate-related changes that are occurring in the Pacific region, integrating their ecological, sociocultural, economic and political dimensions. This requires the building of bridges, still too few and fragile, between environmental and social science approaches. This paper intends to contribute to these efforts by connecting some multi-disciplinary and multi-sited insights into these climate-related changes. It indeed aims to connect some of the scientific facts and projections regarding global climate change and its effects in the Pacific region with the diversity of local climate-related perceptions, narratives and adaptation pathways. This builds on the now well-established observation that climate change is not only a set of physical phenomena that can be observed, studied, modelled, predicted, etc., but also refers to a set of scientific ideas that Pacific Islanders “encounter” (Hetzl and Pascht, 2017), that might change the way the latter think, feel and act (Hulme, 2009), and that might also give rise to counter-narratives that can be used in political praxis (Kempf, 2017). All these aspects and their (dis)connections have to be seriously taken into account in the process of imagining meaningful and sustainable futures in the Pacific.
- 4 This special issue analyzes in particular case studies from diverse parts of the South Pacific (Kiribati, Cook Islands, Vanuatu, Takuu Atoll in Papua New Guinea) as well as a case study from the North-Eastern Pacific (the Fraser River Delta). Another contribution deals with the involvement of Pacific island countries and territories in the global climate negotiations and advocacy.

Climate responsibility and Anthropocene: Pacific views

- 5 The influence of human activities on the planetary climate has been such since the industrial turn that the creation of a new geological epoch, the Anthropocene¹, has been advocated (Lewis and Maslin, 2015; Malhi, 2017). The atmospheric concentration of greenhouse gases (mainly carbon dioxide, CO₂) has been inexorably rising at an accelerated rate. This means that we are committed to decades of global warming even if all emissions ceased today – which seems extremely unlikely. Warming of the global climate system has been stated to be unequivocal by virtually all specialists (IPCC, 2014 & 2018). The global average surface temperature could be 2.6°C to 4.8°C higher than today by 2100 (*ibid.*). About a quarter of the atmospheric CO₂ eventually ends up being absorbed by the oceans, whose surface waters’ acidity is continually increasing, causing damage to coral reefs and other calcifiers. Moreover, global sea levels have already risen by about 3 mm per year over the last 20 years and could rise up to 1 m in certain areas by the end of the century due to thermal expansion of the oceans and melting of ice sheets and glaciers (*ibid.*).

PHOTO 4. – Damaged seawall in Malawai, Gau Island, Fiji, 04/06/2016



(© Élodie Fache)

PHOTO 5. – Shoreline erosion near Monéo in Ponérihouen, New Caledonia, July 2019



(© Isabelle Leblic)

- 6 This scientific view of climate change as an anthropogenic phenomenon mainly caused by highly-industrialized countries has given momentum to the widespread tendency to consider that Pacific nations and people, who have contributed only minimally to the global rise of CO₂ emissions but are already particularly affected by its effects, are faultless victims. However, the politics of blame is often more nuanced and complex on the ground. Rudiak-Gould (2014 & 2015) shows that what he calls “industrial blame”, that is the indictment of industrial, Western, Northern, developed, capitalist countries, co-exist with three other interrelated blame narratives in the Pacific: “ubiquitous/universal blame” (everything and everyone is blameworthy), “ubiquitous blamelessness” (nothing and no one is blameworthy; for instance, climate change is seen as a natural phenomenon), and “partial blame” (whatever and whoever one wants is blameworthy; this includes scapegoating and self-blame). For instance, Marshall Islanders (if not their government) appear as “fascinated and morally animated by their own contribution” to climate change: they are prone to deploying the ubiquitous/universal blame narrative, with self-blaming tendencies (Rudiak-Gould, 2014). The observation that Marshall Islanders are inclined to shoulder some of the blame for climate change can be surprising at a first glance, but not so much when one considers that this opens the door to local agency whereas carbon innocence often implies impotence (Rudiak-Gould, 2015). In Fiji, the blame for extreme weather events occurring at both the national or local scales tends to be ascribed to specific individuals, groups or entities such as dishonest developers, heavy polluters, the tourism industry, the National Weather Office, specific *iTaukei* (indigenous) communities neglecting their land and/or offending God, etc. (Cox *et al.*, 2018; Nolet, 2018). Yet interestingly, Prime Minister Bainimarama tends to ascribe climate change blame to Australia, this Pacific island state’s traditional development partner (Cox *et al.*, 2018: 400).
- 7 In this context of a multiplicity of blame narratives for climate change, various Pacific voices call for the significant contribution of the region’s nations and populations to climate action. For instance, some Pacific political figures advocate for “global togetherness in this issue of taking responsibility for the care of our planet” as the only way to move forward (Efi, 2018: 23). Some Pacific scientists argue that “climate change adaptation is everybody’s responsibility” (Veitayaki and Holland, 2018: 121). Some faith-based organizations contend that it is also Pacific Islanders’ moral and ethical responsibility to contribute to climate action as stewards of God’s creation. Last but not least, some advocates of climate skepticism (Grundmann, 2015), taking advantage of the often-confused climate concepts within Pacific islands, take the opportunity to offer alternative, often cleverly misinformative climate narratives that further confound the already cacophonous discourse. Moreover, scientific studies are also emerging that challenge accepted views of doom for Pacific atolls in face of rising sea-levels (Tuck *et al.*, 2019).
- 8 Against this backdrop, Pacific island countries and territories often remain presented as particularly and inherently “vulnerable” to the adverse effects of climate change (for instance, Howes, Birchenough & Lincoln, 2018), or as “the first victims of climate change” (Struck-Garbe, 2018). Some scholars note that this vulnerability narrative reflects “a longstanding colonial trope that has merely been reinvented and reinvigorated” in the context of the climate change era (Crook and Rudiak-Gould, 2018: 15). For some other scholars, this reveals a victimization strategy crafted by NGOs and/

