

Introduction

EARTHLY INTERPHASES

In early April of 2001, two closely spaced pulses of Siberian jet wind blew into semiarid Inner Mongolia, whipping surface sands into the air. The western reaches of the region, at the frontier with Mongolia, were grass-bare. The convergence of years of drought, a mounting crisis of land degradation, and an unusually warm winter left vast tracts of the region's sands exposed and unstructured in the early spring. In these conditions, an early thaw of sandy landscapes aligned with the onset of strong seasonal winds.¹ An inbound temperate cyclone system scraped against the loosened earth, peeling the land from the ground as a dusty emission, and moving it as a rapidly evolving weather system. The two pulses of wind converged into a complex of airborne dust that rushed toward Beijing. They swirled, over the next weeks, into a single storm whose geophysics and geochemistry would move along its planetary course.²

Over the course of the month, the cyclone of land surged eastward. It filled seasonal airstreams in bursts of earthly color. Its yellow rivulets moved in a complex trajectory of smooth lines and crinkling twists.³ As the storm moved across northern China, coal smoke, soot, volatile organic compounds, and the industrial effluents of China's booming economy entrained into its mix, glomming onto particles of aerosolized land,

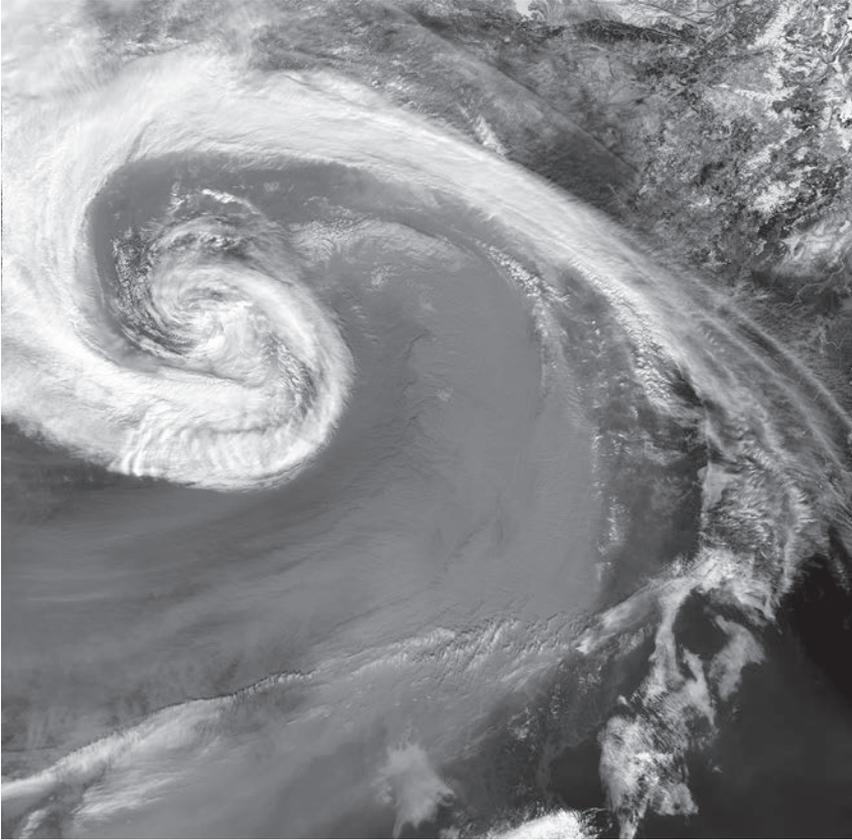


Figure 2. “A Perfect (Dust) Storm,” with high-resolution inset. April 7, 2001. Courtesy of NASA Earth Observatory.

altering the geochemistry of the storm. The storm quickly breached the dotted line of the Great Wall and, two days after forming in Inner Mongolia, it fell over Beijing as a bout of dust weather, one of that season’s eleven major and nearly consecutively spaced major dust events.⁴ On the threshold of a long-awaited “Chinese Century” (Pieke 2014), the storm, its noxious particulate density, was the country’s interior passing over itself in its surge toward the dust-battered capital: modern weather.

