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## Climate–water crises: critically engaging relational, spatial, and temporal dimensions

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**ABSTRACT.** Declarations of water crises have been ubiquitous in water policy and practice for decades. In the face of unprecedented human-caused climate change, the circulation of water crisis discourses has increased in frequency. How crises are defined and made meaningful, however, is often assumed to be commonly agreed upon. Reviewing scholarship at the intersections of water and climate, we show that crisis discourses are inherently political because they depend both on the authority and legitimacy to delineate exceptions from norms, and on the powers to mobilize resources to respond to constructions of crisis. Engaging with crisis as an explicitly normative concept helps situate analyses within the social, historical, political, and geographic particularities of water–climate systems. We identify three interrelated analytical frames that assist with this task: relationality, spatiality, and temporality. Our review hopes to better position researchers, policy makers, and activists to critically engage with crisis narratives. Doing so can effectively advance more critical, creative, and imaginative crisis responses.

**Key Words:** *climate change; climate crisis; hydrosocial; water crisis; water policy and governance*

### INTRODUCTION

Humans and ecosystems are experiencing climate change through water-related impacts. Increasing temperatures and shifts in precipitation are driving hydrological system processes, which have, in many parts of the world, hastened glacial melt, changed flood patterns and magnitudes, increased extreme drought, reduced groundwater, and mediated water quality decline (Douville et al. 2021, Seneviratne et al. 2021, Caretta and Mukherji 2022). The speed, scale, and magnitude of anthropogenic hydro-climatic changes, and their cascading impacts on people, plants, and animals, threaten Earth’s liveability (Gleeson et al. 2020). Declarations of water crises have been commonplace in water policy and practice for decades—e.g., the “drinking water crisis” (e.g., Mueller and Gasteyer 2021), water-related extreme events or “natural disasters” (e.g., Swatuk 2021), geopolitical struggles and “water wars” (Chellaney 2013, c.f. Biswas and Tortajada 2019), or deterioration of water quality (e.g., Biswas 1999). Although connections between water and climate change are scientifically established and crisis discourses are increasingly common under contexts of human-driven climate change, the interconnections between water and climate crises are a relatively recent discourse.

Only last year, in March 2023—47 years after the first United Nations (UN) Water Conference— António Guterres, UN Secretary-General stated, “[t]he climate crisis is also a water crisis—but all of us can be part of the solution” (Guterres 2023). Explicit discourse, such as the above, linking the climate and water crises has only emerged recently in global policy forums. For example, studies reviewing water crises over multiple decades have failed to discuss climate change considerations (e.g., Trottier 2008). Similar exclusions exist when the climate crisis is surveyed. For instance, Biswas (1999) argued water crises have been under-appreciated in global sustainability agendas throughout the 1990s. They (Biswas 1999: 263) noted, “[A]t Rio, water was basically ignored by all the Heads of States, whose primary interests were focused on issues like climate change, biodiversity, and deforestation. Water at best was a

very minor issue during the plenary session at Rio.” In 1993, the year after Rio, Peter Gleick published “Water in Crisis” (1993), which engaged crisis discourses to explicitly link hydrological and climate data to water management. Four years earlier, Gleick (1989) was among the first to link water with climate models in general circulation models (GCMs) (see Schmidt 2017:155-157). Despite early acknowledgments of water crises and climate change, the latter has often been framed as a competing issue, rather than one that is fundamentally interlinked with water-related crises (UN 2020). This was recently identified in the UN World Water Development Report, “Water and Climate Change,” which stated:

*As the planet warms, water has become one of the main ways we experience climate change. And yet the word ‘water’ rarely appears in international climate agreements, even though it plays a key role in issues such as food security, energy production, economic development, and poverty reduction (UN 2020: iv; our emphasis).*

Increasingly, however, water is identified as a priority in the global climate agenda, which is permeated by crisis discourses including the “Code Red for Humanity” that seeks to inspire rapid global decarbonization (UN 2021). Indeed, in August 2023 at the World Water Week in Stockholm, Sweden, the Conference of Parties (COP) United Arab Emirates Presidency announced its intention to “drive water up the climate agenda” prioritizing areas including “conserving and restoring freshwater ecosystems, enhancing urban water resilience, and bolstering water-resilient food systems” (UN Climate Change 2023). COP 28 brought unprecedented attention to water issues within global climate conversations including “recognizing the critical role of protecting, conserving and restoring water systems and water-related ecosystems in delivering climate adaptation benefits and co-benefits, while ensuring social and environmental safeguards”

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(United Nations Framework Convention on Climate Change (UNFCCC) 2023: 2). Recent global policy discourses, hence, demonstrate how water crises are linked to the climate crisis, and aim to spur state and public action toward treating water-dependent ecosystems, infrastructure, and services and their concomitant health, livelihood, and cultural benefits, as influenced by climate dynamics.