or by political leaders with the aim to lay claim to climate change adaptation funds (Gay, 2014). In this volume, Timothée Ourbak, Bran Quinquis and Charlotte-Fleur Cristofari's contribution illustrates that this vulnerability narrative tends above all to be used by Pacific island governments to collectively raise their voices in climate-related international arenas, while calling for an urgent acceleration of the fight against climate change. On another note, some Pacific Islanders endeavour to replace this vulnerability narrative with one of great determination to fight and/or adapt to climate change. This is best illustrated by the motto of the Pacific Climate Warriors, a trans-Pacific network of young Pacific Islanders: "We are not drowning. We are fighting".

The ecological impacts of climate change: Scientific ideas and their reception

Regional assessment of impacts versus local experiences of changes

- 9 The above-mentioned climate-related changes – global warming, ocean acidification, sea level rise, etc. – are expected to have profound and non-reversible impacts on the South Pacific region's terrestrial and marine ecosystems, through major shifts in the structure, distribution patterns and connectivity of various habitats, and the physiology, behaviour, biodiversity, dynamics, etc. of the associated organisms. Substantial alterations are for instance expected in the already weakened coastal ecosystems, which provide crucial environmental and economic services to about 500 million people and generate about USD 30 billion per year in fishing, tourism and coastal protection (Stone, 2007; Wilkinson, 2008). This is in particular the case for coral reefs, mangroves, algae and seagrass beds which constitute hotspots of biological diversity, and a cornerstone of the social, cultural and spiritual identity of the populations in Oceania. More generally, the projected changes in temperatures, rainfall regimes, currents, availability of nutrients and dissolved oxygen, ocean acidification, sea level, etc. act as direct threats to biodiversity and the ecosystem services provided to the adjacent, densely populated communities (Hoegh-Guldberg, 2000; Hoegh-Guldberg *et al.*, 2009; Ganachaud *et al.*, 2011).
- 10 However, these communities' experiences of the world might diverge in many ways from this scientific appraisal of the ecological impacts of global anthropogenic climate change (Crook & Rudiak-Gould, 2018: 10). Janif *et al.* (2016) note that, in the context of their survey of local views of climate change in Fiji, while all respondents in the sample villages stated that they had heard about climate change, 71% were unable to name any specific local effect. Also, Lata and Nunn note that, in other Fijian contexts, while many villagers have heard about climate change, they perceive it "as a phenomenon unrelated to daily life" (2012: 177), even though it already has local impacts such as riverbank erosion and flooding from the river.
- 11 In this volume, Arno Pascht's article also illustrates that, in the Pacific islands, environmental and social changes are generally seen as deeply entangled processes, and environmental and social issues have therefore to be jointly addressed. This challenges the western dualistic perspective considering nature and society as autonomous realms, on which the scientific climate change narrative is based (Cometti,

