

Unconventional_Structures: Toroidal Plume

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The ever-shifting surface of the earth creates a plethora of effects on territories, climate, and territorial ecosystems. Of these effects, no hemispheric region appears as catastrophically consistent in terms of natural disasters, than that of the Asia-Pacific.

Geographically speaking, the country of Indonesia happens to receive the blunt of Earth's natural forces, given that it resides in the belt of shifting tectonic plates known as the Ring of Fire, whose proximal circumstances make it highly susceptible to seismic and volcanic activity.

To fully understand the risk of these circumstances, and their scope in terms of the ecologies they affect, analysis was enacted through critical cartography.

Part of this effort involved instructing local people on how to map their region using Open Source Data, as a means of progressive local agency. This locally-revised data served as a mechanism to understand how people react to natural disasters; how they travel, urbanize, operate, and evacuate.

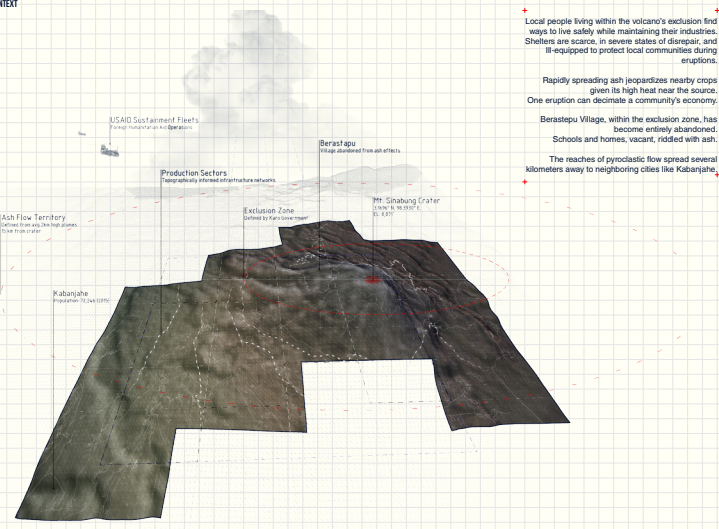
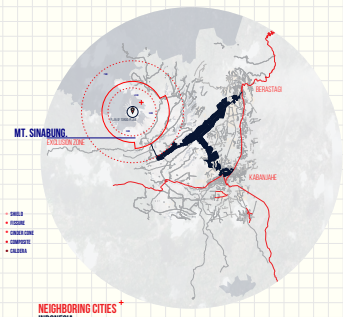
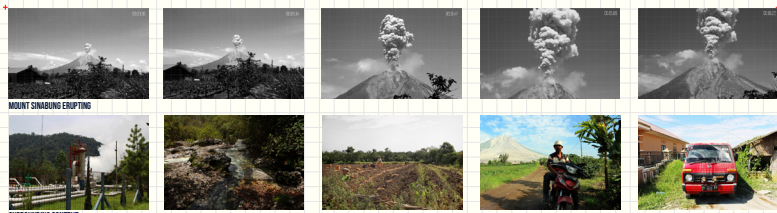
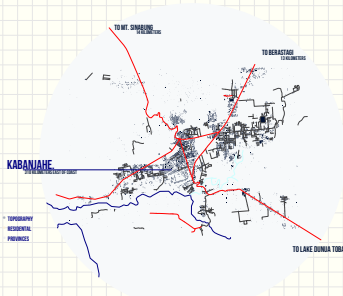
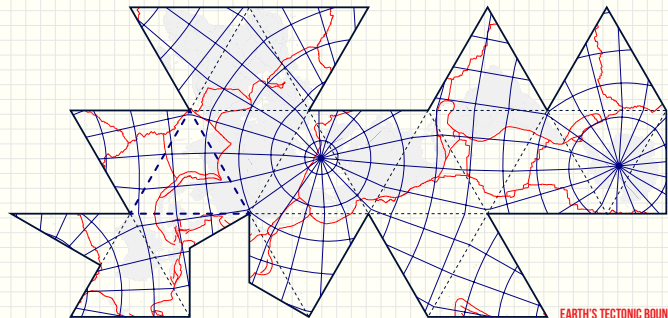
The area of study consisted of Mount Sinabung, a recently active stratovolcano, and its neighboring territories in North Sumatra, Indonesia. Through exploration and analysis based on the volcano's risk and effects, we sought to resolve the most ailing issue this region is succumb to. Ash.