However, global crisis discourses risk obscuring how coupled water–climate crises are produced by social, political, and hydrological relationships. This statement recognizes that factors beyond climate change, such as the concentration and accumulation of resources, power, and privilege, create, sustain, and uphold water crises—conditions for which climate change and variability will deepen (Mills-Novoa et al. 2022). Hence, crises are “conjunctural,” representing a “coalescing of processes that produce distinctive realities and ruptures” (Sultana 2021: 1722, citing Hall and Massey 2010).

To be sure, this framing is not absent from global water crisis discourses. For instance, the landmark “Human Development Report 2006” focused on the intersections between “power, poverty, and the global water crisis” (UN 2006):

*For some, the global water crisis is about absolute shortages of physical supply. This report rejects this view. It argues that the roots of the crisis in water can be traced to poverty, inequality, and unequal power relationships, as well as flawed water management policies that exacerbate scarcity* (UN 2006: v).

Even where linked, coupled water–climate crisis discourses remain focused on biophysical or hydrological framings, narrowing the complex roots of crises, and transformative solutions.

A “hydrosocial” framework (Linton and Budds 2014) allows us to move beyond biophysical discourses to engage with the complex processes through which water and crises are co-produced. Anthropocene-thinking, which acknowledges the inextricable connection between humans and nature, is increasingly applied to hydrological systems (e.g., Meybeck 2003, Vörösmarty et al. 2013, Falkenmark et al. 2019). The “Anthropocene,” a term coined by Crutzen and Stoermer (2000), describes the current geologic epoch in which humans play a dominant role in shaping the earth and its atmosphere. Although the Anthropocene has gained traction as irrefutable proof that humanity and nature are not separate and thus of the need to move beyond the modern nature–culture dichotomy (e.g., Latour 2010, Lorimer 2012), the concept is also subject to growing critique for erasure and justification of unequal social relations and violence involved in racial capitalism (Yusoff 2018, DeBoom 2020) and colonial dispossession and genocide of Indigenous peoples (Davis and Todd 2017). In line with recent research engaging with the (geo-)political and governance implications of Anthropocene-thinking and related global environmental change concepts (e.g., “planetary boundaries”) (Gupta et al. 2013, Clarke-Sather et al. 2017, Schmidt 2017), the hydrosocial approach reveals water crises to be highly political—produced through complex and continually changing assemblages of social and hydrological relations with uneven effects (Swyngedouw 2009, Linton 2010, Linton and Budds 2014, Jepson et al. 2017).

This means that water is not merely a material substance that cycles through the hydrological system, or that water is “modern”—divisible, asocial, and apolitical (Linton 2010). Water is an active, relational entity that exerts agency (“agentive” power) that takes multiple forms (e.g. considered by many Indigenous peoples as a “relative” or as having “spirit”; McGregor 2014, Craft 2017, Wilson and Inkster 2018).

Water is co-constituted through social-cultural and political dynamics across spatial, geographic, and temporal scales (Budds et al. 2014, Wilson et al. 2019). Indeed, the social and political values embedded within regulatory arrangements serve to transform “water”—for example, from a public good of the commons to an economic commodity (Ballesterio 2019). A hydrosocial framework allows us to understand how relationships with water represent a sociality that is actively constructed and maintained through political orders or power distributions (Ballesterio 2019). If “crisis” is “conjunctural” in cause and effects, a hydrosocial approach highlights that not all humans equally contribute to the root causes of water–climate system change (i.e., greenhouse gas emissions are driven by interrelated processes of capitalism, extraction, and colonialism) (Whyte 2017a, Mills-Novoa et al. 2022), nor do people equally experience the risks given the differential vulnerability associated with their entitlements and relationships with water (Adger and Kelly 1999, Shah and Narain 2019). Finally, the “solutions” for such crises depend on how one defines them (Octavianti 2020, Whyte 2021). For instance, naturalizing crises through biophysical discourses advances very different solutions, often seen to require technical or scientific fixes. In this sense, a hydrosocial lens allows us to understand how climate change, its impacts on water, and proposed solutions are inherently political (Oels 2015).

We build on recent interventions by Black, Indigenous and post-colonial scholarship challenging “ecological crisis” as a neutral concept or an ontological given that exists outside of social, political, and historical contexts (e.g., gender inequality, settler colonialism, or racial capitalism) (Davis and Todd 2017, Simpson 2017, Opperman 2020, Whyte 2021, Sultana 2021, Agathangelou 2021), to argue that crisis discourses are inherently political. This requires us to engage with crisis as a “normative” concept, or one that inheres to specific values, claims, authorities, and objectives. Although a comprehensive review of the history of “crisis” within Western thought is beyond our scope (see Koselleck 2000, Roitman 2013), we maintain that engaging with “crisis” as a normative concept helps to situate analyses within the particularities of the hydrosocial relations within a given water–climate system.

