

DUST KINGDOM

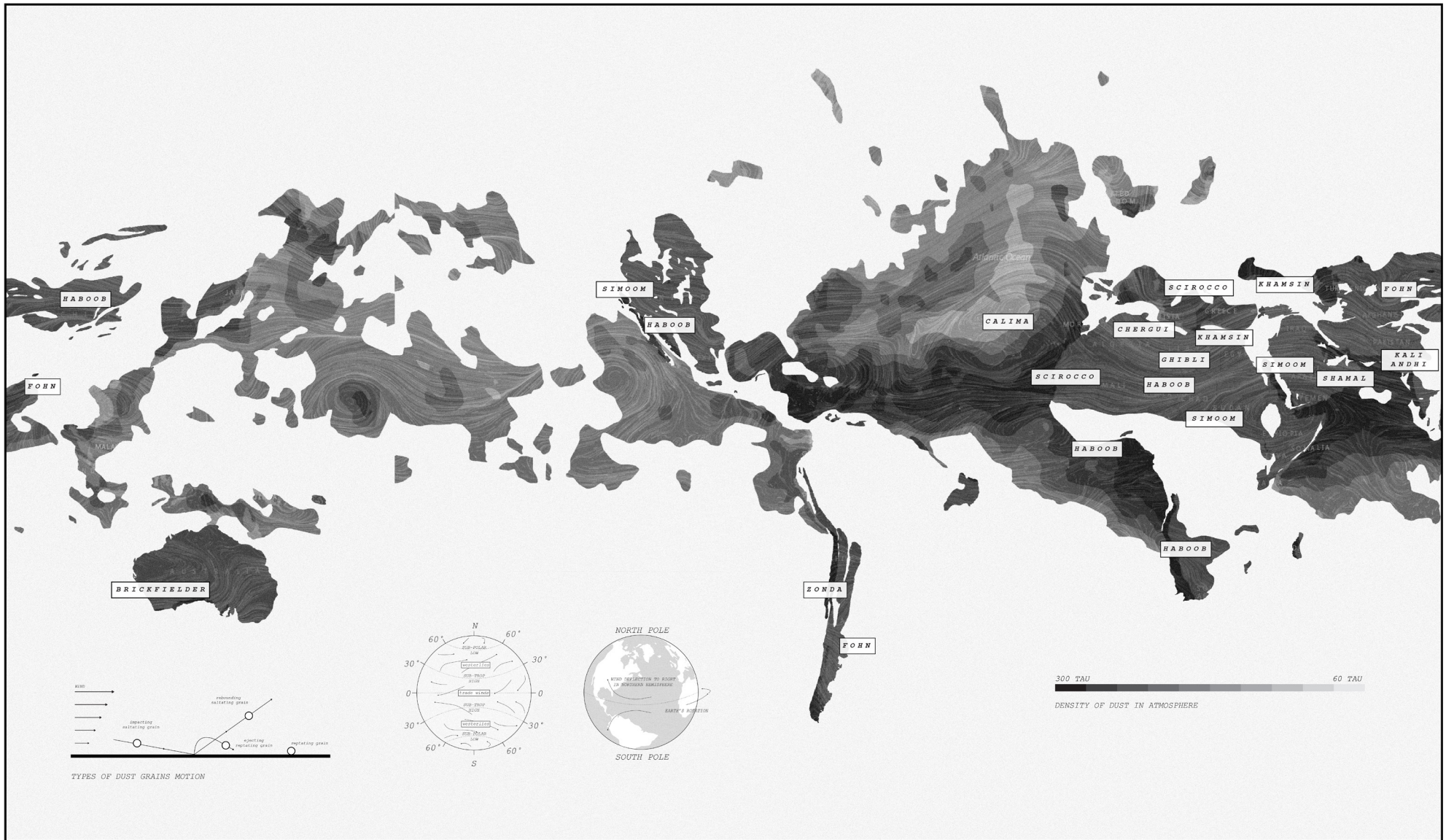
Landscape Architecture in the Sonoran Desert

