



IMPERIAL BEACH
California



**COASTAL FLOODING AND SEA LEVEL RISE
IN IMPERIAL BEACH**





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Tijuana River Valley Sewage Spills



Unknown substance entered into Goat Canyon May 5-6, 2017



CBP has video of this flow coming through from Mexico.



U.S. Customs and
Border Protection



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JANUARY 1983 El Niño





SEA LEVEL RISE IMPACT ANALYSIS

- Land Use
- Roads
- Public Transportation
- Wastewater
- Stormwater
- Schools and Parks
- Hazardous Materials



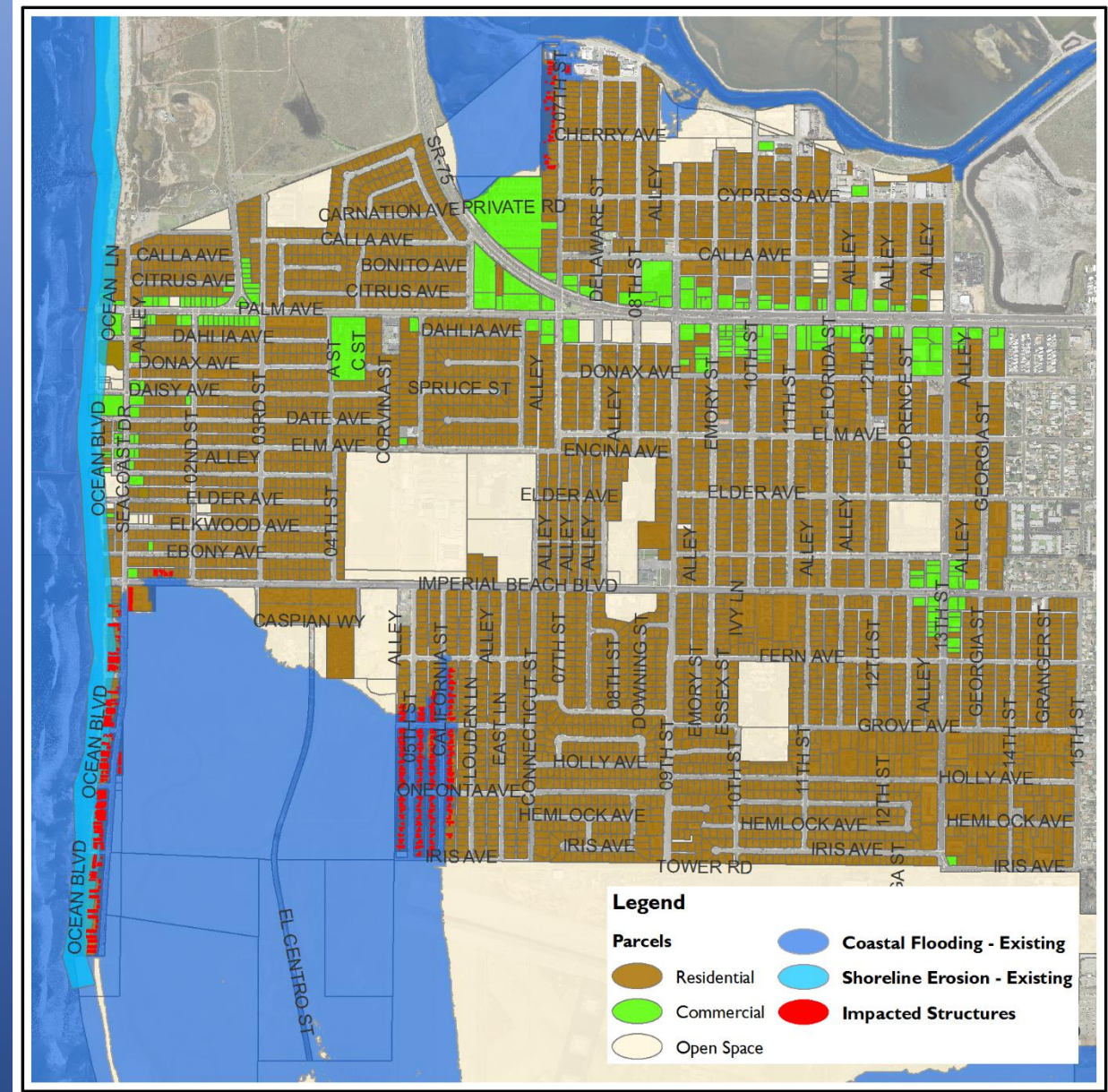
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LAND USE EXISTING CONDITIONS

