Miami Beach
mitigation and adaptation strategies
5th to 15th street
“They took a slimy mangrove swamp and pumped it full of dirt, dollars and dreams.”

Miami News, March 26, 1965

Miami Beach - 1912
miami beach:
5th to 15th adaptation + mitigation strategies
Miami Beach: 5th to 15th adaptation + mitigation strategies
Miamibeach: 5th to 15th adaptation + mitigation strategies
Altered Landscape
miami beach: 5th to 15th adaptation + mitigation strategies today
150 years ago
“The dredge should be the emblem of the State of Florida”

Carl G. Fisher
dredging for agriculture
1916 Swamp Land Act

YOU MAY HAVE THESE, IF YOU DRAIN AND DEVELOP THEM

FLORIDA
EVERGLADES

MISS
FLORIDA

1916 Swamp Land Act
“I have bought land by the acre, I have bought land by the foot but, by God, I have never before bought land by the gallon.”
TROPICAL HOBBYLAND
miami beach: 5th to 15th adaptation + mitigation strategies
winter resort
winter resort to urban playground

Smiths Casino

Miami Vice
Miami Beach
City of Cut + Fill
“Dredges ran continuously day and night from 1914 to 1928”

C.W. Chase Jr.
Carl Fisher’s Real Estate Manager
miami beach:
5th to 15th adaptation + mitigation strategies
Miami Beach - 1914
City of Preservation
the dredge as a catalyst

Miami Beach Redevelopment Agency's South Shore Project of 1976 spurred the preservation movement.
spurred a movement
Miami Beach: 5th to 15th adaptation + mitigation strategies

12 Local Historic Districts
4 National Historic Districts
character of the city is informed by its historic nature
Miami Beach is a tremendously high value area that is critical to the region’s identity and should therefore receive high priority for infrastructure adjustments to increase resilience to sea level rise and storm surges.
billion dollar sandbar

Miami Beach brought in more than 16 billion dollars in hospitality taxes from 95’ - 09’

74% of hospitality taxes came from South Beach

= billion dollars
“Miami Beach tourism industry drew $9 billion last year”
Mayor Phillip Levine
urban environment

New York: 27,400 people per sq mi
Miami Beach: 23,150 people per sq mi
San Francisco: 16,500 people per sq mi
Boston: 13,250 people per sq mi
Chicago: 11,800 people per sq mi
Philadelphia: 11,120 people per sq mi
Miami: 10,650 people per sq mi

Density
people per sq mile

full time residents
- New York: 87,779
- Miami Beach: 23,150
- San Francisco: 16,500
- Boston: 13,250
- Chicago: 11,800
- Philadelphia: 11,120
- Miami: 10,650

peak season population
- New York: 173,228
- Miami Beach: 24,746.9
social hub of miami
anchor of miami tourism

Top Destinations
% visited by tourists
miami beach: 5th to 15th adaptation + mitigation strategies
City in Crisis
flooding, hurricanes, sea level rise
flooding
flooding
hurricanes
HURRICANE HITS MIAMI

Tidal Wave Sweeps Bayshore Drive, Wrecking Boats
Fear Felt For Miami Beach, Pounded by Heavy Sea

Miami was laid waste Saturday by a raging hurricane, attended
by a gale of more than 130 miles an hour velocity, and followed
by one of the most disastrous tidal waves ever experienced on the
Atlantic Coast.

Miami Beach was isolated from the mainland and no word has
been received as to the effect of the storm there. It is feared that
a monster tidal wave has swept across the entire island city.

Newspapers were closed from Miami Beach at 3 a.m. with a story of pounding surf, broken commu-
nication and distressed boats. It was the last information to reach Miami.

Scores of houses in Hialeah were reported leveled by the hurricane and under water from the
overflow of the canal.

Coral Gables was cut off from all outside communication at 4:40 a.m. Saturday. Continued
efforts to reach the city by wire were impossible during early hours of the morning.

All boats on Miami waterfront except one, Adventurer II, were sunk. The Nohab, former yacht
of ex-Kaiser Wilhelm, was split in two.

The hurricane reached Miami between 2 and 3 a.m., following by only a few hours a precau-
tionary hurricane warning issued by the Washington weather bureau.

A hurried check of damage in Miami, made during a momentary lull in the storm and a change of
wind direction about 7 a.m. showed losses in the city proper are beyond comprehensive estimate.