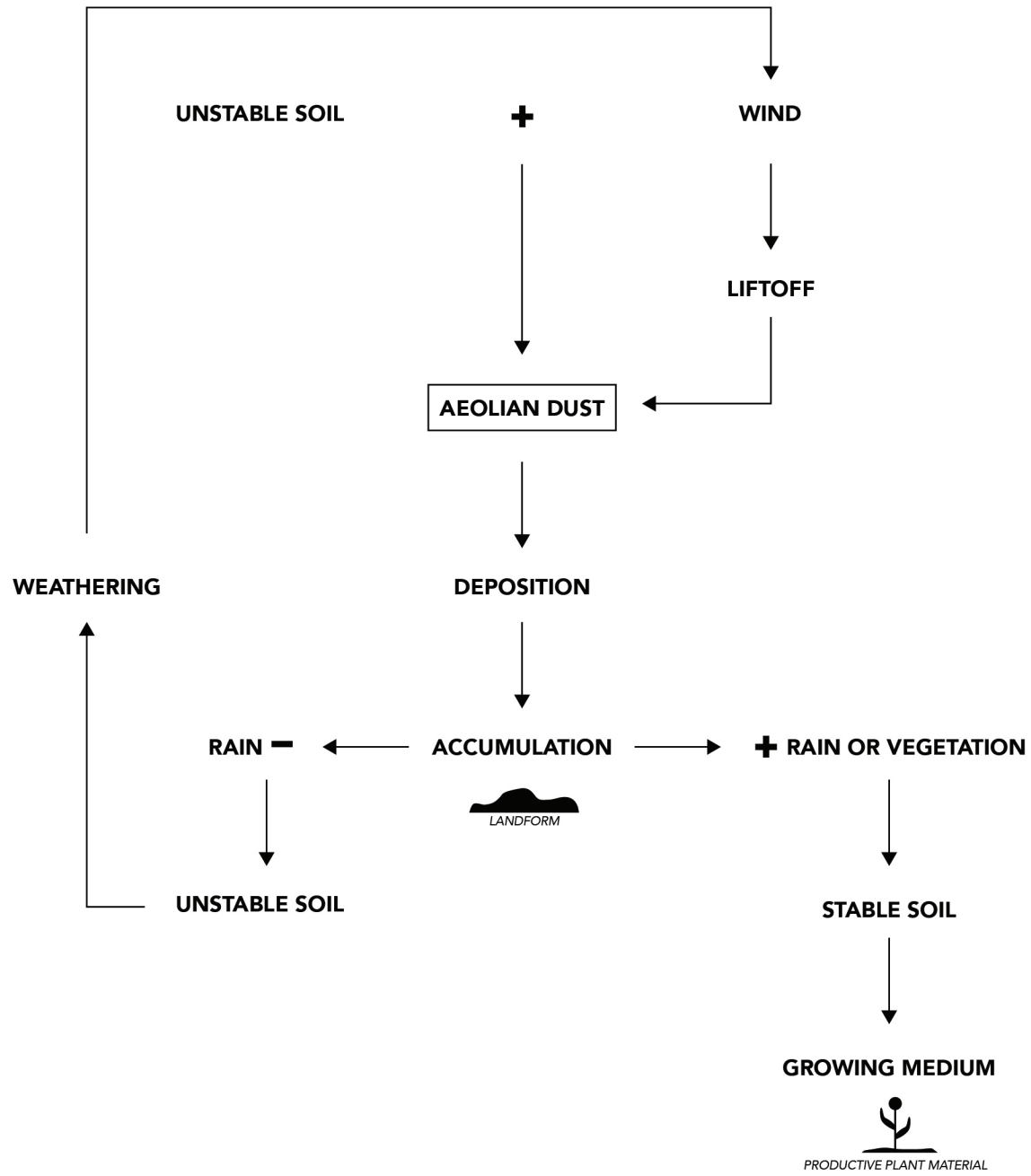
*Danika Cooper
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Master of Landscape Architecture & Master in Design Studies, candidate 2015*

