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## MONSOON ASSEMBLAGES FORUM: PRACTICES AND CURATIONS

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### Intuiting a Monsoonal Ethnography in Three Bay of Bengal Cities

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This visual essay offers an exploration of monsoonal materiality and agency in the urban environments of three cities located around the Bay of Bengal: Chennai, Dhaka and Yangon. The text and images emerge from *Monsoon Assemblages*, an interdisciplinary research project exploring intersections between changing monsoon climates and rapid urbanization in South Asia. The project challenges a view of meteorological systems as being external, inert backdrops to social life by engaging with monsoonal cities as indivisibly natural, social and political arrangements. Within the project, I have used ethnographic techniques to explore the role that the monsoon plays in shaping monsoonal cities and the territories they are situated within, and how human activities respond to and influence monsoonal climates. This is based on a “more-than-human” approach (Whatmore 2006, 600) that is attentive to the co-constitutive role of nonhumans in the production of the world. By collecting and curating an assemblage of visual material and fieldnotes, this essay captures the process of intuiting a monsoonal ethnography whilst also evoking the generative, multifaceted agency and materiality of the monsoon and the urban environments it becomes enmeshed within. Learning to consider weather patterns, such as the monsoon, as vital actors in our entangled world is an urgent necessity in light of increasingly uncertain futures (Barry 2018). Indeed, the climate crisis demands that we take entanglements of human and nonhuman life seriously. Understanding how complex monsoonal forces become folded within landscapes, places, people and things, requires an expanded ethnography” that crosscuts “local” and “global”, “lifeworld” and “system” (Crate 2011, 185), and extends beyond the human.

Although the importance of engaging with more-than-human actors is gaining recognition, the practicalities of how to undertake such research is often overlooked (Bell, Instone, and Mee 2017). During the course of *Monsoon Assemblages*, I have been grappling with how to engage ethnographically with a planetary weather-phenomenon vastly distributed in time and space that, in many ways, lies beyond human comprehension. Whilst anthropologists have been concerned with the atmospheric environment for some time (Kellogg and Mead 1980), and increasing attention is being paid to the “weather-world” (Ingold 2010), ways of working with specific meteorological dynamics are still emerging. My modes of working, within the context of the project, have gravitated toward intuitive, creative and reflexive methodologies inspired by sensory ethnography (Pink 2015), engaged witnessing (Bell, Instone, and Mee 2017), nonrepresentational ethnography (Vannini 2014) and mobile, multi-sited methods (Marcus 1995). My work has proceeded tentatively, as I have attempted to acclimatize to monsoonal fluxes and flows within each city and through all three. My physical interactions with each city, and with the monsoon, have occurred during periodic field trips, ranging in duration from a few weeks to a month and a half. These engagements have been a sensory endeavor, a process of learning to be affected through practices of “attunement” (Stewart 2011, 445).

Through these experiences and practices, I have gradually developed an awareness of monsoonal “qualities, rhythms, forces, relations and movements” (Stewart 2011, 445). Specific methods include observing, sensing, smelling, tasting, conversing, listening, walking, videoing, photographing and audio recording, followed by post-fieldwork periods of digitizing, analyzing, selecting, reflecting, interweaving, generating, writing and editing. Through a curation of images and text, this photo essay aims to convey aspects of this ethnographic monsoonal methodology. The essay is structured around my observations of human practices, socionatural infrastructures and non-human species each of which reveal multiple ways in which the generative materiality of the monsoon becomes entangled within lived environments. Images gathered whilst following monsoonal “lines of flight” (Deleuze and Guattari 1987, 3) elicit intangible connections, relations and understandings as well as the tangible material, sensory and textural qualities of monsoonal environments. By

putting localized, human and non-human movements, practices and materialities into conversation with planetary forces I hope to evoke the various ways in which the vibrant, material ad hoc-ness of cities is enmeshed within agentive meteorological systems.