NASA reported on the storm event as it swept over Northern China two days after its initial formation in the interior of the Asian continent (fig. 2),

juxtaposing satellite photography with visceral testimonials from people swept into its path. At the surface, the density of the storm confused day and night. Ground-level eyewitnesses “reported that around 7 a.m. local time” in the Chinese Northeast, “the dust blocked enough sunlight to leave the skies as dark as midnight, and reduced visibility to roughly 20 meters.” They described their view into the dust as an occlusion of vision. Perspective, fixed inside the storm, is a mode of unseeing, an optics preempted in the eclipse of the air by the sky.

In the impossible freeze frame of extraterrestrial image, however, the storm blazes reflected light into space, revealing itself to the machine eye of NASA’s Earth Observing System, its gaze fixed on China from low earth orbit. From above, the muddle of confused time and stunted vision at surface level furrows into the sharp, crisp lines of an earthform stilled by the camera. Satellites photographed the storm as an airborne landscape, complete with its own shifting geomorphology, held still in the image as a relief map of airborne valleys and rippling dune formations.⁵ In its pedagogical interpretation of the image, NASA enjoins the reader to attune to the storm as both landscape and meteorology. The storm, it offers, “almost forms its own topography, with ridges of dust rising up below the clouds” (NASA Earth Observatory 2007).

Ridges of dust
 rising up below
 the clouds

The god’s eye squints to make sense of the disconcerting clarity of the picture. The China above doubles and obscures the one below, still visible at the storm’s fraying edges and through the intermittent skylights opening where dust thins. The desert below has phased, doubling itself into a desert above: land whipped into floating land, a weather event now creating its own weather.

The sky was full.⁶ There were mountains in it. Lofted into the atmospheric foreground, the storm is a continent in dust, rising and falling with the surge of the spring winds. Pictured in multiple simultaneous phases of a geo-meteorological process, *China* is both the territory and its uncanny meteorological double, and the shifts in terrestrial phase between them. This China rises and falls. Its earth is a plume, unfurling with the coming

of spring. The continent had become a constituent of “sky of our manufacture” (Taylor 2016), unfolding the brittle line between Nature and Culture into a vertiginous interface of socionatural entanglements.

Continent in Dust is a political anthropology of strange weather. It is an ethnography of what I call China’s meteorological contemporary—the transformed weather patterns whose formation and fallouts have accompanied decades of breakneck economic development.⁷ As the headiest days of rapid economic development settle into difficulty breathing, Reform and Opening, at various points along the course of storms, has also opened into questions of how to persist, adapt, and suffer through bad air. The book inquires into Reform and Opening as an array of political, social, conceptual, and technoscientific experiments. Each of these experiments grapples with the curious propensities of modern land and air to phase into one another, and in doing so, raises profound and practical questions for politics, bodies, and analysis. We approach each of these experiments as they offer ways of attending to the beginning of the twenty-first century, and the fourth decade of Reform and Opening, in China and downwind, as a condition of meteorological emergence.⁸ In dust, terrestriality and meteorology evince one another in a profusion of phases, an elemental choreography that unfurls possible Chinas.⁹

The weather had changed. In the thick of China’s geopolitical ascent, dust storms substantiated the capital’s air as a consequential suspension. As 2001’s season of dust storms was beginning to settle, Beijing exploded in wild speculation over the causes of and potential resolutions for this dangerous mineral weather. Planners openly fretted over the expanses of mobile desert sands lurking and lurching at the threshold of the capital. The possibility of the burial of the capital in mobile sand, by advancing dunes or particulate matter unloading from the sky, was openly discussed in official circles and state media. Weather events and aerosols in particular—a mounting crisis in particulate air pollution and catastrophic seasonal dust storms that was quickly becoming a signature of Chinese cities—appeared as shadow-histories of the present, a meteorological aspect of a time most often narrated through rapid development. In “the

first decade of the new millennium,” dust storms “evolved into one of the most widely and controversially debated environmental issues in the People’s Republic of China” (Stein 2015, 321).

