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Climate information? Embedding climate futures within temporalities of California water management

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ABSTRACT

This article uses the case of drinking water utility managers in California to understand uses of climate-change information in resource management. A dominant narrative suggests that producing management practices best adapted to climate-change impacts is a matter of reconciling the supply of scientific knowledge with the demand signals of resource managers. We question this narrative with reference to the diverse cultural and socio-technical structures in which the future climate takes on meaning in water management. Using interviews (n = 61), we analyze three ideal-typical 'social temporalities' of climate change: *modeled futures, whose future?*, and *truncated futures*. We define social temporalities as alternative constructions of the future built into socio-technical engagement with water and into collective orientations to climate change. Of the three ideal types, we found that only one (modeled futures) closely aligns with the supply-demand relationship as constructed in scholarly literature and climate adaptation-related policy. This leaves nonconforming types without guidance that resonates with their relationship to climate change information. Consideration of sociological dimensions of climate knowledge may warrant a revised or additional approach to climate service programs or related assistance efforts.

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Introduction

A vast gap persists between projected climate change impacts and the preparations for these impacts, referred to as the 'adaptation deficit' (Burton and May 2004). Over the past decade a body of literature has explored barriers to adaptation to explain and potentially eliminate this deficit (see Biesbroek et al. 2013; Moser and Ekstrom 2010; Preston, Mustelin, and Maloney 2015). This work has raised issues of climate science/information, organizational structures, leadership, awareness, financing, and related barriers.

Social constructions of time may help explain this deficit. Our main premise, following Hall (2016) and Hulme (2009), is that exploring collective orientations toward climate change may help address why the so-called 'uptake' of scientific information is so difficult to achieve as a basis for coordinated social action regarding climate change. In this article, we focus on water utility managers' engagement with climate information to explore alternative collective orientations to 'climate futures.' We question whether a single collective orientation to time – namely the common diachronic science-policy interface – can, at present, support climate adaptation broadly. To perform this analysis, our study draws on cultural analyses of temporality and related theory in a way that may advance broader environmental sociological consideration of the sociocultural bases of climate change impacts and collective responses (Dunlap and Brulle 2015).

A dominant scholarly and policy narrative suggests that climate-impacts are discovered through scientific research. Climate projections, modeled on the basis of emissions scenarios and downscaled to a specific region, can then be utilized by resource managers to adapt to future impacts. In this narrative, the consonance between the 'supply' of science and the 'demand' signals of resource managers produces both the most useful science and the most well-adapted management practices (Lemos and Morehouse 2005; McNie 2007; Vogel, McNie, and Behar 2016). Scholars have analyzed problems in translation between climate science and adaptation policy as a 'usability' gap separating science and policy decision-making (Archie et al. 2014; Dilling and Lemos 2011; Kirchhoff, Lemos, and Engle 2013; Lemos, Kirchhoff, and Ramprasad 2012; Sarawitz and Pielke 2007). The strength of approaching climate information and adaptation as a supply/demand problem has been to identify research partnerships and facilitate policy-relevant science, including, for example, efforts to construct novel climate models and services for use in resource management settings such as water management, wildfire/forest management, agriculture, and habitat restoration.

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