2018). This author argues that, on the basis of their encounter with media and other representations of climate change, the inhabitants of Siviri village, on Vanuatu's main island Efate, have created a "*klaemet jenj*² reality or world" that includes not only perceived environmental changes, but also everyday concerns related to the "modernization gone haywire" (Nolet, 2018: 64). Siviri villagers indeed consider that *klaemet jenj* involves new social behaviours and phenomena regarded as signs of moral decline, such as teenage pregnancy, the increasing consumption of alcohol, cigarettes and marihuana, the use of new digital technologies (mobile phones, laptops, Internet) and social network sites (mainly Facebook), along with an unprecedented preoccupation with money, a decreased engagement in community affairs, and so on.

- 12 It is crucial to acknowledge the connections that Pacific Islanders make between environmental changes and social processes, but also to recognize local associations of what scientists categorize respectively as anthropogenic climate change and natural disasters. This is highlighted in this volume by Wolfgang Kempf through his analysis of variable discursive associations of climate change and tsunamis in Kiribati arising in relation with tsunami warnings from 2009 to 2011. This analysis shows that, while many I-Kiribati are well aware of the difference between tsunamis, primarily caused by seaquakes, and sea level rise, a significant effect of anthropogenic climate change, some of them establish metaphorical connections between these phenomena that both threaten the very existence of their atoll state.

Biodiversity crisis and local actions: The example of crown-of-thorn outbreaks

- 13 Oceania is, in fact, one of the epicentres of the global biodiversity crisis, as emphasized in the recent global assessment report released by the Intergovernmental Platform for Biodiversity and Ecosystem Services (IPBES, 2019). With 6 to 18% of insects, plants and vertebrates expected to disappear over half of their climatically-defined habitat ranges, the region was ranked with the highest rate of endangered species in the world by the International Union for Conservation of Nature (IUCN, 2019). Moreover, the effects of biodiversity loss are particularly exacerbated in the Pacific islands, where evolutionary constraints resulted in highly specific, hence vulnerable species assemblages characterized by unique levels of endemism: 2-10% for marine species, up to 75-100% for terrestrial species (Payri and Vidal, 2019).
- 14 Future oceanic conditions are also expected to foster the spread of invasive or pest species, usually generalist organisms with relatively plastic life histories and therefore higher adaptation potential than native species (Clavel *et al.*, 2011; García Molinos *et al.*, 2015). This is exemplified by the unprecedented impacts caused by outbreaks of the coral-eating crown-of-thorns (*Acanthaster spp.*), a large opportunistic starfish with boom-and-bust cycles whose populations can dramatically increase on coral reefs during certain periods. There is growing evidence that warming temperatures coupled with acidification and extreme rainfall events play a significant role in the initiation and spread of these outbreaks, which are becoming more frequent and more prevalent (Brodie *et al.*, 2005; Uthicke *et al.*, 2015). Over a third of Indo-Pacific reefs were recently affected by massive coral mortalities caused by crown-of-thorns, leading to significant loss of biodiversity across all biological compartments and a decline in biomass production (Bruno and Selig, 2007; Osborne *et al.*, 2011; Baird *et al.*, 2013).

PHOTO 6. – Acanthasters represent a major risk for Pacific coral reefs



(© IRD Pascal Dumas)

PHOTO 7. – Village-based reef clean-up campaign in Vanuatu



(© IRD Pascal Dumas)

- 15 Interestingly, this is one of the few side effects of climate change than can be efficiently mitigated by local actions. The organization of punctual, village-based “cleanup campaigns” is the most common method used across the Pacific, where excess starfish

are removed by local snorkelers using simple, everyday tools such as spears, sticks, hooks, spear guns and flour bags, and then killed in situ, buried or burnt ashore (Fraser *et al.*, 2000). These small-scale initiatives usually receive high support from regional development or conservation programs as they address immediate health- or fisheries-related concerns, and their impact is easily quantifiable. This is for instance the case in Vanuatu, where local tourism operators have been struggling with crown-of-thorns for many years, and these outbreaks have also recently gained prominence at the national level thanks to the combined efforts of the national Fisheries Department, local business operators, NGOs, and foreign research institutes such as the French National Research Institute for Sustainable Development (IRD). In 2013, a pilot project targeting a heavily impacted area in Santo Island demonstrated that committed communities have the capacity to efficiently reduce densities of crown-of-thorns on their reefs (Dumas *et al.*, 2014). Six months after the project, crown-of-thorns populations were back to normal; women and children, which used to avoid the reef flat by fear of injuries, were seen again fishing and swimming in the area. This was mostly achieved by teaching local communities “good ecological practices” to safely and efficiently remove the crown-of-thorns from their reefs, as well as by providing direct logistical support to organize cleanup events. However, Dumas *et al.* (2016) highlighted that the ecological efficiency of such actions is still controversial: success stories tend to be small in scale, given the great ability of crown-of-thorns to recolonize cleaned areas. More effective control of crown-of-thorns outbreaks will require increased coordination at local and national levels, as well as long-term financial support – a challenge in countries where a lack of scientific knowledge might minimize environmental concerns and impede environmental actions among local communities.