This book traces out this explosion of dust into Chinese politics as a conundrum of how the political dynamics of Reform and Opening interact with aerosols: mixtures of particles and airs, earths and skies, that form, drift, and break along the course of the wind. In our inquiry, particulate dynamics appear as the fallout of explosive economic growth, and as a material condition that gives traction to unexpected configurations of relating, breathing, and governing in the twenty-first century. In each of its scenes, the official histories of development and national arrival are offset into the geophysics of the aerosol and meteorological phenomena that have apparently accompanied development. What shadow-histories of the future might be possible at the near miss of two material histories of China? How can we hold *both* Chinas in view—the satellite’s China in the sky and the one that it obscures below? As an ethnographer in China’s meteorological contemporary, I ask: what if the rise of China were to be approached literally, through the rise of China into the air?

The confluence of meteorological derangement and meteoric economic growth raises the question of Reform as a time of strange weather. Sudden infusions of particulate matter into the capital’s airspace in the early years of the twenty-first century anticipated explosive debates in China’s cities and social media over PM_{2.5} a decade later. Thick hazes of dust, soot, and exhaust cloud the muscular central messaging that Beijing had finally returned to prominence on the world scene, a proclamation rendered unstable in the changing colors of the sky. Beijing’s bid for the 2008 Olympics was submitted in the immediate aftermath of the worst dust storm season in China’s modern history (Jeux olympiques d’été 2010, 21–22). The sunny image of a Green Beijing Olympics was premised upon the notion that China’s ascendance could be evaluated by its ability to control the particulate matter in the city’s air for the benefit of foreign spectators and world-class athletes operating at below peak performance by virtue of breathing Chinese air. Against the spectacle of incoming drifts of mineral dust, the management of the air, its contents and its dynamics, would become a crucial proving ground for evaluating the capacities of the modern Chinese state.

By the turn of the twenty-first century, dust had become a durable feature of the northeast Asian springtime, reliably reported in weather reports across the region. For countries downwind, dust had quickly become a matter of incoming drifts of foreign land. A day after passing over northern China, major dust events leave Chinese airspace, but not before accruing atmospheric effluents into their suspension from industry, power plants, and other sources before passing over the Korean Peninsula and then Japan. Worries over thickening political and economic ties with a rising China sublimates into vocabularies that inflect geopolitical anxieties into words for bad weather: *hwangsa* in the Koreas, and *kosa* in Japan: “yellow dust,” for the telltale hue of a foreign desert (Kar and Takeuchi 2004). Under a strong enough wind, the finest particles of desert can remain suspended indefinitely, engrained into the geochemistry of the troposphere: a becoming-Chinese of planetary atmosphere.

We begin in the dusty middle of this weather system, tracking aerosols like dust and particulate matter as they signal collapse and also condition new political and environmental possibilities. We focus especially on the dust storms and particulate matter events that have transformed the texture of both political governance and everyday life. Our attention condenses, floats, and scatters along dust-transporting airstreams, lingering with people at various points in the trajectory of a storm, for whom “China” exists in the potent interphasings of land into the geophysical substrates of aerosol weather systems. Aerosol transitions, movements, and scales draw the ethnographer and his interlocutors into “a field of accidental social relations” (Rosaldo 2014, 108): dust, that is, is not only the object of a shared fascination, but the very medium through which relations between people and between institutions take shape. Scientists and engineers, officials and herders, breathers, artists, and anthropologists encounter one another through choreographies of dust.