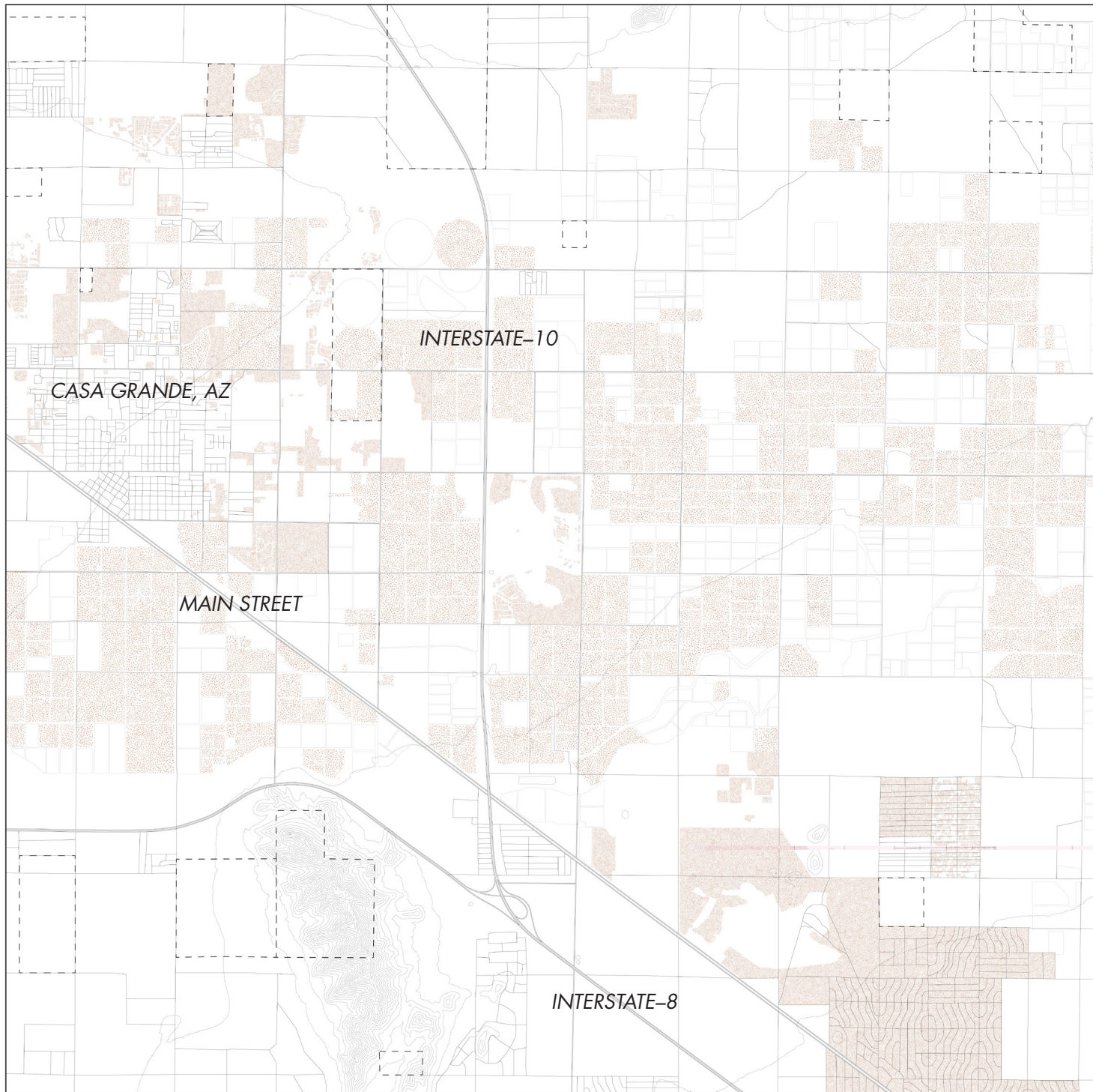
*WHY SHOULD LANDSCAPE ARCHITECTURE BE
PART OF THE DUST CONVERSATION?*

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The field of landscape architecture promotes methods to incorporate experiential and aesthetic qualities into already-existing dust mitigation and awareness strategies.