- Number of parcels in existing Hazard Zones vs total
 - Total = 5955
 - Nuisance = 77 (74 residential, 3 public (school))
 - Coastal Flooding = 1082
 - Coastal Erosion = 383



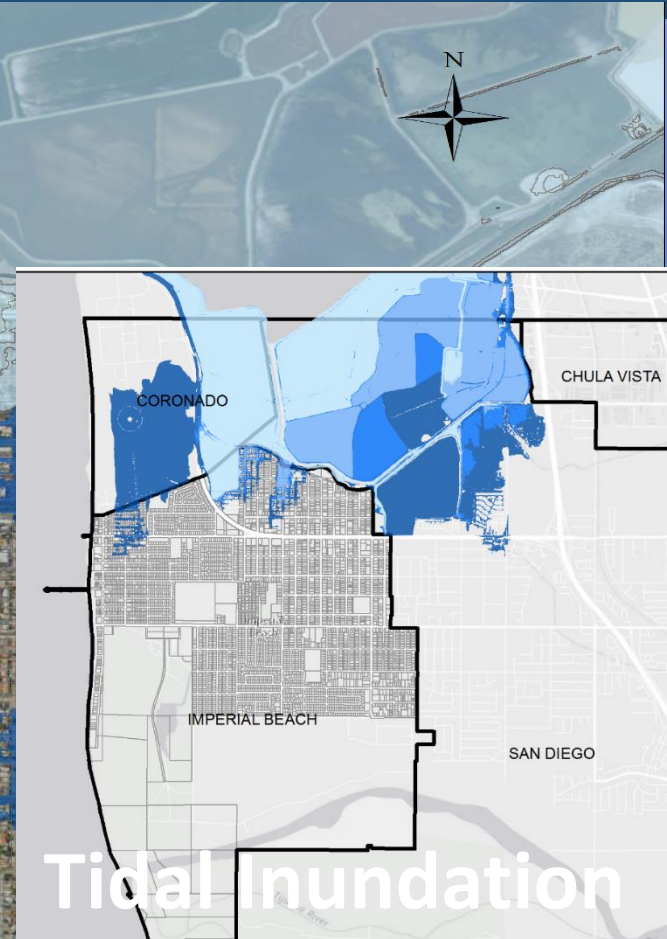
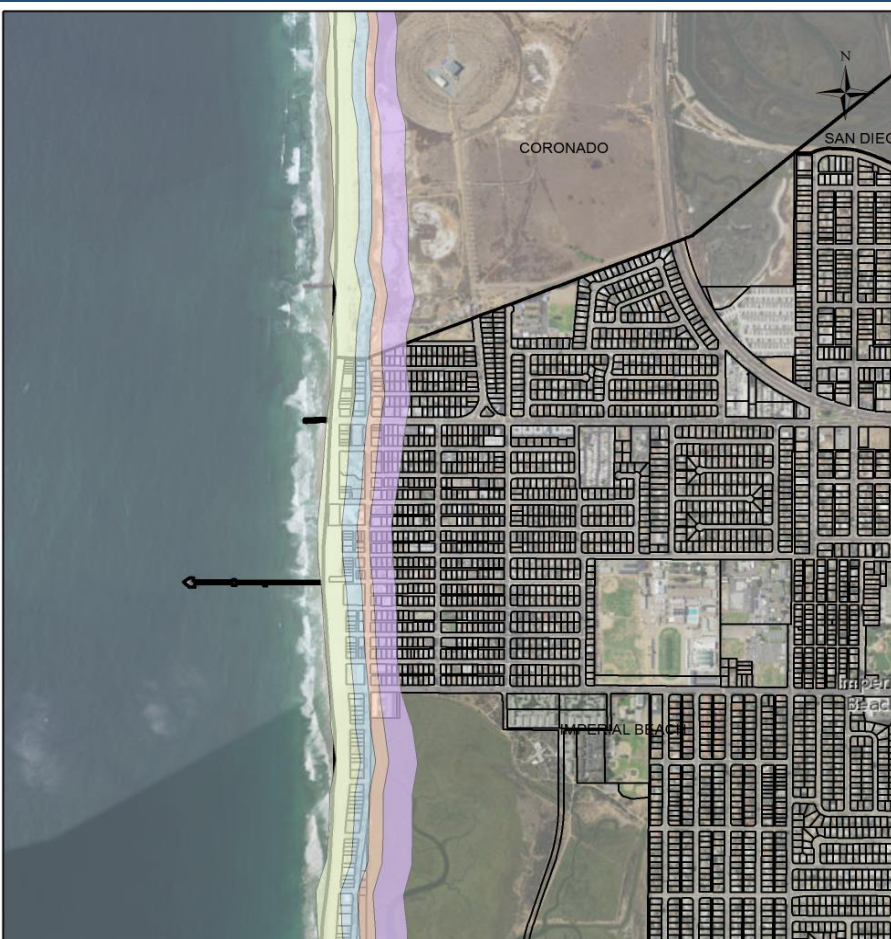
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COASTAL EROSION