This article is intended for researchers, practitioners, and decision makers with applied interests in social–ecological (human–nature) governance, particularly those where climate and water “crises” are actively named. Building on positions that emphasize the interconnectedness between social and ecological systems, we draw upon critical social science approaches to stress their “inseparability.” This approach will enable both critical interrogation over how “crises” are deployed and the use of scale and relationality to understand the uneven production, experience, and redressal of crises within water–climate contexts. The purpose of our article, then, is not to argue that water–climate crises are coupled. Connections between water and climate systems—known through approaches, such as “socio-hydrology” (Sivapalan et al.

2012)—are readily acknowledged and, in international policy circles, increasingly accepted as the introductory matter above indicates. We aim to discuss the shared root causes of water–climate crises by centering political, socio-economic, and cultural experiences and representations, and serving broader justice and equity pursuits. Below, we first define “crisis” and provide an overview of relevant critiques of the concept. Second, building upon recent scholarship at the intersection of water and climate, we review, and identify, three key analytic frames to assist with this task including scale, temporality, and relationality. Finally, we discuss how these insights can be mobilized to move beyond solutionism and simplistic narratives of crisis that focus merely on technological or monetary interventions.

### THEORIZING CRISIS

Rhetorically, the language of “crisis” distinguishes between “an exception (the crisis) and normalcy (non-crisis); that is, between how a specific situation is actually functioning and a projection of how it ought to function under ‘normal’ circumstances” (Janzen 2018: 19). We seek to build on this literature by interrogating crisis discourses as “[...] statements of presumed certainty [that] have been ‘stabilized’ by selective social processes, with the implication of reinforcing certain political objectives” (Forsyth 2008: 758). Whereas some critics suggest we cease to use crisis framings because the problems they identify are inherent to the concept itself, i.e., as those that are embedded in colonial epistemologies and ontologies (e.g., Agathangelou 2021, Whyte 2021), we argue that it remains important to understand particular “crisis” discourses and how they are mobilized for, or against, certain political objectives (Roitman 2013). Indeed, the “crisis in crisis,” cautioned by Masco, reflects its deployment as a “counterrevolutionary idiom,” instead of a mechanism to draw focus to the underlying marginalizations that produce and sustain crises (Masco 2013, 2017; cited in Powell 2024). In what follows, we identify three interrelated assumptions that enable reflection on “who declares crisis, what the crises are,” and “why crises are declared as such” (Castree 2020) in the water–climate system.

First, declarations of crisis are inherently political because they rely both on the authority and legitimacy to delineate exceptions from a norm and on the power to mobilize resources to shape the desired outcomes that flow from such constructions of crisis (Janzen 2018, Castree 2020). Hence, declaring a water crisis, or water insecurity, does not simply rest on neutral or apolitical quantifications of risk; it is a power-laden exercise that assigns (or fails to assign) “value” to actions designed to redress deviations from a norm. This was recently echoed by Castree (2020: 38):

*[c]risis is not simply a cognitive concept based on hard evidence; it's also normative, deriving a critical charge from (contestable) value judgements about what the evidence signifies morally, practically, or aesthetically. [...] A whole set of social practices and judgements relating to valued things (not all of which are basic necessities, like clean water) come into play. Crises are material and discursive; universal definitions scarcely ever apply.*

The power of crisis discourses, and their legitimacy, is conditioned by systems of power that, through their function and mobilization of crisis, deepen existing marginalizations across axes of

Indigenous status, class, caste, race and ethnicity, gender, and more (Simpson 2017, Opperman 2020, Agathangelou 2021, Sultana 2021, Whyte 2021). For instance, Mehta (2001) showed how discourses associated with declining and “dwindling” precipitation in Gujarat, India were mobilized by certain government officials to rationalize the Sardar Sarovar Dam—overshadowing both a range of sustainable water management solutions that addressed anthropocentric causes of the water crisis and a set of strategies compatible with socio-ecological livelihoods in variable water–climate environments (Mehta 2001; for other cases, see Bharucha 2019, Shah and Narain 2019). The fact that some events are declared crises, while others of greater severity and urgency are not, require us to engage with the inherently political natures of crisis declarations (Janzen 2018). For instance, Trottier (2008) found that scientists’ perceptions of certain power structures and their legitimacy affect both their conceptualizations of water crises and the scope of viable solutions. Political ecologists have long emphasized, as above, the need to integrate power dynamics with environmental knowledges and discourses to theorize narrative framing (see Blaikie and Brookfield 1987, Fairhead and Leach 1996, and Mehta 2001). This approach stresses how power, authority, and subjectivity are integral to the production of crises discourses, and how social actors respond to their circulation (Castree 2020, Whyte 2021). Thus, understanding the political nature of crises requires engaging with how power relations within hydrosocial systems “produce and maintain crises” (Sultana 2021: 1721).