## MONSOONAL CITIES

In its simplest definition, the monsoon is a “seasonally prevailing wind”, the name originating from the Arabic *mausim* meaning season (Fein and Stephens 1987). However, the simplicity of this definition belies the monsoon’s complexity. Periodic monsoon winds are created by atmospheric circulations, produced by solar heating and seasonally contrasting temperatures between land and ocean. Arising from dynamic interactions between atmosphere, oceans and continents (Clemens et al. 1991), including the spinning earth, transfers of heat between land and sea and the seasonal movement of the sun, the monsoon is an emergent phenomenon generated by the movements of the earth. Oscillations between wet and dry seasons, caused by the periodic movement of monsoon winds, have a profound influence on lived environments. While the monsoon is most often associated with the heavy rains of the South Asian summer wet season, it also enables the dry winter season as reversing monsoon winds push cool air over the tropics bringing dry and dusty conditions. Human and nonhuman activities respond to these fluctuations, adjusting to the recurrent transformation of the environment.

Although broadly predictable, the movements and rhythms of the monsoon fluctuate from year to year and from place to place; they are not metronomic as each monsoon season varies from the last. Monsoon weather also manifests differently in different places, influenced by diverse landscapes and geographies, whilst also shaping them in turn. In response to fluctuating atmospheric patterns, people weave the weather into their lives, making and remaking places and selves through processes of “weathering” (Vannini et al. 2012, 361). Through a “performative ecology of movement” (Vannini et al. 2012, 361), the monsoon seeps into almost every aspect of life through its smell, its wetness, its dryness, its heat, its pressure, its humidity, its seasonality (Bremner forthcoming), becoming entangled with social processes, materialities and practices. Whereas the influence of the monsoon in rural contexts is widely acknowledged, urban relations with this meteorological phenomenon are more ambiguous. As part of my research I undertook fieldtrips, in pre-monsoon, monsoon and post-monsoon periods, to witness the transformational role of the monsoon in shaping urban environments. Exploring each city I visited through a monsoonal lens revealed the “mutual worlding” brought about by weathering (Neimanis and Walker 2014, 558), processes of becoming in which bodies, materials, places and the weather are inter-implicated.

## HUMAN PRACTICES

During visits to Chennai, Dhaka and Yangon, I became conscious of the ways in which people registered the monsoon through everyday practices. Changing weather patterns not only superficially influence clothing, shopping habits and transportation, all of which shift with the seasons, the weather also permeates and seeps inside people’s bodies through food and water consumption, disease transmission and sensory interaction. As Neimanis and Walker (2014) highlight in their transcorporeal notion of weathering, the ebb and flow of meteorological life transits through human bodies in a myriad of ways. Far from being detached from social life, weather becomes enmeshed within

porous bodies (Alaimo 2010) that are not bounded but open to meteorological fluxes and flows. Interactions between weather and embodied acts of dwelling became particularly clear to me in Chennai where I spent time with two families from different socio-economic backgrounds. One family lived in an informal settlement in the midst of a rapidly urbanizing IT Corridor, the other in an affluent apartment complex on the Chennai coast. Participating in conversations, meals, routine activities, and ritual observances with these families, I came to see how the monsoon features as an active participant in everyday lives, although different groups and individuals do not experience it in the same way.

During Chennai fieldwork, I learned that special pre-monsoon foods are prepared to ward off illness and disease. *Koozh*, a fermented millet porridge, is made in the Tamil month of *Aadi* (mid-July to mid-August), a liminal time of seasonal change associated with forceful winds and atmospheric disturbance. These hot, dry winds are said to affect people's mood and health. Because incidents of sickness and disease peak during this month, vats of bubbling, nutrient-rich porridge teeming with beneficial bacteria, are prepared to cool the body and boost strength and immunity. *Koozh* is also given as a ritual food to the South Indian goddess Mariamman who brings rains and cures diseases, *maari* meaning rain and *amma* meaning mother. I spoke with worshippers as they prepared their rituals in a makeshift temple on the side of a rainwater harvesting tank amidst a bustling IT Estate. They told me, "The time of *Aadi* is a special occasion for Mariamman. We offer *koozh* and drumstick leaves. We worship for our family problems and to keep the community safe from diseases. When we all come together and worship we feel good and content". During these festivities, leaves and flowers from the astringent neem tree are garlanded and hung to ward off infections; pods and leaves from the nourishing drumstick tree are also harvested and cooked. Bacteria, plants and non-human entities are harnessed to mediate the weather. These practices are particularly prominent in informal settlements where people are more exposed to monsoonal fluctuations and due to precarious working conditions cannot afford to get sick, a reminder that we do not all "weather equally" (Neimanis and Hamilton 2017, no page).