Airborne ash proved to be the largest concern in regards to the volcano, causing respiratory damages, infections, and death to the people living there. Volcanic ash has proven beneficial for the surrounding agriculture, in the soil, and can also be utilized as a binding agent in concrete production.

This project investigated an intervention in the landscape as a pre-emptive measure, an unconventional structure integrated as an ephemeral buffer for pyroclastic flow. The collecting ability of the structure allows for maximum extraction of a latent resource. This project speculates the mediums of resource sequestration and protection from a natural catastrophic threat as a possible infrastructural industry.

ARCHITECTURE IN AN EXPANDED FIELD, FROM INTERIORS TO LANDSCAPES

UNCONVENTIONAL STRUCTURES: TOROIDAL PLUME

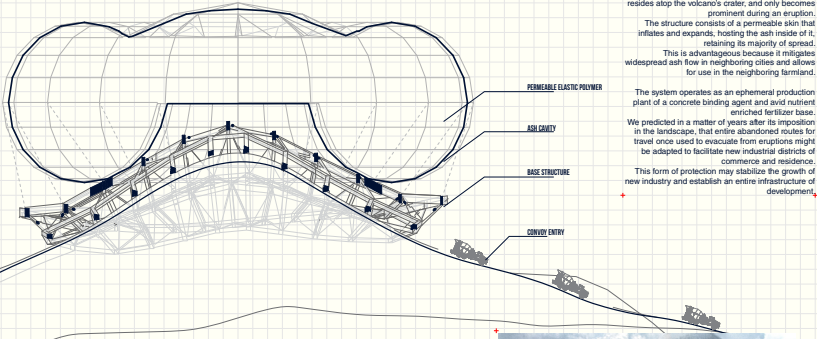
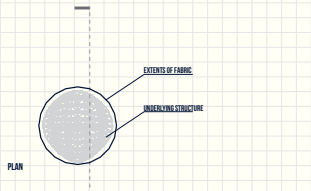


Local people living within the volcano's exclusion find ways to live safely while maintaining their industries. Shelters are scarce, in severe states of disrepair, and ill-equipped to protect local communities during eruptions.

Rapidly spreading ash jeopardizes nearby crops given its high heat near the source. One eruption can decimate a community's economy.

Berastegu Village, within the exclusion zone, has become entirely abandoned. Schools and homes, vacant, ridged with ash.

The reaches of pyroclastic flow spread several kilometers away to neighboring cities like Kabanjahe.



The resultant was that of a pneumatic system that resides atop the volcano's crater, and only becomes prominent during an eruption.

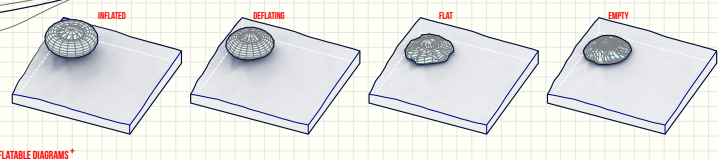
The structure consists of a permeable skin that inflates and expands, hosting the ash inside of it, retaining its majority of spread.

This is advantageous because it mitigates widespread ash flow in neighboring cities and allows for use in the neighboring farmland.

The system operates as an ephemeral production plant of a concrete binding agent and avid nutrient enriched fertilizer base.

We predicted in a matter of years after its imposition in the landscape, that entire abandoned routes for travel once used to evacuate from eruptions might be adapted to facilitate new industrial districts of commerce and residence.

This form of protection may stabilize the growth of new industry and establish an entire infrastructure of development.



INFLATABLE DIAGRAMS
TOROIDAL PLUME