In my fieldwork, dust was most often described to me through reference to the shapeshifting and relational materiality of the substance that aeolian physicists call *fengsha*, or *wind-sand*.¹⁰ For this reason, my inquiry into the worlds and planets that open with dust stays close to *wind-sand*, and its curious materiality of transitions, as a guide. *Wind-sand*, following R. A. Bagnold’s description of its closest English cognate “blown sand,” reveals the planet through phase shifts. *Wind-sand* is not reducible to its

component parts, as its properties cannot be derived from wind nor sand in isolation. It is instead “a new kind of flowing substance” born of their specific relating: sometimes a field of mobile dunes, sometimes lung-penetrating particulate suspension, sometimes hemispheric dust event. To trace *wind-sand* is to be captivated by questions of the many formats that their substantial relation can take (Bagnold [1941] 2005, 105). Staying close to *wind-sand* means that political analysis cannot be confined to the mechanical evaluation of the successes and failures of state programs aimed at fixing the planet against its change. Instead, fantasies of control open into other geometries of agency and inertia, just as the Tais and their anthropologist, in their attempt to contain their pile of sand, are formatted in its flow, their agency distributed into the whirl of substances.

Dusts emerge as multiple in the kaleidoscopic capacities of *wind-sand*. It is an entailment of its unfolding and processual materiality (Zee 2020e); just as the perturbation of a kaleidoscope-turn unsettles new patterns into being, we attend to the moments of apparent breakdown that dusts often signal as moments in which other configurations come into being.¹¹ And so, we approach desert, dust, and storm as possible phases of *wind-sand*: as multiple possible permutations of a single processual materiality. *Wind-sand*, for instance, is in play when herders resettled into villages describe the abrasion of dusts that scrape grass off a windy pasture or scrape exposed skin or hide. It is also what environmental engineers consider when they picture a dune in potential motion or painstakingly maintain infrastructures to hold drifts of dust below the thresholds of suspension. *Wind-sand* is a relational substance that clasps meteorological and geophysical conditions as part of the same complex process of transition. And it is also the rubric through which open-ended relations of air and earth can be apprehended as an array of possible arrangements, phases, and dispositions.

If, following Mary Douglas, dirt is matter out of place, *wind-sand* might be matter out of phase: “a cross-section in a process of change” (Douglas 2005, 39) that relates sand, dust, and storm as patterns of one another. Theorists of dust have attended to its elusive materiality. “Dust is not just ‘matter,’” in any stable way, but it is “something that troubles our notions of matter” (Parikka 2015, 88). Dust is what is shed (Marder 2016, 5), the unbearably light and dense physical manifestation of political formations that operate through ecological ruination, and so it can be read

as the trace of destruction. But *wind-sand* and its permutations of geo-meteorological substances unsettle the sense that any arrangement can be described with the finality of an ending. *Wind-sand* reveals, again and again, a planet made not in fixed forms but in the phase shifts between them.¹² Kicked into sky, China suspends, a meteorological stratigraphy in particulate matter.¹³

The book addresses the following questions:

First, it asks how the problem of materiality in ethnography can be brought to bear on questions of governance, politics, and the state. What I am after here is something more than the observation that materiality matters, or that materiality itself undermines given constellations of the political by exposing their anthropocentric limitations. This kind of argument tends to reproduce an agonistic and binary account of politics and environment, one that implicitly identifies environmental processes with resistance against power. I seek to cultivate an art of noticing that begins with noting the limitations of existing political imaginaries in order to attune to how they are reconfigured, entrained, and patterned into the meteorological dynamics that they seek to control. And so, my attention is trained on how political formations might shift into other configurations as they enter the choreography of the world in all its vibrant materiality (Bennett 2010). If *wind-sand* charts out a course of planetary emergence through its phase shifts, how might it also induce reconfigurations in the architectures of institutions, bodies, and relations of all kinds?¹⁴ As *wind-sand* unfolds into itself through a cascade of geo-atmospheric permutations, so too do the determinants of an anthropocentric politics reconfigure through more-than-human experiments.