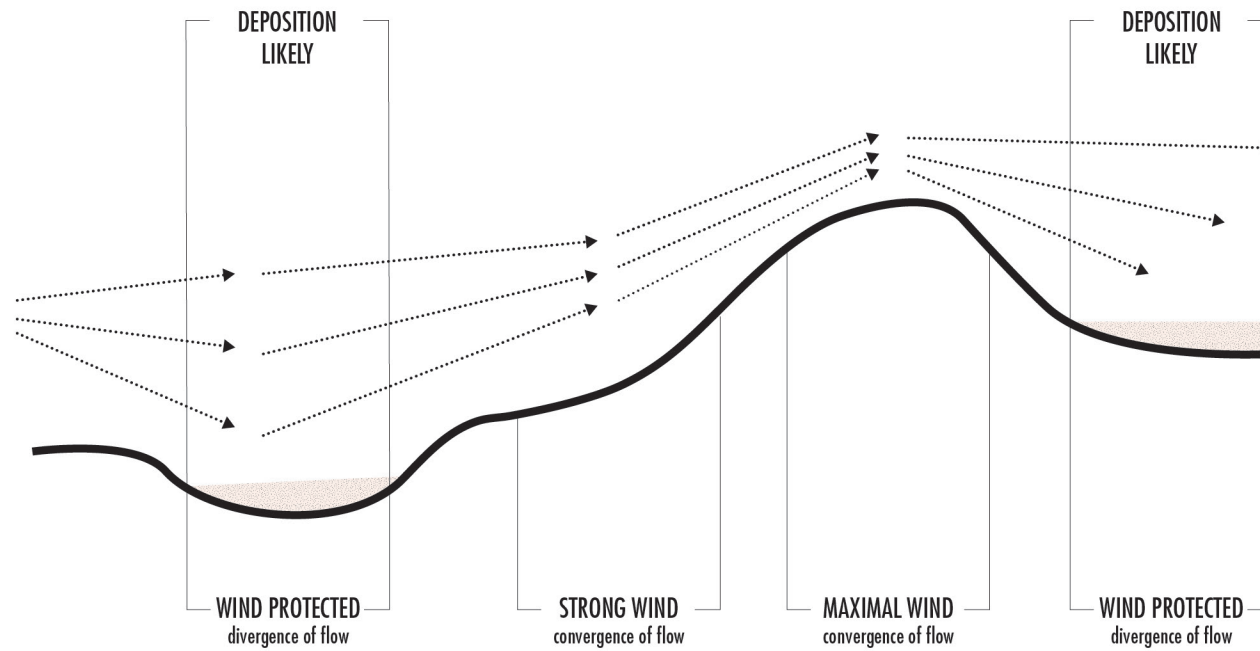


DESIGN INTERVENTION

A. encourage dust deposition

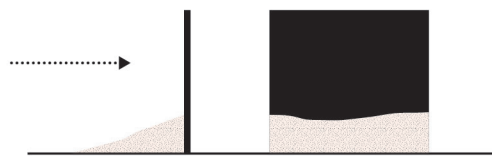
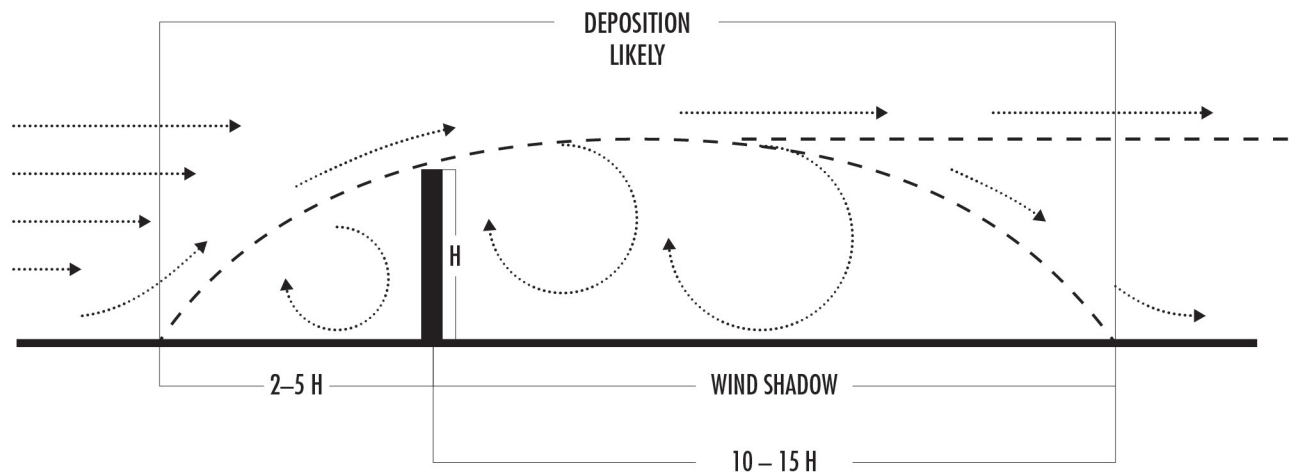
B. stabilize the ground