In this rain-fed city, urban water supplies ebb and flow with the monsoon. If rains are late, water supplies dwindle and the quality deteriorates. Water is routinely checked for its purity, with certain experts even able to taste the varying quantities of total dissolved solids or "TDS", a term that has become part of Chennai discourse. TDS values fluctuate with the seasons, peaking during the dry season. Cardamom, *tulsi* (holy basil) and cloves are added to cleanse drinking water, with *tulsi* renowned for its antibacterial properties. Water quality also affects the longevity of food that is consumed by and sustains human bodies. Rice cooked with "bad water" spoils quickly due to pollutants so is only cooked in small quantities during the dry season. To manage these fluctuations, in more affluent homes, water purifiers and filters are installed to the outlets of piped supplies. Those who cannot purchase clean supplies resort to collecting water from a range of sources. As women from the family in the informal settlement explained, "we use lake water to wash, MetroWater to clean vessels and cook, and mineral water for drinking which costs 35 rupees per can". Water is carefully categorized and stored based on its source and assigned to different uses depending on its quality and proximity to the body, the most contaminated sources reserved for external use only. When the rains fail, as they did in 2017, the whole city waits in desperation for the monsoon to replenish "sweet" water reserves and the bodies that depend on them.

When monsoon rains arrive, they relieve people of the pressures, worries and strains of water scarcity. Rains restore depleted reserves, fill rainwater harvesting structures and recharge groundwater, but they also bring challenges. Tamil Nadu relies on irregular rains brought by the capricious northeast monsoon in October and November. During these months Chennai faces problems with





waterlogging, which has intensified as the city has become increasingly concretized. When heavy monsoon torrents meet impervious surfaces, rainwater cannot percolate into the ground. Water levels frequently reach ankle height, but in extreme cases like the devastating Chennai floods of 2015 they swell to waist-height, forcing rich and poor alike to wade through fetid water as they traverse the city. Children from the more affluent family recounted their perilous journey to school during the wet season, “If you step into the flood water and get your feet or legs wet, you don’t know if it is contaminated or not. If you get wet in the rain you have to put lots of Dettol on your feet and hands. It’s really scary”. Sales of antibacterial soap, insect repellent and antifungal creams increase as humidity and dampness enable fungi, bacteria, viruses and insects to thrive. Mosquitoes proliferate, transmitting diseases as they feed. The children’s mother told me, “Because of the wetness and humidity many diseases come, like dengue, chicken pox and chikungunya. Everything happens during the rains so you have to be prepared, you need to have good immunity”. In this urban environment that oscillates between water scarcity and excess the monsoon is both welcomed and feared, weather infiltrating thoughts and feelings as well as everyday practices (Adams-Hutcheson 2017). People sense and mediate shifting monsoonal materialities through their bodies and emotions, becoming intermeshed with the more-than-human weather-world through mundane acts of dwelling.