A second question: how can the dynamism and open-endedness of weather systems in *wind-sand* stoke open-ended transformative modes of governance? Karen Barad writes, “The world is an open process of mattering through which matter itself acquires meaning and form through the realization of differential agential possibilities” (2007, 141). If we refuse to categorically contrast this open process of mattering with the rigidity of anthropocentric politics, we must attend to the political not in terms of

rigid logics, but in terms of experiments that grapple, in real time, with the planet as it changes. I return to the question of experiment as a way of contributing to an “anthropology of becoming,” grounding my understanding of the political in “the intricate problematics of how to live alongside, through, and despite the profoundly constraining effects of social, structural, and material forces, which are themselves plastic” (Biehl and Locke 2017, x). Experiment is a notion through which a history of modern Chinese politics can be traced. Through it, I insist on the open-endedness of political and environmental formations alike, becoming with one another in conditions of modern weather.

The experiments that concern this book depart from many of the functionalist assumptions of ossified liberal *and* socialist political traditions. Lisa Rofel, in her ethnographies of Reform and Opening, emphasizes “the nondeterministic content and direction of the reforms” that, in retrospect seem planned. Her account traces out scenes of contemporary life and power in China, eschewing the notion that it can be interpreted as the straightforward implementation of a rigid political logic or ideological orthodoxy. Instead, Rofel centers scenes of encounter, for an ethnography that “challenge[s] that ontology of pure categories” (Faier and Rofel 2014, 373). She offers a counterpoint especially the typological impulse that seeks to purify a coherent theoretical model of “Chinese rule” out of what can only be understood as an array of situated encounters and experiments. Departing from studies that pose “environmental challenges” in China only insofar as they facilitate the perfection or fragmentation of an already assumed mode of authoritarian rule (Mertha 2009), I propose that tracking late socialism as an experimental formation offers a view of Chinese environmental politics that does not simply follow out a fixed plan, as though already “fully laid out, based on normative principles” (Rofel 2007, 8).

This leads us to a third question. How might ethnography be reconfigured and extended to attend to questions of planetary and political emergence where they crosshatch with one another? The embroilment and co-constitution of political and meteorological formations makes evident, following Mei Zhan, a pressing “need to co-imagine a critical methodology oriented toward continuous unfolding and differential becoming” (Zhan 2019 187). With *wind-sand*, anthropology may come “unmoored

from its classical objects and referents” (Jobson 2020, 261). The modes of existence of both *wind-sand* and ethnography are configurational. Each requires expansive accounts of relation and becoming, and each demands an attunement to how our senses of what is and can be assembled into other shapes. In this welcome unmooring, anthropologists find space to sift and shift through the various traditions and affordances of ethnography itself, “identifying and expanding the scope for what remains on the threshold of possibility” (Pandian 2019, 4).

Implicit in these questions is the idea that power must not be understood as a one-way action onto environment, as if political formations were external to the geophysics of their Earths. The histories of Reform cannot be abstracted out of the geochemical content and density of the sky. Worlds cannot be excised from winds any more than the wind itself can be stopped. Dreams of geophysical stabilization crack open. Designs to reorient relations with environments are revealed again and again to be part of the complex dynamics through which environments emerge. The significance of these strategies and maneuvers thus exceeds any straightforward accounting of the “environmental impact” of China’s rise and its impacts for climate change, to be debated in international meetings, where countries are straitjacketed into the technocratic language of “emitters.” Rather, I demand attention to planetarity itself as a site of political experiment, opportunity, and contention.

As dust shifts from a problem to be resolved to a condition of planetary emergence that drives Chinese officials to pose new relations between the longevity of the Chinese state and the sustaining of the planet, the meaning of China as a planetary and political question is posed and posed again. Across experiments and weather systems, the question of China is continuously reassembled, appropriated, and retrofitted into the technopolitical dynamics of the earth system “in a moment when the latter has become a technical object” (Woods 2019, 9), and also a demand to imagine more robust and more livable figures of relation on a changing planet. We thus explore, in what follows, the strategic and experimental procedures that seize and remake regional, global, and planetary scales—especially those that figure Asia as a laboratory of possible planets. These make earthly connections through dust and its choreography across earthly and atmospheric phases. None of them default to the planet or the environment as synonyms for “everywhere.”