Climate projections, scientific uncertainty, and local (lack of) trust in science

- 16 Bleaching from thermal stress is another major threat to coral reefs. Climate projections indeed suggest that increasing mass coral bleaching and mortality events will happen in the Pacific, unless corals quickly adapt to rising surface temperatures – which, unfortunately, seems unlikely (Lough, 2008; Donner *et al.*, 2018). The future of coral reefs is therefore very uncertain, but it is expected that the coral cover will gradually drop by 25-65% by 2035, and will be eventually replaced by algae (Bell *et al.*, 2013).

PHOTO 8. – Subsistence fishing in Vanuatu. Pacific populations are particularly dependent on subsistence fishing for their food security



(© IRD P. Dumas)

- 17 Predicting the trajectory of ecosystems facing climate change has become an extremely active, yet challenging field of research. Direct observations, manipulative experiments, and the increasing use of ecological modeling suggest a wide range of adaptive responses from organism to biome levels, making it difficult to get a synthetic picture of the future of biodiversity under the different scenarios (Pereira *et al.*, 2010; Bellard *et al.*, 2012). However, the cascading effects from climate change will likely have serious socio-economic implications for most island countries, where local populations have forged close dependencies on the environment for their livelihoods, economic development, food security, and government revenue. That said, there might in fact be winners and losers. For example, fisheries and aquaculture productions are expected to increase significantly in freshwater habitats, whereas a generalized decline in coastal fisheries may require developing alternate income strategies to maintain livelihoods and food security, especially in the island countries whose populations are rapidly growing (Bell *et al.*, 2013).

PHOTO 9. – Structure built by the inhabitants of Maatee, Moorea (French Polynesia) in response to the severe coastal erosion they are facing (09/07/2019)



(© Maëlle Calandra)

PHOTO 10. – Structure built by the inhabitants of Haapiti, Moorea (French Polynesia) in response to the severe coastal erosion they are facing (19/07/2019)



(© Maëlle Calandra)

- 18 The implementation of these coping strategies might be challenged by the fact that Pacific Islanders do not necessarily trust neither the reliability of climate-related scientific predictions, nor the ability of science to deal with climate change and its impacts. For instance, Marshallese citizens tend to treat the scientific global-warming discourse “not as an obvious truth already plainly apparent to the senses, but as a prophecy whose truth or falsity cannot be taken for granted”, with a minority expressing clear skepticism (Rudiak-Gould, 2011: 11). Likewise, in 2013, many students of the University of the South Pacific (USP) – the future elite, decision-makers and policy-makers of the Pacific islands region – did not completely trust what was said by scientists, with more than half of the survey’s respondents believing the seriousness of climate change to be exaggerated, and less than one-third agreeing that scientists can find a satisfactory solution to the challenges of climate change in the Pacific islands (Scott-Parker *et al.*, 2016). Another study mentions that, in Fiji, students do not necessarily “believe” in climate change (Walshe *et al.*, 2018: 313).
- 19 Such refusal or denial of climate change – or more precisely of the scientific climate change narrative – might be based on Christian convictions and interpretations of the scriptures (Nolet, 2018: 64; Rubow and Bird, 2016). Alternatively, the scientific global-warming discourse is sometimes regarded as contributing to asserting Divine authority and agency, expressed through climate change and associated phenomena (*ibid.*). Hence, the importance of examining the articulations between scientific and Christian narratives related to climate change (Kempf, 2017), in particular with the view to developing and implementing adaptation pathways that are both socially appropriate and sustainable. Nunn (2017) has for instance highlighted that, in the Pacific, most interventions by outside agencies seeking to help people adapt to the effects of climate change have proved neither effective nor sustainable because of their “sidelining of God”: such interventions were planned in secular ways and communicated using secular language, instead of being framed in the terms of the spiritual engagement and agenda of the communities concerned. Christian faith is indeed at the core of the sociocultural and also of the political life in Oceania (Tomlinson and McDougall, 2013), and climate change-focused NGOs and governmental agencies are thus starting to engage with faith-based organizations, religious leaders and scriptural knowledges in order to achieve their adaptation goals.