encourage deposition:
CHANGE TOPOGRAPHY



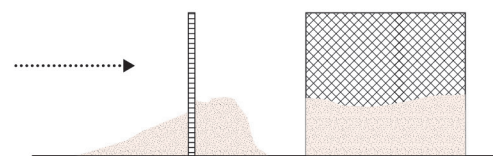
ACCUMULATION of FINE PARTICLES in LEE of OBSTACLE
WHERE VELOCITY is REDUCED

encourage deposition:
BUILD AN OBSTACLE



SOLID FENCE

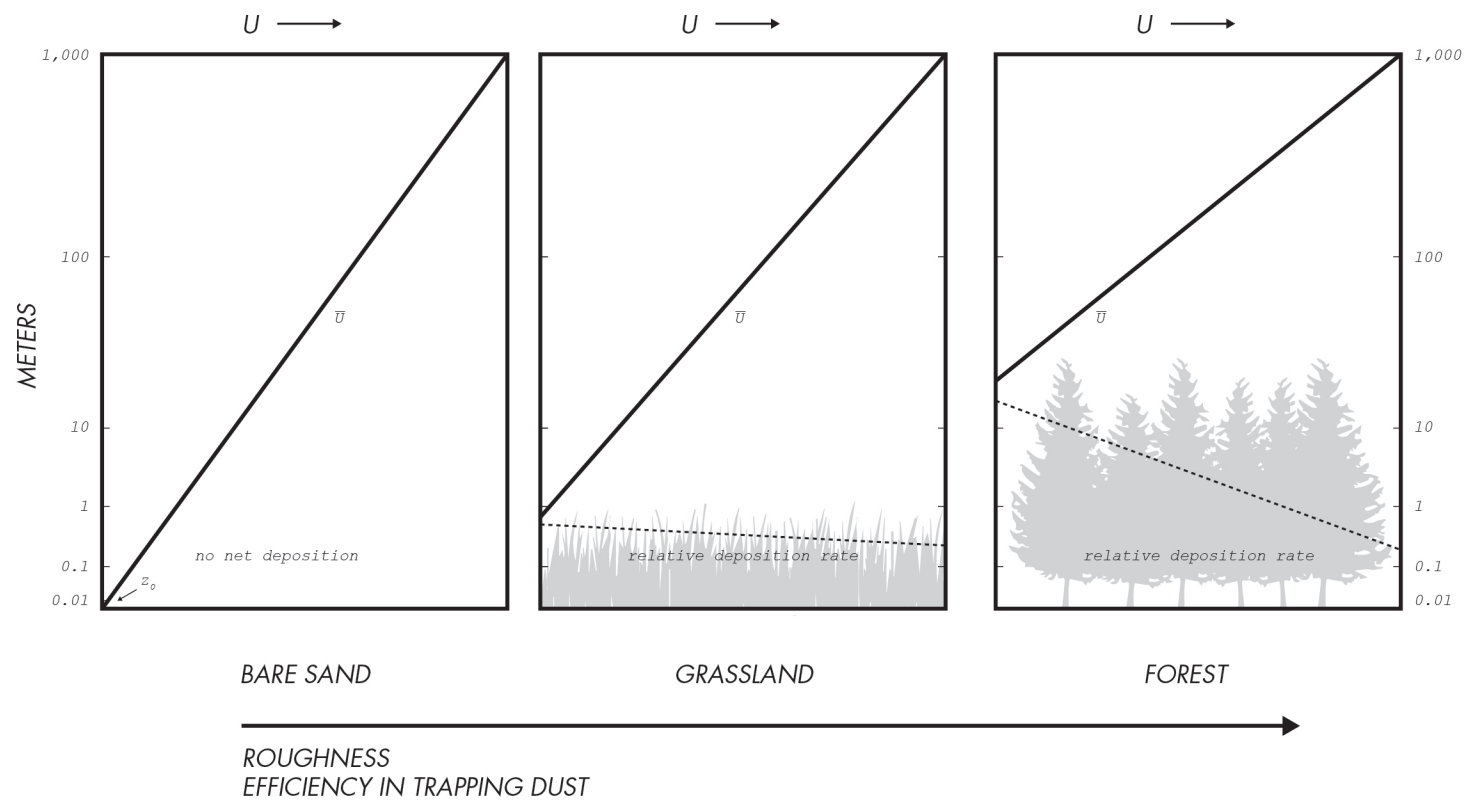
accumulation of material
only on upwind side