Second, crises are often chronic conditions. Although some water crises represent a temporary departure from a “normal” state, there are even more examples where they are chronic or endemic. For instance, in Canada, the Walkerton Crisis in 2000 can be contrasted with the First Nations drinking water crisis. Whereas the former was a tragic failure of water treatment that led to an acute situation, it occurred and was resolved over a relatively short time frame (O’Connor 2002). The First Nations drinking water crisis in Canada represents a crisis that is chronic in every form—and is a manifestation of 150-plus years of entrenched settler-colonial governance that is not easily addressed through techno-managerial solutions (e.g., economic, infrastructural, or technical measures) but also requires a fundamental shift to advance the decolonization of water governance arrangements (Wilson et al. 2021). Following Paglia (2015: 258), environmental crises are “...[n]ot a proper crisis of short or intermediate duration, as crises are commonly thought of today, and it cannot be conceived of or managed as a discrete event.” Instead of discrete events, they suggest ecological crises in their chronicity are consistent with understandings of crises as epochs of fundamental historical change of varying duration (short or long) toward better or worse outcomes (Paglia 2015; see also Koselleck and Richter 2006, Redfield 2013). Similarly, the 2022 Collins Dictionary “Word of the Year” was “permacrisis,” an “extended period of instability and insecurity, esp [sic] one resulting from a series of catastrophic events” (Collins Dictionary 2022). Rather than the opposite of crisis, “chronicity” can be understood as the experience of crises as a persistent state (Estroff 1993; see Garcia (2010) on chronicity in the field of medical anthropology). This focus on the durative nature of environmental degradation is related to what Nixon refers to as “slow violence” whereby effects are “incremental and accretive” (Nixon 2011: 2). Thus, concepts that draw attention to



the ongoing or attritional processes and effects of environmental violence may still be characterized as crisis in the “longue durée” (see subsection “Temporality” below). Relatedly, many regions have been described as on the precipice of crises. For example, the 2017–2018 “Day Zero” water crisis in Cape Town, South Africa was narrowly averted through significant reductions in municipal water use, irrigation water reallocation, emergency planning procedures, and later, precipitation that enabled water level recovery (Rodina 2019). Framing crises as discrete events creates a dichotomy where communities are either in crisis or not. Although not all crises are chronic states, understanding how relational and systemic inequalities and injustices produce crises is critical to understanding the persistence of such conditions. Indeed, scholars and practitioners of water and climate justice identify the need to engage with root causes of environmental change (e.g., capitalism and colonialism as drivers of climate change and water insecurity) because they structure carbon-intensive economies and unsustainable water use (Whyte 2017a, Sultana 2022a). In this sense, water–climate crises are not simply about “ecological” crisis but are also crises of governance. In early 2016, the #NoDAPL movement, whose rallying cry “Mni wiconi” (“water is life”), sought to resist the Dakota Access Pipeline (DAP). The movement asserted that the pipeline violated the Standing Rock Sioux Tribe’s Indigenous rights to land and water outlined in Article II of the Fort Laramie Treaty (U.S. Government and Great Sioux Nation 1868), which guarantees the “undisturbed use and occupation” of reservation lands surrounding the proposed location of the pipeline. Settler-colonialism and capitalism are root causes of carbon-intensive resource development via the DAP, making resistance through the #NoDAPL movement’s assertion of Indigenous sovereignty a clear crisis of governance (see Whyte 2017b, Birkett and Montoya 2019, Estes and Dhillon 2019, Powell and Draper 2020). Thus, understanding the chronicity of crises in the water–climate system is not only about understanding complex connections between the hydrosocial system and the climate, but about identifying the shared root causes that make these conditions chronic.

Third, a return to “normalcy” is not necessarily desirable. Following Janzen (2018), crises can only be defined by understanding water and climate “normalcy.” From a hydrological perspective, normalcy in the water–climate system might be defined by a return to stationarity or the ability to make predictions based on previous trends (Milly et al. 2008). However, the idea of returning to a “normal” state takes on distinct meanings for communities living in a state of chronic or permanent crisis and when conditions are produced through highly unequal social, political and ecological relationships and structures. Therefore, crisis conceptualizations that assert realities of “normalcy” (Janzen 2018) sideline, or worse re-produce, often chronic states of injustice. Relatedly, Masco (2017) identifies the phenomenon of “crisis in crisis” discourses. That is, the “crisis” rests in the social and discursive (re)production of normalized crisis contexts (Masco 2017). For example, racialized and classed inequality are direct outputs of a return to a racial capitalist “normalcy.” Hence, crisis discourses run the risk of dislocation when obfuscated from historical and ongoing systems that enact them. This, in turn, demonstrates how the intersection of power and knowledge reaffirms crisis as a malleable and pliable mechanism.