Negotiating adaptation pathways: A multi-level process

- 20 In climate-related international arenas, adaptation refers to the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities (*cf.* <https://www.ipcc.ch/sr15/chapter/glossary/>). It is now widely accepted that Pacific Islanders “have been adapting to and mitigating against environmental change for much longer than is currently understood”, and are now constantly working to face climate change-related challenges, from the community level to the global stage (Bryant-Tokalau, 2018: 2-3). The “urgency and concern in this era of climate change” (Teaiwa, 2018 : 49) have indeed allowed for an enhanced presence of the Pacific around the international climate negotiation table. This is best illustrated by the presidency of the 23rd Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) – or COP23 – by Fiji in

November 2017. This presidency's vision included the goals to uphold and advance the Paris Agreement (see Ourbak *et al.* in this volume), to build greater resilience and accelerate climate action for vulnerable societies, and to draw a stronger link between climate change and the health of the world's oceans and seas (*cf.* <https://cop23.com.fj/about-cop-23/vision-and-logo/>). In parallel, countless Pan-Pacific collectives and movements have risen up, building on pre-existing regionalism calls (Teaiwa, 2018: 49), such as Epeli Hau'ofa's through his concept of the "sea of islands" (Hau'ofa, 1994).

- 21 Pacific island governments are also launching adaptation actions at the national level, such as the Fiji Climate Change Division, the Fiji National Climate Change Policy (Government of the Republic of Fiji, 2012), and the Fiji National Climate Change Act to take effect in 2019-2020. These actions can take many different forms. For instance, the former President of Kiribati, Anote Tong, considered two radical options to face sea-level rise: he purchased around 23 km² of land on Vanua Levu Island in Fiji, and discussed with Japanese companies the possibility to buy high-technology artificial islands, in order to ensure food security and/or to relocate the population of the country in the (possibly near) future (Bryant-Tokalau, 2018).
- 22 While relocation is increasingly presented by scientists and some political figures as an inevitable coping strategy for Pacific coastal populations, at the community level, this strategy is often met with fears (Lipset, 2013) or resistance (Janif *et al.*, 2016), or even considered as "a far worse option than 'dealing with disasters'" (Nolet, 2018: 62). However, recent acceleration in global warming and the increasing frequency of extreme events such as king tides and storm surges have forced Vunidogoloa Village in Fiji to be the first such community in the Pacific to relocate due to climate change in February 2014 (Charan *et al.*, 2017) and, since then, up to 40 other villages have been earmarked by the Fijian Government for relocation. Socio-cultural aspects are just as important factors as finance and bureaucracy when considering community relocation (*ibid.*). A good example of this was provided by Tabe (2019) in the context of the relocation of Gilbertese Islanders to the Solomon Islands due to periodic droughts and land degradation on their home island. This example illustrates that relocation without sensitivity to cultural and land considerations results instead in forced displacement.
- 23 In that respect, Kees Lokman's contribution to this volume highlights that visual narratives (maps, timelines, diagrams and animations) constitute an innovative way to facilitate multi-stakeholder discussions surrounding coastal vulnerabilities and subsequent adaptation pathways. Visual narratives can indeed make visible the long-term effects of sea level rise on a wide range of issues (urban growth, intertidal habitats, food security, etc.), as well as how communities have changed in the past and may change in the future. When applied to the urbanized region of the Fraser River Delta in the North-Eastern Pacific, such visual narratives have proved to allow for a deeper understanding by residents, decision-makers and planners of the extent to which the delta and its shorelines have been transformed and manipulated over time. They have also provided a useful tool to advance discussions on sea level rise adaptation strategies between the various stakeholders involved (private property owners, First Nations, local municipalities, provincial and federal agencies, etc.), in a complex landscape of regulation, zoning bylaws, permits and overlapping jurisdictions. Thus in the Pacific islands region, Lokman argues, visual narratives could help communicate how flooding may impact certain coastal communities in terms of food security, critical infrastructures, and ecosystem health, and might therefore contribute

significantly to the co-definition by communities, governments, and other stakeholders (such as NGOs), of better informed adaptation strategies and decisions in face of rising sea levels.