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All Modeling assumes no adaptation

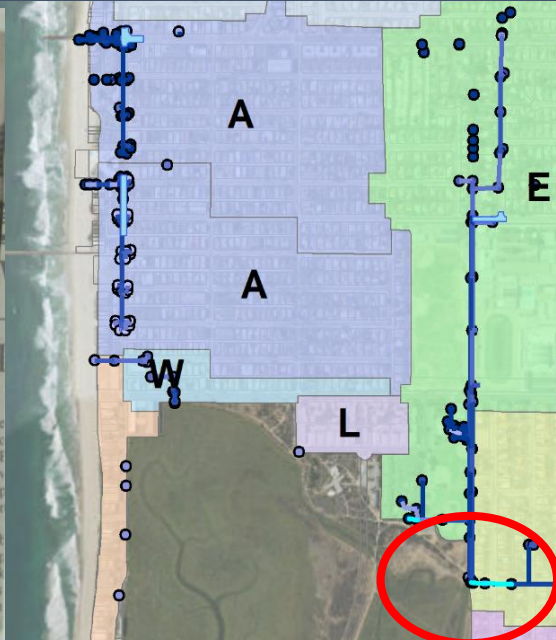
0 0.0750.15 0.3 Miles

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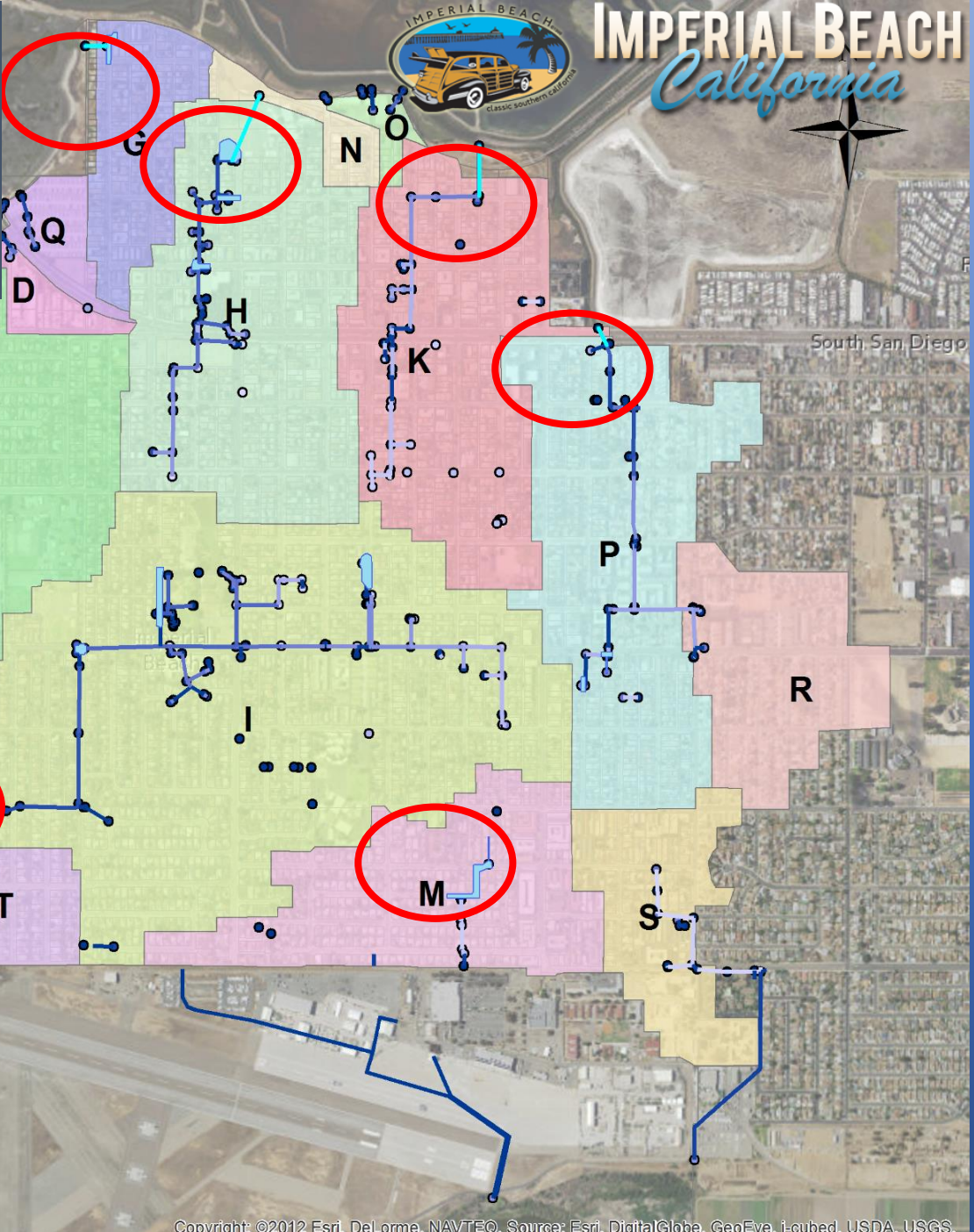
Modeling done separately by USGS and DoD SPAWAR

