

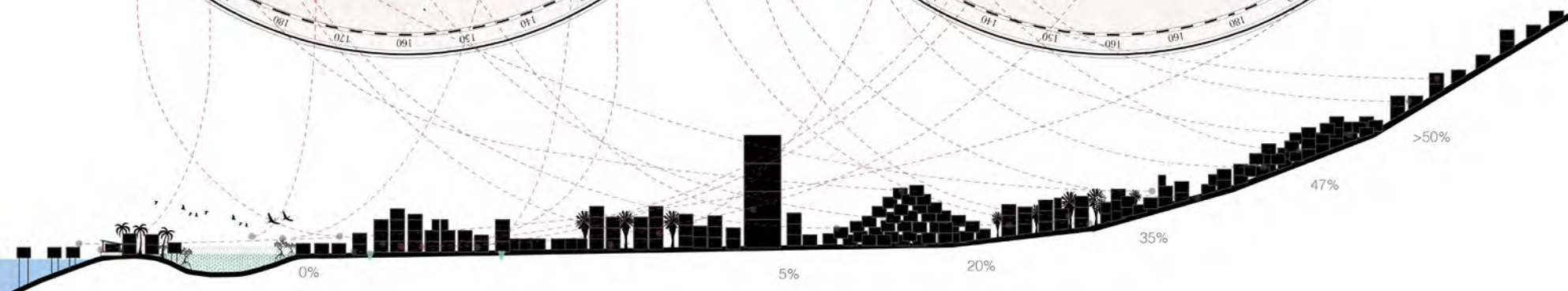
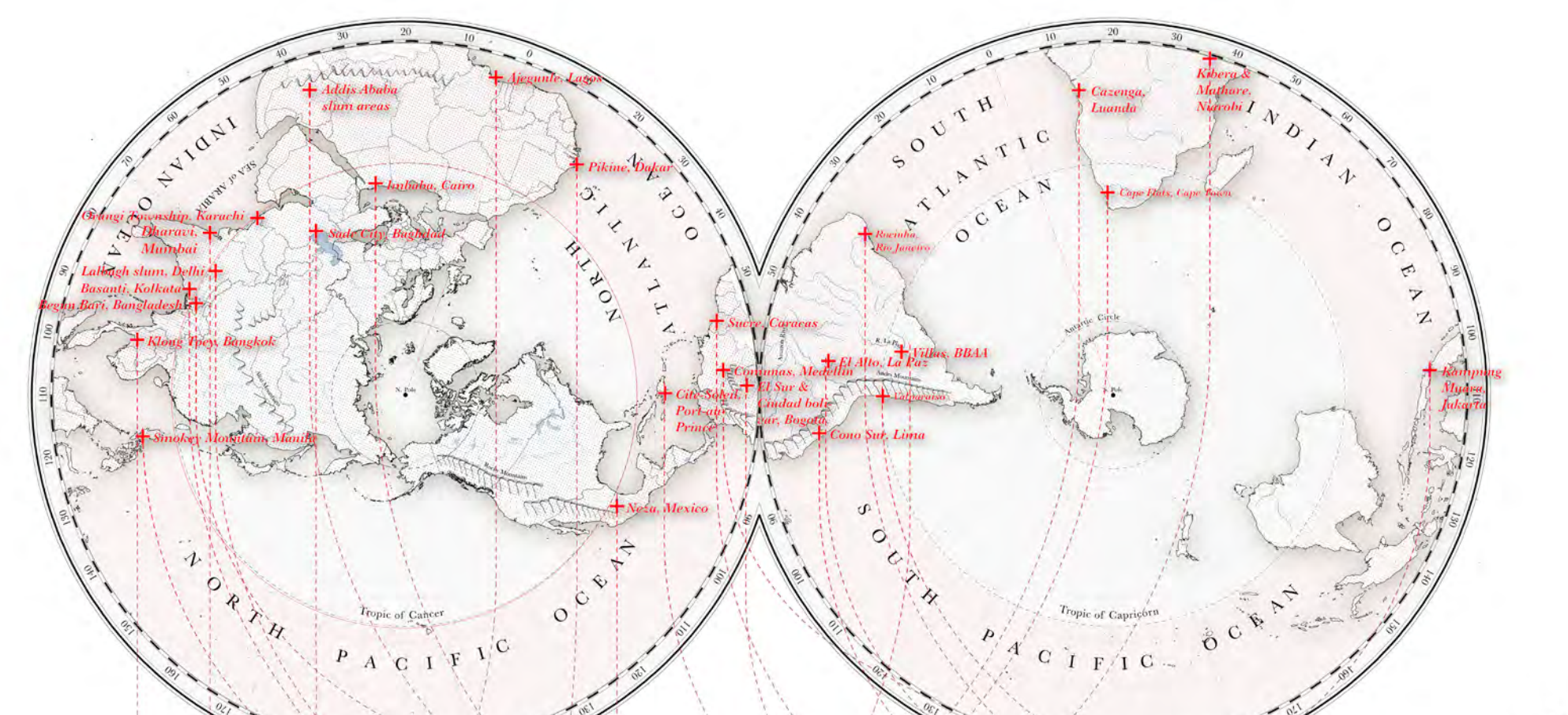
WEAK GROUNDS