- 24 So far, in this region, adaptation pathways – whether designed through top-down or bottom-up processes – have had mixed results, but have emphasized that “there is a great deal of knowledge and activity held locally, and collectively these can lead to positive outcomes and lessons” (Bryant-Tokalau, 2018: 28). For example, in Tuvalu and Fiji, work has been done to find sustainable community-based adaptation solutions to deal with algal bloom issues through the production of biogas and biofertilisers for local use (N’Yeurt & Iese, 2015a & 2015b). In the same vein, to sustainably combat rising CO_2 levels through climate mitigation, N’Yeurt *et al.* (2012) have argued for Ocean Afforestation of Pacific coastlines with seaweed farms that would also provide side-benefits such as energy and food security. While these activities do not *per se* address the core issue of over-population and over-fishing driving the coastal ecological crises, they offer immediate benefits through a symptomatic approach. Their practical success undoubtedly lies in the commitment of local governments to allocate resources and coastal areas for these respective activities.
- 25 Interestingly, the external partners involved in the definition and implementation of community projects aiming to address the effects of climate change do not necessarily frame these projects in these terms. Some partners indeed choose to “filter” the scientific climate change discourse and, instead, use terms that are relevant to the Pacific Islanders concerned and will therefore help convince them to take action. For instance, they focus on reducing fishing efforts in specific coastal areas or on replanting mangroves and native trees instead of frontally tackling the mitigation of global warming or the maintenance of carbon sinks (Veitayaki and Holland, 2018). Such approach is all the more relevant than, for (at least some) Pacific Islanders, the notion of climate is difficult to grasp as there is neither an evident translation in their language nor any equivalent to the long-term perspective it implies. This is what David Glory’s contribution to this volume illustrates well through a case study from the Cook Islands. On Ma’uke Island, the dichotomy between the concepts of climate and of weather used by the national Climate Change Office in their awareness programs contributes to the islanders’ ambiguous consideration of the scientific narrative of climate change, because these concepts involve different time frames. The weather is perceptible and experienced on a day-by-day basis, whereas the notion of climate implies the measurement and modelling of weather patterns over long-term periods.

PHOTO 11. – Woman replanting mangroves on the coast in Malawai Village, Gau Island, Fiji, 07/11/2018



(© Élodie Fache)

- 26 Given the extraordinary reliance of Pacific Islanders on marine resources, it is not surprising that many adaptation pathways are specifically formulated for the fisheries (both inshore and offshore) and aquaculture sectors. They usually involve a mix of short- and long-term adaptation strategies, in a pragmatical attempt to balance the unavoidable social and economic costs associated with the required changes, some of them yielding net benefits only in the longer term (Grafton, 2010). A good example is tuna and similar offshore fisheries, which contribute to about USD 80 million per year to the region and have significant contributions to the gross domestic product and government revenue through the system of national license fees (for instance more than 50% of the GDP in Tuvalu, Tokelau and Kiribati, see Gillett, 2016). Maintaining the economic benefits of tuna fisheries while adapting to the projected redistribution of tuna resources across the Pacific due to climate change is a major challenge: simulations suggest a progressive shift of tuna biomass to the east under the influence of modified ocean temperature and currents, with a subsequent decline of catch in the exclusive economic zones (EEZs) of western Pacific countries and territories (Bell *et al.*, 2013).

Conclusion

- 27 The plethora of climate research projects, often isolated within the environmental or social sciences, and rarely involving links between these fields, could appear to reveal discrete, parallel or even opposing endeavors to provide scientific support for climate change adaptation in the Pacific region, especially at the grassroots level. This

introduction and the associated volume attempt to connect these endeavors, by reaching out across both discipline and linguistic barriers and giving the opportunity to social and environmental scholars to voice, in French and/or in English, their observations and views in a single unifying forum. We hope that this is an admittedly small, but nevertheless brave step towards an informed, nuanced and continuous dialogue on climate change impacts, narratives and responses across the Anglophone and Francophone Pacific, as well as a learning exchange pathways between the South and North sides of the region.