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FUTURE NUISANCE FLOODING



Drainage Basin	Elevation top of Pipe - (ft NAVD)	Baseline	0.5m	1m	2m
I	4.3	18%	49%	81%	100%
G	4.7	12%	40%	75%	100%
I	4.8	11%	38%	74%	100%
I	5.1	8%	32%	69%	99%
H	6	2%	16%	49%	96%
I	6.5	1%	10%	38%	93%
K	6.6	0%	9%	36%	92%
K - P	9	0%	0%	3%	56%
E	12.1	0%	0%	0%	5%



KEY FINDINGS

- **Storm water – substantial decrease in stormwater capacity**
- **Land Use – parcels and buildings 30%**
- **Roads – 40% of all roads impacted**
- **Most vulnerable neighborhoods –**
 - **South Sea Coast**
 - **North of Palm Ave/Carnation**
 - **Neighborhood around Bayside Elementary**



ADAPTATION STRATEGIES



1. Fee Simple Acquisition:
2. Conservation Easements:
3. Transfer of Development
4. Rolling Easement
5. Structural or Habitat Adaption
6. Setback Development
7. Controlling Surface Run-off
8. Controlling Groundwater
9. Beach Nourishment
10. Harbor By-Passing
11. Back-Passing
12. Subaerial Placement
13. Artificial Seaweed
14. Geotextile Core
16. Nearshore Placement
17. Offshore Sand Deposits
18. Added Courser Sand than Native
19. Opportunistic Sand
20. Canyon Interception
21. Inter-littoral Cell Transfers
22. Berms/Beach Scraping
23. Perched Beaches
24. Groins
25. Breakwaters
26. Dune Nourishment
27. Delta Enhancement
28. Headland Enhancement
29. Geotextile Groins
30. Branch Box Breakwaters
31. Floating Breakwaters
32. Submerged Breakwaters
33. Dune Restoration
34. Beach Dewatering
35. Seawalls
36. Revetments
37. Gabions
38. Cobble Nourishment
39. Dynamic Revetments
40. Geotextile Revetment
41. Floating Reefs
42. Rubber Dams
43. Sand Fencing



A Pulitzer Prize-winning, non-profit, non-partisan news organization dedicated to covering climate change, energy



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HOME

The background image for the article is a photograph of the iconic McDonald's golden arches in Imperial Beach, California. The arches are painted in a rainbow gradient from purple to red. In the background, the 'IMPERIAL BEACH' sign is visible on a building, and a person is walking on the beach promenade.

This Tiny California Beach Town Is Suing Big Oil. It Sees This as a Fight for Survival.

Imperial Beach can't afford seawalls, so it's trying to hold fossil fuel companies accountable for climate change as sea level rises and saltwater creeps in.

