



# Circulating climate services: Commercializing science for climate change adaptation in Pacific Islands



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## ABSTRACT

In order to address the impacts of climate change, global multilateral institutions, development organizations, and national and regional science organizations are creating climate services – packages of useful climate information intended to help decision makers. This diffuse collection of actors and institutions suggest that producing climate services will help bridge gaps between climate scientists and decision-makers and will therefore help vulnerable countries and people manage the risks and optimize the impacts of climate change. This article examines this global science-policy ecosystem using the case of climate services produced by Australian science agencies for consumption in adaptation programming in the Pacific Island countries of Kiribati and Solomon Islands. Linking research on geographies of marketization and the neoliberalization of science, I demonstrate that within the climate service movement a focus on usefulness is paired with an emphasis on commercialization. As a result, this case shows the inherent tensions in the climate service model: first, a focus on competition and circulating service products at the expense of collaborative relationships; second, difficulties in negotiating uncertainty; and third contradictions between ‘objective’ and ‘entrepreneurial’ science. In each of these instances, the commercialized mechanisms through which climate services are governed, and the political economic circumstances within which they are produced, magnify rather than ameliorate gaps between science and policy.

## 1. Introduction

Since 2009 multilateral and government weather and climate modellers have argued for a shift in focus from climate science research towards applied climate services in aid of adaptation. Climate services<sup>1</sup> are “easily accessible and timely scientific data and information about climate that help people make informed decisions in their lives, businesses, and communities” (National Oceanographic and Atmospheric Administration, 2011). A climate service can contain simple information such as historical data sets or more complex products such as climate and weather predictions, computer programs, or decision-making platforms. Key to climate services is a focus on decision-making, such that the products must be scientifically credible but also technically accessible to a wide variety of decision-makers. In addition, climate services should be on-demand for individuals, business, and governments to use. Accordingly, transforming climate science into ‘actionable

information’ is understood as integral to adapting to climate change through sector policies and plans (World Meteorological Organization, 2011).

For example, the Fiji Meteorological Service collects and stores daily weather data, and can provide a range of ‘packaged’, ‘on-demand’ services including annual and monthly climate summaries and climate outlooks. In addition to facilitating daily forecasts, The Fiji Meteorological Service generates additional information for the sugar industry and electricity providers, with the objective that they might adapt their planning to suit anticipated climate conditions. According to one analysis (World Meteorological Organization, 2011, 156–60), the Fiji Meteorological Service has successfully and innovatively linked public and private sector interests, and, through an El Niño Southern Oscillation (ENSO) Update and other tools, is able to provide client-focused services that address the country’s development and industrial needs. The ENSO Update is an example of a climate service.

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<sup>1</sup> This is not the only potential definition of a climate service. For instance, a climate service might be a corollary to an ecosystem service (see Cooter et al., 2013). A climate service is also the organization that provides climate information, a corollary to a weather service. Perhaps more accurate would be to call the climate services under discussion here ‘climate information services.’ However, according to ‘industry’ notation, I continue with the above definition. Another ambiguity is that people use the notion of a climate service to indicate a very broad suite of climate information and institutions, from data, predictions, projections, translation methodologies, decision-making tools and more (compare Goddard (2016) and Trenberth et al. (2016)). The essential component of a climate service – as it relates to this discussion – is that it is climate information or knowledge intended specifically for policy and decision-making.

This article examines the production, circulation, and consumption of climate services. It focuses specifically on products intended to assist adaptation decisions and investments in the Pacific region. Much of the existing scholarship on the science-policy interface argues for the creation of climate services in order to address a “persistent gap between production and use” of scientific information in environmental decision-making (Kirchoff et al., 2013, 393). These proponents argue that useful, co-produced, or actionable products can help inform climate change adaptation policies, projects and investments, something that is vitally necessary given anticipated climate impacts. Although this science-policy literature acknowledges that there are few examples of climate services informing specific adaptations (e.g. Meadow et al., 2015; Brasseur and Gallardo, 2016), these advocates remain ‘future positive’ (see Mosse, 2005), diagnosing the need for better products and better relationships between producers and consumers.

In contrast, this article brings the existing literature on climate services into conversation with critical geographical scholarship on the neoliberalization and commercialization of science and environmental governance. In doing so, the article builds on recent research in economic geography and political ecology concerning the logics, conditions, and effects of marketization (Christophers, 2014a,b; Dempsey and Suarez, 2016). I will argue that the failures in the climate service model – identified in the existing science-policy literature as well as the cases outlined below – do not stem from incomplete or poorly conducted engagements between service providers and decision-makers. Instead, I demonstrate that these failures emerge from tensions that arise from commercialized attempts to produce useful science. In its current construction, the need for ‘useful’ science is joined to appeals for valuation methodologies, unleashing demand, and competition between producers. This commercialized and instrumental narrative governs the logic of providing climate services for consumers. Focusing on attempts by Australian climate science and adaptation programs to create ‘actionable’ science for use in decision-making in the Pacific Island countries of Kiribati and Solomon Islands, I will demonstrate that these commercial logics create tensions. In particular, the article charts three tensions that emerge directly from attempts to bound dynamic and fluctuating climate science as circulating ‘immutable mobiles’ (Latour, 1987) – packages that are able to travel intact, and in a legible form, from sites of service production to sites of consumption in adaptation decision making.