## SOCIONATURAL INFRASTRUCTURES

Water infrastructures provided a way of situating fieldwork in each city, acting as anchor points in relation to the vast, dynamic and un-sited phenomenon of the monsoon. In Chennai, pre-colonial rainwater tanks, known as *eris* in Tamil, became focal points of my attention. In Dhaka, interconnected meshworks of Mughal-era *khals*, or canals, emerged as significant. In Yangon, fieldwork involved engaging with colonial water pipelines and back-alley drainage channels. In each city, khals and tanks, canals and reservoirs, pipes and drainage channels have been constructed to carry, divert, capture and store seasonal flows of rainwater, sediment and debris mobilized by the monsoon. These hybrid structures, part natural and part human-made, are a response to the monsoon and provide a way of managing monsoonal materialities. Being long-lived entities that exceed human lifespans, these infrastructures also provide a way of tracing changing relations with the monsoon over time. As physical manifestations of attempts to shape, modify, manipulate and leverage the monsoon over successive generations they connect past and present, human and nonhuman, material and immaterial. Following infrastructural histories highlights that monsoon climates are not static, neither the monsoon nor the environments it becomes entangled within stay the same. As heterogeneous, open-ended formations, that are continually adapted and reworked, water infrastructures reveal cities to be lively assemblages, co-constituted by humans, nonhumans, material and immaterial actors.

During my time in Dhaka, I sought out the numerous wetlands, *khals* and rivulets that formerly criss-crossed the urban landscape. During a walk through the winding alleys and cramped streets of Old Dhaka I stumbled across the remnants of the Dholai Khal. This canal once flowed around the old town, serving as a hydrological defense whilst also facilitating internal transport and access to the surrounding region via the Buriganga River. I attempted to follow the route of the old canal, starting from a sluice gate that marked its junction with the river. After walking about 300 meters along its waste strewn banks, the canal disappeared into a narrow concrete box culvert overlaid by a busy road. Conversations with local residents, and subsequent research, revealed that the canal began to decline in the 1970s, following





Independence. The sluice gate and pumping station were constructed under the direction of the World Bank, after the devastating 1988 flood, one of the worst in Dhaka's history. These technocratic interventions severed the canal's connection with the river, ending its navigability. The remaining portions of the canal were converted into underground drainage in the 1990s to facilitate modern road construction. An elderly resident of the city who had witnessed these changes remembered the old *khal* fondly and described the effects of these reconfigurations. "When I was young the Dholai Khal was connected to the main river network. During monsoon, it was full of water and there would be big merchant ships coming in to anchor from all the regions. From Dinajpur, Rangpur, Calcutta to Dhaka, it was all connected. In those days, monsoon was a very communicative time because it was easy to travel by boat. Dholai Khal was totally navigable then but now it is gone, covered by a road". In the course of its conversion into an engineered drain the canal was irrevocably changed, in turn changing the city's relationship with the monsoon.

Encounters with such water infrastructures helped me to understand the ways in which political and social ideas are manifested in infrastructural forms, as well as in their management and maintenance. As convergence zones where different ontologies meet, these structures reveal different ways of perceiving, working with and living within monsoonal environments. Architects and urban planners I spoke with in Dhaka referred to the paradigm shift in attitudes toward water that took place from the 1980s onwards, largely coinciding with interventions by international donor agencies, transforming Dhaka from a wet city to a dry metropolis. A passionate environmental activist told me, "Dhaka was once a floating city. Dhaka was chosen to be the capital because, in the Mughal days, water offered protection. But developers have filled up the flood plains, canals and rivers and now those hydrological connections are broken". These comments indicate that such infrastructures are also sites of intense power struggles and monsoonal controversies. As marginal areas within rapidly expanding cities that are grappling with enormous population pressures, hydrological structures are often targets for real estate developments implemented by powerful elites. They also provide niches for the poor who struggle to find space in the urban environment. In Chennai, Dhaka and Yangon, informal settlements are frequently sited along canals and pipelines, built on land reclaimed from seasonal tanks and marshlands, or on top of drainage channels and rivulets. These settlements are usually the most vulnerable to flooding and the first to be relocated in the name of urban development. Through complex processes of formal and informal encroachment, water infrastructures disappear from cities altering their hydrological ecology.