People who live in informal settlements have had to learn how to cohabitate with their environmental vulnerabilities, such as swamps, floodplains, and riversides, which are all wet grounds susceptible to groundwater flooding; rubbish mountains, which are waste grounds vulnerable to subsidence; and, unstable hillsides and steep slopes, categorized as steep grounds susceptible to landslides.

This research seeks to theorize, document, and highlight alternative elements of adaptation made by local residents by inhabiting weak grounds, categorized as wet, waste, and steep grounds. I review one case study for each ground type and analyze it through archival, studio, and field works. I chose the most representatives and oldest self-built settlements that have endured environmental hazards and learned from failures. Regarding wet grounds, I visited Dharavi in Mumbai, India; regarding waste grounds, I worked with the Kibera community in Nairobi, Kenya; and regarding steep grounds, I researched about Comuna 03 in Medellin, Colombia.

This research project calls attention to new narratives in the understanding of self-built settlements in the intersection among tectonic substructures, vulnerabilities of those grounds, and the adaptation responses of people in their built environments. The knowledge produced by communities strikethrough the term weak and highlights unseen resourceful strategies and ecological flux systems that enable people to inhabit those environments.

Tectonic composition Self-built settlements Vulnerabilities



Groundwater flooding Subsidence Landslides



- Wet grounds**
 - Riverbanks
 - Swamps
 - Coastal areas
 - Waterfronts
- Waste grounds**
 - Rubbish mountains
 - Landfill areas
 - Chemical dumps
- Steep grounds**
 - Steep hills
 - Volcano slopes

- Dharavi (Mumbai)**
 - Marikina Settlement (Manila)
 - Klong (Bangkok)
- Kibera (Nairobi)**
 - Kampung Muara (Jakarta)
 - Smokey Mountain (Manila)
- Comuna 08 (Medellin)**
 - Campamentos (Valparaiso)
 - Ate (Lima)

Elements of adaptation of self-built communities

Dharavi Rajiv Gandhi Nagar

Studio Work
Wet ground - Dharavi

What is groundwater flooding?