By David Hasemyer

JUN 27, 2018

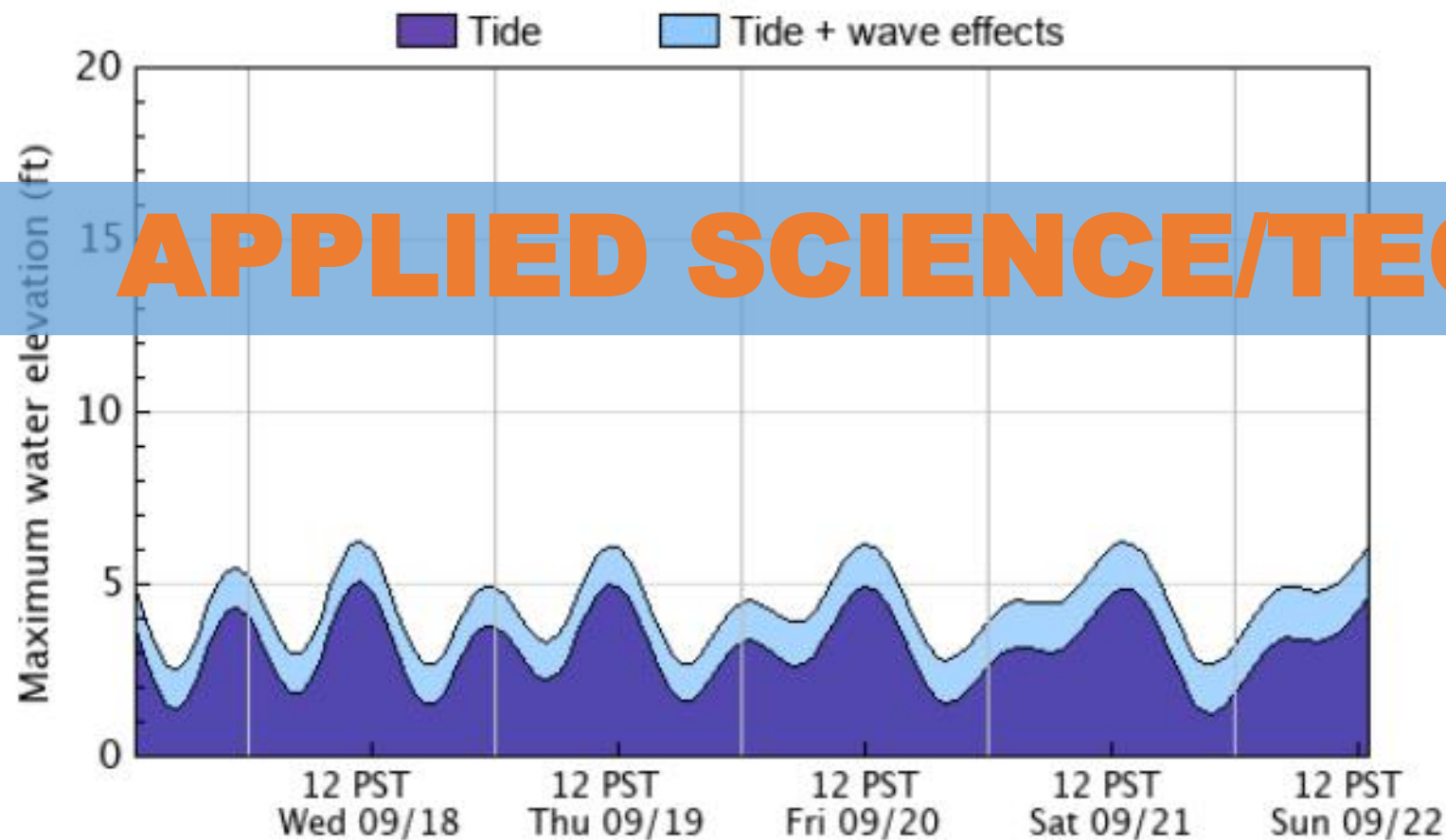
Resilient Futures IMPERIAL BEACH

A SEA LEVEL RISE PREPAREDNESS DEMONSTRATION PROJECT

CDIP/SIO

Water level elevation (relative to MLLW) forecasts use Stockdon (2006), are HIGHLY experimental, and should not be used as your primary forecast information.