All over Dhaka, canals have been filled in, replaced by roads, channeled into storm water drains, controlled by sluice gates, regulated by pumping stations, constrained by embankments and covered by settlements. The truncated remains of former *khals* are scattered throughout the city, now referred to as lakes, obscuring their past. Many urban residents are no longer aware that these severed water bodies once formed an interconnected, hydrological system; as encroachments occur gradually through ad-hoc incremental phases, their deterioration often goes unnoticed by urban publics. Nevertheless, visiting the disused canals in different seasons it is apparent that these remnants still respond to the monsoon. They ebb and flow, expand and contract, become blocked and unblocked, dry up and overflow, transpire and seep, disrupt and connect. Although their constricted and dilapidated forms continue to hold space for the monsoon within the city, they are no longer able to manage monsoonal excesses as they used to; the decline of the *khals* playing a major role in the flooding that Dhaka now regularly

experiences during the rains. As “mediators between nature and the city” (Kaika and Swyngedouw 2000, 120), these water infrastructures shape how the monsoon is experienced and perceived. When they fail economies, neighborhoods, ecosystems and human lives are affected; as a result, many urban dwellers increasingly fear the rains and when flooding occurs the monsoon is often blamed. The intensification of flood events in all three cities, has drawn attention to the decline of these historic structures, an example of infrastructures becoming visible through their breakdown or loss (Star 1999).

Hydrological restoration efforts are proliferating in Chennai, Dhaka and Yangon, catalyzing new relations and understandings, indicating that these affective monsoonal infrastructures have a certain agency of their own and a power to spur people into action.

### NON-HUMAN SPECIES

Spending time around water infrastructures, it becomes apparent that cities also pulse with other-than-human life. Walking through a bustling neighborhood in the midst of an IT Corridor during my first trip to Chennai in 2016 I encountered a swarm of dragonflies hovering along the edges of a rainwater tank. I mentioned them to my companion, a local resident, who told me that their presence often coincides with the arrival of monsoon rains. This piqued my interest and I started to pay more attention to them. From the rooftop of the apartment where I was staying, I started to notice the same species of dragonfly swarming each evening before nightly rain showers. Further investigation revealed that these dragonflies were *Pantala flavescens*, also known as Globe Skimmers or Wandering Gliders due to their migratory behavior. Clouds of these dragonflies move *en masse* across oceans and continents, moving between Africa and South Asia following seasonal monsoon weather fronts. A behavioral ecologist told me more about these movements and how the species has adapted to monsoon patterns. “These dragonflies have a very quick larval development so they can utilize ephemeral pools of water that are just there for a couple of months and get deeper with monsoon rainfall. When they emerge they go to the next place where there are pools of water, which is also where the monsoon wind is blowing. They use the monsoon as a motorway to the next place”. As aquatic organisms that rely on freshwater to breed, these dragonflies follow the rainy conditions enabled by wet monsoon winds. Breeding in fresh water pools whilst on the move, and laying their eggs where monsoon rains fall, their lifecycle is intertwined with the mobile materiality of the monsoon.

Their movements provide humans situated in specific places with an indication of impending weather patterns, facilitating monsoonal understandings and connecting humans with non-humans. Conversations with urban residents in Chennai revealed that dragonflies were traditionally used as weather predictors, the height at which they fly indicating the likelihood of rainfall. There is even a saying in Tamil Nadu: “*Thattan thalaparanthal thappathu mazhai*”, meaning “When a dragonfly flies low, a shower is sure to follow.” After coming across them in Chennai, the journeys of these migrants sporadically intersected with mine as we weaved our way through the cities, each of us following the monsoon. Although I would only see them for short periods of time, I observed their behavior as they engaged with rain, clouds, water bodies, wind and heat. They proved extremely hard to photograph so I often videoed them instead; but, as they use weather fronts to travel with the monsoon at altitudes over 1,000 meters (Anderson 2009), most of their movements remained largely unfollowable.

In Dhaka, there were few to be seen during my monsoon visit, perhaps because the rains were late, although a group appeared unexpectedly in a rain cloud whilst visiting a fishing village to the south of the city. Having followed them through each of the cities, I was thrilled when during my final visit to Yangon the skies were saturated with *Pantala Flavescens*, known in Burmese as *moe pazin*, or “rain dragonfly”.