With this in mind, we explore the weather systems of late socialism through the topologies of power (Collier 2009) that take shape through it, warping the wind and the state into each other's shape.¹⁵ The disorientations of *wind-sand* guide us through the reimagination of the political as it decomposes and repatterns in the flux of bad weather. They allow us to understand both political experiment and planetary emergence as questions of phase shift. And they require an ethnography that takes part in this "continual unfolding and differential becoming" (Zhan 2019, 187). Environmental change, political experimentation, and the ethnography that transforms with them are thus each part of the recombinatory physics that we have called weather.

MODERN WEATHER

The year 2000 was, according to the Chinese Meteorological Agency, the most severe documented dust storm season in the half decade since the founding of the People's Republic of China in 1949.¹⁶ Its nine major dust events set records in both the frequency and intensity of dust storms pummeling Beijing. This record was only to be surpassed the next year, in 2001, with its eleven storms. In 2000, in the face of a gathering political storm in the dust-shocked capital, then premier of the Chinese Communist Party Zhu Rongji left Beijing with a coterie of more than 350 party officials. Zhu and his entourage traced the paths of dust storms, beginning in Beijing and running aground in their purported sites of origin, following the wind in reverse as a movable segment of the state.

Their journey traced an airstream backward out of Beijing into the Chinese interior, a route revealed by the meteorological mapping technique of back trajectory modeling (see Chen et al. 2017), which reconstructs weather systems backward in time and space from a designated point. In doing so, they cross-hatched administrative and meteorological geographies. Center and periphery and upwind and downwind relations tangled in the movement of the premier. Distinct cartographies took on each other's shape as the junket charted a weather map of environmental insecurity rumbling through spaces of uneven state power.

In train with the premier, high government officials parsed the territory for its aerodynamic qualities. They posed far-flung landscapes as

chokepoints in an unruly modern weather system, its variegated geography of upwinded dangers still coming into view. The universe of possible government interventions patterned out with the fraught meteorological prospects that they pictured across the national territory. The junket moved to Hebei province, just past Beijing's administrative boundary, where mobile sands blew against farmhouse walls, making ramps for goats onto roofs. They streamed against the wind to Gansu Province, where, in his early career as Party geologist, Premier Zhu had warned against desertification.¹⁷

The caravan paused at the Alxa Plateau of western Inner Mongolia, hundreds of miles and two days by dustflight from Beijing. At the desert's edge, he invariably characterized mobile sand and new deserts as a crisis of earth surging toward the capital. The media event that crystallized around the premier's airstream tour anticipated, in a tableau of sandy shapes, the coming burial of a Beijing preparing feverishly for its debut into the rarefied echelon of world cities. The relation between upwind land and downwind weather was, in Zhu's warnings about *wind-sand*, coming to formal coherence as a condition for a becoming-meteorological of state power: dust storms were literally land, and land, he warned, was on the move.¹⁸

The assurance that that "land stays in place"—among the "core elements to land's material quality" (Li 2014, 591; see J. Klein 2019)—was frustrated by its insistent entanglement with the wind. For Zhu, land was quickly becoming a question of volumes, speeds, and flows. It proceeded in the devouring advance of sand, mobilized toward the capital by spring winds. Land was *both* political territory and also a theater of earthly interphasings. One could not say *sand* without hearing *wind*. And in this, China's land, in *wind-sand*, became a threat to a capital whose long history has been marked by anxiety over invading forces.¹⁹ It lofted on the jet winds that would, with each spring, redistribute the country's sandy interior as stifling weather in the very centers of state power.

The Alxa Plateau, an out-of-the-way place (Tsing 1993),²⁰ had become evident from downwind as an official "cradle of dust storms" in Beijing's dust-shed. Its land degradation—a regional economic and ecological crisis in the heavily pastoral region—was insinuated into the "north-western route" of dust emissions and transport, traced backwards from