The argument proceeds in the following manner. Section two introduces the existing literature concerned with climate services, describing the mechanisms proposed by advocates for science to better address adaptation to future climate change. Given the commercialized and instrumental rhetoric and practices of the climate service business models, I introduce critical geographical scholarship concerned with neoliberalized and marketized environmental and climate governance. Section three outlines the methodological approach, situating this research alongside claims about the powerful role that science, projections, and models have played in responding to climate change. I also here introduce the ecosystem of climate service provision in the Pacific region, the climate prediction tools that were studied, and how the research was undertaken. Then, section four provides a description of the commercialized business model, followed by three cases of breakdowns, or failures, in the circulation of climate services that stem from this model: the trade-off between relationships and circulating products, disagreements about downscaling and uncertainty, and the disjuncture scientists feel about maintaining objective and entrepreneurial identities. Finally, section five concludes by discussing the stakes of efforts to commercialize science for adaptation.

## 2. Theorizing climate services beyond the science-policy interface

Participants at the 2009 World Climate Conference called upon the World Meteorological Organization (WMO) to develop an institutional

framework to inspire a greater focus on decision-making. The resulting Global Framework on Climate Services entitled *Climate Knowledge for Action* (World Meteorological Organization, 2011) hopes to “strengthen the provision and use of climate predictions, products and information worldwide” (World Meteorological Organization, 2013). The Framework is premised on three assumptions: we are all affected by climate; climate services can help people manage risks and optimize the impacts of climate change; and there is an existing gap between the need for climate services and their provision, particularly in “climate-vulnerable developing countries” (World Meteorological Organization, 2011, 3). In addition to this formal global architecture, there are numerous international, national (acting locally and bilaterally), and regional climate service organizations (see Vaughan and Dessai, 2014). Together these actors constitute a global climate service movement.

Climate services congeal around institutions and organizations that are intended to address the impacts of climate change. Of course, the global climate service movement was not born fully evolved. The World Meteorological Organization has long worked to cultivate socially relevant climate research and information. These efforts ramped up towards the end of the twentieth century, as nation-states began to invest in organizations that would serve their countries climate information needs, as understandings of the climate system advanced, and as global climate change governance bodies were established (see Vaughan and Dessai, 2014 for a history). One key antecedent to climate services is seasonal forecasting,<sup>2</sup> and the organizations and knowledge that emerged from attempts to better understand and forecast ENSO. Importantly, this knowledge relates not only to climate systems but also to how best to govern and intervene in the science-policy interface. As a result, the argument below complements critical geographical analyses of seasonal forecasting (e.g. Ziervogel and Calder, 2003; Carr et al., 2016), and climate information investments such as the United Kingdom Climate Impacts Program (e.g. Hulme and Dessai, 2008) and the United States Climate Program Office (e.g. Kalafatis et al., 2015; Lemos et al., 2014; Meadow et al., 2015). The remainder of the article, however, focuses on climate services as they address the impacts of climate change.

The Pacific Island Climate Services Forum was a workshop designed to bring together climate scientists, service providers, and next- and end-users to exchange information about supply of and demand for products, and therefore increase the circulation of those products within the region. At the Forum, one of its organizers declared: “Climate services are already here... go tell your people... this is not something you have to wait for.”<sup>3</sup> What specifically did this interlocutor imply by ‘climate services’, what does it mean for those services to have arrived, and who are the ‘people’ who might use them? Beyond scientific advancements necessary for a climate service, such services entail the concerted effort to “provide timely, tailored information and knowledge to decision makers” (Vaughan and Dessai, 2014, 588); or “climate forecasts like we now have weather forecasts” (Brasseur in Heffernan, 2009). That past climate is no longer indicative of future climate means that ‘actionable information’ is imperative for governmental planning (Hewitt et al., 2012).

The principal differences between climate services and climate research center on purpose and audience. As one meteorological service officer from the Solomon Islands Meteorological Service describes:

We have come a long way from issuing raw data, raw climate data... Before, when I joined the Met Service, that’s basically what they [did]. Collect, file, and then issue the raw data to interested people. But now... we do seasonal predictions. ... and we can also now do long-term projections. ... But then, one of the things we are now

<sup>2</sup> Indeed, seasonal forecasts are often described as climate services, as with the SCOPIC tool discussed further below.

<sup>3</sup> Official, US Embassy, Suva, 24 January 2013.

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