POROUS FENCE

accumulation of material
on both sides; more on downwind side

encourage deposition:
CHANGE THE "ROUGHNESS"



stabilize ground:

PERENNIAL PSAMMOPHILES

germinated in response to rainfall > 10mm
reach greater soil depths than other plants

ASTRAGALUS MAGDALENAE VAR. PEIRSONII

Peirson's milkvetch

- + dicot, perennial herb
- + native to Arizona, California, Baja Mexico
- + bloom: December – April (purple)
- + grows at 40 – 250 m elevations



HELIANTHUS NIVEUS SSP. TEPHRODES

Algodones dune sunflower

- + dicot, perennial herb
- + native to Arizona, California, Sonora Mexico
- + bloom: September – May (yellow)
- + grows at 50 – 300 m elevations



PALAFIXIA ARIDA VAR. GIGANTAE

giant Spanish needle

- + dicot, annual / perennial herb
- + native to Arizona, California
- + bloom: February – May (purple, white)
- + grows at 40 – 140 m elevations



“Seedling Emergence on Sonoran Desert dunes”

Janice E. Bowers

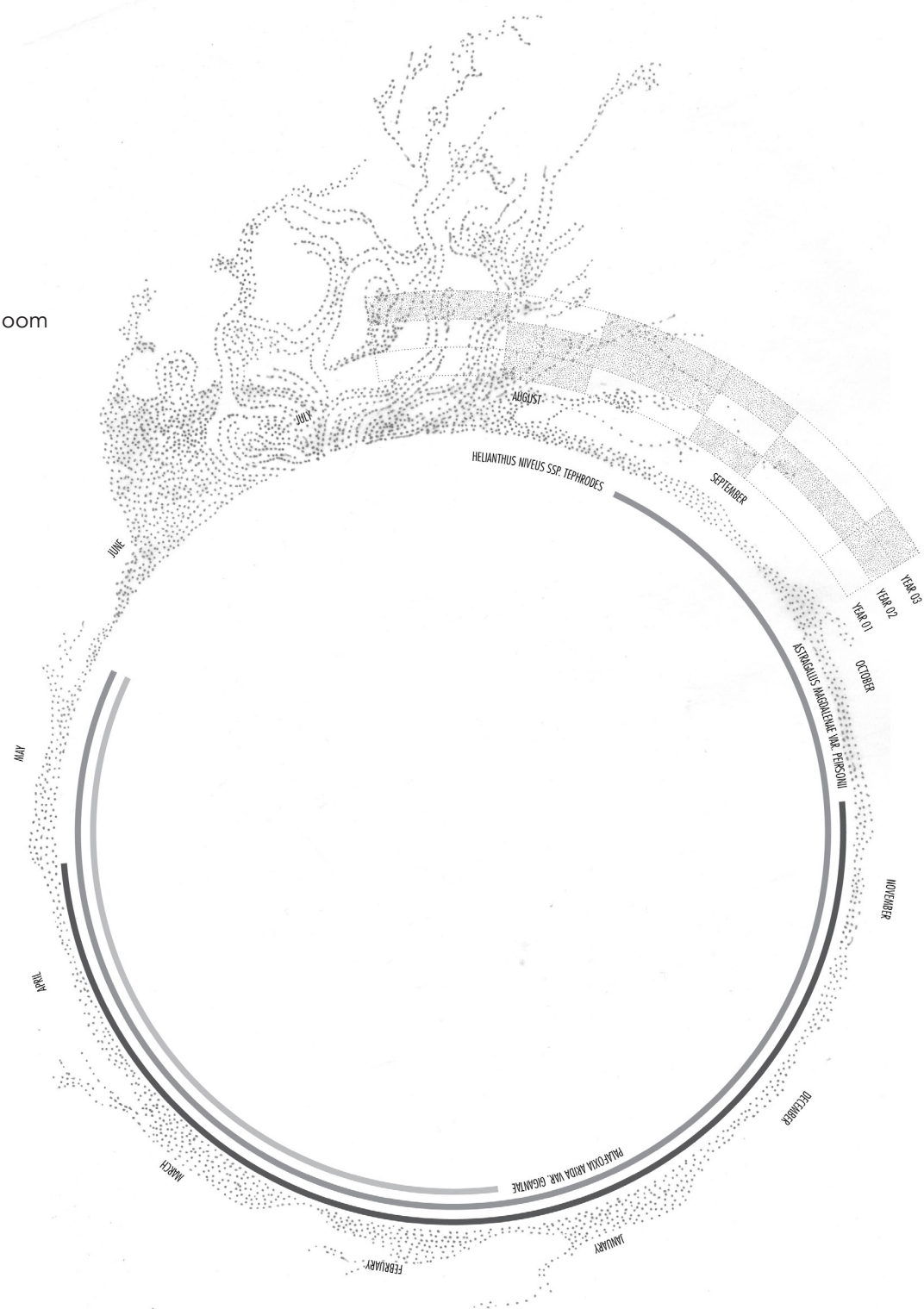
Journal of Arid Environments

Vol 33; Issue 1 (May 1996) 63-72

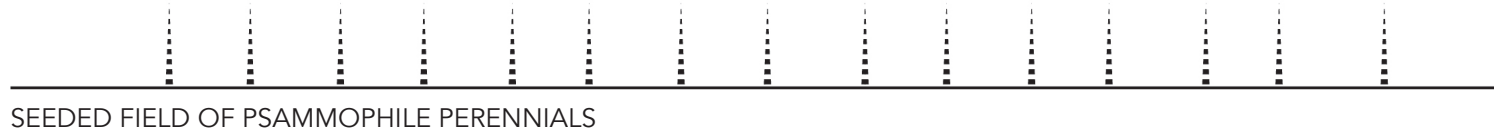
seasonal / yearly rotations

June – August : peak dust storm
September – May : Algodones dune sunflower bloom
December – April: Peirson's milkvetch bloom
February – May : Giant Spanish needle bloom

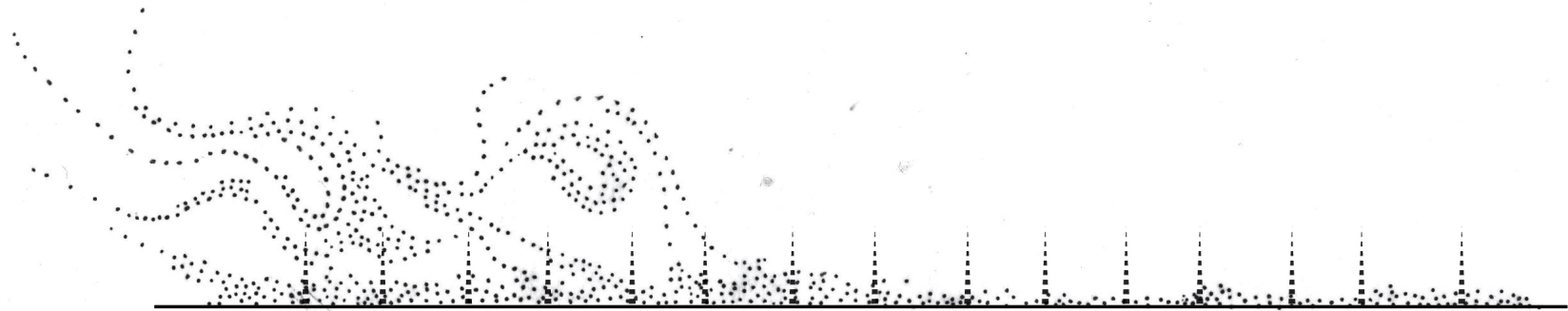
** Dust source : Cleared lands + croplands
seasonal & yearly rotations