Although dragonflies might seem to be far removed from urban environments, in Yangon I became aware of the various ways they are entwined with urban systems. I learned that dragonflies from the same family as *Pantala flavescens* have been used in participatory mosquito elimination trials. Dragonfly larvae were placed in domestic water storage containers that are used to harvest rainwater, but which also harbor dengue carrying mosquitoes. As voracious predators, the larvae help to suppress both the mosquitoes and the diseases they carry. Traveling around the city I spotted Wandering Gliders above urban paddy fields situated alongside Yangon’s circular railway line. Apparently large swarms of these dragonflies use highways and railway tracks to move through the landscape, their movements connecting aerial ecologies with urban infrastructures. I also observed them in iconic places in the city, such as the Shwedagon Pagoda, where they possibly provide a source of food for communities of migratory bats that reside in the stairwells and temple during certain months of the year. As well as enabling ecosystems in the specific places they visit, it is increasingly recognized that *Pantala flavescens* facilitate complex atmospheric ecologies by providing food for fellow migrants as they move, although the dynamics of these systems are still not fully understood.

My dragonfly sightings were not just restricted to the cities, I also observed the Wandering Gliders in agricultural fields, on the edges of vast river systems, at the top of inactive volcanoes and washed up on the seashore, offering hints into their epic journeys. In the course of following these dragonflies I met farmers and fishers, urban residents and academics, agroecologists and entomologists. The fieldnotes, photographs and videos that were generated as a result trace the somewhat unconventional routes that the research project has taken to understanding each of the cities, extending the boundaries of the urban in the process. This tiny dragonfly draws relations between places and things that are not usually associated, connecting rural with urban, blurring human geopolitical and epistemological boundaries and revealing the complexity of human and nonhuman interactions. In tracing the migratory routes of this dragonfly the impact of the expanding human footprint also became apparent, the future of *Pantala flavescens* being impacted by the loss of wetlands due to rapid urbanization and shifting monsoon weather patterns associated with human-induced climate change. Bangladeshis I spoke with who make their living from the land have already observed changes in their behavior. “As farmers, we know these dragonflies very well. We used to see them in millions, in our paddy fields. During the monsoon, we used to see a lot of them, but these days we see very few”. As a species whose lifecycle is intimately intertwined with the monsoon, *Pantala flavescens* highlights the predicament of the global commons, their movements opening up new understandings, relationships and accountabilities.

In addition to the dragonflies, I also followed a number of other species through the course of fieldwork, including bats, birds, fish, snakes, trees and plants, each one bound up with the monsoon in different ways and often interconnected with one another. These explorations, carried out in a nonscientific, qualitative way, revealed the synchronies and sequences of breeding, feeding and migrating that the monsoon brings together; entanglements in which





“food and fed, pollinator and pollinated, traveller and medium travelled” (Bastian 2017, 150) are all caught up, together. These multi-species cycles, rhythms and movements often stretch over vast spatial regions, affecting and connecting atmospheric, aquatic and terrestrial ecosystems, highlighting the significance and reach of the monsoon.

## CONCLUSION

This visual essay is an eclectic assemblage, a gathering of fragmentary insights that combine to build a rich, but partial, understanding of how the monsoon manifests in material environments and influences the multiple lives entangled within them. Following human practices, socio-natural infrastructures and non-human species provides an indirect way of engaging with a complex weather phenomenon vastly distributed in time and space. This methodology recognizes that the multifaceted, multi-scalar dynamics of the monsoon cannot be accounted for by focusing on a single site, or a single entity; and even when you engage with multiple things and multiple sites it is impossible to comprehend this complex earth system in its entirety. Nevertheless, engaging with the human, the non-human and the more-than-human acknowledges that monsoonal cities, and the monsoon itself, are entanglements of all these things. This is an inherently emergent way of working; one that in many ways mirrors the phenomena that Monsoon Assemblages is seeking to understand, both the cities and monsoon system they are enmeshed within. By tracing various lines of association, and their social, material, temporal and spatial dynamics, the agentive force of the monsoon is revealed. As an embodied, sensory and immersive endeavor, in the process of conducting this research, the monsoon has seeped inside me too, pervading my thinking and influencing how I encounter people, places and things.

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