The official weather bureau barometer at 5:50 a.m. registered 27.75 inches—the lowest ever
recorded in the history of the U.S. weather bureau, according to Richard W. Gray, government
meteorologist here. Normal standing of the barometer is 29.80. Galveston, Texas, during the
disastrous hurricane and tidal wave in 1900, registered a barometric pressure of 28.40.

Miami river was out of banks, flooding Allapattah and the northwest section of the city.
Merrill & Stevens' shipyard was a mass of wreckage. Pleasure yachts under the sheds suffered
heavy damage. Telephone and electric light poles were hurled into the Miami river.

Without power to set type or operate a press, The Daily News is publishing this miniature edition
of a newspaper as a duty to its readers. It will continue to issue bulletins as often as possible.

BAROMETER READINGS

The barometer began dropping from its normal
point Friday afternoon. At 10 p.m. it registered
29.64. Subsequent readings were:

<table>
<thead>
<tr>
<th>Time</th>
<th>Reading</th>
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<tbody>
<tr>
<td>2 a.m.</td>
<td>29.34</td>
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<tr>
<td>4 a.m.</td>
<td>29.24</td>
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<td>6 a.m.</td>
<td>29.21</td>
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<td>29.20</td>
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<td>10 a.m.</td>
<td>29.19</td>
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<td>29.16</td>
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<tr>
<td>2 p.m.</td>
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<td>29.11</td>
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<td>6 p.m.</td>
<td>29.08</td>
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<td>8 p.m.</td>
<td>29.05</td>
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<tr>
<td>10 p.m.</td>
<td>29.02</td>
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</tbody>
</table>

MEET THE CRISIS

Miami has been the victim of a great catastro-
phie. Few if any, have escaped the effects of
the hurricane.

But this is a time when personal loss must
give way to the common good; when Miami must
meet the situation as it should be met.

This is a time for a high degree of courage, but
Miami has it. This is a time for unity of action.
It is a crisis to be met and disposed of.
great hurricane of 1926
The costliest hurricane in U.S. history was the Great Hurricane of 1926. Damage totals $125 billion in 2012 dollars — triple what even Katrina did. 

Source: Karen Clark & Company
Sea level rise

Topography Analysis

Source: City of Miami Beach
Miami is ranked 9th in the world for potential population exposed to coastal flooding by 2070 with 4,795,000 people.
1 meter slr
2 meters slr
Miami is the most at risk city in the world to assets exposed to coastal flooding both today and in 2070.
back to the swamps

past

+ present

II proposed
past
present
proposed
ecological characters
urban characters

- Stiltsville
- Atlantis
- Urban Delta
- Amsterdam
- Stormwater Park
- Miami Beach
dynamic strategy

miami beach: 5th to 15th adaptation + mitigation strategies
adaptation strategy
“Thoroughfare bordered by mangrove trees and foliage.”

“On the bay side (the boardwalk) extended 500 feet into the water, which was very shallow until that distance, from Miami Beach. At that point it was slightly more than three feet deep.”

6 feet of fill will be cut to form an ecological canal and to raise the grade of Lenox, Michigan, and Jefferson Avenue residences. The grade surrounding historic residences will be raised 1.5’ to adapt to sea level rise. The grade change could protect the ground floor from flood inundation for up to two additional centuries.

The cut and fill strategies only protect the residences up to 6’ of sea level rise before the finish floor would be inundated. To raise the finish floor is an option, but this approach of adaptation is against the Secretary of the Interior Standards #1 + #2 for Historic Preservation.

After cut and fill strategies no longer suffice against the rising tides, nature will reclaim the ground floor. Building atop the historic envelope could be the best way to preserve the structures and keep a functional residence.
biscayne bay
past
“On the bay side (the boardwalk) extended 500 feet into the water, which was very shallow until that distance, from Miami Beach. At that point it was slightly more than three feet deep.”

Miami Herald
July 28, 1929
“Thoroughfare bordered by mangrove trees and foliage”

Miami Herald July 28, 1929

Biscayne Bay - 1929
present
proposed
alton road
past
proposed
lenox, washington and jefferson avenues
past
Miami Beach - 1912
proposed
washington avenue
present
proposed
ocean drive
past
present
proposed
proposed
miami beach: 5th to 15th adaptation + mitigation strategies
“The physics of sand is not rocket science; it may be even harder.”

— Albert Einstein
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