The mobilization of securitized crisis discourses can also bolster and or reinforce states of water or climate injustice. Following Buzan et al. (1998: 26), securitization involves “the staging of existential issues in politics to lift them above politics.” Once an issue is securitized (or, perceived as a threat or crisis), extraordinary measures (e.g., infrastructural) become possible (Buzan et al. 1998). Octavianti (2020) uses a case study of the “sinking crisis” in Jakarta, Indonesia to explore how flooding and land subsidence combine to create greater windows of opportunity for securitizing policy responses that include advancing support for large-scale infrastructure projects, such as a sea wall through the “securitizations of fear” (Octavianti 2020: 153) (see also Octavianti and Charles 2019, 2018). Under declarations of emergency, or what Agamben (2005) calls “states of exception,” individual rights are diminished, supplanted, or excluded by the biopolitical extension of state power. For instance, Kyle Powys Whyte (2021: 52) engages with crisis epistemologies, stating, “[t]oday, people perpetrate colonialism in the name of responding to environmental crises—climate change being one prominent case. Responses to scientifically understand and mitigate climate change can harm or threaten Indigenous peoples.” There are many threats to water security associated with “false solutions” to the climate crisis, where emissions reductions cost some communities their water security (e.g., large-scale hydro-electric dams flooding Indigenous land, impacts to water quality and quantity through mining critical minerals, such as lithium) (Indigenous Climate Action 2021, Sultana 2022b, Carmona et al. 2023).

If “normal” conditions already represent a state of ecological and social injustice, responses to crises are not likely to be rooted in the desire to return to such a state. For instance, if settler-colonialism or racial capitalism are root causes of present crises in the water–climate system, then those most impacted by these injustices are unlikely to desire to maintain or return to such states. Thus, the goal of crisis discourses ultimately depends on who is defining the crisis. Crisis discourses can be invoked to galvanize people toward particular ends. For example, Koselleck and Richter (2006) conceptualize crisis as a “tipping point.” As a threshold draws nearer, a declaration of crisis functions as a call to action. Furthermore, alternatives to invoking crises presented in the literature include cooperation or “coordination” (Whyte 2021). We argue that global water crisis discourses often fail to leave room for the visions of the future held by marginalized peoples by centering the urgency and catastrophe of the present moment, rather than treating it as a point of departure for imagining and bringing into being more just and desirable futures. In engaging with crisis discourses at the intersection of water and climate, it is necessary to center analysis and practice that aims to bring about transformative and decolonial change in hydrosocial systems.

#### **SITUATING WATER AND CLIMATE CRISES**

Whereas discourses that situate water as fundamentally linked to the climate tend to frame water crises as a global problem, we build on the above theorization of crisis to highlight the ways that a hydrosocial approach can enable more situated understandings of crises. We build upon the critiques of crisis discourses above to highlight key analytic frames that can help situate understandings of crisis in coupled water–climate systems through a hydrosocial framework. In what follows, we suggest

relational, spatial, and temporal engagements (and their interrelationships) are necessary to move beyond biophysical crisis discourses in ways that help us think about how to advance more just water futures.

### **Relationality**

The analytic of “relationality” provides important ontological and epistemological contributions to crisis re-framing. A relational approach illustrates that crises are not separate or distinct from social, cultural, environmental, and economic systems and their concordant relations of power. Ontologically, crises cannot exist “outside” the very systems that enact them—and hence, are foundational to them (Agathangelou 2021, Sultana 2021, Whyte 2021). Thus, crises are internal to hydrosocial systems.

What first becomes clear is how the declaration of crises reflects (and reifies) ontological and epistemic power structures (Castejo 2020). Moving beyond “modern water” (Linton 2010) requires challenging “the assumption of a singular world” and instead seeks to take “seriously the existence of diverse ways of being and knowing within and with multiple [water] worlds” (Wilson and Inkster 2018: 3). The ways that multiple worlds exist within a hydrosocial system and often come into conflict reveals that water conflicts are often rooted in ontological differences (Yates et al. 2017). Hegemonic understandings of “modern water” are enacted in ways that have historically and often continue to suppress Indigenous ontologies, epistemologies, and governance systems within present water governance arrangements rooted in the understanding that water is a living entity and a relative (McGregor 2014, Stensrud 2016, Wilson and Inkster 2018, Chiblow (Ogamauh annag qwe) 2019). For instance, Astrid Stensrud (2016) illustrates that relational worlds are fundamental to understanding “campesinos” and “pastores” (peasant farmers and herders) assertions of political agency in the Colca Valley in the Andes of southern Peru. Although the imminent water crisis was understood as driven by climate change and unjust water governance arrangements, political advocacy for water ownership in the face of these stressors foregrounded relational responsibilities to water and the “Apus” (“mountain spirits”) (Stensrud 2016). In northern Tanzania, Goldman et al. (2016) report how, despite substantial regional deficits in the 2010–2011 precipitation “[...] for most Maasai, and regional NGOs, it was not a drought” (Goldman et al. 2016: 27). Drought declaration was based on scientists’ use of regional precipitation deviations, whereas for the Maasai, drought depended not only on precipitation anomalies, but on the availability and access to alternative water, grazing, and pasturelands—important factors that enabled the 2010–2011 “drought” to be characterized differently by the Maasai (Goldman et al. 2016). For these authors, different ontologies of drought among scientists, NGOs, and Maasai exist, requiring a relational approach to how crises are enacted (Goldman et al. 2016). Researchers and policy makers must recognize the nature of crises is diverse. Dominant power structures have suppressed, not only certain ways of representing and knowing crises, but by virtue of this, relief from experienced crisis conditions.