staged design intervention
synced with rotations

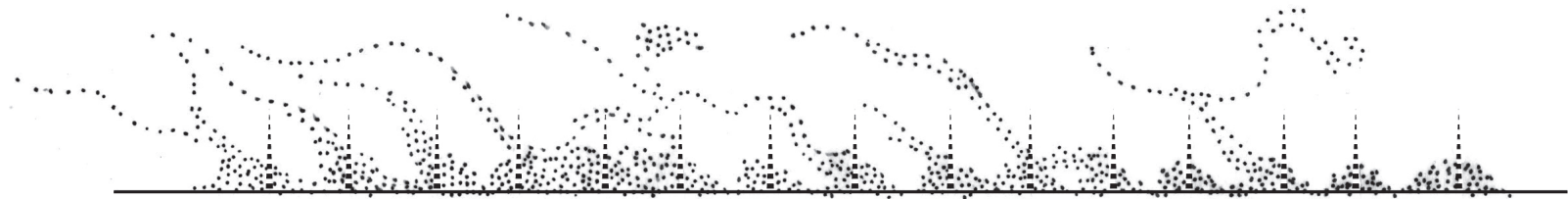


staged design intervention
synced with rotations



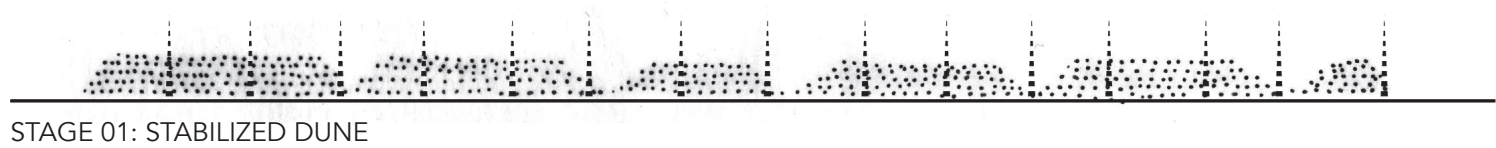
DUST SINK

staged design intervention
synced with rotations



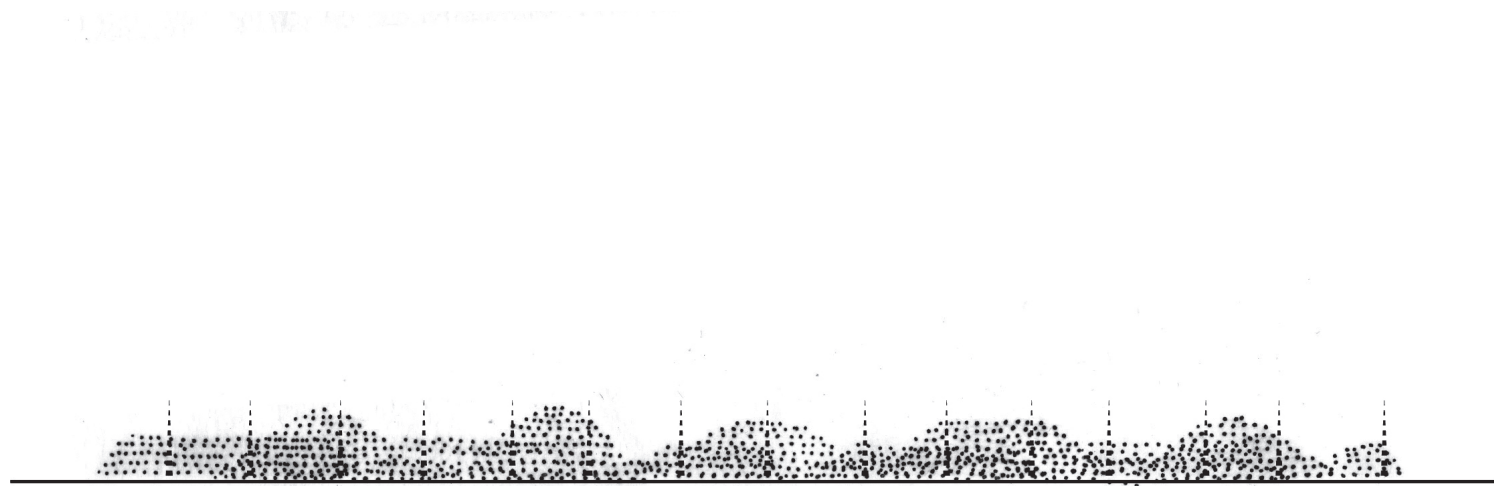
SEEDED FIELD ACCUMULATES DEPOSITION

staged design intervention
synced with rotations



STAGE 01: STABILIZED DUNE

staged design intervention
synced with rotations



STAGE 02: STABILIZED DUNE, INCREASED SIZE / QUANTITY

STABILIZED DUNE SYSTEMS:

A. create a new topographic identity for the region and thus, slows the wind and decreases the strength of the storm (MITIGATION)

B. register the phenomenon of dust storms in the Sonoran Desert and thus, a new experience moving through the region (AESTHETIC)

C. become a didactic tool, bringing awareness to the dust storm and the movement of material through the region