- 28 This special issue puts into perspective the alarmist scientific findings and predictions regarding the environmental and subsequent socio-ecological impacts of climate change in the South Pacific region, that we have presented in this introduction, with “observation studies” and “reception studies” (as categorized in Rudiak-Gould, 2011) that analyze how Pacific Islanders deal with climate change – as both a set of physical phenomena and a set of discursive constructions – in many different ways (see in this volume Moesinger; Pascht; Kempf; Glory). Doing so, the contributions do not only highlight local knowledge and interpretations of rapid environmental changes, and how these might reveal discrepancies with the mainstream scientific discourse on global anthropogenic climate change. We also acknowledge the development of collaborations between scholars, communities, and other stakeholders aiming to define and implement together climate change adaptation strategies, and we are calling attention to potential limits of such collaborations, in particular in terms of effectiveness, sustainability, and sociocultural sensitivity. Innovative tools are currently being developed in order to avoid or overcome some of these limits, especially by improving the visualization of climate change projections and, thereby, facilitating multi-stakeholder discussion and decision-making processes (e.g., Lokman in this volume).
- 29 Yet the special issue illustrates that, despite the varying exposure to, experience of, and attitude to climate change, as well as the multitude of adaptation strategies that have been documented in the South Pacific, the countries and territories of this region have managed to agree on a common positioning and a globally unified voice to be defended around the international climate negotiation table (Ourback *et al.* in this volume). We consider that both environmental and social sciences have a role to play in supporting these coalitions of national governments in climate-related international arenas. This scientific support involves the spotlighting of the complexity and uncertainty of “climate change worlds” (see Pascht in this volume) behind the appealing but simplistic picture of Pacific islands as about to disappear and their populations as about to become “climate refugees”.

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NOTES

1. Yet, some scholars suggest that the Technocene, the Econocene, the Capitalocene, the Westocene, the Richocene, or the Consumocene could be more accurate terms, as only “particular humans (Westerners, consumers, fossil fuel elites, etc.)” are disturbing the planet, “under particular historical (modern), political (neoliberal), and economic (capitalist) circumstances” (Rudiak-Gould, 2015: 48). In addition, it is worth highlighting that the concept of Anthropocene is based on a dichotomy between nature and culture, and therefore does not fit well into non-Western worldviews (Cometti, 2018).

2. *Klaemet jenj* is equivalent to the term *climate change* in Bislama, one of the three national languages in Vanuatu.

ABSTRACTS

This overview challenges the commonly accepted notion that Pacific societies are all doomed to an uncertain near and distant future despite their inherently different exposures to, experiences of, and attitudes to climate change. It also recognizes that the scientific narrative of climate change acts as a catalyst for new regional alliances and movements aiming to take proactive climate action, from the global to the local levels. We therefore advocate for nuanced views of the climate-related changes that are occurring in the Pacific region, based on a multi-scalar approach that integrates the ecological, sociocultural, economic and political dimensions of these changes. This would require the building of bridges, still too few and fragile, between the environmental and social science approaches. We intend to contribute to these efforts by connecting some of the most recent scientific research and projections concerning global climate change and its effects in the Pacific region, alongside the diversity of local perceptions, narratives and adaptation pathways.

Cette synthèse met en question l'idée généralement acceptée selon laquelle les sociétés du Pacifique sont toutes condamnées, à plus ou moins brève échéance, à un avenir incertain malgré leurs expositions, expériences et attitudes fondamentalement différentes face au changement climatique. Le discours scientifique sur le changement climatique sert de catalyseur à la création, au niveau régional, de nouvelles alliances et de nouveaux mouvements visant à prendre des mesures proactives face au changement climatique, de l'échelle locale à l'échelle globale. Nous préconisons donc une vision nuancée des changements liés au climat qui se produisent actuellement dans le Pacifique ; une vision fondée sur une approche multi-échelle intégrant les dimensions écologiques, socioculturelles, économiques et politiques de ces changements. Cela nécessite la construction de passerelles, encore trop peu nombreuses et fragiles, entre les approches proposées par les sciences environnementales et par les sciences sociales. Nous proposons de contribuer à ces efforts en mettant en relation certaines des recherches et projections scientifiques avec la diversité des perceptions, des discours et des stratégies d'adaptation développées localement.

INDEX

Keywords: Climate Change, Adaptation, South Pacific, Interdisciplinarity, Overview

Mots-clés: changement climatique, adaptation, Pacifique Sud, interdisciplinarité, synthèse

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