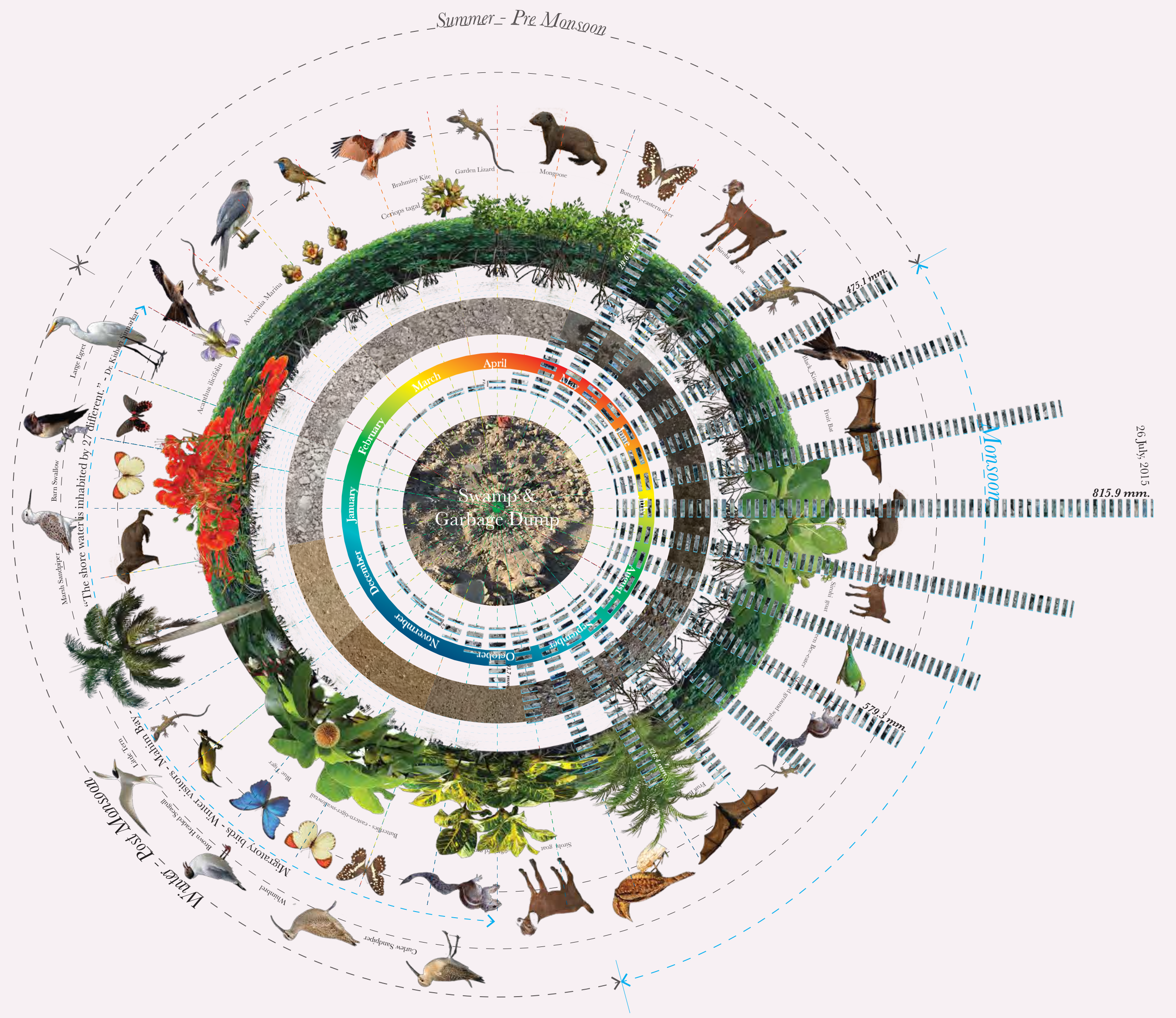
Groundwater flooding is defined as the emergence of groundwater at surface level away from perennial river channels or the rising of groundwater into man-made or natural grounds. Moreover, it occurs when the natural underground drainage system cannot drain rainfall away quickly enough, and the water table rises up from rocks or soils to above (the) ground level, causing flooding to occur at the surface.

When does it occur?

This tends to occur during and after season-long periods of high rainfall, and in the case of Dharavi, during the monsoon season. The rainfall infiltrates the ground, causing the water table to rise above normal levels. Additionally, the rainfall increases the water level of ponds and rivers next to some settlements, and the water presses the unsaturated grounds and increases the groundwater level.

How can you protect your habitat against groundwater flooding?

Groundwater flooding takes more time to dissipate, and it breaks and weakens tiles and solid surfaces. People who have struggled with these vulnerabilities for many years have developed physical strategies to cope with this phenomenon. These resourceful and low-tech adaptive solutions can teach everyone how to inhabit these wet grounds—from the composition of a foundation to a roof.



Elements of architecture adaptation

Field Work
Wet ground - Dharavi