Potential Flooding Index – D0043





LCP-LOCAL COASTAL PLAN



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PUBLIC INFRASTRUCTURE



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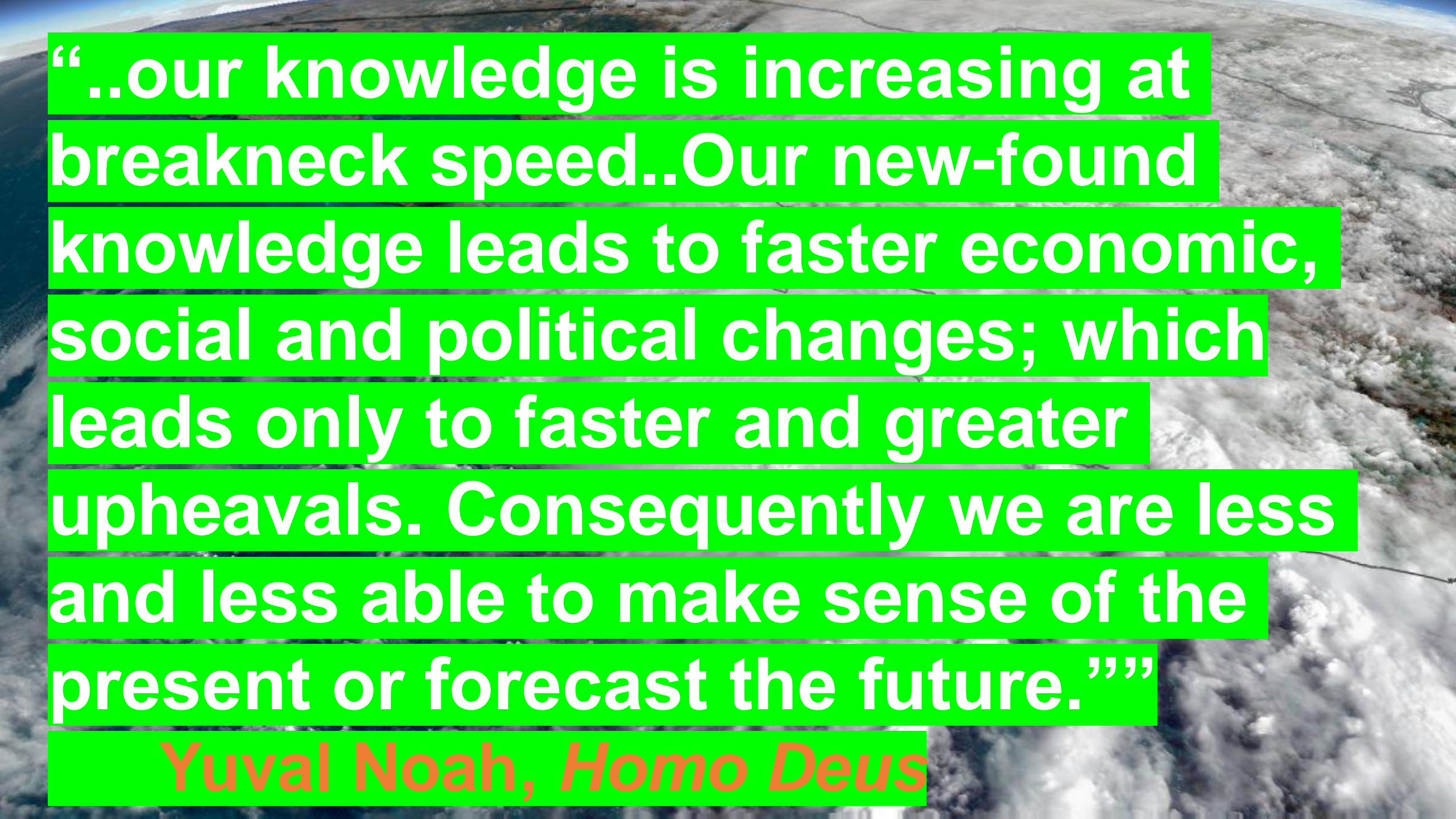
NATURAL CLIMATE SOLUTIONS BLUE CARBON



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PUBLIC ACCESS

An aerial photograph of a dry, cracked landscape with sparse, low-lying vegetation. The ground is a mix of light brown and grey, with numerous deep, winding cracks. Small patches of green and yellow plants are scattered across the terrain. The overall scene suggests a harsh, arid environment.

“..our knowledge is increasing at
breakneck speed..Our new-found
knowledge leads to faster economic,
social and political changes; which
leads only to faster and greater
upheavals. Consequently we are less
and less able to make sense of the
present or forecast the future.””

Yuval Noah, *Homo Deus*