The second benefit of a relational approach occurs upon recognizing how Western scientific measurements divorce the characterization of drought, or other crises, from the actual lived

experience of it. This slippage, more covertly, obfuscates relational questions around why impacts are felt and become crises for some over others (Goldman et al. 2016). To focus on the lived experiences of water and climate stressors, instead, invites a broader appreciation of the multiplicity of what crises are, and when they occur, but critically, draws focus to “why” they unevenly manifest. For example, in 2019, the government of India reported the country was experiencing “the worst water crisis in its history” (National Institution for Transforming India (NITI) Aayog 2018: 15). However, this discourse neglects the histories and traumas of colonialism and the everyday struggles of water insecurities that people marginalized by intersecting systems of colonialism, caste, class, and patriarchy have long experienced (Shah and Narain 2019). Similarly, Roque and others (2021, 2023) critically examine “autogestión” (self-management) and “water sharing” in Puerto Rico as responses to water crises and insecurity induced by hurricanes Irma and María in 2017. Although such responses can highlight the transformative potential of mobilizing social relations and capital to address water challenges, they also emerge from the problematic relegation of State responsibility from extensions of neoliberalism and colonialism (ibid.). Crises are relational to these mediating processes (Roque et al. 2021, 2023).

Third, and last, a relational approach is important because what crisis constitutes has often been based on a certain set of, often narrowly construed, impacts, such as economic loss or physical damage, however important. Cultural, knowledge-based, symbolic, and institutional losses are also crises. Overall, understanding crises outside of the social context through which crises are signified, experienced, and gain meaning is not an effective approach to alleviating them. A relational approach, we argue, is better positioned to address all three considerations, and the dangers that come with de-politicizing and technifying crises, and crisis response.

### **Spatiality**

Given diverse geographies and variations in water scarcity and/or extreme events, such as flooding, cyclones, and typhoons (Caretta and Mukherji 2022), crises are declared at local, regional (e.g., watershed, basin), or national levels. However, global water crisis discourses have been on the rise in recent decades given the accelerating impact humans have had on the Earth’s hydrosphere in the Anthropocene. Global changes are observable through advancements in geographic and hydrological science and technologies (e.g., remote sensing, hydrological models, and data integration systems) that enable knowledge of “global water” (Vörösmarty et al. 2013). Linking water crises to climate change has further underscored the view that water crises are a global challenge that all countries have a vested interest in addressing, often expressed through the declaration that “we are all in this together,” which hides difference (DeBoom 2020, Sultana 2021). Advancements in technology and knowledge are valuable for understanding how global changes are driving local or regional water problems and how local changes (e.g., land-use changes) accumulate to drive changes in the global water system (Vörösmarty et al. 2013). Similarly, with climate science, the global view on emissions has enabled greater understanding of the effects on the climate system. However, the “globalizing instinct” observable in declarations of crises in the water–climate system and knowledge making about them can serve to erase differences

and obscure locally relevant meaning and experiences of these changes (Hulme 2010: 563). Here, and drawing from well-established understandings among critical and feminist geographers and scholars from the global South (e.g., McKittrick 2006, de Leeuw and Hunt 2018, Mollett and Faria 2018), space is critical for understanding how diverse groups experience water crises in distinct ways, where intersectional differences are deeply intertwined with colonialism, capitalism and modernization both historically and in the present (Sultana 2021). In this sense, global-scale crisis discourses can hide important relational differences in the who, what, where, when, and why of crises including the drivers (e.g., rising emissions, land-use changes), and their impacts and responses across diverse peoples and geographies (Sultana 2021). We must question how the production of “global water” through such technologies and discourses might privilege some hydrosocial relations over others by shaping differential access and citizenship.

Further to this argument, crises are not contained within discrete spatializations. There is no one correct spatial scale for understanding such phenomena, and the levels within a scale are relative (Sayre 2015) as each may be useful in revealing distinct attributes and drivers of crisis. Indeed, despite privileging the global scale in present discourses, household, community-level, and watershed or basin analyses maintain their importance in engaging with many challenges and power dynamics that exist locally in ways that matter for how water crisis is produced, understood, and experienced. For instance, Méndez-Barrientos and others (2022) highlight the importance of municipal-scale analysis for water insecurity as experienced in the “underbounded” (i.e., historically excluded from centralized water infrastructure) Latinx community of East Porterville, California. Their spatial analysis supports understanding water and climate injustices through racialized access to urban drinking water infrastructure, and further analyzes how such disparities are exacerbated by climate change (Méndez-Barrientos et al. 2022). Shah et al. (2021) show how state-driven efforts to reduce the impacts of drought in Maharashtra, India privilege a village scale, which does not map onto the uneven and lived experiences of household and livelihood water insecurity.

### Temporality

There is a tendency to frame crises as sudden, newly emergent, and unfolding only in the present day (e.g., Agathangelou 2021, Agathangelou and Killian 2021, Whyte 2021, Rivera 2022). Although water–climate crises are experienced over the course of days, weeks, seasons, and between years through extreme weather events, climate change develops over longer temporalities, with trends detectable over a minimum of 30 yrs, if not centuries. Tensions related to temporality are illustrated in the debate over what date initiated the Anthropocene (now “officially” considered to begin in 1850 with the invention of the steam engine; Steffen et al. 2015) and proposals for alternative timelines that would better represent the global-scale impacts of industrial racial-capitalism and colonialism that shape current crises (Davis and Todd 2017). Tahltan scholar Candis Callison (2020: 132) writes that, for Indigenous peoples, climate change is “not the first epic ecological disaster, nor is it understood as a stand-alone issue” but rather “deeply connected to more recent histories of settler colonial dispossession of lands and waters and ensuing disruption

of relations between humans and nonhumans.” Potawatomi scholar Kyle Whyte (2021: 55) deepens understandings of temporality and crises discourses through a discussion of “presentism” whereby “time is put together (arranged) to favor a certain conception of the present as a means of achieving power or protecting privilege” (see also Davis and Todd 2017). According to Whyte (2021: 55) “presentism” is characterized by the temporal assumptions that some event or “crisis” is both “unprecedented”—an ahistorical view on crisis—and “urgent”—the need to act quickly, which excuses some unanticipated collateral harm to human or non-human life. Presentism, Whyte (2021: 55) argues, can “easily be abused for the sake of advancing colonial power, even in cases where the perpetrators would swear, they have only the best intentions.” Presentism in crisis discourse engages modern colonial temporalities in ways that ignore the root causes of the “slow violence” or chronic conditions (Nixon 2011) indicated by longer histories and justify certain actions that reinforce unequal social and political relationships and structures in the present.

We must, then, ask how the longer historical trajectories that contribute to conjoint water–climate crises can make them a “chronic condition” (cf. Paglia 2015). Tracing the histories that shape flooding events is key to understanding the social, political, and economic factors that produce floods as crises. Anishinaabe scholar Myrle Ballard and others examine the process of “dispossession by flooding” in Manitoba, Canada, where flood control structures are built to protect areas heavily populated by settler populations like urban Winnipeg with devastating consequences for downstream First Nations, their housing infrastructure, and lands (Ballard and Thompson 2013, Ballard et al. 2020). Such flood events are often framed as crises in the present, but such events are produced by longer histories of settler colonialism and land dispossession whereby many Manitoba First Nations were “relocated” to marginal lands, flood-prone lands (i.e., Muskeg) to preserve agricultural land for settlers (Ballard 2012, see also Parsons and Fisher 2022). This example illustrates that, although crises are framed through presentism, the conditions that produce these events can be traced to the settler colonial governance and infrastructure, which has transformed waterscapes. Thus, temporality is key to situating crisis discourses where water-related crises may not be unprecedented and where longer temporalities reveal histories of injustice.

Scholarship and practice related to water–climate crises can be better situated through understanding the role of temporality in shaping hydrosocial imaginaries (Berry and Cohn 2023). Indeed, water connects all aspects of life (Strang 2004, Orlove and Caton 2009), and such connections are temporal. Learning from Clarke-Sather et al. (2017), our engagement with hydrosocial relationships must engage “water as a time-substance” where hydrosocial relationships are understood to link the past, present, and future (see also Schmidt 2014). In the same way that “modern water” separates water from social and political context (Linton 2010), it also imposes “modern time,” linear and unidirectional, and ahistoricizes water in ways that have social and political consequences for marginalized peoples. For instance, the imposition of “settler-time” has been fundamental to the dispossession of Indigenous peoples’ sovereignty over lands and waters within their territories (see Rifkin 2014). As the effects of



climate change on hydrosocial relations are intensifying, it is crucial to ask how the analytic of temporality can offer opportunities to critique framings of crises in water–climate systems by dominant, Western-colonial ontologies of crisis as unprecedented, urgent, sudden, contemporary, and equally created (Davis and Todd 2017, Callison 2020, Rivera 2022).

### BEYOND “SOLUTIONS” AND TOWARD FLOURISHING

Crisis discourses have their place, and thus far, we have argued for the importance of examining the dynamics that underlie and produce crisis. Although we agree with Cattellino and others’ (2019: 136) assessment that crisis conceptualizations engaged by “many scholars and (other) political actors have backed themselves into a conceptual corner of doomsday eventualities,” this is not always the case. As we discussed, crisis discourses differ depending on “who” is using them and “what” their goals are. In other words, the positionality and goals of those espousing crisis matter. To this end, maintaining a focus on what lies beyond crisis is imperative. Yet today, crisis discourses remain overwhelmingly focused on hydrological discourses in ways that narrow understandings of the nature of the problem and potential “solutions.” Such a solutionist approach forgoes engaging with the complexities, uncertainties, tensions, and contradictions that emerge when various actors consider responses to climate change (Morozov 2014, Stein 2024). Ignoring the complexity of the problem leaves little possibility such approaches will work and, even worse, risks that they will exacerbate existing injustices in favor of simple and guaranteed solutions to otherwise “wicked problems” (Morozov 2014, Stein 2024). Here, the visions of marginalized communities for the future are sidelined in crisis discourses. In concert with Black, Indigenous, and post-colonial scholars (e.g., Cattellino et al. 2019, Agathangelou and Killian 2021, Sultana 2021, Whyte 2021), we argue that engagement with crisis discourses can catalyze transformative and decolonial change. In other words, what does it look like for communities of human and non-human persons to thrive or flourish beyond the present moment? What needs to happen to advance more just and desirable (water–climate) futures?

Many scholars have taken up these questions. Julie Sze (2020: 12) embraces “forward dreaming,” a “politics grounded in values” that considers diverse dreams and desires for the future. Similarly, Cattellino et al. (2019: 150) develop the concept of “flourishing,” which encompasses action inspired by “ways of being that cannot be fully envisioned. [...] and modes of flourishing [that] proliferate in the nooks and crannies of our shared world, but their very multiplicity resists definitive description.” Whyte (2021: 153) offers “epistemologies of coordination” or “ways of knowing the world that emphasise the importance of moral bonds—or kinship relationships—for generating the (responsible) capacity to respond to constant change in the world” as an approach to responding to change “without validating harm or violence.” These approaches all require moving beyond cataloging injustices in ways that frame marginalized communities as “damaged,” and instead centering the strengths and desires of these communities (Tuck 2009). For Powell (2024: 82, citing Redfield 2005), efforts to move beyond “damage-centered” research will include “[...] a more expansive thinking of the institutional, agentive, temporal, and affective registers of ‘life in crisis’ presenting a temporal rupture that demands action.” To this end, crisis discourses from the margins are often linked to more just visions of the future—

challenging hegemonic powers that frame crises (ontological and epistemological), the narrow drivers seen to result in them (causal dynamics), and the severity and diversity of impacts communities encounter and live (effects of crisis).

### CONCLUSION

Although declarations of water crises have been frequent in water policy and practice for decades, crisis discourses have increased because of anthropogenic climate change. In this review of crisis discourses in water–climate systems, we have engaged recent scholarship at the intersection of water and climate to argue that crisis discourses are inherently political. We identify three key analytics (relationality, spatiality, and temporality) that assist with situating crisis as a normative concept shaped by the particularities of the hydrosocial relations within a given water–climate system. Our review aims to better position researchers, policy makers, and activists to critically reflect on questions of the “who,” “what,” and “why” (Castree 2020) of crisis discourses in the water–climate system. In doing so, we can move beyond solutionism and simplistic narratives of crisis. Instead, we argue that crisis discourses are only useful when situated within transformative approaches that center understandings of climate and water injustices that drive crises and limit the responses of communities who contribute the least to the causes of change in the water–climate system (Whyte 2017a, Mills-Novoa et al. 2022).

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### Author Contributions:

*Nicole J. Wilson: conceptualization, writing - original draft, writing - review and editing, project administration, funding acquisition. Sameer H. Shah: conceptualization, writing - original draft, writing - review and editing, project administration. Teresa Montoya: conceptualization, writing - original draft, writing - review and editing, project administration. Catherine Fallon Grasham: writing - original draft, writing - review and editing, funding acquisition. Marina Korzenevica: writing - original draft, writing - review and editing, funding acquisition. Thanti Octavianti: writing - original draft, writing - review and editing. Jaynie Vonk: writing - original draft, writing - review and editing. Farhana Sultana: writing - review and editing.*

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#### Data Availability:

*As this is a synthesis (review) paper, there are no data or code.*

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